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Article

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Original Research Article

Forensic Audit and Fraud Detection and Prevention in the Nigerian Banking Sector

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Abstract
This study examined the impact of forensic audit on fraud detection and prevention in the Nigerian banking sector. The study took a census of the 16 Deposit Money Banks (DMBs) listed on the Nigerian Stock Exchange (NSE) as at 31st December, 2016. The study used the secondary source to collect data from the Nigerian Deposit Insurance Corporations' (NDICs) annual reports of 2013 and 2016 respectively. The study covered a period of five (5) years spanning 2012-2016. Data generated were analyzed using charts, graphs, tables and regression. Our findings revealed that forensic audit has a significant negative impact on number of fraud cases, number of staff involved in bank fraud, and actual amount of bank losses through fraud in the Nigerian banking sector. However, forensic auditing has insignificant impact on expected losses generated through fraud activities in the Nigerian banks. This study recommends that banks in Nigeria should intensify the application of forensic auditing in the fight against fraud and forgeries in the system. Also, forensic auditing should be focused on detecting number of fraud as well as staff involvement in the Nigerian banking sector. Staff welfare and remunerations should be prioritized since staff are strategic in the prevention of fraud in any organisation, including the banks in Nigeria.

Keywords: Forensic audit, fraud detection, fraud prevention, banking sector, Nigeria.

JEL Classification:

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1.0 INTRODUCTION

Banks and non-bank financial institutions jointly comprise the financial industry of an economy; however, the banking sector consists of the major corner stone of any economy. The existence of an effective banking industry is a panacea to growing any economy (Owolabi, 2010). Thus, for an economy to grow, the banking sector must be strong, effective and efficient. The banking sector is regarded as one of the vulnerable sectors and a major contributor to the acceleration of the economy of Nigeria; ensuring economic growth, stimulates investment, employment, international trade and payment, and positively affecting the lives of the citizenries through her financial intermediation role of collecting deposits from the excess units and making it available to the needing units via credit or loans, which most often is on short-term basis (Ogbeide, 2018). The banking sector is one of the most controlled and regulated sectors in Nigeria. In spite of this, fraud has continued to rear its ugly head in the sector. Banks are the principal depositories of the public's monetary savings, the nerve centre of the payment system, the vessel endowed with the ability of money creation and allocation of financial resources and channels through which monetary and credit policies are implemented (Idolor, 2010; Akindele, 2011). Banks are institutions that involve in the business of financial intermediation and mobilization of deposit/savings from the surplus economic units to the deficit economic units (Aigienohuwa, Okoye & Uniamikogbo, 2017). Thus, the success of any monetary policy to a large extent, depends on the health of the banking institutions through which the policies are implemented (Adeyemo, 2012). This means that whatever problems that militate against the proper functioning of the banking sector will invariably have multiplier effects on the other sectors of the economy. These significant roles played by the banks in the nations' economic growth are responsible for the importance accorded the sector world over.

Today, the very professionalism and ethics of banking appeared to have been grossly undermined in the banking sector. The banks over the years have lost substantial amount of their quality assets and integrity to the local and international communities, due to the activities of fraudsters in which majority of them were bank officials (The Association of Certified Fraud Examiners, 2014). According to NDIC (2014), the increase in expected/actual loss in fraud and forgeries was largely due to astronomical increase in the occurrence of web-based (online banking)/ATM and fraudulent transfer/withdrawal of deposit funds. A significant fraud case in an organisation does not only undermine or shake up the financial stability of the company but, also ruins the company's reputation, thereby posing a threat to stakeholders, shareholders' and other investors.

According to Inaya and Isito (2016), fraud is a global phenomenon that has been in existence for long and keeps increasing by the day. Fraud is an activity that takes place in a social setting and has got severe consequences in the economy, corporations, and individuals (Silverstone & Sheetz, 2007).Silverstone and Sheetz (2007) observed that fraud is an opportunistic infection that burst forth when greed meets possibilities of deception. Ratlift (1996) defines fraud as a sequence of activities perpetrated to obtain money, property or services, to avoid payment for services or to secure personal or business advantages. Fraud has currently become a norm in most organisations and due to its widespread, conventional auditing andinvestigations have failed to prevent and detect it, thus its multiplier adverse consequences on individuals, organisations and the society at large (Aigienohuwa et al, 2017).Fraud is a subject that has received a lot of attention in Nigeria and at the global level (Oyejide, 2008) which internal and external auditors aresupposed to guard against through their periodic audits.However, auditors can only check for thecompliance of a company's books to GenerallyAccepted Accounting Practices (GAAP), auditingstandards, and company policies.

Globally, there are increasing occurrences of fraud in corporate organisations and this has adversely affected the firms' bottom line due to its none detection and prevention by statutory audit. These high spates of fraudulent activities perpetrated by management of organisations which cannot be detected nor prevented by statutory auditors which eventually led to the collapse of many high profile companies such as Enron, Tyco, WorldCom, Pamalat, Cadbury Nigeria, etc., necessitated the need for forensic audit for an enhanced control system. Fraud is a universal problem as no nation is immune from its continued existence and it has been identified as a major threat to the growth and development of the banking sector in Nigeria and the world at large. However, whether the use of forensic auditors would help in detecting and preventing fraud with a view to enhancing investors' confidence in the annual reports of banks in Nigeria remains unknown. This is the knowledge gap that drives this study.

2.0 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Concept of Forensic Audit

Forensic is as old as history but its usage got little attention in the past. Forensic means the application of scientific knowledge to legal problems, or usable in a court of law. Webster dictionary defines forensic as belonging to; used in, or suitable to courts of jurisdiction or to public discussions and debate.

Forensic audit is seen as summarizing and adapting investigative auditing, criminology, litigation services, and financial skills to uncovering fraud (Enofe, Omagbon, & Ehigiator, 2015). The growing demand for forensic audit service is becoming prominent because of the increasing fraudulent practices in businesses and government agencies around the world in recent time. The increasing complexity of fraud requires that forensic auditing be included in the tools required to successfully investigate and prosecute cases of fraud and those involved in fraudulent practices (Njanike, Dube, &Mashayanye, 2009). Often, quoted in fraud scandals that almost swallow the corporate world are cases of Enron, Arthur Anderson, and WorldCom. These cases have, therefore, brought forensic auditing to limelight (Enofe, et al, 2015). Also, the failure of statutory audit to prevent, detect, and reduce the wrongful, fraudulent, or corrupt use of corporation's financial and non-financial assets and the increase in corporate crime brought about the need for professional accountants and legal practitioners to find ways of fighting this perceived threat called fraud which is digging deep into the business world and which has also put pressure on the professional accountants and legal practitioners in exposing this evil frame in the business world, using forensic audit.

