

E-Fraud and Bank Performance: Empirical Evidence from Nigeria

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ABSTRACT: This study examines e-fraud and bank performance: empirical evidence from Nigeria. Expo facto research design was used while time series data for the period of ten (10) years sourced from Central Bank of Nigeria (CBN) statistical Bulletin. Unit root test and correlation matrix was used as a diagnostic tests. The Augmented Dickey Fuller (ADF) test is used to test for stationarity. The results of the stationarity or unit root test show that all the variables, return on equity (ROE), Automated Teller Machine Fraud (ATF) and Online Fraud (OLF) have unit roots and are only stationary at first difference and integrated of order one I (1). The fully modified least squares regression (FMOLS) is used for the analysis. The result of the study indicates that both variables, online fraud, (OLF) and ATM fraud (ATF) show negative effect on bank performance proxied in Nigeria in line with a priori expectation. In order words, fraud and fraudulent activities impede on the profitability of the banks. Based on the results obtained from the regression and the analysis conducted, the study recommends among others that bank managers should strengthen their internal control systems at all times. The regulatory authorities should be up and doing concerning their supervisory functions. Appropriate disciplinary measures should be taken against culprits of e-frauds so as deter others with such intentions. Also, banks should hold regular trainings for their Information Technology staff to counter the activities of fraudsters that use electronic means to commit fraud.

KEYWORDS: E-fraud, Bank, Performance, ATM, Nigeria.

1. INTRODUCTION/BACKGROUND OF THE STUDY

The goal of every bank, be it commercial or otherwise is to make profit at the end of the day, apart from other goals and objectives. In this wise, these banks tailor their products, brands and other operational guidelines towards this goal. It is not uncommon to see or read about these institutions declaring huge sums of money either as profits after tax or profit before tax (PBF).

As a matter of fact, any bank that fails to declare profit as and when due is considered as not healthy; in which case, necessary steps are taken by the monetary authorities to step in to salvage the situation. This is evidenced in the recent intervention of the Central Bank of Nigeria in the management and control of some commercial banks in the country.

However, the level of profit may be adversely affected by some macroeconomic and bank specific variables. One of these factors is the issue of bank fraud. Fraud is seen as a social economic disease that affects most financial institutions apart from banks. The menace of fraud is gradually becoming a way of life as far as banks are concerned. As a matter of fact, fraud in banks is just part of the endemic sector wide corruption that is pervading the landscape of the Nigeria economy.

Apart from individuals, corporate organisations and bank clients are all involved in bank frauds within the Nigeria Banking system. Gbegi (2014).

Because of the nature and volume of transacting (hundreds of billions of naira), the financial sector, especially the banking sub-sector seems attractive and prone to constant episodes of fraud related crimes.

It is pertinent to note that bank frauds have far reaching effects on owners, managers and stockholder of the concerned banks economy wide resulting sometimes to the ugly incidence of banks distress, closures, and sometimes, mergers and acquisitions such a crisis situation will ultimately have an adverse effect on the traditional role of commercial banks as financial intermediaries. Owolabi (2010).

It has found out that banks frauds comes with it, untold hardship and frustrations to stakeholders including customers, employees, family members, shareholders, managers, etc. This project is therefore, aimed at examining the effect of bank fraud on bank profitability with particular emphasis on electronic fraud.

The main objectives of the study therefore is to ascertain the effect of electronic fraud on Nigerian banking sector Profitability. However, the specific objectives are to ascertain the effect of ATM fraud on profit in Nigeria banking industry

and evaluate the effect of online fraud on profitability in Nigeria banking industry.

2. REVIEW OF RELATED LITERATURE

Conceptual Review

The concept of Fraud

Fraud can be define as a predetermined as well as planned tricky process or device usually undertaken by a person or a group of persons with the sole aim of cheating another person or organisation to gain ill-gotten advantage which would not have accrued in the absence of such deceptive procedure (Nwaze, 2012). The primary factor that distinguishes fraud from error is whether the underlying action that resulted in a misstatement of the financial statement is intentional or unintentional. For purposes of the statement, fraud is an intentional act that results in material misstatement in financial statements that are subject of audit. Explicit from the above description are: fraud is an intentional act and it legal in nature; as such, auditors do not make legal determination of fraud.

