

Research on Operational Risk Management in First Bank of Nigeria (FBN Bank)

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Abstract

The FBN bank is the oldest and largest of the twenty-four banks operating in the Nigerian economy. The objective of this study is to assess the impact of Operational Risk Management on FBN Banks. Past literatures were reviewed and theoretical frameworks such as the extreme-value theory and risk theory of profit were adopted to support the study. The research adopted both qualitative and quantitative techniques, and the data for the study was employed from primary and secondary sources. Primary data questionnaires were distributed to 60 bank workers, but Only 50 surveys were returned from the served respondents, and the analysis was focused on those 50. Eventually, the respondents' responses were analyzed using simple percentages. Moreover, the secondary data were derived from the sampling deposit money institutions audited and publicly available financial statements of first bank of Nigeria. Following, the results were analyzed based on time series basis from 1999 to 2020 using regression estimates. The investigation indicated that operational risk and credit risk have a greater impact on FBN banking operations than market risk. Fraud and forgeries also have a negative impact on banking operations. However, fraud and forgery risk, operational risk, credit risk, and system risk abound in FBN banking operations, all of which must be managed effectively to improve bank performance and stability. Deductively from the survey analyses, the FBN banks' risk management procedures have effectively minimized the different risks that FBN banks face. Nevertheless, a case study was carried out and these necessitates the design of a risk indicator system that will further help first bank of Nigeria to map and curb their operational risks. The regression result revealed that operational risk management had a considerable impact on FBN banks'

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performance measures in Nigeria. Especially the Ratio of Non-Performing Loans to Total Loans (BRNPL), and Ratio of Cost to Income (BROCI) has a negative significant impact on the financial stability of FBN banks in Nigeria as measured by Return on Equity (ROE).

Keywords: Commercial bank; operational risk; risk management; financial stability.

1 Introduction

It is widely assumed that a country's financial sector, through its financial intermediation functions, contributes greatly to the growth and development of its economy. Akpasung and Gidigbi [1] argued that financial institutions play an intermediation role in the economy by assisting in the channeling of resources from the surplus idle sector to the deficit real sector, thereby facilitating productive activities, and that this intermediation role is a veritable process for investment, growth, and development [8-14]. In this study we will deal with risk management in banks namely with operational risk management in banks. Again, according to Duong, Huyen, and Huong (2018), the financial system, through banking, plays a critical role in economic development, and as a result, the banking sector must be strong in order to maintain financial stability.

Financial system stability is critical not just for financial institutions, but also for any economy's growth and development, because a financial crisis could result in major cutbacks in bank loans, as well as a drop in investment and growth [65]. Financial stability, according to Healey, Mosser, Rosen, and Tache (2018), is the ability of the financial system to promote and enhance economic processes, manage risks, and absorb shocks. It is a state in which the economy's systems for pricing, allocating, and managing financial, credit, liquidity, counterparty, and market risks are adequate to contribute to the economy's performance [49]. According to Dugguh and Diggi [32], bank failures have a wide range of negative implications that affect not only depositors but also investors, the general banking public, and the entire economy. They came to the conclusion that bank failures impede financial intermediation and efficient resource allocation, as well as individual well-being and economic advancement.

Many Nigerian banks have become financially stretched as a result of the emergence of one or more of these hazards, and have gone bankrupt as a result. For example, prior to the 2014 bank recapitalization reforms, approximately 35 banks were distressed and subsequently liquidated due to issues involving credit risk arising from inability to repay default loans, market risk arising from unfavorable exchange and interest rate movements, operational risk arising from poor risk management practices, weak corporate governance, and inexperience [39]. Risk management is particularly important in financial institution decision making since risk management must satisfy certain objectives to keep the organization functioning properly [43]. Singh and LaBrosse [69] agreed on the necessity of risk management in the banking sector when they stated that banks, like other businesses, will fail, and the likelihood of this happening is higher when risks in a specific banking concern are not well handled.

