Computer Assisted Audit Techniques as a panacea for Fraud Detection and Control in Deposit Money Banks in Nigeria

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Abstract: This study examined the perceived effect of Computer Assisted Audit Techniques (CAATs) on fraud detection and control in Deposit Money Banks in Nigeria. It identified the problem of frequent occurrences of fraud which have amounted to the unhealthiness of financial reports, technical insolvency and at-times collapse of some banks in Nigeria. It therefore set out to examine the effect of the use of Computer Assisted Audit Techniques by bank management for fraud detection and control in Deposit Money Banks in Nigeria as its main objective. With three research questions, it hypothesized that CAATs application by bank's management has significant and positive effect on fraud detection and control (FDC) in Deposit Money Banks in Nigeria. It also conjectured that CAATs employed by bank's management have direct influence on preventing the occurrence of fraud in Nigerian Deposit Money Banks; and thirdly that management's current level of CAATs usage significantly minimises the incidence of fraud in Nigerian Deposit Money Banks. The study applied a survey research design and collected primary data with the aid of a questionnaire from a sample statistically drawn from a targeted population of Managers and Cashiers in selected Deposit Money Banks in Nigeria. The hypotheses were tested using ANOVA and Regression models with the aid of Computer Special Package for the Social Sciences (SPSS) version 20.0. The findings among others are that the use of CAATs by bank managements is essential and significant in detection, prevention and control of fraud in Deposit Money Banks in Nigeria. This study concluded that CAATs have contributed immensely, not only to the audit practice, but also to the business world as a whole in detection and control as well as minimizing or completely prevent the frequent occurrence of fraud. The study recommended inter-alia, that the Central Bank of Nigeria should enact policies that will restore soundness, stability, investors' confidence and guarantee safety in Deposit Money Banks in order to tackle the issue of fraud, and the use of Computer Assisted Audit Techniques to be encouraged particularly in Deposit Money Banks and generally in all facets of accounting profession.

Key words: CAATs, Auditors, Fraud Detection, Fraud Control, Computerized Auditing, IT Adoption.

1. INTRODUCTION:

The Nigerian financial system has suffered from fraudulent practices perpetrated by employees, people outside the banks and by banks management. The situation has been worrisome since 2000-2019 with unprecedented upsurge in bank fraud, particularly within the deposit money banks. However, the frequent occurrences of these fraudulent practices such as embezzlement of fund, defalcations, forgeries, identity fraud, hacking, fraudulent bill settlement, payroll fraud, and money laundering have led to the unhealthiness of banks, technical insolvency and at-times collapse of some banks in Nigeria. Equally, internet-based fraudulent activities are growing across all business segments in Nigeria but much more in the financial sector (CBN, 2009). Fundamentally, Information and Communication Technology (ICT) has penetrated many areas of human activity, such as engineering, medicine, science, as well as business (Yang & Guan, 2004). It has dramatically changed the way that organisations initiate, process, store, retrieve and report business transactions (Bell & Knechel, 1999; Rezaee & Elam, 2001; Rezaee & Sharbatoghlie, 2002). Reports have it that Electronic information generated from these electronic systems, are more timely, flexible, accessible, transferable, transparent, and can be stored, retrieved, summarized, and organized more easily than paper-based information (Rezaee & Sharbatoghlie, 2002). Electronic systems apart from ensuring timely and accurate financial records also helps the organisation to accomplish its objective approach, systematic discipline approach, to evaluate and improve the effectiveness of risk management control and governing process (Siltow 2003). The Computer Assisted Audit Techniques (CAATs) function is one of the fundamental checks and balances for sound corporate governance. Virtually, every large corporation whether government, companies, banking and non-banking sectors in Nigeria and the world at large today maintains an audit unit. The audit units have various functions in these corporations and need to be performed electronically. Siltow, (2003) identified that Computer Assisted Audit Techniques affect internal control activities (Control environment, risk assessment, auditing, control activities, information, communication and monitoring) and how it provides guideline and best practices in evaluating techniques available for effective performing of auditing tasks internally. Furthermore, he reckoned that CAATs address how technology, information system and electronic data processing have changed the way organisations conduct their businesses, promoting operational efficiency and aids decision making. This study therefore stresses more on the global trend of adopting Computer