Forensic audit and forensic accounting are concepts interchangeably used. While Arokiasamy and Cristal (2009) described forensic audit as the application of financial skills and investigative ability within the context of rule of evidence to examine unsettled issues, Linquistn and Bologna (1987) affirmed that forensic accounting is a discipline that is made up of fraud knowledge, financial expertise and a sound knowledge and understanding of business reality and the working of the legal system.

The Institute of Forensic Accountants (IFA) of Nigeria depicts forensic auditing as the specialty of accounting that describes forensic auditor/accountant's engagement resulting from anticipated dispute or litigation. Mohd and Mazni (2008) defined forensic auditing as an activity that consists of gathering, verifying, processing, analyzing, and reporting on data in order to obtain facts and evidence in a predefined context in the area of legal/financial disputes and/or irregularities and giving preventive advice. Albrecht and Albrecht (2001) define forensic auditing as the utilization of specialized investigative skills in carrying out an enquiry conducted in such a manner that the outcome will have application to the court of law. This is in line with the definition of Messier (2000) which states that forensic auditors are fraud examiners employed by corporations, government agencies public accounting firm and are trained by Association of Certified Fraud Examiners (ACFE) on areas which cover, fraudulent financial transactions, legal elements of fraud investigation, criminology and ethics. Forensic auditing or accounting is that aspect of accounting that provides analysis suitable to the court which will form the basis for discussion, debate and ultimate dispute resolution (Wallace, 1991). Forensic auditors therefore, 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 the public for discussions and debate. Akenbor and Ironkwe (2014) argue that the importance of forensic auditing cannot be undermined as a result of global persistent perpetration of fraud in various organisations. Hence, forensic audit may be one of the most effective and efficient way to detect, reduce and prevent fraud.

Forensic Audit in Fraud Prevention and Detection

Fraud is a generic category of criminal conduct that involves the use of dishonest or deceitful means in order to obtain some unjust advantage or gain over another (Okoye, Maimako, Jugu, & Jat, 2017). When fraud is discovered within an institution, the initial response is "how could that have happened", and if audited statements were issued, the question asked will be" why didn't the auditor have a clue"? These raised the question of whose responsibility it is to detect and prevent fraud. The cost of fraud to business organizations today is mounting and it's of concern to the professionals.

Forensic audit plays a very essential role in the business organizations. It facilitates the prevention, detection and investigation of fraud and other economic crimes in the economy. Areas covered by forensic audit include: (i) The limitation of an economic crime awareness program with a view to highlighting the existence of potential risks and the need for economic crime (fraud) prevention strategies in each institution; (ii) A review of the criminal justice system as it pertains to economic crimes in financial institutions and of all the relevant registration with a view to identifying any material deficiencies and reporting appropriately thereon; (iii) The development of necessary policies and guidelines, including an appropriate risk assessment models for audit and other purposes. According to Modugu and Anyaduba (2013), one of the effective tools used by forensic auditors in fraud detection and money laundering is the net worth method. The net-worth technique is good in demonstrating the income of the suspect by using financial analysis to determine the increase in his or her wealth. This is usually done by showing the year to year increase in the wealth of the individual. Through this tool, it can be shown that fraudsters, money launders, and corrupt bank officials spent money that can be traced to their legitimate income.

Transaction monitoringis another area where forensic accounts can assist both the institution and law enforcement agencies to detect or prevent fraudulent practices. Two basic ways to conduct transaction monitoring to ensure that fraud and other financial crimes are not perpetrated are the use of anti-money laundering (AML) software used by various institutions using data mining tool and reports generated by the accounting system which can be queried by the forensic accountant using query type analysis of spreadsheets. These can effectively assist to deal with tracking complex transaction that some of these fraudsters and sophisticated money launderers employ.

Measurement of Fraud

The mechanisms considered appropriate to measure fraud as used in this study are: Expected loss and total amount lost to fraudof banks, Frequency of fraud occurrences and staff involvement in fraud and forgeries**.** Theyare explained below:

Expected Loss and Total Amount Lost to Fraudof Banks and Forensic Auditing

Expected loss is the sum of the values of all possible losses, each multiplied by the probability of that loss occurring.In the banking sector, expected loss could arise from lending activities of banks or fraudulent acts perpetuated by the staff of the banks. The expected loss on a loan and fraudulent activities of staff varies over time for a number of reasons.

Bank failures are as old as banking industry itself. Despite the significant roles banks play in economic development, its failures are becoming well pronounced. The Dictionary of Economics and Commerce confirmed that 200 banks failed in England between 1815 and 1850 just a period of 35years. One of the reasons adduced for this failure is Fraud (Owolabi, 2010). The problem of fraud in the banking industry is not limited to any economy, nation, continent or an environment; it is a general phenomenon. The origin of bank failure in Nigeria can be traced to the 1930s bank failure and crises.

Frauds are perpetrated in corporate organisation such as banks and non-banks mostly by staff of these organisations (Enofe, et al, 2015). Fraud is one of the evils irrespective of peoples' status, age, ethnicity, religion and organisation affiliation consciously and unconsciously indulged in through varying methods, approaches and tactics. Fraud is a social malady which keeps the perpetrators enriched and elevated in the society in the temporal period it occurs while it causes pains, frustration, losses and economic retrogression to the victims, be it individual, corporate bodies and the nations at large (Ogbeide, 2018). Fraud is a calculative attempt by an unsuspected party to deceive another for either financial gain or moral gain. Idolor (2010) notes that behaviour which engenders fraud is a sort of evil purpose on the part of the perpetrator(s) to the disadvantage of a third party, in this case the victim of the fraud.