In addition, according to Zakaria (2017), effective risk management procedures are critical in the development of stable and sound financial institutions. The International Monetary Fund (IMF) (2019) backs up this claim by stating that the series of financial crises that occurred between the 1990s and 2008 highlighted the importance of effective systemic risk monitoring and management, which explains why the IMF has increased its efforts to assist countries in implementing policies that support sound financial systems. While credit risk, liquidity risk, and market risk appear to be the most significant risks facing financial institutions, there are other major risks that are equally important to the financial stability of banks and that, if not properly managed, could lead to bank failure. One of these risks is operational risk. Banks had traditionally focused on credit and market risk management, with only limited resources allocated to operational risk management, according to Prabhu and Shankar [62], until operational losses began to rise significantly over time, prompting regulators and banks to take a closer look at operational risk management [15-17].

De Jongh and Van Vuuren [33] looked into the role of operational risk in the financial crisis of 2007/2008, as well as the reasons that led to the crisis. Although the events leading up to the financial crisis were generally perceived as a credit crisis, the authors stated that operational risk factors played a key influence in determining the length and intensity of the impact, and that operational risk management should be addressed. Zaman and

Ali [74] agreed that the credit and liquidity crises, as well as the downfall of financial institutions around the world in 2008, were driven by poor operational risk management. Prior to the Basel II Accord's release in 1999, financial institutions did not place a high priority on operational risk. Financial institutions, as was widely assumed at the time, were exclusively vulnerable to credit risk. Financial organizations and regulatory agencies began to pay attention to operational risk after failures and fraud cases in some banks as a result of exposure to operational risk events.

According to Kneevi [45], the majority of bank failures are the result of internal frauds or insufficient processes and procedures that encourage employees to get involved in activities that expose banks to higher risk in order to achieve personal gain, and he gave an example of operational risk events on the LIBOR fraud case that was discovered in the summer of 2012 and resulted in a loss of about \$1 billion.

1.1 Objective of the study

The objective why we study Operational Risk in Banks is that risk is very important in our lives and knowing what risk is, is already a plus for us because it allows us to be more cautious even if we cannot avoid it. Writing my thesis in operational risk would help me in my professional life and each of us must know what is risk? what is operational risk? Given the place that operational takes in any company.

We also believe that writing our research will help us all to have a risk management vision of how the Bank functions especially how FBN Bank manages its operational risks.

1.2 Problem statement

There are numerous risks in banks activities ranging from credit risk to market risk Among those risks, it reveals that widest and fast evolving risk is the operational risk. Operational risk has become a growing source of worry for banks around the world. Due to their continual vulnerability to significant operational loss events and fraudulent operations, many banks have failed or are facing substantial financial difficulties. Indeed, the operation risk is the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk. According to Teply (2012), financial institutions have suffered multiple big operational loss events in recent years, including scandals at JPMorgan Chase & Co. (USD 6 billion) in 2012 and UBS in 2011. (USD 2.3 billion). The failure and subsequent closure of First NBC bank in 2017 was caused by operational risk, and the bank's failure cost the Federal Deposit Insurance Corporation (FDIC) around \$1 billion. Enloe state bank, which had deposits worth over \$31 million, was also closed in 2019 owing to fraud [46]. Also, according to Ogunbadewa (2013), HSBC UK was fined \$1.9 billion due to the bank's failure to oversee and govern anti-money laundering measures. Suren (2016) also mentioned incidents of operational losses in financial organizations such as Lloyds Banking Group and Barclays in 2006, which resulted in losses of €5.9 billion and €4 billion, respectively.