Assisted Audit Techniques in producing a more controlled environment in delivering audit process particularly in Nigerian Deposit Money banks. It demonstrates the effect of CAATs on fraud detection and control mechanism in the Nigerian Deposit Money Banks. The paper is organized in five parts. Part one is the introduction which highlights the problem of the study and its main and specific objectives. Part two shows the methodology of the study and part three contains the review of related literature. Part four presents the data collected from the field and the analysis therein including the findings of the study. Part five concludes the work and makes recommendations including areas for further study.

2. METHODOLOGY:

The paper adopted the survey research design and the area of the study is the South-East region of Nigeria. The target population is the General Managers and Cashiers of fifteen (15) Deposit Money Banks operating in Nigeria. They are; Access Bank PLC, Citibank Nigeria Limited, Eco Bank PLC, Fidelity Bank PLC, First Bank of Nigeria Holdings PLC, First City Monument Bank PLC, Guarantee Trust Bank PLC, Heritage Banking Company Limited, Stanbic IBTC Holdings PLC, Sterling Bank PLC, Union Bank PLC, United Bank for Africa PLC, Unity Bank PLC, Wema Bank PLC and Zenith Bank PLC. The population size of this study is 2500 staff. For the fact that many banks operate in Nigeria, the study adopted Bill Godden (2004) sample size determination formula for infinite population. Thus, this is given below:

$$Ss = \frac{Z^2 \times (P) \times (1 - P)}{C^2}$$

Where   Ss = Sample Size
      Z = Level of Confidence (95%)
      P = Percentage of population picking a choice (5%)
      C = Confidence interval (4%)

$$Ss = \frac{(1.96)^2 (0.5)(0.5)}{(0.04)^2} = \frac{(3.8416)(0.25)}{(0.0016)} = \frac{0.9604}{0.0016} = 600.25 \approx 600$$

Therefore, sample size of finite population (where the population is less than 50, 000)

$$New\ Ss = \frac{Ss}{\left(1 + \frac{(SS-1)}{Pop}\right)} = \frac{600}{(1 + (600\text{-}1))/2500} = \frac{600}{1 + 0.2396} = \frac{600}{1.2396} = 484.02 \approx 484$$

Hence, the sample size for the study is 484.
To obtain a fair representation of banks used for this study, the sampling technique adopted was the Bowley's proportional allocation statistical technique.
The formula applied:

$$\frac{nNh}{N}$$

Where   Nh = Total sample size of the study
      N = Total population of the study
      n = Population size of a firm

Table 1.1: Shows the Stratum representation of Banks

S/N	Name of Banks	No. of Managers & Cashiers	Equation	Questionnaire Allocation
1	Access Bank PLC	140	$\frac{140}{2500} \times \frac{484}{1}$	27
2	Citibank Nigeria Limited	98	$\frac{98}{2500} \times \frac{484}{1}$	19
3	Eco Bank PLC	250	$\frac{250}{2500} \times \frac{484}{1}$	48
4	Fidelity Bank PLC	170	$\frac{170}{2500} \times \frac{484}{1}$	33
5	First Bank of Nigeria Holdings PLC	327	$\frac{327}{2500} \times \frac{484}{1}$	63
6	First City Monument Bank PLC	260	$\frac{260}{2500} \times \frac{484}{1}$	50

