EFFECT OF FORENSIC ACCOUNTING APPLICATION ON FINANCIAL CRIME DETECTION IN DEPOSIT MONEY BANKS IN ANAMBRA STATE

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ABSTRACT

This research set out to find out the effect of forensic accounting application on the detection of financial crime in deposit money deposit banks in Anambra State. The survey approach was adopted for this study. Out of a population of 5 key officials in 11 commercial banks, which gives a total of 55 key officials, a sample size of 35 was selected using Taro Yamane formula. Three hypotheses were formulated and tested in the course of the research. The three hypotheses were tested using the t-test statistics. The study revealed that forensic accounting is effective in reducing financial crimes. Upon the findings, the study recommended among others that auditors should be required to introduce some elements of forensic accounting techniques into the average financial statement audit to increase the effectiveness of the audit, there be certain standard methodology and procedures to guide forensic accounting assignments and to act as a reference for practice reviews especially in cases of dispute with client.

Key Words: Forensic Accounting, Financial Crime, Data Mining, Rogue Trading

Introduction

Accounting has been perceived as a medium through which financial information is made available to various users for effective economic decision making. The growth of public limited liability companies has attracted large increase in the number of investors and the divorce of ownership from control of companies has called for regular auditing of financial statements. (Owojon & Asaolu, 2009). Nevertheless, the large number of accounting and business scandals occurring around the world has attracted criticism on the accounting profession. These recent scandal has induced a crisis of confidence in financial reporting practice. Given the current state of the economy and the recent corporate scandals, fraud and other financial crimes are still top concerns for the corporate executives (Amahalu, Abiahu, Obi & Okika,2016).

The Statement of Accounting Standards (SAS), states that the ordinary examination directed to the expression of an opinion on financial statement is not primarily or specifically designed and cannot be relied upon to disclose malpractice and other similar irregularities or deliberate misrepresentation by management. Since modern corporate financial crimes are sophisticated and well resourced by managers, entrepreneurs and politicians, it is difficult for a regular auditor to suspect irregularities while conducting statutory audit. Centre for Forensic Studies (2010) report in Nigeria states that forensic accounting could be used to reverse the leakages that cause corporate failures. This can be attributed to the fact that proactive forensic accounting practice look for errors, engage in operational vagaries and deviant transactions before they crystallize into fraud. The failure of the major corporate governance mechanism to reduce financial fraud and the increasing sophisticated financial fraud has posed serious threat to investors, government, and general public (Eyisi & Agbaeze 2009; Amahalu, Abiahu, Nweze, & Obi, 2017). More so, an instance of case of corporate financial statement audit fraud could be drawn from Enron and WorldCom which has capitalized expenses resulting to increased profit which is not in existence by their auditors Andersen and yet such companies audit was unqualified by their auditors resulting to corporate failure of two big companies in USA (Zimbelman, 2012). Enofe, Okapor and Atube (2013), Okoye and Gbegi (2013), Gbegi and Adebisi (2014), Agbionu, Amahalu, Egolum, (2017) acknowledged in their separate studies the increase incidence of fraud and fraudulent activities in Nigeria. The issue of forensic accounting and fraud continuingly being debated for the past few years as companies in developed countries such as Enron Corp, WorldCom Inc, and Kmart Corp have been detected and proved of fraudulent conduct (Shaikh & Talha, 2003). These still an issue to be addressed in the business sector as fraud cases have only been detected after massive funds have disappeared from the coffer (Adrian, Lawrence & Cristal, 2009). Owojori and Asoula (2009) states that the failure of statutory audit to prevent and reduce misappropriation of corporate fraud and increase in corporate crime has put pressure on the professional accountant and legal practitioner to find a better way of exposing fraud in business world. Corporate financial fraud could be drawn from recent bank failure in Nigeria where management has fraudulently given loans without board approval and yet such bank annual report has been unqualified (Eyisi & Ezuwore, 2014). Though, the use of forensic accounting is not yet common in Nigeria, the rate at which financial irregularities in Nigeria is spreading especially in the banking sector has put the focus on the need for forensic accounting techniques

to be utilized (Amahalu, Abiahu, Okika & Obi, 2016). Change they say is constant; to response to these changing fraudulent activities that is going on in corporate entities and skills of forensic accountants which include investigators and legal experts to combat this corporate menace is paramount. In view of the above problems, this study examines the extent to which forensic accounting in combating fraudulent activities and impact on corporate governance of corporate organizations. Charrin (2009) opines that the recent accounting scandals occurred as a result of integrated factors such as lack of auditor independence, weak internal control and the inability of corporate governance mechanism to monitor management behavior. The need to find a long lasting solution to these corporate menaces cannot be over emphasized and to achieve this, the skills of non-traditional investigators are required. Charin (2009) suggests forensic accounting as one of the alternative tools that can be used to detect the possibility of financial frauds, hence the services and skills of forensic accountant are required.