Barings Bank is one of the others (Drummond, 2008). Haven Trust Bank of Georgia in the United States went bankrupt in 2009 as a result of insufficient operational risk management, which resulted in rapid loan growth concentrated on high-risk construction sectors and poor loan underwriting. According to Nakaso [54], Daiwa Bank, an internationally active city bank, announced a loss of approximately \$1.1 billion in September 1995 as a result of the fraudulent conduct of an employee at its New York branch, and the bank was ordered by US regulators to close all operations in the US markets in November. According to Audit Board [2], as organizations grow and evolve, the complexity, frequency, and impact of poorly managed risks grow in lockstep, and losses from failure to properly manage operational risk have led to the failure of many financial institutions in recent years, with over 100 reported losses exceeding \$100 million. Furthermore, due to weak or ineffective operational risk management methods and policies, numerous banks in Nigeria have encountered financial trouble and have been liquidated or taken over [18-21]. Nigeria Merchant Bank Plc, Cooperative & Commerce Bank Plc, Metropolitan Bank Limited, and Group Merchant Bank Limited, for example, all failed due to losses incurred as a result of operational events such as poor risk management, noncompliance with credit policies, poor operational policies and procedures in the bank, weak human resources and capacity, weak corporate governance, and information technology compromise [39].

Poor risk management practices, the absence of basic control measures, the near total absence of corporate governance in most banks, a lack of adequate disclosure and transparency about banks' accurate financial positions, a poor operating environment, weak internal control, and insider abuse, among other factors, according to the CBN [31]. Insider misuse, regulatory violations, and directors' over bearing interest in loans and advances and other credit facilities, according to Olukotun, Olusegun, and Kehinde [59], accounted for certain bank collapses.

Conversely, Bassey, Tobi, Bassey, and Ekwere [3] identified weak corporate governance, a low capital base, illiquidity and insolvency, poor asset quality, and low earnings as some of the banking system's constraints. According to Hunyen and Huong [42], scholars and stakeholders in the banking industry are now concentrating their efforts on examining the factors that affect bank operations because this will aid in the formulation of appropriate strategies and policies to avoid financial crises that could threaten the banking system's sustainability and stability. According to Mohammed [50], financial distress in most countries is caused by a high incidence of non-performing loans, poor management, and poor credit policy, and that banks' performance is hampered by a lack of consideration for ethical values and good governance, as seen in the failures of All States, the Central Bank of Nigeria (CBN) withdrew the licenses of Trust Bank Plc, Lead Bank Plc, Assurance Bank Nigeria Limited, Trade Bank Plc, and Metropolis Bank Plc, Societe Generale Bank of Nigeria Plc, African Express Bank Plc, and Gulf Bank of Nigeria Plc in 2006, and Intercontinental Bank Plc, Oceanic Bank Ltd, and Bank PHB failed in 2011.

However, most of these studies have focused on other risks such as credit, liquidity, and occasionally market risk, with little or no emphasis on operational risk, which, according to Vysya and Gill [72], is the most dynamic and complicated in nature, influenced by a variety of factors including internal business processes, regulatory landscape, business growth, customer preferences, and even fads.

Some authors have conducted previous studies on operational risk management, but they were limited to only one bank or a few branches of a bank within a specific geographical location, such as Okeke, Anogoke, and Onuorah (2018), Kuriah [47], and Harelimana [40], while others, such as Zaman and Ali [75] and Olalere [61], only used one variable to measure operational risk and financial stability (2018). Iso, Okeke, Anogoke, and Onuorah [60] conducted a study on operational risk management and organizational performance of banks in Edo State, concluding that operational risk management has a negative significant effect on organizational performance of banks in Edo State, a finding that differed from the findings of other related studies such as Maina, Alala, Wabwile, and Douglas (2014). Again, several prior risk management studies, such as Okere, Isiaka, Adebis, and Oladunjoye (2018), focused on credit, market, and liquidity concerns in banks, with little or no emphasis on operational risk (2014).

This study will use operational risk management and financial stability to test these contradictory findings and fill any gaps, as well as introducing new variables such as the ratio of non-performing loans to total loans, cost to income ratio, and ratio of total loans and advances to total deposit as measures of operational risk, capital adequacy, and liquidity, in addition to the profitability.