7	Guarantee Trust Bank PLC	110	$\frac{110}{2500} \times \frac{484}{1}$	21
8	Heritage Banking Company Limited	138	$\frac{138}{2500} \times \frac{484}{1}$	29
9	Stanbic IBTC Holdings PLC	120	$\frac{120}{2500} \times \frac{484}{1}$	23
10	Sterling Bank PLC	98	$\frac{98}{2500} \times \frac{484}{1}$	19
11	Union Bank PLC	250	$\frac{250}{2500} \times \frac{484}{1}$	48
12	United Bank for Africa PLC	100	$\frac{100}{2500} \times \frac{484}{1}$	19
13	Unity Bank PLC	128	$\frac{128}{2500} \times \frac{484}{1}$	25
14	Wema Bank PLC	105	$\frac{105}{2500} \times \frac{484}{1}$	20
15	Zenith Bank PLC	206	$\frac{206}{2500} \times \frac{484}{1}$	40
	Total	**2500**		**484**

Source: Field Survey, (2020)

Primary data was collected using questionnaire. The questionnaire was structured using concise language and in a simple form to avoid ambiguity. The 5-point Likert scale of questionnaire structure was adopted. The range covered from (1) Strongly Agreed, (2) Agree, (3) No idea, (4) Disagree and (5) Strongly Disagree. The instrument was tested for reliability and validity. The techniques for data analysis were both descriptive and inferential statistics. The former included presentation of the data using frequencies and percentages, while the later included analysis of variance (ANOVA) and simple regression analysis at a 5% level of significance. Decision as to whether to accept or reject the hypothesis and reject or accept the alternate hypothesis respectively was based on 5% alpha level of significance with the aid of Computer Special Package for the Social Sciences (SPSS) version 20.0. The formula for ANOVA is given as: SSW = SST – SSB where SST = total variation (total sum of squares). SSB = variation between groups (sum of squares between). SSW = variation within groups (sum of squares within), while the formula for Simple Linear Regression is: Y= a + Bxí + eí that is y is the response variable, xí is the controlled variable, as is the intercept. B is the slop and eí is known as error component. Kerlinger and Lee, (2000) model was adopted for this study

CAATs   = $\alpha + \beta_1$ FDC + β_2 FP + β_3 FM + ε

Where: CAATs = Computer Assisted Audit Techniques, α = Constant, $\beta_1, \beta_2, \beta_3$ = Linear Regression Coefficient,
FDC =   Fraud Detection and Control;
FP =   Fraud Prevention;
FM =   Fraud Minimisation and
ε =   Error term.

The above model was formulated to empirically test that the application and level of usage of Computer Assisted Audit Techniques has significant and positive effect on fraud detection and control, in order to agree or disagree that CAATs are instruments for Fraud Detection and Control (FDC), Fraud Prevention (FP), Fraud Minimisation (FM) which can help to restore soundness, stability and investors' confidence particularly in the selected banks and generally in the whole deposit money banks in Nigeria.

2.1. Distribution and Collection of Questionnaire:
Table 1.2: Copies of the Questionnaire Distributed and Returned.

S/N	Name of Banks	Number Distributed	Number Returned	Percentage Returned
1	Access Bank PLC	27	23	4.8%
2	Citibank Nigeria Limited	19	17	3.5%
3	Eco Bank PLC	48	45	9.3%
4	Fidelity Bank PLC	33	31	6.4%
5	First Bank of Nigeria Holdings PLC	63	58	11.98%

6	First City Monument Bank PLC	50	47	9.7%
7	Guarantee Trust Bank PLC	21	19	3.93%
8	Heritage Banking Company Limited	29	25	5.2%
9	Stanbic IBTC Holdings PLC	23	21	4.34%
10	Sterling Bank PLC	19	17	3.5%
11	Union Bank PLC	48	47	9.7%
12	United Bank for Africa PLC	19	15	3.1%
13	Unity Bank PLC	25	21	4.34%
14	Wema Bank PLC	20	19	3.93%
15	Zenith Bank PLC	40	35	7.23%
	Total	**484**	**440**	**91%**

Source: Field Survey, (2020).