Classifications of Fraud

Fraud may be classified into two: (a) According to the nature of the fraudsters and (b) Method employed in carrying out the fraud. On the basis of nature of fraudsters, fraud may be categorized into three viz; internal, external and mixed frauds. Fraud committed by the members of the employee and directors of the organisation is referred to as internal fraud. External fraud is committed by individuals outside the organisation. In mixed fraud, outsiders collude with the employees and the directors of the organisation. However, in

methods employed in carrying out fraud, fraud could be classified into asset misappropriation, corruption and fraudulent misstatement. Furthermore, Ojo (2008) classified the causes of fraud and forgeries in banks as; generic factors comprising institutional or endogenous factors and environmental or exogenous (social) factors. In the same vein, Crumbley in Osisioma (2012) presented the 3ms of financial reporting fraud which includes:

- (a) Manipulation, falsification or alteration of accounting records or supporting documents from which financial statements are prepared;
- (b) Misrepresentation in or intentional omission from the financial statements of events, transactions, or other significant information.
- (c) Intentional misapplication of accounting principles relating to amounts, classification, manner of presentation, or disclosure.

Some Episodes of Fraud in Nigeria Banking Sector

About 3,756 cases of fraud were reported in 2013 alone; as against 3,380 reported in the previous year, representing an increase of about 11.12%. Also there was an increase of 21% in the amount involved as N18.1 billion was reported in 2012 as against N 21.8 billion reported in 2013 NDIC (2013).

Also the expected actual loss increased by N 1.24 billion or 27.4% from N 4.52 billion in 2012 to N 5.76 billion in 2013. It is also instructive to note that the highest expected/actual loss of N 2.5billion accounted in the first quarter of March 2013 representing 47.7% of total industry.

The following tables summarizes different fraud related statistics for 2012 & 2013.

Table 2.1: Share of DMBs in Reported Fraud Cases

Group	2012	
Group	Amount	Percentage
Top 10 DMBs	15,478	86.16
Total for 24 DMBs	17,965	100
Group	2013	
Group	Amount	Percentage
Top 10 DMBs	18,859	86.54
Total for 24 DMBs	21,795	100

Table 2.2: Return on DMBs Frauds/For Services for 2012/2013

Quarter	Year	No of Cases	Amount involved	Total expected loss	Expected loss to amount involved (%)
1.	2012	709	2,825	1,370	48.50
	2013	983	7,805	2,506	32.11
2.	2012	691	10,200	1,260	12.45
	2013	768	4,859	1,164	23.96
3.	2012	932	2,049	1,098	51.59
	2013	1067	3,844	906	23.57
4.	2012	1,048	2,971	788	26.56
	2013	938	5,287	1,180	25.32
Total	2012	3,380	18,045	4,516	25.14
	2013	3,756	21,796	5,757	26.41

The nature of fraud cases, the frequency of frauds and actual loss incurred is reported in table 2.3 as follows:

Table 2.3: Types of Fraud with frequency and actual loss as at 2013

S/NO	Nature of Fraud	Frequency	Actual loss
1.	Transfer, withdrawal of Deposit	394	1.162
2.	ATM Fraud	1739	0.585
3.	Suppression of Customer Deposit	324	0.482
4.	Internet Bank Fraud	316	1,683
5.	Fraudulent Conversion of Cheque	219	0.385
6.	Presentation of Stolen Cheque	196	0.120
7.	Unauthorized Credits	132	0.511
8.	Presentation of Forged Cheque	118	0.018
9.	Outright Theft by Staff	116	0.205
10.	Diversion of Bank Charges	63	0.056
11.	Lodgment of Stolen Warrants	55	0.034
12.	Foreign Currency Theft	41	0.049
13.	Non Dispensing of Money, but register by electronic journal	39	0.427
14.	Outright Theft by Customers, outsiders	34	0.037
	TOTAL	3,756	5,757

Different categories of Bank Staff were also involved in bank fraud as can be seen in table 2.4

Table 2.4 Category of Bank Staff involved in Fraud from 2011-2013 2011/2012/2013

S/NO	Status	No	%	No	%	No	%
1.	Supervisors/Managers	89	17.87	78	14.69	97	14.22
2.	Officers, Accountants & Assistant			1			
3.	Clerks & Cashiers	163	32.73	117	20.03	128	18.77
4.	Typists & Stenographers	7	1.41	5	0.94	12	1.76
5.	Messages Cleaners, Drivers, Guards, Stewards	35	7.03	16	3.01	34	4.99
6.	Full Staff					33	4.84
7.	Temporary Staff	78	15.66	226	42.56	144	21.11
	TOTAL	498	100	531	100	682	100