Objectives of the Study

Generally, this study is intended to ascertain the effect of forensic accounting application in financial crime detection in deposit money banks. The following are the specific objectives for which this research is being carried out:

1. To determine the extent to which data mining techniques affect rogue trading in deposit money banks in Anambra State.

2. To ascertain the extent to which ratio analysis affects fraudulent loans in deposit money banks in Anambra State

3. To evaluate the extent to which computer assisted auditing techniques (CAATs) affects money laundering in money deposit banks in Anambra State.

Research Hypotheses

The following null hypotheses guided this research:

Ho$_1$: Data mining techniques have no significant effect on rogue trading in deposit money banks in Anambra State.

Ho$_2$: Ratio analysis has no significant effect in reducing fraudulent loan in deposit money banks in Anambra State.

Ho$_3$: Computer Assisted Auditing Techniques (CAATs) have no significant effect on money laundering in deposit money banks in Anambra State.

Conceptual Review

Forensic Accounting

Forensic is the use of science and technology to investigate and determine the facts in a civil or criminal court. It is performed to achieve an objective that has judicial determination. Forensic accounting can also be referred to as fraud auditing or investigative accounting. The Association of Certified Fraud Examiners (ACFE) defines forensic accounting as follows "Forensic accounting is the use of professional accounting skill in matters involving potential or actual civil or criminal litigation including but not limited to generally accounting and audit principles and concepts in the determination of lost profits, income, assets or damages, evaluation of internal control, fraud and other matters involving accounting expertise in the legal system". It provides an accounting analysis that is suitable to the court, which will form the basis of discussion, debate and ultimately dispute resolution (Zysman, 2001).

Forensic accounting is the practice of utilizing accounting, auditing and investigative skills to assist in legal matters and the application of specialized body of knowledge to the evidence of economic transaction and reporting, suitable for the purpose of establishing accountability of valuation of administrative proceedings (Owojori & Asaolu, 2009). It comprises of two major components, Litigation services that recognizes the role of an Accountant as an expert consultant and investigative services that use a forensic accountant's skills and may require possible court room testimony (Coulbert, 2004).

Financial Crimes

Financial crimes are a form of theft/larceny that occur when a person or entity takes money or property, or uses them in an illicit manner, with the intent to gain a benefit from it. These crimes typically involve some form of deceit, subterfuge or the abuse of a position of trust, which distinguishes them from common theft or robbery. Financial crimes may involve fraud (cheque fraud, credit card fraud, mortgage fraud, medical fraud, corporate fraud, securities fraud (including insider trading), bank fraud, insurance fraud, market manipulation, payment (point of sale) fraud, health care fraud); theft; scams or confidence tricks, tax evasion, bribery, embezzlement, identity theft, money laundering, and forgery and counterfeiting, including the production of counterfeit money and consumer goods. Financial crimes may be carried out by individuals, corporations, or by organized crime groups. Victims may include individuals, corporations, governments, and entire economies.

Arjan (2013) defined financial crime as acts and statements through which financial market participants misinform or mislead other participants in the market by deliberately or recklessly providing them with false, incomplete, or manipulative information related to financial goods, services, or investment opportunities in a way that violates any kind of legal rule or law, be it a regulatory rule, statutory law, civil law, or criminal law. In legal and regulatory parlance, such acts are often described in terms of "misrepresentations," "misreporting," "false disclosure," "non-disclosure," or "fraud."

Financial Conduct Authority (FCA) defined financial crime as any kind of criminal conduct relating to money or to financial services or markets, including any offence involving: (a) fraud or dishonesty; or

(b) misconduct in, or misuse of information relating to, a financial market; or

(c) handling the proceeds of crime; or

(d) the financing of terrorism;

Data Mining Techniques

Data mining technique it is a set of computer assisted techniques designed to automatically mine large volumes of data for new, hidden or unexpected information or patterns. It discovers the usual patterns in data, without a predefined idea or hypothesis about what the pattern may be, and then those items that deviate from the usual are discovered and investigated.

Ratio Analysis

Ratio analysis report on fraud health by identifying possible symptoms of fraud. Three commonly employed ratios are;

The ratios of the highest value to the lowest value

The ratio of the highest value to the second highest value

The ratio of the current year to previous year.

Using ratio analysis, a financial expert studies relationship between specified costs and some measure of production such as units sold or direct labour hours. A ratio analysis is a quantitative analysis of information contained in a company's financial statements. Ratio analysis is based on line items in financial statements like the statement of financial position, income statement and cash flow statement; the ratios of one item – or a combination of items to another item or combination are then calculated. Ratio analysis is used to evaluate various aspects of a company's operating and financial performance such as its efficiency, liquidity, profitability and solvency. The trend of these ratios over time is studied to check whether they are improving or deteriorating. Ratios are also compared across different companies in the same sector to see how they stack up, and to get an idea of comparative valuations. Ratio analysis is a cornerstone of fundamental analysis.