1.3 Significance of study

Every organization's fabric is woven with operational risk, and effective risk management will increase visibility to material and emerging losses across front-line operations while encouraging more informed risk taking, improved product performance, greater brand recognition, and long-term financial results [35]. According to Epetimehin and Fatoki [37], in the wake of the phenomenal increase in transaction volume, high degree of structural changes, and complex technological support systems, managing operational risk is becoming an important element of sound risk management in modern day banks, and the Central Bank of Nigeria expects all Nigeria banks and other financial institutions to strengthen their operations. Integrating operational risk management strategy, methods, and tools into corporate goals will improve product performance, raise brand awareness, and help produce long-term financial gains [35]. This is why financial institutions have begun to develop particular structures and control mechanisms aimed primarily at operational risk [34].

Many banks have invested a significant amount of money in attempting to establish a framework for managing operational risk [22-26]; modern risk management, as a result, necessitates everyone's participation, whether through a strategic plan or within departments to access the risk scope, in order to achieve the business goal

Kuriah [48]. Institutions must now manage operational risk on purpose and within the parameters of the amount of risk they are willing to accept in order to achieve their strategic goals, which is determined by the size of a company's operational risk appetite (PWC 2014 as cited in Kuriah [48]).

As a result, all stakeholders in financial institutions, particularly the board and senior management, must place a greater emphasis on effective operational risk management. The goal of this research is to find out how operational risk management affects bank financial stability and how banks can successfully manage and mitigate risk to the bare minimum.

1.4 Research questions

In this study, we will try to answer to these following questions:

- i. To investigate the relationship between operational risks and FBN banks' stability.
- ii. The type of risk the first bank is prone to, and the various methods used by banks to hedge against risk.
- iii. Whether Fraud and Forgeries contribute to risk exposures in banks.
- iv. Whether the risk management techniques put in place have curbed the various operational risk in the bank.

2 Literature Review

The issue of operational risk has become a serious challenge for all market participants, especially in light of recent financial scandals. In fact, the consequences (colossal financial losses, bankruptcies, and so on) left no one unaffected. Regulators and market authorities have attempted to better understand this concept from this perspective. Their shared purpose is to eliminate or reduce the negative consequences of such hazards. First, we must identify enterprise operational risk, followed by a description of the methods and processes employed to mitigate its negative impact. Finally, we will offer a method for implementing the main risk indicators system. Operational risk is a risk that includes errors because of the system, human intervention, incorrect data, or because of other technical problems. Every firm or individual has to deal with such an operational risk in completing any task/delivery. The types of operation risk are:

- **Human Error:** We can also refer to this as a fat finger input error. This type of error is the most common and most significant risk to the organization or individual. It may also relate to the skill issue of the processor. This type of error evolves when incorrect input is because of human error. The reasons for incorrect input may be multiple, including incomplete information, incomplete understanding, insufficient knowledge, inconsistent processing, genuine input error, or more [27-30]. However, processing of such an error may affect the output seriously and may also lead to a loss.
- **Technical Error:** This includes system glitches. Even though everything is perfect, there are sometimes system issues like a slowdown, connectivity, system crashes, incorrect calculation by application, or a new missing bridge. Sometimes, the output received may be off from the actual expected result, but because of unknown technical defects, it may be challenging to catch [36,41,44].
- **Gap in Flow:** Sometimes, information is missing from the source itself because of data lag or restrictions. In such cases, the output gets affected. The required production varies from that desired and may put the process at risk.
- **Uncontrollable Events:** These include effects from an external environment like political scenarios, weather changes, syndromes affecting living beings, outdated technology, etc. which affect the performance and quality of processors and hence puts the output at risk.
- **Intentional Frauds:** There have been cases where intentional conflict of interests has arisen, resulting in an illegal profit to trade executors. Most of the organizations have a clause in their policies which the employees have to abide by, for fighting against conflict of interests and fraudulent practices, failing which they meet with extreme consequences. However, if such an event occurs, the firm has to bear monetary and defame losses, which are sometimes irrecoverable.

