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FINANCIAL-TECHNOLOGICAL ADVANCES AND FRAUD IN NIGERIAN-LISTED DEPOSIT
MONEY BANKS

ALU, CHITURU NKECHINYERE

Department of Accounting, School of Management Sciences,
Babcock University, Ilishan Remo,
Ogun State, Nigeria

AKINSANYA, DEBORAH

Department of Accounting, School of Management Sciences,
Babcock University, Ilishan Remo,
Ogun State, Nigeria

SHIYANBOLA, ALICE ANESE

Department of Accounting, Faculty of Business and Social Sciences,
Adeleke University, Ede,
Osun State, Nigeria

And

OLOWU PRINCESS ATINUKE

Department of Accounting, School of Management Sciences,
Babcock University, Ilishan Remo,
Ogun State, Nigeria

Abstract

Incidence of Fraud resulting in financial losses continues to pose a significant challenge to many industries despite advances in fraud detection technologies. Large-scale Fraud has occurred in Nigerian banks, which has resulted in bank distress at different times, among other reasons. This study examined the effect of financial and technological advances on Fraud in Nigerian-listed deposit money banks. A survey was employed in the research. The sample size of 198 members of staff in deposit money banks, Sagamu, Ogun State, Nigeria was utilized. Data for the research were obtained through a questionnaire. Responses were obtained from 188 eligible respondents and analyzed using descriptive and inferential statistics. This study indicates that technological advances significantly affect fraud detection in Nigerian listed deposit money banks (Adj. R²= 0.362, F = 36.320, p<0.05); (β = 6.145, t = 5.931; technological advancement significantly affects fraud prevention (Adj R²= 0.334, F = 32.25, P<0.05); (β = 5.090, t = 4.418; and technological advancement has significant impact on fraud control in Nigerian listed deposit money banks (Adj R² = 0.269, F = 23.90, p<0.05), (β = 7.462, t = 6.932. The study concluded that technological advances significantly impact fraud detection, prevention and control in Nigerian listed deposit money banks. Management of deposit money banks should train its employees on using financial technology-based services for effective operations to enable the customers to appreciate management's efforts in providing technological services to detect, prevent and control Fraud.

Key Words: Fraud, Fraud control, Fraud Detection, Fraud Prevention and Technological Advances

Introduction

Fraudulent activities affect every business. Yaro, Simeon, and Abu (2016) submitted that annual losses due to Fraud for various industries in the United States of America are estimated to be: \$67b (Insurance), \$150b (Telecommunication), \$1.2b (Bank), \$40b (money laundering), \$5.7b (Internet) and \$1b (Credit card). Bank collapse in Nigeria can be traced back to the banking depression of the 1930s (Adeku, 2020). Udeh and Ugwu (2018) stated that a loss in trust in the Nigerian banking sector arose in the 1930s when all native banks, except the National Bank, failed. It happened again after the banking bubble and the fall of the late 1940s when all but four native banks faced a hammer of liquidators. Also, 16 out of 21 indigenous banks collapsed between 1952 and 1954. At the end of the 1990s, 26 bankrupt banks were liquidated, while some underwent a range of surgical procedures, ranging from a merger, renaming, takeover and complete sales to new owners (David, 2014).

On this note, Garba and Usaini (2020) argued that bank fraud has far-reaching implications for stakeholders and the nation's economy. The bank may have a poor capital adequacy ratio or a liquidity deficit. David (2014) attributed much of the world's financial scandals to bribery, sometimes resulting in a bank collapse. Bank fraud causes untold misery to owners, staff, clients and family members when bank defaults are the product of the Act. Odi (2013) admits that Fraud in banking has rattled the foundations and reputation of most banks in Nigeria, leaving some banks in trouble.

To this end, Fraud control is becoming a matter for regulators and senior banking executives who are on the brink of illegal operation or, more succinctly, committing Fraud in financial institutions under their control (Adetiloye, Olokoyo & Taiwo, 2016). The establishment of internal controls cannot be sufficient to eradicate unethical practices; continually reshuffling the controls already in place to ensure that they successfully reduce fraudulent activities in financial institutions should become relevant (Jesse, 2019). Fraudulent practices are rampant in every company but more rampant in financial institutions and maybe more prevalent in Deposit Money Banks (DMBs) because of their trade instruments (Ibanichuka & Oko, 2019). In other words, banks are more vulnerable to financial theft due to money and near-money instruments used in their activities, thereby, requiring strategic measures like financial-technological innovations such as electronic banking, forensic investigation and the likes.

Innovations have changed businesses by offering creative avenues to bring value to current and new markets, generating possibilities that will extend the reach of companies beyond the boundary of organizations (Schiavi & Behr, 2018). Technology has changed banking, and consumers are happier than ever with e-transactions, creating more sales income for banks in Nigeria and other parts of the world (Oira & Kibati, 2016). Bank clients now do their transfers without seeing the four foundations of the bank division. That is why it is possible today in Nigeria to see people enjoying banking facilities via their smartphones without even being the bank's account holder (Okoye, 2019). In other words, technology has become a center of global transformation, and its introduction into the financial system has transformed the sound of music and vastly increased service delivery (Hennayake, 2017). However, there seems to be persistent occurrences of irregularities and financial crimes in the system.

The most prevalent forms of financial crimes in Nigeria, primarily in banks and government departments, are electronic banking fraud; ATM card fraud; fraud transfer, fraud control and withdrawal of funds; use of illegal overdraft; posting of fake credits; display of forged checks; conversion of bank money into personal use; issuance of unauthorized loans;

misuse of med (Economic and Financial Crimes Commission [EFCC], 2014). Taiwo, Ijaiya, Afolabi and Abdurashed (2020) argued that the potential motivation for these financial crimes included: personal greed; probability of running away; low conviction rate; organizational pressure; high debt; financial pressure; workers' moral problems; internal management deficiencies and anti-institutional stance (David, 2014).