Computer Assisted Auditing Techniques (CAATs)

CAATs are computer programs that the auditor uses as part of the audit procedure to process data of audit significance contained in a client's information system, without depending on him. Forensic accounting software (for accounting purposes) comes in two different varieties: data extraction software and financial analysis software. Data extraction software is designed to conduct spreadsheet analyses on all the company's computer data base records, unusual inconsistent fluctuations are then detected and investigated. Financial analysis software is used monthly, quarterly, or annual financial statements, and benchmark the ratios between different accounts such as billing by revenue. Other computer software that forensic accountant may use are called 'spy' software. CAATs are the fundamental tool which is used by the auditors. This

tool facilitates them to make search from the irregularities from the given data. With the help of this tool, the auditors and accountant of any firm will be able to provide more analytical results. These tools are used throughout every business environment and also in the industry sectors too. With the help of computer-assisted audit techniques, more forensic accounting with more analysis can be done. It's really a helpful tool that helps the firm auditor to work in an efficient and productive manner. Working with the CAATs, it is essential for the accountant or the auditor to select the right data, the selection process is very much tricky, and you need to be professional for it. After selecting the right data, import that to the CAATs, now the tool will automatically generate the analytical data. This tool really contributes to the efficiency of the auditors.

The auditor uses CAATs throughout the audit for the following activities while performing data analysis:

Fraud detection

CAATs provide auditors with tools that can identify unexpected or unexplained patterns in data that may indicate fraud. Whether the CAATs is simple or complex, data analysis provides many benefits in the prevention and detection of fraud.

Rogue Trading

The practice of trading securities using another person or institution's money without input or oversight from others. For example, an employee of an investment bank may trade with the bank's money without receiving authorization from or reporting it to his supervisor. Rogue trading generally is risky and usually is discovered when it leads to a large loss. This activity is often in the grey area between civil and criminal transgression, because the perpetrator is a legitimate employee of a company or institution, yet enters in to transactions on behalf of their employer without permission. It is a trader who acts independently of others - and, typically, recklessly usually to the detriment of both the clients and the institution that employs him or her.

Fraudulent Loan

One way to remove money from a bank is to take out a loan, a practice bankers would be more than willing to encourage if they knew that the money will be repaid in full with interest. A fraudulent loan, however, is one in which the borrower is a business entity controlled by a dishonest bank officer or an accomplice; the "borrower" then declares bankruptcy or vanishes and the money is gone. The borrower may even be a non-existent entity and the loan merely an artifice to conceal a theft of a large sum of money from the bank.

Money Laundering

The term "money laundering" dates back to the days of Al Capone; Money laundering has since been used to describe any scheme by which the true origin of funds is hidden or concealed. Money laundering is the process by which large amounts of illegally obtained money is given the appearance of having originated from a legitimate source. Money laundering is a crime involving the movement of illicit money and other gains in to legitimate channels in order to disguise the money's illegal source and thwart tax officials.

Theoretical Review

The fraud diamond theory:

This theory considers the four elements of fraud by Wolfe and Hermanson (2004). This theory is an improvement in the existing fraud triangle. They believe that the fraud triangle could be enhanced to improve both fraud prevention and detection by considering a fourth element. In addition to addressing incentive, opportunity and rationalization, the Wolfe and Hermanson's four sided fraud diamond" also considers an individual's capability personal traits and abilities that play a major role on whether fraud may actually occur even with the presence of the other three elements. Many frauds especially some of the multibillion-dollar ones would not have occurred without the right person with the right capabilities in place. Opportunity opens the doorway to fraud and incentive. Using the four-element fraud diamond, a fraudster thought process might proceed as follows:

Incentive: I want to, or have a need to commit fraud

Opportunity: There is a weakness in the system that the right person could exploit fraud is possible.

Rationalization: I have convinced myself that this fraudulent behavior is worth the risks.

Capability: I have the necessary traits and abilities to be the right person to pull it off. I have recognized this particular fraud opportunity and can turn it into reality.

They further stated that while these four elements certainly overlap, the primary contribution of the fraud diamond is that the capabilities to commit fraud are explicitly and separately considered in the assessment of fraud risk. By doing so the fraud diamond moves beyond viewing fraud opportunity largely in terms of environmental or situational factors, as has been the practice under current and previous auditing standards.

The fraud diamond theorists were of the opinion that when people perform a certain function repeatedly, such as bank reconciliations or setting up new vendor accounts, their capability to commit fraud increased as their knowledge of the function's processes and controls expands over time. Secondly, the right person for a fraud is smart enough to understand and exploit internal control weaknesses and to use position, function or authorized access to the greatest advantage.

Empirical Review

Eyisi and Ezuwore (2014) in their study considered the roles of forensic auditors in combating fraudulent activities, distinction of forensic auditor and statutory auditor, characteristic of forensic auditor and impact of forensic auditor on corporate governance. The study concludes

that forensic auditors having improved management accountability, strengthened external auditor's independence and assisting audit committee members in carrying out their oversight function by providing them assurance on internal audit report have impacted positively to corporate governance, thereby reducing corporate failure and impoverishment of investors.