According to NDIC report (2014), the proportion of banks actual/expected loss to the amount involved in fraud rose from 3 percent in 1990 to 22 percent in 1998. Perhaps the highest fraud ever reported in any particular year by a Nigerian bank occurred in 1998 when United Bank for Africa Plc wrote off an amount of N786m on account of fraud. The expected/actual loss increased by N1.24 billion or 27.4% from N4.52 billion in 2012 to N5.76 billion in 2013. The highest expected/actual loss of N2.5 billion occurred in the first quarter ended March 2013, which represented 47.4% of the total industry expected/actual loss. The increase in the number of fraud cases was due to rising fraud cases through Automated Teller Machine (ATM), Internet Banking and suppression of customers' deposits. The major types of frauds as reported by DMBs included ATM fraud, fraudulent transfers/withdrawals, internet banking fraud, cash suppression, unauthorized credits, fraudulent conversion of Cheques, diversion of customer deposits and presentation of forged Cheques, etc. From the above, the first hypothesis of this study is presumed as follows:

H_{01}: Forensic auditing has no significant effect on expected loss and total amount lost to fraud of Deposit Money Banks in Nigeria.

Fraud Occurrences and Forensic Auditing

Occurrence means something that happens or takes place. Occurrence may apply to a happening with or without intent, volition, or plan. Frequency is the rate of recurrence of an event, action or happening. Fraud occurrence therefore, is the frequency with which fraud related activities take place in an organization. The occurrence of fraud in corporate organizations is becoming rampant and this was seen in the large number of reported cases of bribery, corruption, embezzlement, money laundering, racketing, fraudulent financial reporting, tax evasion, forgery and other means through which both financial and economic dishonesty are being perpetrated (Ofiafoh & Otalor, 2013).

Arguably, a reasonable amount of fraud related cases in organisations are perpetrated by employees of these organisations. Employees occupying positions of responsibility in organisations use their position to commit fraud when internal controls are weak, or where there is poor management oversight on internal control implementation. Most employees who commit fraud do so, because they have access to assets and information that allows them the opportunity to engage in fraudulent deeds. It is true that employees need access to certain platform to perform their jobs. The same access provides the employees with the opportunity to commit fraud. The occurrence of fraud and other financial crimes have gone sophisticated, coupled with the advent of computerization and internet facilities which further enhance the problem of financial crimes. These factors which have helped to boost the possibility of committing fraud with no trace have made employees to either intentionally or inadvertently, consistently indulge in fraudulent practices, thereby enhancing the chances and regularity of fraud committed. Thus, making it difficult to detect and reduce these fraudulent activities as more easier ways are paved for committing these crimes. However, Onodi, Okafor and Onyali (2015) are of the opinion that forensic investigative skills are required to uncover, prevent and establish the occurrence of financial crimes. It is on this basis that our second hypothesis is stated as follows:

H_{02}:*Forensic auditing has no significant effect on fraud occurrence of Deposit Money Banks in Nigeria.*

Staff Involvement in Fraud and Forgeries and Forensic Auditing

As the old saying goes “prevention is better than cure” and this is certainly true when considering how to manage the risk of employee fraud. The Association of Certified Fraud Examiners (ACFE, 2014) defined occupational fraud as one in which an employee uses his or her occupation to enrich himself or herself through the deliberate misuse or misappropriation of employer’s resources or assets. A typical example of this type of fraud is employee embezzlement. There is also vendor fraud (a type of external fraud), which is usually in the form of overcharge for purchased goods, over-invoicing, shipment of inferior goods or the non-shipment of goods even though payment was made; and lastly is customer fraud. According to Nipion (2015), fraud usually occurs in different form and can lead to bankruptcy, inflation, increase in crime, reduced income per head, unemployment, and can also affect the economic system of a country.

The most important aspect to managing this risk is ensuring that the business has solid internal control system in place as, for every fraudulent activity there is always a breakdown of internal controls. Minimising the potential for fraud will require designing and implementing internal controls that prevent, detect and deter most fraudulent behaviour. The successful implementation of such internal controls begins with the “tone at the top”. Managing the risk of fraud requires the business owners and senior managers to support and adhere to all policies and procedures implemented to manage this risk. The success of internal controls also requires that they be visible, built into the day-to-day work of the business and that employees are held accountable for their actions. In addition, internal controls should be continually reviewed and, where appropriate, amended. It is important to realize that employee fraud cannot be eliminated but the risks of it occurring can be substantially reduced. It is worthy to note that the fidelity bond insurance policy taken on staff by the banks to address frauds perpetuated by staff has failed to achieve its desired objective; hence, the need for DMBs to further enhance their control/security measures using forensic audit. Forensic auditing needs to be adapted to every organization internal control system (Onuorah and Ebimobowei, 2012). However, the strategies to reduce the risk of employee fraud must strike a balance between the need for such controls and not “micro-managing” employees. Thus, our third hypothesis is as follows:

H_{03}:*Forensic auditing has no significant effect on staff involvement in fraud in the Deposit Money Banks in Nigeria.*

Review of Theory

The Fraud Diamond Theory was adopted in this study because it is the theory that deals with the capacity or traits of person(s) or staff with the requisite skills to implement the details of fraud in an organisation. Hence, the most appropriate theory for this study. This theory is explained below:

Fraud Diamond Theory

The Fraud Diamond Theory (FDT) which is an extended version of the Fraud Triangle Theory was propounded by Wolfe and Hermanson in 2004. Wolf and Hermanson (2004) introduced the fraud diamond model where they presented another view of the determinants of fraud. The model adds fourth variable “capability” to the three factor theory of ‘fraud triangle’ propounded by Donald Cressey in 1950 which is; pressure, opportunity and rationalization. This theory believes that the presence of pressure, opportunity and rationalization alone cannot lead to fraud except the person/employee has the capacity to commit that fraud. They opined that opportunity opens the doorway to fraud, and that pressure and rationalization can draw a person towards fraud. It therefore shows that, for fraud to occur in any organization, including the banks, these three elements must first be present. Pressure, which is a significant financial need or problem, is frequently what causes the act of fraud. Opportunity facilitates the ability to commit fraud, while rationalization connotes the justification of the fraud as consistent with the employees’/fraudsters’ personal code of ethics (Okoye et al, 2017).

However, Wolfe and Hermanson (2004) opined that for fraud to be committed, the person must have the capacity to recognize the open doorway as an opportunity and take advantage of it by walking through it (Okoye et al, 2017). Capacity is the possession of relevant traits or skills and ability to turn such opportunity to a reality. Hence, capacity connotes understanding of the internal control system and its lapses that could be exploited in planning and implementation of the fraud. Wolf and Hermanson believed that many frauds would not have occurred without the right person with right capabilities implementing the details of the fraud. They also suggested four observation traits for committing fraud as: (i) authoritative position in the organization; (ii) capacity to understand and exploit the organisation’s systems of accounting and internal control; (iii) confidence that they will not be detected, or if caught, they will get out of it easily; and (iv) capability to deal with the stress created within and otherwise be a good person when he or she commits bad act.