To this end, Nwekpa, Okoli and Nwevo (2022) argue that, financial technological advances such as electronic banking services do not even guarantee customer satisfaction occasioned by the frequency of complaints received from users such as poor electronic banking quality, poor or non-availability of network, unavailable cash, unsafely of funds, internet fraudsters, hidden charges and online theft. Hence, banks must ensure that they carry out their duties with a genuine intent, devoid of unethical activities (Lawrence, Ehimare & Okoh, 2018) if the banking industry is to win public confidence and goodwill. As there have been reported cases of Fraud in the Nigerian banking industry, such as Oceanic Bank and Skye Bank, now Polaris Bank, one big question remains unanswered. How can this be detected, prevented and controlled through technological advances? Thus, the study examined the effect of financial-technological advances on Fraud of listed deposit money banks in Nigeria.

Literature Review

Conceptual Review

Fraud

Fraud simply means deception or cheating of an individual or a party by another individual/party leading to a financial loss or loss of resources. Fraud could be perpetrated through different means, like one-on-one (physically) online (over the internet), messaging (correspondence) and the likes. Adeyemo (2012) posited that banks' going concern might be affected negatively because of Fraud. Fraud could create additional costs to the concerned entities because of the added cost of supervision that is, cost of instituting the required fraud detective and preventive measures to protect the assets of the firm. It also leads to a loss of money profit, reduces the equity capital of the bank, impairs the bank's financial health and constrains its ability to extend loans and advances for profitable operations (Adetiloye, Olokoyo, & Taiwo, 2016). Fraud has consequences for companies in numerous industrial, psychological and operational fields. Although monetary loss due to Fraud is significant, it can have a surprising impact on a business in its entirety.

The credibility, goodwill and consumer relationship losses may also be damaging. Therefore, as any employee in a firm or outside the company commits Fraud, it is valuable to have an efficient fraud management program in place to protect the assets and credibility of the company (Okafor & Agbiogwu, 2016). Through multifaceted screening: cryptography inspection barriers, financial institutions can protect and ensure their business's protection, integrity or originality. Moreover, financial institutions should rotate people who work in critical seats, keep strict oversight, upgrade technology regularly and involve many more than one person (Okafor & Agbiogwu, 2016).

Prevention of Fraud

Zimbelman and Albrecht (2012) submit that prevention of Fraud has to do with creating a culture of honesty, openness and assistance and ending the Fraud opportunities. Singleton and Singleton (2010) agree that having dealt with other elements of Fraud, the creation of a positive and low environment for Fraud (by positive modeling and tone labeling at the top) and giving more attention to the culture of the organization are essential elements for the prevention of Fraud. According to Ng'eni (2016), every procedure, action, training, communication and policy towards the hindrance of Fraud occurrence is a strategy for the

prevention of Fraud. To prevent Fraud, The best approach to fighting Fraud in a business is to prevent its occurrence in the first instance, mainly by improving the vital risk processes indicators (Ng'eni, 2016).

Thus, instituting strategies aimed at reducing the motivation and opportunity to commit Fraud will go a long way to prevent Fraud (American Institute of Certified Public Accountants (AICPA), 2009). That is, anti-fraud control mechanisms like separation of duty, limits and approval authorities, review of customer associates, access control, implementation and application of security mechanisms, and physical security control systems are recommended (Ng'eni, 2016). On the other hand, (Gbebi & Adebisi, 2014) identified the following preventive measures: lending units, graduated limits of authority, dual control, close circuit television, separation of duties, close watch on staff's lifestyle, signature verification, establishing inspectorate units, detection of passport-sized photos, coding and telex message texting, dormant account control, referencing on presentation of a document of value, operational manual and reporting system.

Detection of Fraud

Fraud detection constitutes a sequence of actions prohibiting obtaining money or property under false pretenses. Fraud identification applies to all business techniques to prevent Fraud after promises (Changwong & Rotich, 2015). Fraud detection techniques are a technique for the effective and rapid detection of Fraud by detecting suspects or bypassing prevention steps to allow an organization to take necessary corrections. A variety of fraud prevention and prevention measures have been developed in Nigeria by the public sector. The rationale behind any fraud screening scheme is that suspected Fraud is reported or observed, and the losses are reduced. Nigerian public sector is highly interested in designing techniques to identify illegal activities in time due to their significant effects on its role as a trustworthy financial institution, low running costs and customer service institutions with honesty (Abdulrahman, 2019).

Eze and Okoye (2019) indicated that the continuous appraisal of an anti-fraud and red-flag organization is a prerequisite for effective deterrence, indicating that red-flag Fraud is an example of timely control of vital compliance with a given transaction. Implementing the mechanism for internal audits would be an ethical operating environment and a fraud control program. Abdulrahman (2019) suggested that companies must assume a frigid duty in planning and enforcing internal control/anti-fraud schemes entirely in their accounting processes in order to be able to enforce a measure of fraud prevention.

It is as challenging to describe Fraud as to recognize it. There can be no definitive and invariable law in describing Fraud as a general statement, as it involves twists, tricks, cleverness, and unfair ways of manipulating others. Fraud is a legal term which refers to the deliberate misrepresentation of facts to deceive or disappoint a business or individual. Fraud is a misjudgment that is present to persuade someone to enter into an agreement implying a deliberate enrichment by secretly reducing the value of an asset. If businesses suffer severe financial difficulties which result in bankruptcy, senior management bribery may be involved. It says that Fraud is not probable but a possibility (Raymond, Nkiru & Okoyo (2016).