Kosmas et al (2009) investigated the effectiveness of forensic auditing in detecting and preventing bank frauds in Harare, Zimbabwe. The study employed questionnaires, personal interview and documentary review to obtain information from respondents in thirteen commercial banks, four building societies, and four audit firms. The study revealed that forensic auditing department lacked material resources and technical know- how. As well that forensic auditing is confronted with interference from management and the profession has no clear recognition.

Modugu and Anyaduba (2013) examined forensic accounting and financial fraud in Nigeria. The study employed survey design in a sample size of 143 consisting of accountants, management staff, practicing auditors and stakeholders. The authors employed binomial test for data analysis and found that there is significance agreement amongst stakeholder on the effectiveness of forensic accounting in fraud control, financial reporting and internal control quality.

Okunbor and Obaretin (2010) examined the effectiveness of the application of forensic accounting services in Nigerian corporate organization in a sample of ten companies quoted in the Nigerian Stock Exchange by employing simple regression model for the test of hypothesis. The study revealed that the application of forensic accounting services by corporate organization in Nigeria is not effective in determine fraudulent activities.

Onuorah and Ebimobowei (2011) employed survey design to examine the effect of forensic accounting services in fraud detection in Nigeria banks by the use of Augmented Dickey- fuller, ordinary least square and Granger Causality test. The result revealed that the application of forensic accounting services affect the level of fraudulent activities of banks.

Okoye and Gbegi (2013) employed simple mean and standard deviation to investigate forensic accountants to planning management fraud risk detection procedures. They also used multivariate analysis of variance and analysis of variance ANOVA to compare their study with that of Asare and Wright (2004). The authors found that forensic accountants effectively modify the extent and nature of audit test when the risk of management fraud is high. They also found that forensic accountant should be involved in the risk of management fraud assessment process than consulting them.

Methodology

Research Design

The survey research design was employed in this study. It is characterized by random samples from large population to obtain empirical knowledge of contemporary nature.

Nature and Sources of Data

For the purpose of this research, primary and secondary data were used.

Primary Data

The researcher administered questionnaires and conducted personal interview in gathering relevant primary data. Section A of the questionnaire elicited personal information from the respondents. Section B comprised of relevant questions that would aid in realizing the research objectives. A five point likert scale: Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree was utilized in obtaining respondents views.

Population of the Study

The population of this study consist of 11 commercial banks (GT Bank, UBA Bank, First Bank, Zenith Bank, Diamond Bank, Access Bank, FCMB, Skye Bank, Sterling Bank, Eco Bank, Fidelity Bank) operating in Awka metropolis. The element of the population consists of 5 key officials in each bank, namely: The Head of Operations, Resident Internal Control Officials, Funds Transfer Officials and Accounting Officials. The total number of the entire officials is 55.

Sample Size and Sampling Techniques

The sample size will be determined using Taro Yamane (1964) formula.

Thus;

$$n = N/1+(e)^2$$

Where; n= desired sample size

 N= total population

    e= error limit

Error limit (e) was assumed to as 10% i.e 0.1

Thus; the sample size, $n = 55/1+55(0.1)^2$

$=55/1+55(0.01)$

$= 55/1+0.55$

$= 55/1.55$

Then, n= 35

Data Analysis Techniques

Simple percentage and frequency tables were used to analyze the distribution of responses. A summary of responses from the research instrument was done using descriptive statistics of mean and standard deviations. The student's T-test was used in the test of hypothesis. An alpha level of 10% was set at a degree of freedom of (n-1). The formula for T-test is stated as

$$t = \frac{\overline{X} - \mu}{s/\sqrt{n}}$$

Where;

t = calculated value of t

S = standard deviation whose formular is $\quad s = \sqrt{\dfrac{\Sigma fX^2 - \dfrac{(\Sigma fX)^2}{N}}{N-1}}$

X = sample mean whose fomular is $\quad \bar{x} = \dfrac{\Sigma fx}{\Sigma f}$

n = sample size

U = population mean which is unknown. However, an expected mean of 3 was gotten using the five point Linkert scale

Thus;

Expected mean = (5+4+3+2+1)/5 = 3

The student's t-statistics were computed around this expected mean and the result compared with t-tabulated at an alpha level of 10% and degree of freedom. The use of T-test is justified in this case because the population standard deviation is unknown. A Z-test in this instance will need to use the sample standard deviation to estimate population standard deviation. This will result in a little loss of accuracy when compared with the T- test. However, since the sample size is large (n>30) the two test statistics will in this instance give the same result (Okaro,2008).

Decision Rule

i) Accept the Null Hypothesis (Ho) if t-cal< t-tab, this implies that the Alternative hypothesis (Hi) will be rejected.

ii) Reject the null hypothesis (Ho) if t-cal> t-tab this implies that the alternative hypothesis (Hi) will be accepted.