With the additional element presented in the fraud diamond theory affecting individuals' decision to commit fraud, the organisation and auditors need to better understand employees' individual traits and abilities in order to assess the risk of fraudulent behaviours. In addition, better systems of checks and balances should be implemented and monitored to proactively minimize risks and losses resulting from fraudulent activities in the workplace. It is therefore, pertinent to note that for the capability of those who engaged in fraud and other form of atrocities to be detected and prevented, the services of a trained and experienced investigator like the forensic auditor is required to forestall incidences of fraud in the Nigerian banking sector.

Review of Empirical Studies

Bassey (2018) examined the effect of forensic accounting on the management of fraud in microfinance institutions in Cross River State. The study adopted a survey research design. Data were collected from both primary and secondary sources and analysed using the ordinary least square technique. The regression results showed that the estimated coefficients of the regression parameter are all negative signs. The implication of these signs was that the actively engagement of forensic investigation and litigation support reduces fraud in the selected microfinance banks in Calabar. The study recommends that management of micro finance banks in Calabar should develop more interest in forensic accounting for monitoring and investigating suspected culprits in fraud cases.

Aigienohuwa, Okoye, and Uniamikogbo (2017) examined the effectiveness of forensic accounting and fraud mitigation in the Nigerian banking industry. The primary source of data was adopted using the 5-Likert scale questionnaires as the research instrument for data generation from respondents. The findings revealed that forensic accounting aside significantly reduces fraud in the banking industry, it has helped to improve considerably the internal control system of banks. It was recommended that the regulatory agencies and shareholders should strictly enforce forensic accounting of banks and ensure that both internal control and internal audit staff embrace this emerging trend.

Raymond, Nkiru, and Jane (2016) investigated the impact of forensic auditing in combating fraudulent activities in orderto ensure good corporate governance practice in Nigerian banking sector using the t-test statistical techniques with the aid of SPSS version 20.0. The survey method was adopted and data were collected through the use of questionnaire. Sample size of fifty five (55) respondents from the commercial banks in Awka, Anambra state was used. The study revealed that forensic accounting is an effective tool for addressing financial crimes in the banking system. The study further stated that forensic audit is necessitated in ensuring corporate governance in corporate organizations. It was recommended among others that the apex bank should engage the services of forensic accountants to compliment efforts of other professionals in reducing fraudulent activities in order to ensure corporate governance in financial sector.

Ogutu and Solomon (2016) examined the application of forensic auditing skills in the mitigation of fraud with particular reference to the accounting firms in Nakuru County, Kenya. The Descriptive survey research design was adopted for the study. The sample size of the study consists of 25 accounting firms to which questionnaire were administered to generate data. The primary source of data collection method was used using the responses from the 25 respondents from the 25 accounting firms. The OLS regression was used in analysing the data collected from the primary source.

Findings from the study showed that forensic accountants should have auditing skills, investigative skills, fraud skills as well legal skills. The study recommends that training and adoption of scientific forensic accounting skills by accounting firms and internal auditors is essential to ensure efficient mitigation against fraud.

Enofe, Omagbon, and Ehigiator (2015) examined the impact of forensic audit on corporate fraud in Nigeria. The study employed the survey method. The study employed the use of questionnaires which was judgmentally distributed to persons knowledgeable in the field of accounting and auditing with a view to harvesting data. Data gathered were analyzed using the Ordinary Least Square (OLS) regression technique. The study findings showed that forensic audit was adjudged to be an efficient and effective tool against corporate fraud. Also, frequent utilization of forensic audit services will significantly help in the detection, prevention as well as reduction of incidences of fraud in businesses. The findings suggested that forensic audit be made statutory for business organizations.

Adeniyi (2014) investigated the effect of forensic auditing on financial fraud in Nigerian DMBs. The cross sectional survey design was adopted for the study. The population comprised the staff of banks and audit firms in Abeokuta, Ogun State. The purposive sampling technique was used for the administration of questionnaire. The OLS regression analysis was used in analyzing the data. Findings from the study showed that forensic audit has significant effect on financial fraud control in Nigerian DMBs and that forensic audit report significantly enhances court adjudication on financial fraud in Nigeria. The study concludes that the application of forensic audit to tackle financial fraud in Nigerian DMBs is still at the infant stage. The findings further suggested that organizations should have a strong internal control system in place to reduce the occurrence of fraud.

Akenbor and Oghoghomeh (2013) examined forensic auditing and financial crime in Nigerian banks. The population of the study consists of twenty-three (23) employees from the recapitalized banks in Port-Harcourt, the Rivers state capital. A 5-point Likert-Scale questionnaire was the major instrument used for data collection. Data generated were analyzed using frequencies and percentages. The Pearson Product Moment Correlation Co-efficient was used to statistically test formulated hypotheses. The findings revealed that the proactive approach to forensic auditing helps in minimizing the risk of financial crimes in Nigerian banks. The study recommends that forensic audit department should be created in Nigerian banks to initiate internal measures for fighting financial crimes; forensic auditing courses should be introduced in Nigerian higher institutions of learning to provide the necessary skills and knowledge on forensic auditing; forensic audit reports of banks should be made public.

3.0 METHODOLOGY

This study adopts the ex-post facto research design with an extensive reliance on secondary data generated from the NDIC reports of 31st December 2013 and 2016 respectively. The population of this study which also forms the sample size of this study consists of 16 DMBs listed on the Nigerian Stock Exchange as at 31st December 2016. The census sampling technique was adopted since the entire population forms the sample of study. The study covered a period of five (5) years (2012-2016). The study employs multiple linear regression model to capture four (5) variables comprising of dependent and independent variables. The specified variables are expected loss of banks, fraud occurrence, total amount lost to fraud, staff involvement in fraud, and forensic auditing. The statistical tool used is the Statistical Package for social science (SPSS). Data generated from the NDIC reports of 2013 and 2016 respectively were analyzed based on these variables using charts, graphs, tables and regression.