Theoretical Review

The theory of fraud triangle

The classical theory of fraud triangle was developed by Donald Cressey in 1973. According to Cressey (1973), fraud is likely to occur if a combination of these factors exist, that is Pressure (Motivation), Opportunity and rationalization. Trusted persons become trust violators when they conceive

themselves as having a financial problem which is non-shareable, and are aware this problem can be secretly resolved by violation of the position of financial trust, and are able to apply to their own conduct in that situation which enable them to adjust their conceptions of themselves as trusted persons with their conceptions of themselves as users of the entrusted funds or property.

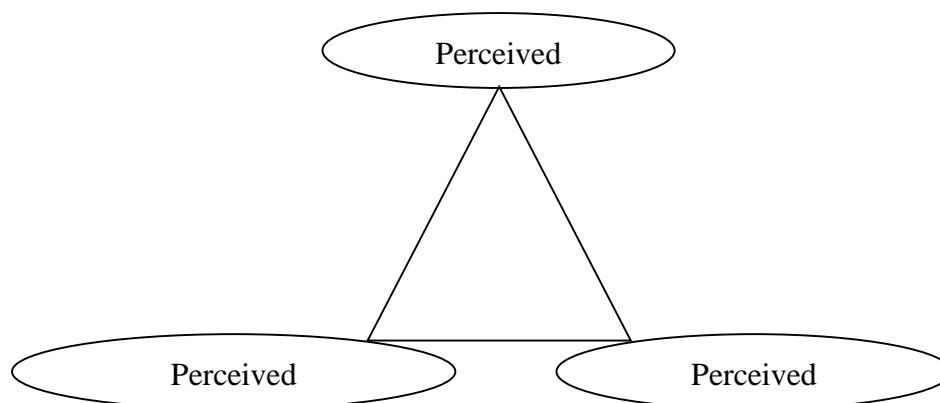


Figure 1: The Fraud Triangle (Donald Cressey, 1973)

Job dissatisfaction theory

Robert Hoppock developed the job dissatisfaction theory in 1935. Hollinger and Clarke (1983) affirmed that dissatisfaction motivates employees to commit fraud. When employees perceive that their jobs or working conditions are unfair, they are more likely to justify and commit fraud (Well, 2005). However, this theory is difficult to prove due to the relative lack of information regarding employee theft in general; while it can be studied in its particulars, it is difficult to identify in general due to lack of reliable and widespread information about employee theft (Mustaie& Tewksbury, 2002). Furthermore, this model suffers from the same issues regarding motivation and rationalization as the Fraud Triangle theory.

The fraud scale

Albrecht, Howe and Rommey (1984) also developed a fraud theory known as the “Fraud Scale” in the 1980s that shared some of the fraud elements used by Cressey (1973) in explaining criminal behaviour. Their theory suggest that three factors contribute to fraud: a situational pressure, a perceived opportunity to conceal the fraud; and the level of the employees’ personal integrity. The situational pressures are described as the immediate problems individuals experience within their environment. Opportunities to commit fraud may be created by individuals or by deficient or missing internal controls. Personal integrity refers to the personal code of ethical behaviour each person adopts.

Theory of concealment

This theory is an embodiment of the classical Fraud Triangle Theory of Donald Cressey in 1973. It is otherwise called the “Elements of Fraud”. Concealment is an essential ingredient of most systematic fraud (Owolabi, 2010). According to Owolabi (2010) concealment can be defined as a manipulation of an accounting record or misrepresentation of a physical, personal or commercial reality. The theory explains the fact that the culprits deliberate after the act to assist in its omission. Greed motivates this type of fraud to exploit any opportunities available. Self-preservation is crucial when it comes to concealment. The culprit usually tries to hide the loss and the evidence which indicates that he is responsible for it. He (the culprit) will strive to conceal the fraud in the best way available to him and may adopt optimum concealment course.