Reliability test of research instrument

This was done using Cronbach Alpha at 5% level of significant. Cronbach's alpha is the most common measure of internal consistency ("reliability"). It is most commonly used when you have multiple Likert questions in a survey/questionnaire that form a scale and one wish to determine if the scale is reliable.

Cronbach's basic equation for alpha

$$\alpha = \frac{n}{n-1}\left(1 - \frac{\Sigma Vi}{Vtest}\right)$$

- n = number of questions

- Vi = variance of scores on each question

- V-test = total variance of overall scores on the entire test.

High alpha is good, High alpha is caused by high variance.

High variance means you have a wide spread of scores, which means respondents are easier to differentiate.

Data Presentation and Analysis

Presentation of Data
The questionnaire in Appendix 1 was administered to thirty-five (35) respondents during the field survey by the researcher. However, 29 (82.9%) were returned and 6 (11.4%) were not returned, 2 (5.7%) were returned unfilled.

Table 4.1: QUESTIONNAIRE ADMINISTRATION

QUESTIONNAIRE TYPE	NUMBER	% OF TOTAL
Total questionnaire administered	35	100
Questionnaire validly computed and returned	29	82.9
Questionnaire administered but not returned	4	11.4
Questionnaire administered but returned unfilled	2	5.7

Source: compiled from the researcher's question survey, 2017.

Response Rate = Number of research tools returned   x   100

            Number of research tools administered

       = 29   x   100   =   82.9%

Reliability Test of Research Tool using Cronbach's Alpha

Number of items = 13

Number of respondents = 29

Table 4.1.1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.953	.966	13

Source: Researcher's computation using SPSS version 20, 2017

Cronbach's alpha is 0.953, which indicates a high level of internal consistency for the scale.

Table 4.1.2 Reliability Test

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	72.7648	698.065	.562	.902
Q2	73.1223	711.564	.793	.926
Q3	73.0211	877.888	.330	.844
Q4	72.5729	772.344	.938	.810
Q5	73.8368	701.684	.754	.946
Q6	73.1094	831.573	.561	.992
Q7	72.6921	775.016	.787	.848
Q8	71.0520	886.092	.892	.830
Q9	73.3013	714.870	.645	.927
Q10	71.2893	704.991	.572	.959
Q11	73.9465	810.122	.784	.943
Q12	72.0001	676.333	.554	.937
Q13	73.7985	687.453	.489	.840

Source: Researcher's computation using SPSS version 20, 2017

Table 4.1.1 presents the value that Cronbach's alpha would be if a particular item was deleted from the scale. We can see that removal of any question would result in a lower Cronbach's alpha or almost the same cronbach's alpha. Therefore, we would not want to remove any of these questions.

Analysis of Data

Demography of Respondents

Table 4.1: Gender Distribution of Respondents

GENDER	FREQUENCY	PERCENT %
Male	19	65.5
Female	10	34.5
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table, 65.5% of the respondents were male while 34.5% of the respondents were female.

Table 4.2: Age Distribution of Respondents

AGE	FREQUENCY	PERCENT %
20 – 25	2	6.9
25 – 30	7	24.1
30 - 35	12	41.4
35 and above	8	27.6
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table,6.9% of the respondents were between 20 – 25 years, 24.1% of respondents were between 25 - 30 years, while 41.4% of the respondents were between 30 – 35 years, 27.6% of respondents were 35 years and above.

Table 4.3: Distribution According To Marital Status

MARITAL STATUS	FREQUENCY	PERCENT %
Married	18	62.1
Single	11	37.9
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table, 62.1% of the respondents are married, while 37.9% of the respondents are single.

Table 4.4: Distribution According to Staff Category

STAFF CATEGORY	FREQUENCY	PERCENT %
Partner /Manager		

Senior staff accountant	7	24.1
Junior staff accountant	22	75.9
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above shows that, 24.1% of the respondents are senior staff accountants, while 75.9% of the respondents are junior staff accountants.

Table 4.5: Experience Distribution of Respondents

NUMBER OF YEARS	FREQUENCY	PERCENT %
Less than 2years	2	6.9
2 years to less than 5years	5	17.3.
5years to less than 10 years	9	31
10 years and above	13	44.8
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, 6.9% of the respondents had less than 2years practice experience, 17.3% of respondents had practice experience of 2 years to less to less than 5years, 31% of respondents had been in practice for 5years and less than 10years, while 44.8% respondents had experience and practice for 10years and above.

Table 4.6: Distribution According to Educational Qualification

QUALIFICATION	FREQUENCY	PERCENT %
HND	3	10.4
BSc/B.A	9	31
M.Sc/PHD	17	58.6
Others	None	__
Total	29	100

Source: compiled from the researcher's question survey, 2017.

Comment: from the table above, 10.4% of respondents had HND, 31% of respondents had BSc/B.A, 58.6% of respondents had MSc/PhD.

Analysis and Interpretation of Relevant Questions

Question 1: Forensic audit is a key component in reducing bank fraud in deposit money banks

Table 4.7: Reduction of Bank Fraud in Money Deposit Banks.