The word fraud is generic and is used in different contexts and notes (Abdulrahman, 2019). Fraud takes so many forms and degrees that courts are required to context their finding and disobedience only with few general laws. It is best not to describe the term to discourage people from seeking ways to commit Fraud that would circumvent those

meanings. Oladejo and Yinus (2015) assert that Fraud is an act or course of disappointment intentionally exercised for illegitimate or unfair benefit.

A deception in accounting constitutes a willfully deceptive accounting report, like revenues or expense registers, to raise net revenue or sales estimates. Fraud in accounting is criminal (Enofe, Omagbon & Ehigiator, 2015). Officials of the company may use accounting deception to reverse losses or guarantee that their shareholders or the public satisfy their earnings expectations.

Fraud Control

Control of fraud occurs when a trusted person in a high position of responsibility in a company, corporation, or state subverts the organization and engages in extensive Fraud for personal gain. In this case, Fraud risk response measures need to be in place. Omodero and Okafor (2016) view Fraud risk response as corrective measures taken to avert or remedy fraud injury. Such measures reduce the occurrence of fraud in organizations.

To this end, (Okoye & Gbebi, 2013) argue that more challenging response measures lead to less likely fraud incidence. Depending on its magnitude, a successful fraud incident may negatively impact the firm's survival (KPMG, 2010). In other words, fraudulent activities could wreak havoc in the banking system because the customers' saving effort will be frustrated and they will experience physical and emotional trauma.

The bank, on the other hand suffers a great loss when customers request for a refund of their lost money due to fraud. Therefore, the banks should periodically design, implement, and maintain fraud risk management (Omodero & Okafor, 2016) measures. Hence, implementation of Fraud control strategies is necessary to reduce the occurrences of fraud. On this note, (Wanjohi, 2014) submits that clear and concise Fraud response strategies must be developed by firms, including, communicating effectively the severity of the Fraud and its punitive measures.

Financial technological advances

Financial technology can be seen as the application of emerging or innovative technologies by financial intermediaries or institutions to aid their financial service delivery. Raza, Samad and Umer (2020) posit that technology advancement has generated different ways by which firms relate with their customers and as such the banking sector has made a drastic change in their relationship with their customers.

The banking industry, as a means of meeting their varying customers' needs and modern lifestyle, are engaging in various technology-based services (Hammoud, Bizri, & Baba, 2018). The implementation and appropriate use of these technology-based services could bring about competitive advantages to the institutions and guarantee customers' satisfaction. For the purpose of this study, financial technological advances have been viewed as mobile banking, internet banking; and availability and access to technology.

Mobile banking

Bala, Jahan, Amin, Tanin, Islam, Rahman and Khatun (2021) view mobile banking as an obligatory thought, which creates new streaming in the field of business for emerging global economy. However, Nwekpa, Okoli and Nwevo (2022) describe mobile banking as the carrying on of financial transactions using the electronic devices, basically, as a result of its availability to the common man. In other words, the use of mobile banking is a common means of financial transaction to an average user as it can be applied or utilized at any point in time and anywhere without going to the bank. This means of transaction is usually carried out with mobile applications on the mobile phones, especially the smart phones. Mobile banking,

being a form of cashless banking branch, can easily be adopted by banks to offer financial services to poor individuals outside the network of the traditional branch, enabling the system to assist customers to check their account balance, send money to the members of their family/friends, receive messages (SMS and/or emails) from the bank (Kumar & Dabnath, 2018).

Internet banking

Omodele and Onyeiwu (2019) define electronic banking (e-banking) as a universal concept for delivering banking products and services via electronic platforms like the telephone, cell phone, and internet. Electronic banking (e-banking) generated the need to create different platforms for meeting customers' expectations like the automated teller machine (ATM), mobile (phone) banking and internet (online) banking (Bala, Jahan, Amin, Tanin, Islam, Rahman & Khatun, 2021).

In addition to the three forms of e-banking, (AL-Adwan & AL-Tarawneh, 2017) identified the automated clearing, e-bank card (credit cards), points of sales (POS) and home banking as platforms of e-banking services. Hence, e-banking is made up of POS, PC banking, TV based banking, telephone banking, mobile banking, ATMs and internet banking (Omodele & Onyeiwu, 2019). However, AL-Adwan and AL-Tarawneh (2017) argue that these services could create the fear of hacking, which calls for the need for banks to provide protection services such as encryption and firewalls.

Therefore, internet banking, according to (Raza, Samad & Umer, 2020 in Pikkarainen et al, 2004), is a kind of electronic banking, which is a portal where customers utilize different banking services like payment for bills and investments. Nwekpa, Okoli and Nwevo (2022) view internet banking as one of e-banking services channels, which customers utilize in performing financial activities on the financial institution's secured website, such as retail or virtual bank, credit union or society. Raza, Samad and Umer (2020) citing DeYoung, Lang, and Nolle, 2007, Rod & Ashhil, 2010) argue that internet banking, unlike the conventional banking system, is more cost effective and helpful in building a more healthy relationship with customers as it allows the customers/users to relate with the website instead of the bank's representative.

Availability and access to technology

Conceptualizing technology-based services and access, especially in the banking sector simply means that such services are available to users without entering the banking hall or requiring the bank's representative to do such within the bank's confined working hours. Often times, the use of such technologies require availability and access to internet facilities (data or wifi), which imply that user(s) can utilise such at an affordable price, any time, and anywhere. For example, technology-based banking services ensure that the banking processes are done by means of electronic communication networks, such that customers or users need not go to the bank, and this service requires information technology and telecommunications revolution (AL-Adwan & AL-Tarawneh, 2017).

It is evident that enhancement in technology has changed the bank's batch processes to online and real-time system, enabling the banks to develop and render customized services. Such services include ATM, plastic money, internet banking and mobile banking (Shanker, 2016). Therefore, technological advances will assist the bank in tackling the incidence of fraud thereby, winning public confidence and satisfying the needs of stakeholders.