Empirical Review

Employing regression analysis, Offiong, *et al* (2016) analyzed banking sector frauds in Nigeria from 1994 to 2013. The study found that the problems of Nigerian banking sector frauds require strong inter-agency collaboration, public education and cross border cooperation to accomplish sustainable success. The study recommended, among others, that existing regulatory guidelines on prevention of banking sector frauds, which are currently inadequately addressing detection and mitigation activities, should be strengthened and broadened to include forensic accounting/auditing to aid

recovery of losses. Inaya and Isoto (2016) investigated the social impact of fraud on the Nigerian banking industry from 1990 to 2014. Using the ordinary least squares regression techniques, findings from the study showed that there was a negative social impact of fraud on the Nigerian banking industry.

In Adeniyi (2016), the effect of forensic auditing and financial fraud in the Nigerian, deposit money banks (DMBs) was examined by analyzing questionnaires using logistic regression analysis. The study found that forensic auditing has significant effect on financial fraud control in Nigerian (DMBs). A strong internal control system was recommended in the study to reduce the occurrence of fraud. Also, Osuala, Opara and Okoro (2016) examined the impact of fraud on the risk assets of commercial banks in Nigeria from 1990 to 2013, by employing Johansen’s approach to co-integration and error correction model. They found that fraud significantly impact on commercial bank loans and advances in Nigeria.

In a study on the determinants of fraud measures in selected commercial banks in Nakuru Town of Kenya, Sang (2014) employed descriptive statistics with the use of questionnaire to collect data from 89 staff of selected commercial banks in the area of the study. The findings of the study revealed that the effectiveness of the internal control measures was undermined by non-adherence to dual control aspects and lack of sufficient time to undertake the various periodic tests diligently. Therefore, the study recommended the need to establish a comprehensive fraud mitigating measures against external frauds at the cashier' department, more enforcement of compliance with fraud mitigation methods, an increase in staff numbers in key operational areas and lifestyle audits among the bankers to detect fraud occurrences among bankers. Wanjohi (2014) studied fraud in the banking industry in Kenya using Commercial Bank of Africa as a case study. By employing descriptive statistics with the use of online questionnaire to access a population of 68 employees representing 33% of the population, the study revealed that fraud in commercial Bank of Africa was given a very high priority and the employee fraud was the most prominent fraud in the bank, while third party fraud was second. It was recommended that banks should implement systems and structures that will reduce the opportunities for fraud within the banking environment.

A study on the effectiveness of fraud prevention and detection techniques in Malaysian Islamic banks was conducted by Abdul-Rahman and khair-Anwar (2014). By using primary data through the use of 146 questionnaires distributed to the managers of Islamic banks in Malaysia, the study found that the protection software is the most effective components of fraud protection techniques. Meanwhile, bank reconciliation, password protection and internal control review and improvement were recommended as the most effective techniques when assessing independently. Akinyomi (2012) examined fraud in Nigerian banking sector and its prevention. The study used primary source through the administration of

questionnaire to two hundred (200) staffs member in ten (10) deposit money banks in Lagos. Greed, according to the findings of the study is a foremost cause of fraud as greater part of the staff considered their remuneration as sufficient. It was also observed that banks’ staff got involved at all stages of fraud, including: initiation, execution and concealment. Moreover, computer fraud accounted for the majority of the fraud perpetuated in the bank. The establishment of adequate internal control system was a suggestion to prevent fraud in banks.

Employing ordinary least square method (OLS) to analyse the growth of bank frauds and its impact on the Nigerian banking industry from 1989-2004, Ikpefan (2006) found that deposits of insured banks have significant influence on the explanatory variables for the period. The study recommended that bank management should strengthen their internal control system; employ qualified personnel to work in it. This would to a large extent help to rebuild the public confidence in the banking industry.

Akindele(2011) conducted a research on the “challenges of automated teller machine (ATM) usage and fraud occurrence in Nigeria banking industry”. The study posits that lack of adequate training, communication gap, and poor leadership skills were the greatest causes of fraud in banks. He advised that adequate internal control mechanism be put in place and that workers satisfaction and comfort be taking care of.