OPTION	FREQUENCY	PERCENT %
Strongly agree	4	13.8
Agree	10	35
Disagree	7	24
Strongly disagree	8	27.2
Total	29	100

Source: compiled from the researcher's question survey, 2017.

Comment: from the table above, 13.8% of respondents Strongly Agreed, 35% chose Agree, 24% chose Disagree and the remaining 27.2% went for Strongly Disagree.

Question 2: Integrating algorithm, designed to sniff through emails, call notes and event data increases the chances of detecting rogue traders in money deposit banks.

Table 4.8: Detection of Rogue Traders in Money Deposit Banks.

OPTION	FREQUENCY	PERCENT %
Strongly agree	14	48.3
Agree	11	37.9
Undecided	2	6.9
Disagree	2	6.9
Total	29	100

Source: compiled from the researcher's question survey, 2017.

Comment: from the table above, 48.3% of respondents indicated that they strongly agreed that integrating algorithm, increases the chances of detecting rogue traders, 37.9% of respondents chose agree, 6.9% chose undecided, while 6.9% of respondent chose disagree.

Question 3: Proper analyzing of ratio of loan applicants to the actual loans granted out will reduce the risk of dubious loans in financial institutions.

Table 4.9: Reducing the Risk of Dubious Loans in Financial Institution

OPTION	FREQUENCY	PERCENT %
Strongly agree	7	24.1
Agree	16	55.2
Undecided	2	6.9
Disagree	4	13.8
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, indicates that 24.1% of respondents strongly agreed that proper analyzing of ratio of loan applicants to the actual loans granted out, will reduce the risk of

dubious loans in financial institutions, 55.2% of respondents chose agree, 6.9% of respondents chose undecided, while the remaining 13.8% disagree.

Question 4: Embedded audit software which analyzes the origin of money transfer, reduces money laundering fraud in money deposit banks.

Table 4.10: Embedded audit Software in Reducing Money laundering Fraud.

OPTION	FREQUENCY	PERCENT %
Strongly agree	11	37.9
Agree	13	44.8
Undecided	1	3.5
Disagree	3	10.3
Strongly disagree	1	5.5
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, 37.9% of respondents strongly agree that embedded audit software reduces money laundering in money deposit banks, 44.8% of respondents agree, 3.5% of respondents were undecided, 60.3% of respondents chose disagree, while 3.5% chose strongly disagree.

Question 5: Continuous analyzing of relevant data, makes it difficult for insider trading to go undetected in money deposit banks.

Table 4.11: Analyzing of Relevant Data reduces rogue trading

OPTION	FREQUENCY	PERCENT %
Strongly agree	6	20.7
Agree	12	41.4
Undecided	3	10.3
Disagree	6	20.7
Strongly disagree	2	6.9
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, 20.7% of respondents strongly agree that Continuous analyzing of relevant data, makes it difficult for insider trading to go undetected in money deposit banks, while 41.4% of respondents chose agree, 10.5% of respondents were undecided, 20.7% of respondents disagree while the remaining 6.9% of respondents strongly disagreed.

Question 6: Effective application of forensic accounting reduces the risk of loan fraud in deposit money banks.

Table 4.12: Forensic Accounting Application Reduces the Loan Frauds in Money Deposit Banks.

OPTION	FREQUENCY	PERCENT %
Strongly agree	3	10.3
Agree	17	58.7
Undecided	4	13.8
Disagree	2	6.9
Strongly disagree	3	10.3
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, 10.3% of respondents strongly agree that effective application of forensic accounting reduces the risk of loan fraud in deposit money banks, 58.7% of respondents agreed, 13.8% of respondents were undecided, 6.9% of respondents disagree and 10.3 of respondents chose strongly disagree.

Question 7: Ratio comparisons of previous year loan grants to that of the current year, increases the chances of identifying which loans were granted intentionally with an ulterior motive.

Table 4.13: Comparisons of Loans Identifies fraudulent loan

OPTION	FREQUENCY	PERCENT %
Strongly agree	3	10.4
Agree	15	51.7
Undecided	6	20.7
Disagree	4	13.8
Strongly disagree	1	3.4
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above indicates that 10.4% of respondents strongly agree that ratio comparisons of previous year loan grants to that of the current year, increases the chances of identifying which loans were granted intentionally with an ulterior motive, 51.7% of respondents agreed, 20.7% of respondents were undecided, 13.8% of respondents disagreed while 3.4% of respondents strongly disagree.

Question 8: Test data technique designed to detect misstatements, detects any transactions above the pre-determined limit in money deposit banks.

Table 4.14: Test data technique detects transactions above pre-determined limit.

OPTION	FREQUENCY	PERCENT %
Strongly agree	7	24.1
Agree	13	44.8
Undecided	1	3.5
Disagree	5	17.2
Strongly disagree	3	10.4
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, 24.1% of respondents strongly agreed, 44.8% of respondents chose agree, 3.5% of respondents were undecided 17.2% of respondents chose disagree, the remaining 10.4% strongly disagreed.