Theoretical framework

Fraud diamond theory

The theory of fraud diamond seems to be an extension of the theory of fraud triangle. Wolfe and Hermanson (2004) have found the idea of an extension of the fraud triangle as a diamond theory of Fraud. A fourth element, known as capacity, was introduced to the advocates of diamond theory. In their belief, deception happens in most situations where individuals are used for Fraud (Wolfe & Hermanson, 2004). Usually, these people will have the expertise and tricks to cheat. Wolfe and Hermanson (2004) find that perceived resources give way to Fraud while perceiving difficulty and rationalization contribute to Fraud.

The skill, however, makes it possible for a person to analyze and use this opportunity. It is assumed that the fraud triangle could be approached with the fourth factor in mind to enhance the prevention and identification of Fraud. In addition to dealing with motivations, resources and rationalizations, the four-sided fraud diamond by Wolf and Hermanson also explores an individual's strengths and capabilities that play a role in ensuring that Fraud ultimately happens following the other three.

The capability is the mechanism for a person to commit deception to get the essential features, skills, and abilities. This situation is where the fraudster understands and uses the opportunity to obtain the unique risk of Fraud. The supportive elements of potential are location, intellect, ego, manipulation, deception and stress (Wolfe & Hermanson, 2004). Mackevicius and Giriunas (2013) have thought this aspect is relevant when a high-value or long-term Fraud is involved.

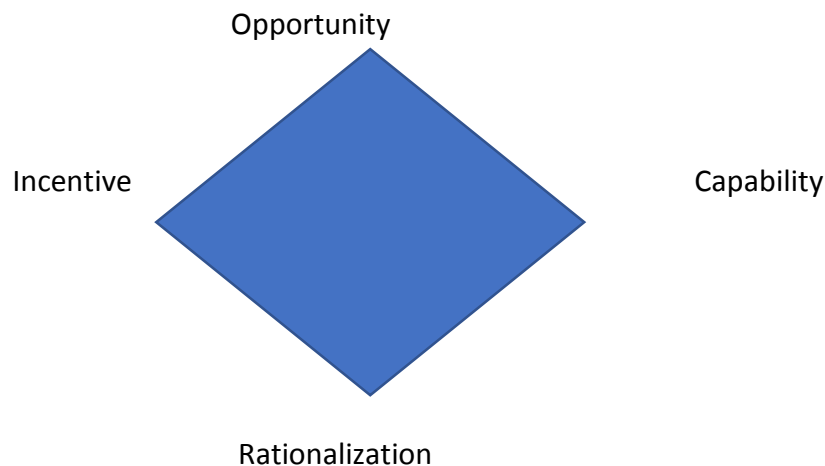


Figure 1: The Fraud Diamond (Wolfe & Hermanson, 2004)

Therefore, the theory underpinning this study is the fraud diamond theory. Since fraud occurrence cannot be totally eradicated and regulators can only play catch up to the news of fraud perpetuations, the fraud diamond theory stresses the fourth element, which is capable. The capability is the mechanism for a person to commit deception to get the essential features or skills and abilities.

This condition is where the fraudster understands and uses the opportunity to obtain the unique risk of Fraud and takes advantage of the weakness in the system. The principle illustrates how wrongdoing can be recognized, stopped and discovered and even how it is corrected and not repeated by technological advances. Technology and avoidance of Fraud are the focus of this study.

Empirical Review

Vetrivel, Krishnamoorthy, and Rajini (2019) examined the quality of internet banking services and how it affects fraud prevention based on a theoretical model of fraud prevention,

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detection, and internal control. Convenience sampling technique was adopted in selecting 250 internet bank customers. A questionnaire constituted the research instrument and the study found that internet banking services and fraud avoidance had a substantial positive relationship.

Nigerian banks' financial technologies and fraud prevention has been explored by (Iriobe & Akindele, 2017). Two hundred and fifty (250) Nigerian University students constituted the population of the study and a questionnaire served as the research instrument. Out of the 250 administered questionnaires, 243 were retrieved and analysed using descriptive statistics. The outcome showed that financial technologies are very effective in monitoring and mitigating Fraud in the Nigerian banking industries and positively impact banks' profitability.

In order to ensure good corporate governance practices in the Nigerian banking industry, (Raymond, Nkiru, & Okoye, 2016) evaluated the effect of technology-based services on countering fraudulent activities. Data from surveys (questionnaires) obtained from commercial banks in Awka, Anambra and from 55 respondents were analysed on a 5-point scale by Likert. Two formulated theories were tested using SPSS version 20.0-based statistical techniques. The report found that technology-based services are efficient instruments in the finance sector to cope with financial crimes.

The effect of financial technology on corporate Fraud was investigated in Nigeria by (Enofe, Omagbon & Ehigiator, 2015). This research attempts to establish how financial technology applies to corporate theft. The research design utilized in data collection was survey, and a questionnaire constituted the research instrument. The data were analyzed using the regression technique of IBM SPSS Statistics 21 (OLS). The report concluded that the regular use of financial technology services would substantially contribute to the identification, avoidance and reduction of the occurrence of Fraud in corporations.

Okafor and Agbiogwu (2016) concentrated on the effect of forensic accounting skills on bank fraud management in Nigeria. Workers of five (5) selected banks in Imo State have been issued 140 questionnaires. ANOVA was the mathematical method for checking the hypothesis. Among other items, the study showed that forensic accounting skills have significant positive effects on fraud management, which suggests that forensic accounting tools improved fraud identification and control in the Nigerian banking sector.

Abdulrahman (2019), using chosen research from and outside Nigeria, explored financial technologies and fraud detection in the Nigerian public sector. The analysis determined whether and how financial technology in the Nigerian Public Sector prevents. Data were obtained from the secondary source or content analysis to achieve the report's goals. Based on the research, the study found that financial technology methods and fraud avoidance had a substantial positive impact. The study considers that additional action should be taken to ensure that financial technologies are applied in the detection of Fraud.