The model is expressed functionally as:
Forensic Auditing = *f*(Expected loss of banks, Fraud occurrence, Total amount lost to fraud, Staff involvement in fraud).
The econometric model is expressed thus:
$FA_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 FO_{it} + \beta_3 TS_{it} + \beta_4 SF_{it} + \varepsilon_{it}$
Where;
FA_{it} = forensic auditing
X_{it} = expected loss of banks
FO_{it} = fraud occurrence
TS_{it} = total amount lost to fraud
SF_{it}= staff involvement in fraud
$\beta_1 - \beta_4$ are the coefficient of the parameter estimate.
ε is the error term.

4.0 DATA PRESENTATION AND ANALYSIS

Table 1 presents the reported types of frauds and forgeries, frequency of occurrence and actual losses incurred in 2016. From the table, it can be deduced that the frequency of ATM/Card-related fraud recorded the highest frequency of 11,244 or 67.12% of fraud cases in 2016. Web-based fraud (internet banking) and fraudulent transfers/withdrawal of deposits ranked second and third with 3,689 or 22.02% and 836 or 4.99% of recorded fraud cases respectively. However, fraudulent transfers/withdrawal of deposits had the largest actual loss of ₦0.63 billion or 25.59%, Web-based fraud (internet banking) had ₦0.58 billion or 23.79% and ATM/Card related fraud had actual loss of ₦0.48 billion or 19.46% of the DMBs total actual loss as at 31st December, 2016. It is instructive to note that losses incurred through Web-based fraud had declined considerably from ₦0.857 in 2015 to ₦0.582 in 2016, while the frequency of occurrence had doubled.

Table 1
Type and Frequency of Frauds and Forgeries with Actual Losses Sustained in DMBs in 2015 and 2016

		2015		2016	
S/N	**Nature of fraud**	**Frequency**	**Actual Loss Sustained (₦ 'b)**	**Frequency**	**Actual Loss Sustained (₦ 'b)**
1	ATM/Card-Related Fraud	8,039	0.504	11,244	0.476
2	Web-Based (Internet Banking) Fraud	1,471	0.857	3,689	0.582
3	Fraudulent Transfers/ Withdrawal of Deposits	1,396	0.562	836	0.626
4	Suppression of Customer Deposits	602	0.218	357	0.224
5	Fraudulent Conversion Of Cheques	71	0.049	48	0.002
6	Presentation of Stolen Cheques	132	0.054	17	0.014
7	Presentation of Forged Cheques	69	0.067	59	0.021
8	Outright Theft by Staff (cash defalcation)	213	0.146	182	0.179

9	Unauthorized Credits	143	0.587	172	0.198
10	Outright Theft by Outsiders /Customers	33	0.021	24	0.021
11	Foreign Currencies Theft	18	0.033	26	0.033
12	Diversion of Bank Charges (Commissions & Fees)	92	0.075	83	0.036
13	Lodgement of stolen warrants			14	0.034

Source: *NDIC various reports*

Although, the incidence of fraudulent transfers, suppression of customer deposits and fraudulent conversion of cheques actually decreased, the actual losses remained high. It is of concern that the frequency of occurrence of frauds and forgeries rose significantly by 36.42% from 12,279 in 2015 to 16,750 in 2016. However, losses suffered by the industry due to frauds and forgeries had declined in the review period by 23%. The rising frequency rates could be explained with the economic downturn, youth unemployment and unfavorable exchange rate against the Naira.

Staff Involved in Frauds and Forgeries

The perpetuation of bank frauds is generally based on the activities of bank staff either in terms of connivance, collusion, negligence or inefficiency. In Figure 1, the number of staff involved in bank frauds and forgeries for the period from 1998 to 2016 is reported. From the chart, it is seen that the number of staff involved in frauds reduced between 2000 and 2003, but increased from 2003. The number was highest in 2009 and 2013 respectively. It therefore appears that bank fraud has high correlation with banking sector crises in Nigeria.

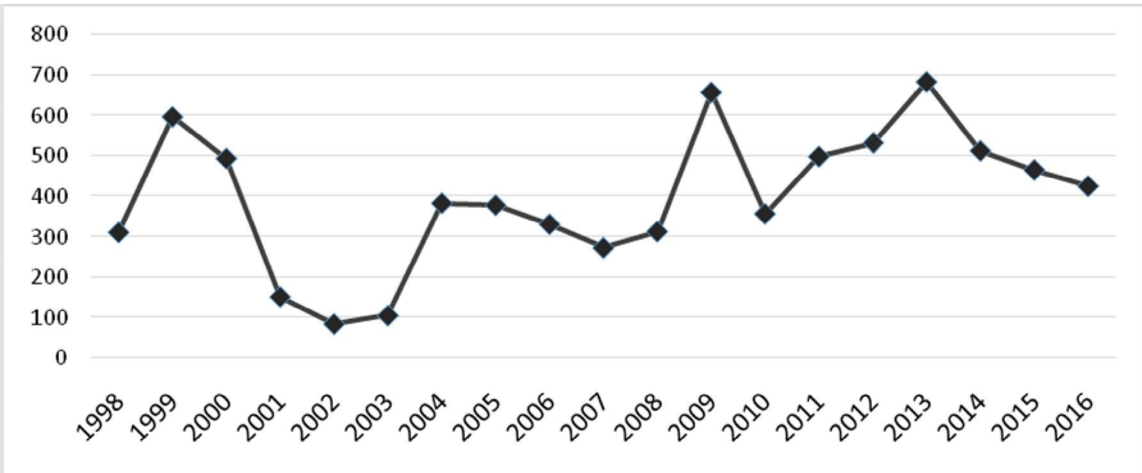

Fig.1: Number of staff involved

Source: *NDIC various reports*

Figure 2 also shows the number of staff involved in frauds and forgeries in the last three years with their status. Out of the 16,751 fraud cases reported by the banks in 2016, 231 cases or 1.38% were staff related. The number of fraud cases perpetrated by staff decreased by 46% from 425 in 2015 to 231 in 2016. That was an indication of improvement in banks internal control systems and risk management. However, despite the fidelity bond insurance cover taken by banks to address frauds perpetuated by staff, there is still the need for banks to further enhance their control/security measures. It is worrisome that Officers, accountants and Executive Assistants accounted for 98 out of 231 fraud cases during the period. The banks need to address the issue of casualization of staff as shown in the Figure 4.1 that temporary staff represented the second largest group of staff (59 out of 231) involved in bank frauds.