Question 9: Sequential pattern analysis that seeks to identify similar patterns, regular events in transactions, reduces unauthorized trades in financial institutions.

Table 4.15: Sequential Pattern Analysis Reduces Unauthorized Trades in Financial Institutions.

OPTION	FREQUENCY	PERCENT %
Strongly agree	3	10.4
Agree	15	51.7
Undecided	6	20.7
Disagree	4	13.8
Strongly disagree	1	3.4
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, 10.4% of respondents strongly agreed, 51.7% of respondents agreed, 20.7% of respondents were undecided, 13.8% of respondents disagreed, 3.4% of respondents chose strongly disagree.

QUESTION 10: Audit software packages, used by forensic accountants, can detect illicit money transfers carried out by employees of the bank on behalf of other individuals.

Table 4.16: audit software detects illegal money transfers

OPTION	FREQUENCY	PERCENT %
Strongly agree	1	3.5
Agree	17	58.6
Undecided	5	17.2
Disagree	4	13.8
Strongly disagree	2	6.9
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, 3.5% of respondents strongly agreed, 58.6% of respondents agreed, 17.2% of respondents were undecided, 13.8% of respondents disagreed and 6.9% of respondents strongly disagree.

Question 11: The services of forensic accountant is an important mechanism in tackling fraudulent practice in Nigeria banking system

Table 4.17: Forensic Accountant is required in tackling Fraud in Nigerian Banking System.

OPTION	FREQUENCY	PERCENT %
Strongly agree	9	31
Agree	8	27.6
Undecided	4	13.8
Disagree	5	17.3
Strongly disagree	3	10.3
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, 31% of respondents simply agreed, 27.6% of respondents agreed, 13.8% of respondents were undecided, 17.3% of respondents disagreed and 10.3 % of respondents strongly disagreed.

Question 12: Forensic accounting is an effective tool in identifying and preventing money laundering in deposit money banks.

Table 4.18: Forensic accounting identifies and prevents money laundering in deposit money banks

OPTION	FREQUENCY	PERCENT %
Strongly agree	11	37.9
Agree	14	48.4
Undecided	1	3.4
Disagree	2	6.9

| Strongly disagree | 1 | 3.4 |
| Total | 29 | 100 |

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, 37.9% of respondents strongly agreed, 48.4% of respondents agreed, 3.4% of respondents were undecided, 6.9% of respondents chose disagree while the remaining 3.4% of respondent chose strongly disagree.

Quesion 13: Proper utilizing of the services of forensic accountant by banks, reduces the chances of bank failures in Nigeria.

Table 4.19: Utilizing of Forensic Accountant Reduce the Chance of Bank Failure.

OPTION	FREQUENCY	PERCENT %
Strongly agree	1	3.5
Agree	17	58.6
Undecided	4	13.8
Disagree	5	17.2
Strongly disagree	2	6.9
Total	29	100

Source: compiled from the researcher's question survey, 2017

Comment: from the table above, 3.5% of respondents strongly agreed, 58.6% of respondents agreed, 13.8% of respondents were undecided, 17.2% of respondents chose disagree while the remaining 6.9% of respondent chose strongly disagree.

Test of Hypotheses

Hypothesis 1:

Ho: Data mining techniques have no significant effect on rogue trading in deposit money banks in Anambra state.

H₁: Data mining techniques have significant effect on rogue trading in deposit money banks in Anambra state.

QUESTION 2:

f	x	x^2	fx	$f(x^2)$
14	5	25	70	350
11	4	16	44	176
2	3	9	6	18
2	2	4	4	8
TOTAL = 29	14	54	124	552

$$\bar{x} = \frac{\sum fx}{\sum f}$$

$$s = \sqrt{\frac{\sum fX^2 - \frac{(\sum fX)^2}{N}}{N-1}}$$

$X = \frac{124}{29} = 4.276$

$$S = \frac{\sqrt{552 - \frac{124^2}{29}}}{29-1}$$

$$t = \frac{\bar{X} - \mu}{s/\sqrt{n}}$$

$$= \frac{\sqrt{552 - 530.2}}{28}$$

$$= \frac{4.276 - 3}{0.882/\sqrt{29}}$$

$$= \sqrt{0.778}$$

$$= \frac{1.276}{0.16378}$$

$S = 0.882$

$t = 7.791$

Table 4.21: a one sample t-test analysis on the effect of data mining technique on rogue trading.