A total of 484 copies of the questionnaire were administered, and 440 of them were properly filled and returned. This was possible because the respondents were encouraged to fill the questionnaire on the spot and were collected accordingly. The remaining 44 copies constituting 29% were not filled correctly. Therefore 440 copies of the questionnaire were analyzed in the study.

2.2. Empirical Review:

Within the 21st century, several studies have been carried out in both the academic and professional literature about the use ICT to detect fraudulent activities in different large corporations. These studies were carried out by various researchers from different viewpoints and in different circumstances. The following studies are very interesting and useful for this research. Sachin, Manish, and Raj (2014) in a study explored Fraud Detection through Routine Use of CAATTs. Using a sample of USA audit firms, the result however revealed that fraud detection has gained momentum in industry and in academia due to the emergence of newer fraud techniques and capabilities. To thwart fraud attempts by early detection, it is therefore unanimous in choice that automation is the way to go. The cost presented by new fraud detection techniques hampers development of new tools and software. The study concludes that auditors who are skilled and knowledgeable in the areas of fraud can be equipped with CAATTs that they can also leverage for fraud detection. Bierstaker and Thibodeau (2006) surveyed 86 accountants, Internal Auditors and certified fraud examiners in the United States to examine the extent to which they use fraud prevention and detection methods, and their perceptions of the effectiveness of these methods. The results indicated that firewalls, virus and password protection, and internal control review and improvement are quite commonly used to combat fraud. However, continuous auditing, discovery sampling, data mining, forensic accounting techniques, and digital analysis software are less often used, despite receiving high ratings of effectiveness due to lack of resources and their reluctance to invest in fraud prevention, detection and control systems. This study is important for fraud prevention and detection methods especially as the digital age is changing the face of auditing.

However, because the study was conducted in the United States, a developed economy, it is doubtful if the result can be generalized to a developing economy like Nigeria where poverty and struggles for personal survival are endemic. Mahzan and Veerankutty (2011) in a study empirically measure the impact of Information Technology auditing activities of public sector auditors on business. Using the activities of public sector auditors in Malaysia as a reference point, they found that CAATTs have been used most frequently as a problem solving aid. Wilks and Zimbelman (2004) highlight the importance of audit policy and action plans to improve fraud prevention, detection and control. According to Wilks and Zimbelman (2004), auditing standards ought to discourage auditors from anchoring on prior fraud risk assessments, and they should be designed in such a way to maximize opportunities for auditors to learn from prior experience. In addition, auditors must always consider adopting unpredictable audit strategies, such as varying the nature, extent and timing of their audit tests to improve the effectiveness of fraud detection. Auditors ought to also align their resources with auditing fraud risk according to changes in auditing standards (Doogar, 2010). Miller (2006) states the press acts as a watchdog for accounting fraud. At the industry level, Bagnoli and Watts (2010) show that industry rivalry and product market competition affects financial institutions' earnings management decisions. Several articles identified the important role played by auditors in detecting, preventing and controlling fraud. For example, Ramos (2003) provides an in-depth, section-by-section explanation as well as implementation guidance and practice tips for Statement of

Auditing Standard (SAS) Number 99 (Consideration of Fraud in a Financial Statement Audit) fraud standard. Durtschi (2004) introduced Benford's Law, a useful digital analytical procedure used by auditors to detect fraud. Nonfinancial measures were effective in assisting auditors to assess fraud (Brazel, 2009). Debrecency (2005) studied bank internal auditors and external auditors in Singapore. They found that auditors tend to use CAATs for special investigations rather than as a foundation for their regular audit assignment. Debreceny, Lee, Neo, and Shuling (2005) carried out a research on the usage of CAAT and Generalized Audit Software (GAS) in the banking industry in Singapore. GAS is a class of CAATs that allows auditors to undertake data extraction, querying, manipulation, summarization and analytical tasks (Boritz, 2003). It was discovered that the common uses of GAS in bank audits includes extraction of samples, identification of reactivated dormant accounts and verification of the completeness and accuracy of data. This study also found that GAS was frequently being used in special investigation audits and exceptional instances. From their findings, it was concluded that bank auditors do use GAS, but only to a limited extent because GAS was perceived as an interrogation tool to perform fraud investigations rather than as a general audit tool.