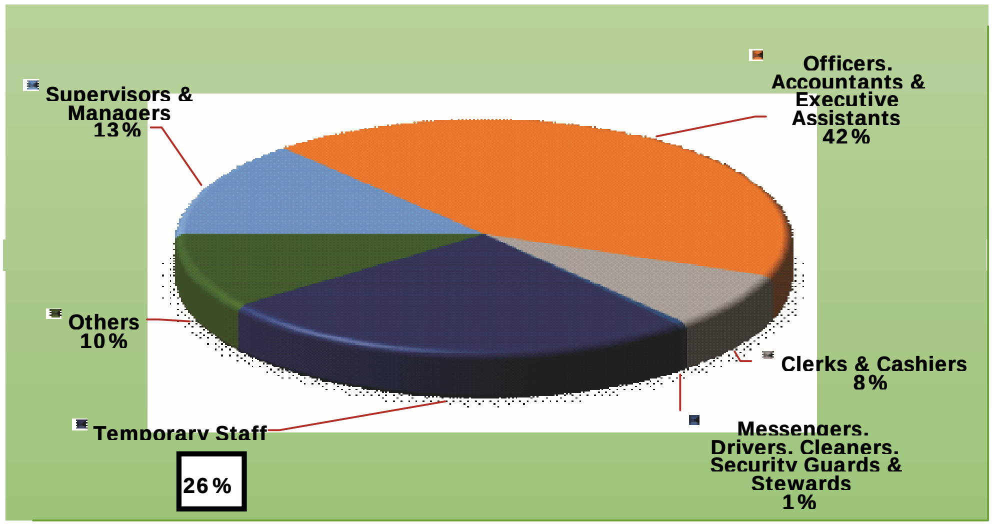

Fig. 2: Categories of Staff Involved in Frauds and Forgeries in DMBS in 2016

***Source:** NDICvarious reports*

Trends in Bank Frauds in Nigeria

In this section, we consider highlights of the bank frauds in Nigeria. Table 2 shows the top ten (10) banks with the highest amount of reported fraud cases between 2005 and 2016. It is seen that the trend has been rising for the banks over the period. Also, the share of the top ten banks reporting fraud has not abated over time. This indicates that the incidence of bank fraud is still rampant among Nigerian banks. The Table also shows that the top ten banks accounted for 87.83% of the fraud cases in 2016 as against 90.23% in 2015. The fraud cases from the top ten (10) banks amounted to ₦7.63 billion in 2016 as against ₦16.26 billion in 2015. The share of frauds by these banks decreased from 90.23% in 2015 to 87.83% in 2016. The reported loss which dropped by ₦9 billion shows a huge improvement in the banks' ability to stem fraud losses in 2016 as compared with the previous years.

Table 2

Top 10 Banks with the Highest Fraud Cases from 2005 to 2016

Year	Amount involved	% share
2005	9,373.74	88.38
2006	2,512.73	51.77
2007	2,565.01	25.64
2008	34,311.72	64.11
2009	37,179.90	*90.1*
2010	10,874,68	51.08
2011	24,730,04	87.1
2012	15,478.31	86.16
2014	21,904.45	85.54
2015	16,261.64	*90.23*

2016	7,625.90	87.83

Source: *NDIC various reports*

Analysis of Regression Results

The goal of the regression analysis is to investigate the impact of forensic auditing on bank fraud in Nigerian banks. It is assumed that forensic auditing will lead to less fraudulent activities by banking sector systems in Nigeria. Since forensic audit is the only independent variable while the bank fraud variables are the dependent variables, a number of simple regression equations were presented for the analysis. Here we estimate the effects of forensic auditing on number of bank fraud, numbers of staff that are involved in fraud, and the expected losses from fraud. First, the descriptive statistics of the data are reported in Table 3. Given that the forensic auditing variable is taken as the probability of fraud detection in the banks, the mean value is generally low at 2.64, indicating that on average, there is 2.6 percent chance of detecting fraud in the Nigerian banks. The standard deviation of the value is low, suggesting that the low value was spread over the entire period of the study. This calls for more stringent measures in checking fraud in the Nigerian banking system. The mean value for number of staff involved in fraud is 397, which is a high number, suggesting much of the staff in banks have the tendency to be involved in fraud. This is the only variable where the J-B value is significant (suggesting that there is normality of the distribution). Average number of reported fraud is high at 3,334 with maximum value of 16,761 per year. This is high and is expected to lead to high losses as shown in the mean values for TS and X in Table 3.

Table 3
Regression Analysis Results

Variable	Mean	Max	Mini	Std. Dev.	Skewness	Kurtosis	J-B	Prob.
SF	397	682	85	170.34	-0.22	2.37	0.47	0.79
FO	3,334	16,751	195	4,612.73	1.95	5.45	16.74	0.00
TS	20,388.33	73,944.28	2,857.11	18,299.56	1.66	5.20	12.59	0.00
X	4,436.62	17,543.09	692.25	4,202.40	1.87	6.24	19.34	0.00
FA	2.64	7.91	0.20	2.07	0.93	3.32	2.84	0.24

Source*: E-view10+*

The results of the econometric analysis are presented in the equation below. The R-squared value is moderate at 56 percent, indicating that 56 percent of the systematic variations in the staff involvement in fraud were explained in the model. The coefficient of FA in the equation is positive and significant at the 5 percent level (prob = 0.04 < 0.05). This implies that the hypothesis that forensic auditing has no significant impact on staff involvement with bank fraud is rejected. The coefficient is negative, which shows that forensic auditing has significant negative impacts on number of staff involved in bank fraud in Nigeria. The results show that with more forensic auditing, the number of staff involved with fraud tends to decline.

$$SF = 6.004 - 0.2177FA + 6.0041$$

$R\text{-}sq = 0.56; \ t = 2.40(0.04)$ (1)

The result of the histogram normality test is presented in Figure 3 below. From the chart it is seen that the estimated equation is normally distributed based on the structure of the histogram.