Operational risk, according to BCBS [4], is the risk of loss caused by insufficient or failing internal processes, people, and systems, as well as failures caused by external events. Legal risk is included in this definition, but strategic and reputational risk are not. According to Muriungi, Waithaka, Were, and Muriuki [49], the events resulting from the above failures and inadequacies of systems, people, process, and external events have now been categorized as operational risk, a nomenclature designed to promote risk visibility, risk management, and regulatory intervention. Because operational risk encompasses a wide range of hazards, it is one of the most common and critical risks that businesses confront. Many researchers, institutions, and large banks have attempted to come up with a universal definition, but it has evolved over time. Many banks "associate operational risk with settlement or payments risk, business interruption, administrative, and legal risks," according to some banks, including the BIS2 [5]. The BB (1999) definition of operational risk, which was adopted by the Basel Committee [6] [CD] and assumes that operational risk is "the risk of direct or indirect loss resulting from inadequate or failed internal processes, people, and systems or from external events," was widely criticized by industry for a lack of clarity in the definition of direct and indirect losses. After a rogue trader caused the collapse of Barings Bank in 1995, the importance of internal controls and corporate governance in managing financial losses associated with fraud, human errors, and technical failures, as well as other breakdowns in normal business processes and operations, became prominent in banking and regulatory circles (Peter, Gordon & Yueran, 2016).

Some institutions prefer to define operational risk in their own way. "The possibility for incurring losses in relation to people, project management, contractual specifications and associated documentation, technology, infrastructure failure and disasters, external influences, and customer relationships," according to Deutsche Bank (2005). As in the case of the global financial crisis triggered by the sub-prime mortgage crisis in the United States, which greatly influenced the global economy, this operational risk could arise from poor credit appraisal, approval, and monitoring processes, which could lead to credit risk, or inappropriate assets and liability management processes, which could lead to liquidity risk, as in the case of the global financial crisis triggered by the sub-prime mortgage crisis in the United States, which greatly influenced the global economy, especially with the takeover of Fanni (2016).

Operational risk can also develop as a result of system or human failure, resulting in late or non-delivery of regulatory returns, as well as violations of regulatory standards in transaction processing, posing a regulatory or compliance risk. The efforts of the banks to standardize operational risk have resulted in a greater understanding of the problem. Indeed, as previously said, the banking laws (Basel I and Basel II) have attempted to not only create a comprehensive definition of operational risk, but also to make it a prominent concern of all businesses due to its unpredictable consequences. Nigerian financial institutions, like their counterparts around the world, are exposed to various risks as a result of their processes, procedures, and other activities. Customers use banks for financial, insurance, and investment services, and the nature of these services produces risks that, if not properly and effectively handled, can have a significant influence on the banks' financial health [44,51-53].

The chairman of the Basel Committee, according to Medovan and Berg- Yuen (2009), emphasized that banks will have to create more rigorous techniques to measuring and managing their operational risk exposures, as well as keep capital that is proportionate with the risk. The Basel Committee released an informal poll that illustrates the growing recognition of the importance of operational risks, which are not market or credit concerns, but have become the primary cause of certain major financial and business issues in recent years [34]. Basel II incorporated two additional types of risk, Market and Operational Risks, in order to govern risk management in big internationally active banks and promote risk-based regulatory capital for all risk exposures.

2.1 Theoretical framework

Many academics have utilized various hypotheses to explain the impact of operational risk management on deposit money bank financial stability. In this study, the risk theory of profit, extreme value theory, and expected income theory will all be investigated. The study, on the other hand, used extreme value theory and profit risk theory. Extreme value theory was chosen because it provides a better analysis of events, activities, or financial risks that could result in significant operational risk losses, whereas risk theory of profit addresses earning capacity in relation to risk exposure in order to ensure deposit money financial stability.