Eze and Okoye (2019) explored the connection between the prevention of Fraud in manufacturing firms in Nigeria and financial technologies. The data gathered from primary sources have been presented to the accounting personnel of ten (10) production firms via the issue of fifty (50) standardized questionnaires. The multiple regression analyses evaluated the data approach used in Ordinary Least Square. The study has shown that the association between fraud investigation activities and fraud avoidance in manufacturing industries is favorable and statistically relevant.

The impact of forensic accounting on fraud management was evaluated by (Okoye, Adeniyi & James, 2019). The goals are to see the reliability and beneficial effects of financial

technology on the recuperation of fraud-lost funds in fraud prevention. The survey research design was employed, and the population consists the Nigeria Breweries Plc, Cadbury Nigeria Plc, Nigeria Bottling Company and Dupril Nigeria Ltd, all based in Aba (Abia State). Questionnaires were used to elicit information from the accounting personnel. One hundred and ninety (190) participants constituted the size of the sample. The study followed descriptive statistics, including the use of mean and standard deviation during regression analysis. Findings suggested that financial technologies significantly affect the identification and avoidance of Fraud.

Financial technology's (forensic accounting mechanisms) impact on fraud identification in Nigerian companies has been investigated in Enofe, Okpako and Atube (2013). Data were obtained from primary sources to accomplish this purpose. A well-structured three-sector questionnaire was given to five companies in the State of Benin City-Edo to collect the essential data. The data obtained have been analysed using the ordinary least squares (OLS) regression and chi-square with descriptive statistics. The research indicated that using financial technology software in businesses impacts the degree of fraudulence.

Umar, Umar and Eriki (2020) has discussed and clarified the financial technology and the effects of fraud identification in Nigeria. The purpose of the research was to study the technical effect of financial technologies on the identification of Fraud in Nigeria. The qualitative approach was employed. 101 Economic and Financial Crimes Commission (EFCC) investigators were used for the analysis as a reference. The study has identified a close correlation between technical methods of financial technology and the identification of Fraud in Nigeria, then, concludes that identification and prevention of fraud can be done through forensic accounting techniques.

Gbebi and Adebisi (2014) analyzed Nigerian public sector financial technology integration and methods of a fraud inquiry. The research comprised 129 senior personnel from Nigeria's three anti-corruption organizations (EFCC, ICPC, and CCB). The technique involves primary and secondary data collection sources; a questionnaire was used for primary data collection, while secondary data from EFCC, ICPC and CCB were collected. The created data from this study have been used to evaluate hypotheses using SPSS version 17.0 to analyze Variance Analysis (ANOVA) and time series analysis. The results indicate that the expertise and methods of financial technology have a massive impact on the identification and prevention of Fraud in the public sector in Nigeria.

The impact of financial technology and fraud detection on the public sector in Nigeria was analyzed in the case study by (Eze & Okoye, 2019). The descriptive survey was used for the research design. After validity and reliability checking with a z-test for hypothesis testing, the analysis followed a standardized data sheet. The result shows that financial technology and public sector fraud identification and prevention are related.

Hence, based on the above reviews, the study's hypotheses statements are:

H₀₁: Financial-technological advances have no significant effect on Fraud detection.

H₀₂: Financial technology based-services do not significantly influence the prevention of Fraud.

H₀₃: Control of Fraud is not significantly related to financial-technological advances.

Researchers' Conceptual Framework

This conceptual framework shows the pictorial relationship between financial technological advances and fraud as well as their proxies.

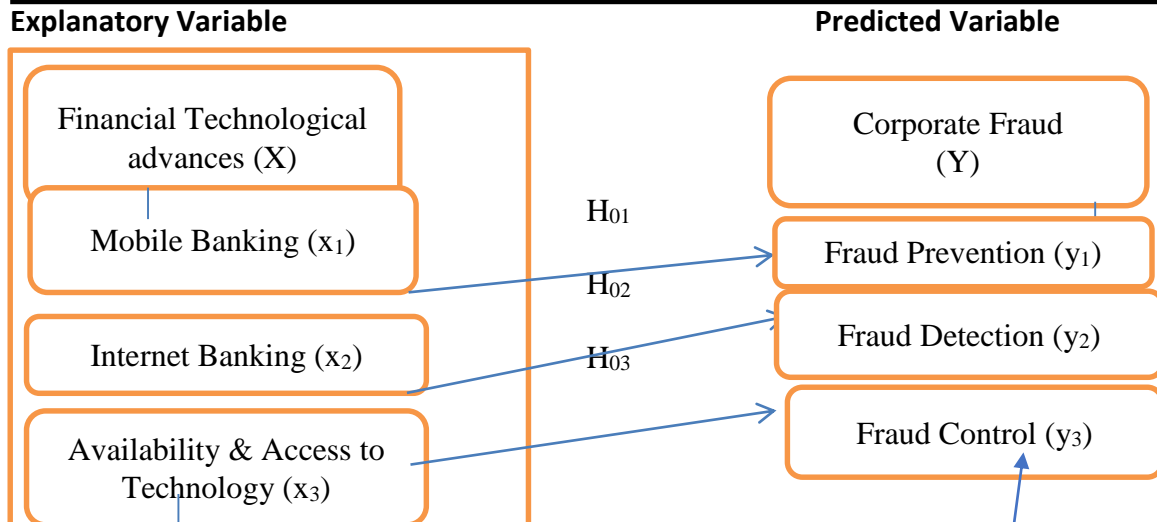


Figure 2: Conceptual Model

Source: Researchers’ Conceptual Model (2021)

Methodology

This segment deals with the research methods employed in addressing the research objectives and hypotheses. This section discusses the details of the research design, study population, sample size and sampling techniques, validity and reliability of the instrument, data collection method and the statistical instrument employed in data analysis.