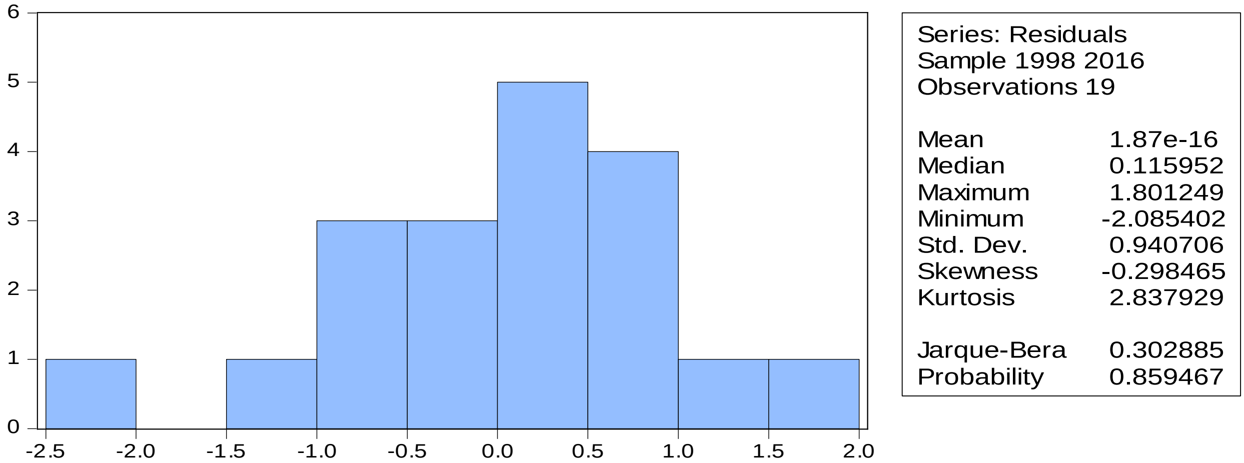

Fig. 3: Normality Test

Source: *Authors computation using E-view10+*

The impact of forensic auditing and number of fraud cases is a very essential aspect of this study. We intend to know whether this auditing pattern tends to reduce the number of fraud reported among banks in Nigeria. In the result in the equation 2, the results are quite impressive with R-squared value of 0.78, suggesting that 78 percent of systematic variations in fraud cases are explained in the simple regression equation. The coefficient of FA in the model result is negative and passes the significance test at the 1 percent level (given that prob = 0.0 < 0.01). Thus, the hypothesis that forensic auditing has significant negative impact on number of fraud cases in the banking sector in Nigeria is accepted for the study. The value of the coefficient is negative and significant, suggesting that indeed, the better the forensic auditing among banks the lower would be the number of fraud cases reported for Nigerian banks. Indeed, a 1 percent increase in forensic auditing structure results in 0.8 percent drop in the number of fraud cases observed in Nigerian banks. This shows that forensic auditing is a very strong tool for reducing fraud in banks.

$$TS = 7.9235 - 0.8003FA$$

$$R\text{-}sg = 0.781; \ t = 8.17 \ (0.0) \qquad (2)$$

The normality plot of the estimated equation is presented in Figure 4. The chart has a condensed structure that is relatively Bell-shaped, suggesting normality in the distribution. Thus, the problems of weak coefficients are not demonstrated in the results in equation 2.

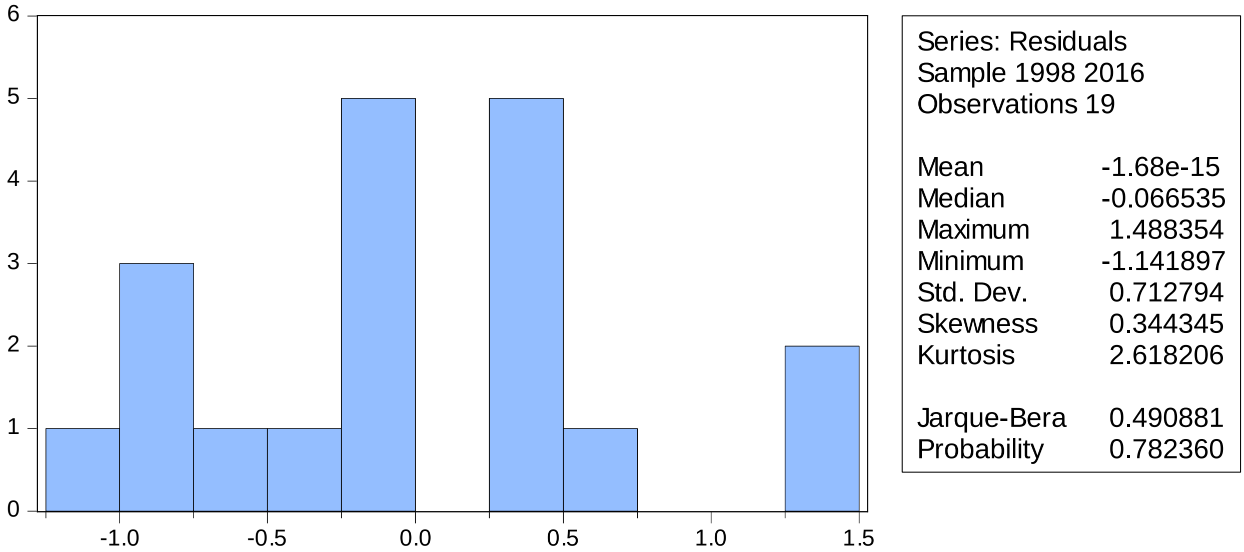

Fig. 4: Normality Test

Source: *Author's computation using E-view10+*

Finally, the effects of forensic Auditing on expected losses through fraud activities in the banking sector is estimated and reported. The result of the simple regression estimate of the equation is shown in Table 4 below. In the result, the diagnostic coefficients are generally weak, suggesting a poor relationship between FA and expected losses. For instance, the R-squared value is low at 0.12. However, the t-value for the estimated coefficient is negative, suggesting that FA has negative impact on expected losses from fraud. The coefficient is however not significant at the 5 percent level (since prob = 0.37 > 0.05). Thus the null hypothesis cannot be rejected. Apparently, forensic auditing has no significant impacts on expected losses generated through fraud activities in Nigerian banks.

$$y = -0.0028x + 8.0324$$
$$R^2 = 0.119;\ t = 1.21\ (0.37) \qquad (3)$$

The normality test shown in the histogram in Figure 4 shows that the estimated equation 2, was well specified, given the shape of the histogram (bell-shaped).