Onuorah and Ebimobwei (2012) investigate fraudulent activities and forensic accounting in Nigeria. The study found that there is need for the banks in Nigeria to adopt more proactive measures such as the use of forensic accounting techniques in banks. Abdurashed, Babaitu and Yinusa (2012) also examined the impact of fraud on bank performance in Nigeria. Result of the study shows that, there is a significant relationship between banks profit and total amount of funds involved. Finally, Kanu and Okorafor (2013) did a work on the nature, extent and economic impact of fraud on bank deposit in Nigeria using descriptive and inference statistics. The study revealed that there is a positive significant relationship between bank deposit and fraud in Nigerian banking industry.

Nweze(2008) conducted a study on bank frauds. The methodology he adopted involved an interaction with bank staff of various cadres with questionnaire to identify the fraud forms and characteristics in the banking industry. Idowu (2009) did a research aimed at finding means of minimizing the incidence of fraud in Nigerian banks. Findings of this study revealed that, so many factors contributed to the incidence of frauds in banks amongst which are poor management of policies and procedure, inadequate working conditions, bank staff staying longer on a particular job and staff feeling frustrated as a result of poor remunerations. Chiezey and Onu (2013) in their study used multiple regression analysis to ascertain the impact of fraud and fraudulent practices on bank performance in Nigeria from 2001 to 2011. They found that the percentage of mobilized

funds lost to fraud was highest between 2001 and 2005 but which was significantly reduced between 2006 and 2011. The study concluded that fraud and fraudulent activities inflict severe financial difficulties on banks and their customers.

Abdurashed, Babitu & Yinusa (2012) examined the impact of fraud on bank performance in Nigeria. The study revealed that Nigerian banks recorded the highest cases of fraud in 2008. Result of the study shows that, there is a significant relationship between banks profit and total amount of funds involved in fraud.

3. RESEARCH METHODOLOGY

Introduction

This chapter focuses on research methodology. This is divided into sub sections on the model, data sources, technique of data analysis, etc.

The Model

The model for this study is expressed as:

$$\begin{aligned} \text{BPF} &= f(\text{C P F}) & - & - & - & - \\ & & - & - & \text{I} & \\ \text{BPF} &= \text{ROE} & - & - & - & - \\ & & - & - & - & \text{II} \\ \text{CPF} &= \text{ATM} + \text{ONL} & - & - & - & - \\ & & - & - & - & \text{III} \end{aligned}$$

Therefore, substituting equation II and III and I, the model becomes:

$$\begin{aligned} \text{ROE} &= \text{ATM} + \text{ONF} & - & - & - \\ & & - & - & \text{IV} \end{aligned}$$

Expressing IV explicitly, we have

$$\text{ROE}_t = b_0 + b_1\text{ATM}_t + b_2\text{ONL}_t + b_3\text{HAC}_t + U_t$$

Where:

BPF	=	Bank Performance (proxied by ROE)
ATF	=	Automated Teller Machine Fraud
ONF	=	Online Fraud
ROE	=	Return on Equity
U _t	=	Error term

Method of Data Analysis

The data is first subjected to pre-estimation test to discover their historical properties including unit root tests, summary statistics and correlation matrix. Thereafter the model is then estimated.

Estimation Technique

The error correction model is used as the technique of data analysis.

Data Sources/Types

Secondary data is used for the study obtained from CBN Statistical Bulletin, NDIC statistics and audited accounts of the DMBs.

4. DATA PRESENTATION AND ANALYSIS

This section presents data used for the work and also details the analysis of the same data.

Pre-Estimation Analysis

Before the estimation is carried out, the data was subjected to pre-estimation analysis. This was done to uncover the historical details of the variables under consideration.

Correlation analysis

Correlation analysis is presented as in table 4.1

Table 4.1: Correlation Analysis

Variable	ROE	ATF	OLF
ROE	1.00000		
ATF	-0.34759	1.00000	
OLF	0.115017	0.108782	1.00000

The table above displays the figures for the correlation analysis as shown. ATM fraud (ATF) is negatively correlated with return on equity (ROE) which represents a proxy for bank performance/profitability.

Online fraud (OLF) is positively correlated with ROE and (ATF), the ATM fraud as expected. However, for both

variables, the p-values such that the relationships are insignificant.

Summary Statistics

The vital statistics for the variables are summarized in the summary statistics as given in table 4.2.