The research design employed is survey where the research used a structured questionnaire to gather valuable information from the respondents. The population for this study was five listed deposit money banks in Nigeria.

According to the Human Resource Department of individual banks (2020), the staff members are 384. The sample size was 198 members of staff of the selected banks in Sagamu, Ogun province, eligible to respond to the questionnaire. This number was determined using the Yamane formula.

Table 1: List of Deposit money banks staff selected for the study

S/N	Banks	Population
1	First Bank	84
2	Keystone Bank	55
3	FCMB	40
4	Zenith Bank	90
5	Guaranty Trust Bank	115
	TOTAL	384

Source: Human Resource Department (2020)

The sampling technique adopted in this research was the purposive sampling method because it ensures that the sample is drawn from a population that is close to hand and also to respondents that know about financial and technological advances and Fraud. The source of data used in this research was acquired from primary sources.

The primary data source for this study involved the administration of a well-constructed questionnaire. The questionnaire was employed because it ensures a high response rate and requires less time and energy to administer. The use of a questionnaire offers the possibility of anonymity because respondents are not required to put their names on the questionnaire.

The questionnaire was presented in two sections, A and B. Section A deals with the respondent's data, such as Gender, Age, Level and Department. Section B contains questions regarding the respondent's views and opinions on financial, technological advances and Fraud. This instrument was tested for validity and reliability by employing a pilot study on 30 respondents who were not part of the study sample. The test result showed Cronbach alpha coefficients ranging from 0.706 to 0.718. The study utilised descriptive and inferential statistics for data analysis.

Model Specification

This section identifies a functional relationship between financial and technological advances and Fraud.

To evaluate:

$$Y = f(X)$$

Y is the dependent variable (Fraud) while X is the independent variable (Financial Technological advances)

X and Y are sub-categorized as follows:

$$Y = (y_1, y_2, y_3)$$

$$X = (x_1, x_2, x_3)$$

Where

y_1 = Fraud detection (FDE)

y_2 = Fraud prevention (FPR)

y_3 = Fraud control (FCL)

x_1 = Mobile banking (MBA)

x_2 = Internet banking (IBA)

x_3 = Availability and access to technology (AAT)

Models

$$FDE = \alpha_0 + \beta_1MBA + \beta_2IBA + \beta_3AAT + \mu \dots\dots\dots \text{(Model 1)}$$

$$FPR = \alpha_0 + \beta_1MBA + \beta_2IBA + \beta_3AAT + \mu \dots\dots\dots \text{(Model 2)}$$

$$FCL = \alpha_0 + \beta_1MBA + \beta_2IBA + \beta_3AAT + \mu \dots\dots\dots \text{(Model 3)}$$

Where,

α = the constant value of the equation,

β = the coefficient of the independent variable, and

μ = the error or stochastic term.

Analysis of Data and Research Findings

The findings of this study has been presented and analyzed in this section. Specifically, the responses have been analyzed accordingly and conclusions made based on the statements of hypotheses of the study.

Table 2: Demographic Characteristics of Respondents

Item		Frequency (n)	Percentage (%)
Gender	Male	89	47.3%
	Female	99	52.7%
	Total	188	100.0
Experience Level	Less than 1yr	148	78.7%
	1-5yrs	16	8.5%
	6-10yrs	24	12.8%

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	Above 10yrs	0	0.0%
	Total	188	100.0
Cognate Work experience	Less than 5 yrs	85	45.2%
	6-10 yrs	20	18.1%
	11-15	34	10.6%
	16yrs and above	49	26.1%
	Total	188	100.0
Academic Qualification of respondent	Bsc/HND	92	48.9%
	Msc/MBA	71	37.8%
	PHD	7	3.7%
	Others	18	9.6%
	Total	188	100.0

Source: Researchers' study (2021)

From Table 2, although more females took part in the survey, both male and female were represented. Also, the experience levels of many respondents fall as less than a year; and others as 1-10 years. The respondent's working experience was mainly less than five years, followed by 6-10 years; the rest was 11-15, then, above 16 years. Most respondents are BSc/HND holders, followed by MSc. holders; whereas, only 18 belong to others group. The implication is that the respondents are well educated.

Table 3: Financial technological advances and fraud detection

ITEM	SD	D	UN	A	SA	Mean (\bar{x})	SD
	Frq. %	Frq. %	Frq. %	Frq. %	Frq. %		
Integration of technology helps to enhance the security and fraud detection capabilities of the banks	9	9	6	78	86	4.19	1.041
	4.8%	4.8%	3.2 %	41.5%	45.7%		
Technological advances help to address the increasingly technical nature of Fraud	4	10	0	98	76	4.23	.870
	2.1%	5.3%	0.0 %	52.1%	40.4%		
The usage of advanced technologies helps the banks to determine the tendency of customers to commit Fraud	7	13	5	95	68	4.09	.999
	3.7%	6.9%	2.7 %	50.5%	36.2%		
Advanced technologies increase the banks' industry coordination in fraud reporting	6	14	6	101	61	4.05	.972
	3.2%	7.4%	3.2 %	53.7%	32.4%		
Advanced technologies enhance the global solutions to deal with Fraud and anti-money laundering problems	8	1	10	110	59	4.12	.872
	4.3%	0.5%	5.3 %	58.5%	31.4%		

Source: Researchers' study (2021)

Table 3 shows that 45.7% (n=86) of the respondents strongly agreed that it is imperative for an Integration of technology helps to enhance the security and fraud detection capabilities of the banks. 3.2% (n=6) remain undecided, 4.8% (n=9) strongly disagree, 4.8% (n=9) disagree and 41.5% (n=78) agreed with a mean of 4.19 and standard deviation 1.041. The result indicates that most respondents accepted that integrating technology helps enhance the banks' security and fraud detection capabilities.