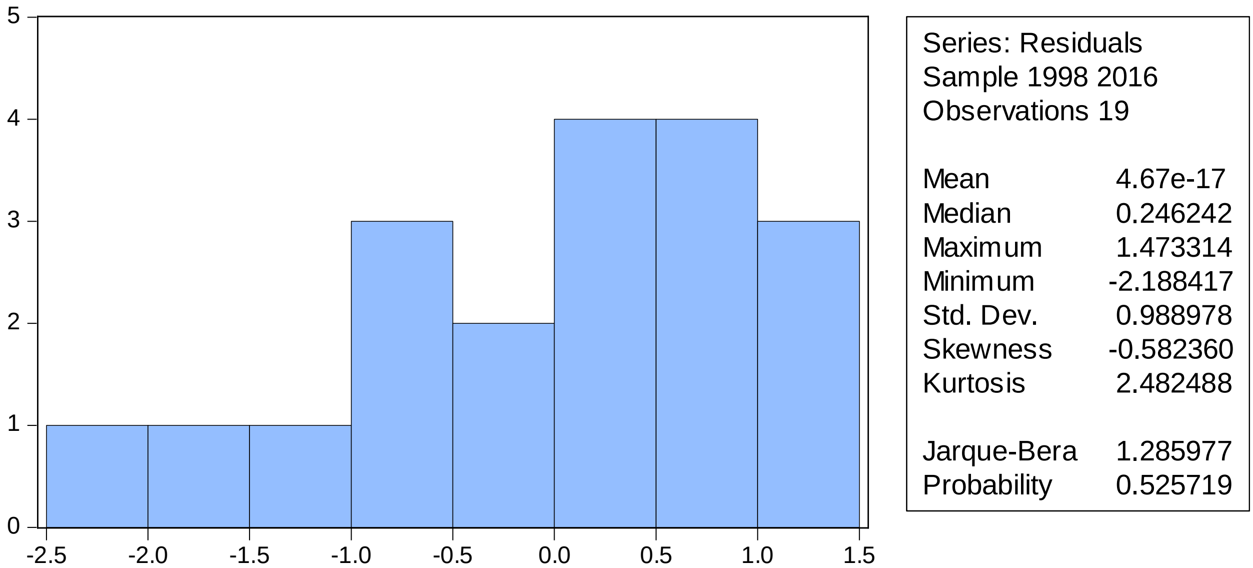

Fig 5: Normality Test result

Source: *Author's computation using E-view10+*

Test of Hypotheses

Test of hypotheses are based on the results of Table 3 where the relationship between forensic auditing and the selected characteristics are reported. The decision is based on the t-value and its probability outcomes.

Hypotheses One

H_{o1}: *Forensic auditing has no significant effect on expected loss of DMBs in Nigeria.*

The coefficient of expected loss in figure 5 is not significant at 5 percent level of significance (since probability = 0.37 > 0.05). The coefficients of expected loss are generally weak, suggesting a poor relationship between forensic auditing and expected loss. Hence, the null hypothesis is accepted at 5 percent level of significance, implying that Forensic auditing *has no* significant effect on expected loss of DMBs in Nigeria.

Hypotheses Two

H_{02}: *Forensic auditing has no significant effect on fraud occurrence in DMBs in Nigeria.*

The coefficient of FA in the model result is negative and passes the significance test at the 1 percent level (given that prob = 0.0 < 0.01). Thus, the hypothesis that forensic auditing has significant negative impact on number of fraud cases in the banking sector in Nigeria is accepted for the study. The value of the coefficient is negative and significant, suggesting that indeed, the better the forensic auditing among banks the lower would be the number of fraud cases reported for Nigerian banks. Hence, the null hypothesis is rejected.

Hypotheses Three

H_{03}: *Forensic auditing has no significant effect on total amount lost to fraud in the DMBs in Nigeria.*

The results from Table 3 are employed to test this hypothesis. In the result total amount lost to fraud did not pass the significance test at the 5 percent level. Slice total amount lost to fraud failed the test at the 5 percent level, the null hypothesis is accepted, and it is stated that Forensic auditing has no significant effect on total amount lost to fraud in the DMBs in Nigeria

Hypotheses Four

H_{04}: *Forensic auditing has no significant effect on staff involvement in fraud in the DMBs in Nigeria.*

In the result in Table 3 the coefficient of staff involvement in fraud failed the significance test at 5 percent level of significance since the probability of t-value is higher than 0.05. Staff involvement in fraud has a high probability value of 0.79. It is the co-efficient with the highest t-value, thus, the null hypotheses is accepted at 5 percent level of significance. This implies that Forensic auditing has no significant effect on staff involvement in fraud in the DMBs in Nigeria.

5.0 CONCLUSION AND RECOMMENDATIONS

Conclusion

In this study, the usefulness of forensic audit in the prevention and detection of fraud in the Nigerian banking sector was examined. Data used cover the period 1998 and 2016 based on fraud activities in the Nigerian banking sector. Simple regression equations were estimated in order to meet the objectives of the study. The study reveals that bank frauds are creation of professional criminals, desperate customers or errand bankers or their collusion inters. Most of the time, frauds are committed through forged documents and generally they are crook attempt which can be detected easily. Knowledge of the possible avenues can keep the banker warned and hence fore-armed against fraud. Internal and eternal vigilance and sticking to rules are the basic preventive measures. This implies that fighting this menace may include adoption of highly sophisticated techniques. Forensic auditing is a form of these instruments to combat fraud.

Recommendations

Based on the results from the study, the following recommendations are made:

i. Banks in Nigeria should intensify the application of forensic auditing in the fight against fraud and forgeries in the system as the probability of fraud detection is still generally low for the Nigerian banking sector.
ii. Adaptive data mining and intelligent agents who are robust enough to defeat sophisticated fraudsters, fast enough to minimize fraud damages and scalable enough to tackle huge volumes of data, should be employed to fight against loan frauds in the loan fraud detection domain.
iii. Adequate internal control system should also be established to have checks and balances among bank staff to reduce fraud to its nearest minimum, thereby, restoring confidence to bank customers.
iv. The regulatory authorities should make their impact felt in combating fraud by establishing more specialised agencies to focus on technology, ethical and other areas for combating fraud.
v. Since staff are strategic in prevention of fraud, their remunerations and welfare should be made a priority and taken serious. Also, training and retraining of these staff would encourage them to detect early warning signals for fraud activities in the banks.

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