Expected mean = 3

S/N	ITEMS	SA F	%	A F	%	U F	%	D F	%	SD F	%	N	×	S.D	d.f	t.cal	t.tab
2	Integrating algorithm, designed to sniff through emails, call notes and event data increases the chances of detecting rogue traders in money	14	48.3	11	37.9	2	6.9	2	6.9	-	-	29	4.276	0.882	28	7.791	1.313

	deposit banks.															
5	Continuous analyzing of relevant data, makes it difficult for insider trading to go undetected in money deposit banks.	6	20.7	12	41.4	3	10.3	6	20.7	2	6.9	29	3.483	1.243	28	2.093	1.313
9	Sequential pattern analysis that seeks to identify similar patterns, regular events in transactions, reduces unauthorized trades in financial institutions.	3	10.7	15	51.7	6	20.7	4	13.8	1	3.4	29	3.517	3.138	28	2.824	1.313

Source: compiled from the researcher's questionnaire survey, 2017

Decision Rule

Since the t calculated (7.791, 2.093, 2.823) of all items used is greater than t tabulated (1.313), we reject the null hypothesis and accept the alternative hypothesis. This signifies that data mining techniques has significant effect on rogue trading in deposit money banks in Anambra state.

Hypothesis 2

Ho: Ratio analysis has no significant effect in reducing fraudulent loan in deposit money banks in Anambra state.

H₂: Ratio analysis has significant effect in reducing fraudulent loan in deposit money banks in Anambra state.

Table 4.22: A one sample t-test on the analysis on the effect of ratio analysis on fraudulent loan.

Expected mean = 3

S/N	ITEMS	SA		A		U		D		SD		N	×	S.D	d.f	t.cal	t.tab
		F	%	F	%	F	%	F	%	F	%						
3	Proper analyzing of ratio of loan applicants to the actual loans granted out, will reduce the risk of dubious loans in financial institutions.	7	24.1	16	55.2	2	6.9	4	3.8	-	-	29	3.897	0.939	28	5.144	1.313
6	Effective application of forensic accounting reduces the risk of loan fraud in deposit money banks.	6	20.7	12	41.4	3	10.3	6	20.7	2	6.9	29	3.483	1.243	28	2.093	1.313
7	Ratio comparisons of previous year loan grants to that of the current year, increases the	3	10.7	15	51.7	6	20.7	4	13.8	1	3.4	29	3.517	0.986	28	2.824	1.313

	chances of identifying which loans were granted intentionally with an ulterior motive.																

Source: compiled from the researcher's questionnaire survey, 2017

Decision Rule

Since the t-calculated (5.144, 2.093, 2.824) is greater than the t-tabulated (1.313) for all items used, we reject the null hypothesis and accept the alternative. This signifies that ratio analysis has significant effect in reducing fraudulent loan in deposit money banks in Anambra state

Hypothesis 3.

Ho: Computer assisted auditing techniques (CAATs) have no significant effect on money laundering in deposit money banks in Anambra state.

H₃: Computer assisted auditing techniques (CAATs) have significant effect on money laundering in deposit money banks in Anambra state.

Table 4.23: A one sample t-test analysis of the effect of CAATs on money laundering in money deposit banks.

Expected mean = 3

	ITEMS	SA		A		U		D		SD		N	×	S.D	d.f	t.cal	t.tab
S/N		F	%	F	%	F	%	F	%	F	%						
4	Embedded audit software which analyzes the origin of money transfer, reduces money laundering fraud in money deposit	11	37.9	13	44.8	1	3.5	3	10.3	1	3.5	29	4.035	1.085	28	5.137	1.313

	banks.															
8	Test data technique designed to detect misstatements, detects any transactions above the pre-determined limit in money deposit banks.	2	6.9	11	37.9	8	27.5	5	17.3	3	10.4	29	3.552	1.302	28	2.283	1.313
10	Audit software packages, used by forensic accountants, can detect illicit money transfers carried out by employees of the bank on behalf of other individuals.	1	3.5	17	58.6	5	17.2	4	13.8	2	6.9	29	3.379	1.015	28	2.011	1.313
12	Forensic accounting is an effective tool in identifying and preventing money laundering in deposit	11	37.9	14	48.4	1	3.4	2	6.9	1	3.4	29	4.104	1.012	28	5.875	1.313

money banks.												

Source: compiled from the researcher's questionnaire survey, 2017

Decision Rule

The t-calculated (5.137, 2.283, 2.011, 5.875) is greater than the t-tabulated (1.313) for the item used, therefore we reject the null hypothesis and accept the alternative hypothesis. This signifies that Computer Assisted Auditing Techniques (CAATs) have significant effect on money laundering in deposit money banks in Anambra state.

Summary of Findings

1. Data mining techniques have significant effect on rogue trading in deposit money banks in Anambra state.
2. Ratio analysis has significant effect in reducing fraudulent loan in deposit money banks in Anambra state
3. Computer Assisted Auditing Techniques (CAATs) have significant effect on money laundering in deposit money banks in Anambra state.

Recommendations

i. Bank management should create awareness in the workers that forensic accounting service is being utilized in the organization in detecting financial crimes. This will deter all those who might want to engage in such.

ii. In line with the benefit of forensic accounting, auditors should be required to introduce some elements of forensic accounting techniques into the average financial statement audit to increase the effectiveness of the audit.

iii. There should be certain standard methodology and procedures to guide forensic accounting assignments and to act as a reference for practice reviews especially in cases of dispute with client.

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