Similarly, 40.4% (n=76) of the respondents strongly agreed that Technology advances help to address the increasingly technical nature of Fraud. However, 2.1% (n=4) strongly disagree, 5.3% (n=10) disagree and 52.1% (n=98) agreed with a mean of 4.23 and standard deviation 0.870. The results suggest that many respondents agreed that Technology advances help to address the increasingly technical nature of Fraud.

36.2% (n=68) of the respondents strongly agreed that using advanced technologies helps the banks to determine the tendency of customers to commit Fraud. 2.7% (n=5) are undecided, 6.9% (n=13) disagreed, 50.5% (n=95) agreed and 3.7% (n=7) strongly disagreed with a mean of 4.09 and standard deviation 0.999. Note that more of the respondents believe that using advanced technologies helps the banks to determine the tendency of customers to commit Fraud.

In addition, 7.4% (n=14) of the respondents disagreed that Advanced technologies increase the banks' industry coordination in fraud reporting. However, 53.7% (n=101) agreed, 3.2% (n=6) strongly disagree, 3.2% (n=6) remained undecided while 32.4% (n=61) strongly agreed with a mean of 4.05 and standard deviation 0.972. The findings indicate that a higher percentage of respondents believe that Advanced technologies increase the banks' industry coordination in fraud reporting.

Lastly, 58.5% (n=110) agreed that Advanced technologies enhance the global solutions to deal with fraud and anti-money laundering problems but 0.5% (n=1) disagreed, while 31.4% (n=59) strongly agreed, 4.3% (n=8) strongly disagree and 5.3% (n=10) remain undecided with a mean of 4.12 and standard deviation 0.82. The results show that more respondents agree that advanced technologies enhance the global solutions to fraud and anti-money laundering problems.

The findings reveal the following: the integration of technology helps to enhance the security and fraud detection capabilities of the banks; technology advances help to address the increasingly technical nature of Fraud; usage of advanced technologies helps the banks determine the tendency of customers to commit Fraud; advanced technologies increase the banking industry's coordination in fraud reporting; Advanced technologies enhance the global solutions to deal with fraud and anti-money laundering problems.

Table 4: Financial technological advances and fraud prevention

ITEM	SD	D	UN	A	SA	Mean (\bar{x})	SD
	Frq. %	Frq. %	Frq. %	Frq. %	Frq. %		
Software packages help banks to prevent Fraud	7	11	12	103	55	4.00	.965
	3.7%	5.9%	6.4%	54.8%	29.3%		
Technological tools help to prevent Fraud by identifying suspicious transactions	15	24	8	76	65	3.81	1.260
	8.0%	12.8%	4.3%	40.4%	34.6%		

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Technology facilitates the prevention of money-laundering and fraudulent schemes.	9	17	7	99	56	3.94	1.063
	4.8%	9.0%	3.7%	52.7%	29.8%		
Technological advancement helps to prevent the manipulation of financial statements by corporate organizations	8	11	6	91	71	4.10	1.014
	4.3%	5.9%	3.2%	48.7%	38.0%		
Financial technological tools help in exploring data in order to prevent errors and irregularities that could lead to fraud.	6	11	13	94	62	4.05	.966
	3.2%	5.9%	7.0%	50.5%	33.3%		

Source: Researchers' study (2021)

Table 4 reveals that 29.3% (n=55) of the respondents strongly agreed that software packages help banks to prevent Fraud. But 3.7% (n=7) strongly disagree, 5.9% (n=11) disagreed, 6.4% (n=12) remained undecided and 54.8% (n=103) agreed with a mean of 4.00 and standard deviation 0.965. The result indicates that software packages help banks to prevent Fraud.

Similarly, 34.6% (n=65) of the respondents strongly agreed that Technological tools help to prevent Fraud by identifying suspicious transactions. While 12.8% (n=24) disagree, 8% (n=15) strongly disagree, 40.4% (n=76) agreed and 4.3% (n=8) remained undecided with a mean of 3.81 and standard deviation 1.260. The results suggest that many respondents agreed that Technological tools help to prevent Fraud by identifying suspicious transactions. 29.8% (n=56) of the respondents strongly agreed that technology facilitates the prevention of money-laundering and fraudulent schemes. However, 48% (n=9) strongly disagree 3.7% (n=7) are undecided, 52.7% (n=99) agreed and 9%(n=17) disagreed with a mean of 3.94 and standard deviation 1.063. Note that more respondents believe that technology facilitates the prevention of money-laundering and fraudulent schemes.

In addition, 5.9% (n=11) of the respondents disagree that technological advancement helps to prevent the manipulation of financial statements by corporate organizations. However, 48.7% (n=91) agreed, while 38% (n=71) strongly agreed, 4.3%(n=8) strongly disagreed and 3.2% (n=16) remained undecided with a mean of 4.10 and standard deviation 1.014. The findings indicate that a higher percentage of respondents believe that technological advancement helps to prevent the manipulation of financial statements by corporate organizations.

Lastly, 50.5% (n=94) agreed that financial technological tools help in exploring data in order to prevent errors and irregularities that could lead to fraud but 5.9% (n=11) disagreed, while 33.3% (n=62) strongly agreed, 3.2% (n=6) strongly disagree and 7% (n=13) remain undecided with a mean of 4.05 and standard deviation 0.966. The results show that more

respondents agree that financial technological tools help explore data to prevent errors and irregularities that can lead to fraud.

The findings reveal the following: Software packages help the banks to prevent Fraud, technological tools help to prevent Fraud by identifying suspicious transactions, technology facilitates the prevention of money-laundering and fraudulent schemes, technological advancement helps to prevent the manipulation of financial statements by corporate organizations, financial technological advances help in exploring data in order to prevent errors and irregularities that could lead to Fraud.