3. PRESENTATION OF FINDINGS AND ANALYSIS:
3.1. Presentation of Data:
3.1.1. Characteristics of the Respondents: In this section, the respondents' sex, professional qualification, years of experience in current position and department of the sampled respondents were discussed as seen in table 2.1.

Table 2.1: General Characteristics of Respondents (n=440):

S/N		General Characteristics	Number	Percentage
1	**Qualification**	OND	102	23%
		HND/BSC	91	21%
		MSC/PHD	33	8%
		ICAN/ANAN/ACCA etc	214	48%
		Others (Specify)	0	0
		Grand Total=440		**100%**
2	**Year of Experience**	One to 5 years	53	12%
		Six to 10 years	216	49%
		10 years and above	171	39%
		Grand Total=440		**100%**
3	**Departments**	Audit	54	12%
		Finance & Accounts	67	16%
		Information Technology	62	14%
		Banking Operations	81	19%
		Risk Mgt. Unit	58	13%
		Credit Review & Mgt.	62	14%
		Credit Analysis & Research	56	12%
		Others (Specify)	0	0
		Grand Total=440		**100%**

Source: Field Questionnaire, (2020).

Table 2.1 shows a summary of the general characteristics of the respondents. It was seen that the qualifications of the respondents shows that 23% of the respondents have OND; HND/BSC followed by 21%. Also, 8% of the respondents have MSC/PHD and ICAN/ANAN/ACCA members 48%. This shows that the study made use of staff and they have sufficient knowledge about Computer Assisted Audit Techniques at various levels and would give reasonable answers to the questions asked. Hence, it will increase the internal validity of the study. Again, an examination of years of experience reveals that 12% of the respondents have one to five years of experience of their present position, while 49% and 39% affirmed that they have experience ranging between six to ten years and above ten years respectively.
All in all, the responses from the respondents indicated that 100% of the returned questionnaires are bank staff. This implies that all the respondents sampled in this study, are experienced in providing answers to the questions.
3.1.2. Analysis of Data According to Research Questions: Here, answers provided by the respondents to the questionnaire items were analyzed and interpreted to arrive at conclusions. The primary data were analyzed, the hypotheses were tested and discussion of findings was based on the results of the analysis.

3.1.3. Model Specification: The researcher formulated a model to empirically test if the use of Test Data, Parallel Simulation, Integrated Test Facility and Embedded Audit Module Techniques have significant and positive effect on fraud detection and control, fraud prevention and fraud minimisation. Thus, the result is shown in Table 4.11.

Table 2.2: Shows the Regression Analysis and result of application of Computer Assisted Audit Techniques by bank's management to detect, prevent and minimise the occurrence of fraud in Deposit Money Banks in Nigeria.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.669	.531		8.786	.028
	Fraud Detection and Control	.024	.081	.727	6.294	.048
	Fraud Prevention	-.088	.149	-1.431	-8.587	.002
	Fraud Minimisation	-.036	.023	-.406	-6.568	.031

a. Predictor: (Constant) : CAATs

 b. Dependent Variables: Fraud Minimisation, Fraud Prevention, Fraud Detection and Control