Table 4.2: Summary Statistics

Statistics	ROE	ATF	OLF
Mean	7.222000	0.457500	0.655080
Median	3.485000	0.51000	0.56000
Maximum	22.20000	0.798000	1.583000
Minimum	-0.040000	0.82000	0.098500
Std. Dev.	8.189286	0.250228	0.475011
Skewness	1.000286	-0.409550	0.773813
Kurlosis	2.397283	1.841908	3.321802
Jarque-Bera	1.849123	0.83878	1.040587
Prob.	0.398705	0.55758	0.584381
Sum	72.22000	4.57500	6.50300
Sum Sq. Dev	603.2802	0.583525	2.03324
Observations	10	10	10

The table above (table 4.2) shows the summary statistics of the variables. The mean of the ATF and OLF are respectively 0.45 and 0.65. The maximum values are 22.2, 0.80 and 1.5 for ROE, ATF and OLF respectively. The standard deviation for the variables indicates that they are not too far away from their respective means.

Apart from the ATM fraud (ATF) that is negatively skewed, the other variables, OLF and ROE are positively skewed. For the Kurtosis statistics, both ROE and ATF are below the threshold of 3 while online fraud (OLF) has a value slightly above the threshold of 3.

Unit root tests

It is a well-known fact that most economic and financial time series data exhibit non-stationarity behaviour with no evidence of mean-reversion. Therefore, it is necessary to first of all ascertain the stationarity or otherwise of the series before proceeding with the appropriate regression tool. The Augmented Dickey Fuller (ADF) is used here to test for stationarity. The null hypothesis is that the variables being considered have unit roots against the alternative that they do not. The ADF test result is shown as below.

Table 4.3: Unit root test

Variable	t-statistics	P. value	Order of integration
ROE	-10.1296	0.001	1(1)
ATF	-3.42982	0.044	1(1)
OLF	3.6142	0.010	1(1)

The results of the stationarity or unit root test show that all the variables, ROE, ATF, and OLF have unit roots and are only stationary at first difference.

Regression Result

The fully modified least squares regression (FMOLS) is used for the analysis. The choice of the (FMOLS) is hinged on the fact that it has unique statistical properties including the fact

that, it can be used even in situations where the number of observation is low.

The result of the regression result is as shown below.

Table 4.4: Regression Result

Variable	Coefficient	Std	T-Statistics	Prob.
ATF	-9.94718	8.77258	-1.036712	0.3398
OLF	-3.95796	4.03298	0.981386	0.3643
C	10.33431	5.202271	1.986507	0.0942

R² = 0.1906

The result of the Fmols regression is as seen above. The first variable, ATM fraud (ATF) is negatively related to Bank performance (ROE). A one unit increase in these variables reduces bank profitability by about 9 units, in line with Adeyemo (2012) Ikpefa (2006).

Online fraud (OLF) also has a negative impact on bank profitability going by its sign. Increases in online fraud reduce bank profitability as shown. However, going by their probability values of the coefficients, it shows that they are not statically significant.

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

This study examined the effect of e-fraud on the performance of deposit money banks in Nigeria for the study period.

Summary

The main objective of this work is to examine the effect of e-fraud on bank performance in Nigeria, during the study period. The study used online fraud (OLF) and ATM fraud (ATF) as a pray for electronic fraud, while return on equity (ROE) was used as a proxy for bank performance.

Pre-estimation analysis was conducted to ascertain the historical properties of the variables, such as summary statistics, correlation analysis, trend analysis or graphical presentation and then stationarity or unit root tests were conducted to avoid the incidence of spurious regression that is prevalent in financial and economic time series data.

Therefore, the Fully Modified Ordinary Least Squares (Fmols) regression analysis was conducted on the variables. Results indicate a negative relationship between the explanatory variables and return on equity (ROE).

Conclusion

Based on the results revealed in section 5.1, the study concludes that:

- Both variables exhibit non stationarity.
- Both variables, online fraud, (OLF) and ATM fraud (ATF) show negative effect on bank performance in Nigeria, as expected, in order words, fraud and fraudulent activities impede on the profitability or otherwise of the banks.

Recommendations

Based on the results obtained from the regression and the analysis conducted, the study recommends among others that:

- Bank managers should strengthen their internal control systems at all times.

- The regulatory authorities should be up and doing concerning their supervisory functions.
- Appropriate disciplinary measures should be taken against culprits of e-frauds so as deter others with such intentions.
- Banks should hold regular trainings for their I.T. staff to counter the activities of fraudsters that use electronic means to commit fraud.

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