Table 5: Financial technological advances and fraud control

ITEM	SD	D	UN	A	SA	Mean (\bar{x})	SD
	Frq. %	Frq. %	Frq. %	Frq. %	Frq. %		
Technologies help to control fraudulent activities in the banking system	3	18	11	89	67	4.06	.971
	1.6%	9.6%	5.9%	47.3%	35.6%		
New technologies make it easier for banks to avert identity theft	6	18	4	91	69	4.06	1.030
	3.2%	9.6%	2.1%	48.4%	36.7%		
Advancements in technologies limit the case of card skimming in the banks	9	13	3	107	56	4.00	1.013
	4.8%	6.9%	1.6%	56.9%	29.8%		
Technologies adopted by banks help to control cases of cheque fraud	6	27	8	104	43	3.80	1.049
	3.2%	14.4%	4.3%	55.3%	22.9%		
Technologies help to check fraudulent activities such as phishing and social engineering	7	29	9	94	49	3.79	1.106
	3.7%	15.4%	4.8%	50.0%	26.1%		

Source: Researchers' study (2021)

Table 5 shows that 35.6% (n=67) of the respondents strongly agreed that Technologies help to control fraudulent activities in the banking system. While 1.6% (n=3) strongly disagree, 9.6% (n=18) disagreed, 5.9% (n=11) remained undecided and 47.3% (n=89) agreed with a mean of 4.06 and standard deviation 0.971. The result indicates that most respondents accepted that Technologies help to control fraudulent activities in the banking system.

Similarly, 36.7% (n=69) of the respondents strongly agreed that New technologies make it easier for banks to avert identity theft. But 9.6% (n=18) disagree, 3.2% (n=6) strongly disagree, 48.4% (n=91) agreed and 2.1% (n=4) remained undecided with a mean of 4.06 and standard deviation 1.030. The results suggest that many respondents agreed that new technologies make it easier for banks to avert identity theft.

29.8% (n=56) of the respondents strongly agreed that the advancement of technologies limits the case of card skimming in the banks. 1.6% (n=3) are undecided, 56.9% (n=107) agreed, 4.8% (n=9) strongly disagree and 6.9% (n=13) disagreed with a mean of 4.00 and standard deviation 1.013. Note that more of the respondents believe that the advancement of technologies limits the case of card skimming in the banks.

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In addition, 55.3% (n=104) of the respondents agreed that Technologies adopted by banks help to control cases of cheque fraud. However, 3.2% (n=6) strongly disagree, 14.4% (n=27) disagree, 4.3% (n=8) remained undecided, while 22.9% (n=43) strongly agreed with a mean of 3.80 and standard deviation 1.049. The findings indicate that Technologies adopted by banks help to control cases of cheque fraud.

Lastly, 50% (n=94) agreed that Technologies help to check fraudulent activities such as phishing and social engineering, but 15.4% (n=29) disagreed. In comparison, 26.1% (n=49) strongly agreed, 3.7% (n=7) strongly disagreed and 4.8% (n=9) remain undecided with a mean of 3.79 and standard deviation 1.106.

The results show that more respondents agree that Technologies help to check fraudulent activities such as phishing and social engineering.

The findings reveal the following: Technologies help to control fraudulent activities in the banking system; new technologies make it easier for banks to avert identity theft and advancement of technologies limit the case of card skimming in the banks, Technologies adopted by banks helps to control cases of cheque fraud, Technologies helps to check fraudulent activities such as phishing and social engineering.

Discussions of Findings

The first model stated that mobile banking, internet banking and technological availability and access significantly and positively affect Fraud Detection. The model's explanatory power reflects that financial and technological advances caused 36% of variations in Fraud detection. In contrast, the remaining 64% of changes in Fraud Detection can be attributed to other variables outside the model. In conclusion, technological advances significantly impact fraud detection of listed deposit money banks in Nigeria.

The regression estimates of model two showed that mobile banking, internet banking and technological availability and access significantly and positively affect fraud prevention. The model's explanatory power shows that 33% of the variations in Fraud Prevention can be attributed to Financial and technological advances. The remaining 67% of changes in Fraud Prevention can be attributed to other measures outside the model. In conclusion, technological advances significantly impact fraud prevention of listed deposit money banks in Nigeria.

The regression estimates of model three showed that mobile banking, internet banking and technological availability and access significantly and positively affect Fraud Control. The model's explanatory power reveals that financial and technological advances caused 27% of the changes in fraud control. On the other hand, 73% of changes in Fraud Control can be attributed to variables outside the model. In conclusion, technological advances significantly affect fraud control of listed deposit money banks in Nigeria.

Conclusion

All the analyses revealed that financial-technological advances significantly impact fraud prevention, detection, and control of listed deposit money banks in Nigeria. Hence, technological advances significantly affect fraud prevention, detection and control of listed deposit money banks in Nigeria.

Recommendations

The study recommends the following based on its findings:

Management of deposit money banks should train its employees on using financial technology-based services for effective operations to enable the customers to appreciate

management's efforts in providing technological services to detect, prevent and control Fraud.

The management should adopt adequate financial technologies to improve the quality of service and identify customers' expectations to provide ideal electronic banking services capable of detecting, preventing and controlling Fraud. This will in turn, improve the goodwill and reputation of the banks.

Limitations and Suggestions for Further Study

This study is limited in scope as it focuses on Nigerian-listed banks in Ogun State, Sagamu, which could restrict the generalization of the results. To this end, other researchers could expand the scope to include other locations and sectors, such as the educational sector, the public sector/government parastatals, the manufacturing sector and others. Future researchers can explore the subject matter further by including other economies/nations in the analysis.

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