$$CAATTs = 4.669 + .024FDC - 0.088FP - 0.036FM$$

4. RESULT:
        The result of the hypothesis revealed that the use of Test Data, Parallel Simulation, Integrated Test Facility and Embedded Audit Module Techniques by bank's management have significant and positive effect on fraud detection and control particularly in the selected banks and generally in the whole deposit money banks in Nigeria. (CAATs = 0.977). The table revealed that the coefficient of determination R-square is 0.955, meaning that 95.5% of the variability in the dependent variables Fraud Detection and Control (FDC), Fraud Prevention (FP) and Fraud Minimisation (FM) was explained by the independent variable CAATs. Hence, 4.5% variability in FDC, FP and FM was explained by other factors outside CAATs. In computing the analysis of variance (ANOVA) in the regression model, the F- statistics test computed for CAATs showed a figure of (F- Cal = 7.100, P = 0.028 < 0.05 significant level) (see appendix 6). This revealed that the model is adequate for the study.

5. DISCUSSION OF FINDINGS:
5.1. Extent to which the use of CAATs by bank's management is significant in detecting, preventing and minimising the occurrence of fraud in Deposit Money Banks in Nigeria.
        The study shows the significant level of the use of CAATs by bank's management in detecting, preventing and minimising the occurrence of fraud in Deposit Money Banks in Nigeria. The result confirms and reinforces the need to address and promote the adoption of sophisticated Computer Assisted Audit Techniques by Nigerian banks on a wider scope of study for effective fraud detection and control. In order to strengthen the efforts of bank's management on fraud detection using CAATs, some empirical studies were reviewed. They all allude to the unanimous belief that the use of CAATs (Test Data, Parallel Simulation, Integrated Test Facility and Embedded Audit Module Techniques) have positive effect on detection and control of fraud specifically when applied by banks for auditing. Debreceny and Gray, 2010; Zhou and Kapoor, 2010, also agreed that the use of simpler CAATs (such as Test Data, Parallel Simulation, Integrated Test Facility and Embedded Audit Module Techniques) for investigation of isolated cases in financial statement have proved effective for detection of fraud than the use of complex data mining techniques (such as decision tree, regression, neural networks and Bayesian networks).
However, fraudulent activities in banks which have led to the unhealthiness, technical insolvency and total collapse of some banks in Nigeria will continue if sound decisions are not taken on how to adopt the use of latest Computer Assisted Audit Techniques.

6. SUMMARY OF FINDINGS:
         The use of CAATs by bank's management is significant in detecting, preventing and minimising the occurrence of fraud in Deposit Money Banks in Nigeria.
* As the need to leverage on technology to improve audit effectiveness is being felt, bank managements need the incorporation of auditing with CAATs within manual/traditional audit programmes. It is expected that as more and mord technology is being used for internal control and audit functions the lines separating auditing with CAATs and manual/traditional audits will continue to disappear.

- Policy makers within the executive and legislative arms of the Nigerian government and professional accounting bodies should enact policies that will restore soundness, stability and guarantee safety in banks in order to tackle the issue of fraud and the use of Computer Assisted Audit Techniques should be encouraged in all facets of accounting profession.

7. CONCLUSION:

The study found, however, that fraud detection and control by bank staff which is significantly affected with the use of Computer Assisted Audit Techniques and tools are not contingent upon the user's characteristics such as their level of education, experiences and gender. In other words, experiences, level of education and gender have no effect on the use of CAATs for fraud detection and control. The study adopted a survey research method using a sample from a population of suitable respondents made up of Managers and Cashiers whose opinion are considered useful in drawing inferences about the topic. It is obvious that fraudulent activities in banks have led to the unhealthiness, technical insolvency and total collapse of some banks in Nigeria. In view of the nature of fraud and financial malpractices, the ultimate desire of the management should be to make sound decisions which will see to the healthiness and wealth maximization objectives of the firm. Taking into consideration that no study can be really conclusive, banks should encourage the use of latest Computer Assisted Audit Techniques. The basic pre-requisite of auditors on this digital age is to be competent in using CAATs so as to access and analyze digital data with greater assurance to reduce or eradicate fraud totally. Therefore, Computer Assisted Audit Techniques are important to both the bank management and to users of audited financial report as all parties will benefit from it adequately.

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