2.1.1 Risk theory of profit

Hawley (1893) developed a hypothesis about the relationship between risk and profit, claiming that business compensates workers not just for their labor but also for their worries, and that without danger, there can be no big profit for an entrepreneur. Hawley believed that production elements should not be restricted to the three variables of land, capital, and labor, but should also incorporate risk taking, with the bigger the risk, the larger the profit. This was corroborated by Landqvist and Stalhandske (2011), who concluded that entrepreneurship would not be as fascinating as it is today if risk-taking was not involved.

2.1.2 Extreme value theory

According to Gumel (1958), as cited by Bukwimba (2015), Nicolas Bernoulli explained the mean largest distance from the origin when n points lie at random on a straight line of length t in 1709, when he explained the mean largest distance from the origin when n points lie at random on a straight line of length t . According to Teply (2012), one of the early research on operational risk management was conducted in 1997 by Embrechts, Klüpperberg, and Mikosch, who modelled severe occurrences for insurance and finance.

According to Garrido and Lezard (2013), extreme value theory is a branch of statistics that deals with extreme deviations from the median of probability distributions, i.e. based on the language of probability theory and thus the occurrence of rare events that are not within the range of available data; it is one of the standard approaches to studying risks; it is a branch of statistics that deals with the extreme deviations from the median of probability distributions.

2.1.3 Anticipated income theory

Prochanow created the anticipated income theory in 1949 and published it in his book "Term Loan and Theories of Bank Liquidity." Regardless of the type and character of a borrower's business, the bank aims to liquidate the term loan from the borrower's anticipated income, according to this notion. This idea proposed that a bank's liquidity can be managed by properly arranging and structuring the bank's loan commitments to customers, and that liquidity can be planned if scheduled loan redemption by customers is based on the individual borrower's future (Olanrewaju and Adeyemi, 2015).

According to Fagboyo, Adeniran, and Adedeji (2018), the anticipated income hypothesis states that liquidity can be guaranteed if scheduled loan repayments are paid on the borrower's future income. The authors emphasized that the anticipated income approach, rather than relying on collateral, links loan repayment to income. While granting this loan, the bank places restrictions on the borrower's financial activity, and when granting a loan, the bank considers not only the security but also the borrower's expected profits.

3 Case Study on Operational Risk in FBN Banks in Nigeria

3.1 Background of FBN bank

The First Bank of Nigeria Limited (First Bank) is the leading bank in West Africa, with a deep societal effect. The Bank, which has been providing development-oriented services for over 126 years as the region's leading financial inclusion provider, provides a full range of retail and corporate financial services to over 17 million customer accounts through over 44,000 business outlets. First Bank is one of Africa's most enduring financial services companies, with international presence through its subsidiaries, FBN Bank (UK) Limited in London and FBN Bank (France) Limited in Paris. FBN Bank also has offices in the Democratic Republic of the Congo, Ghana, Gambia, Guinea, Sierra Leone, and Senegal, as well as a representative office in Beijing. First Bank has been quick to promote the digital economy in Africa, issuing over 10 million cards, making it the first bank in Nigeria to do so.

Since its founding in 1894, FirstBank has consistently focused on the principles of solid corporate governance, strong liquidity, efficient risk management, and leadership in order to build relationships with customers. The Bank has played a vital role in the Federal Government's privatization and commercialization plans over the years, leading the financing of private investment in infrastructure development in the Nigerian economy. With

over 228 million users on its USSD banking service through the nationally famous *894# banking service and over 3.4 million users on its Firstmobile platform, First Bank's financial inclusion and cashless transaction initiative has paid off.

The teeming customers of the FirstBank Group are serviced from a network of over 700 business locations across Africa. To promote financial inclusion and reach the unbanked and under-banked, FirstBank has an extensive Agent Banking network, with over 53,000 agent locations across Nigeria. The Bank specializes in retail banking and has the largest client base in West Africa, with over 18 million customers. For eight consecutive years (2011 -2018) FirstBank received the Best Retail Bank in Nigeria award by The Asian Banker. FirstBank has a The FirstBank Group employs over 16,000 staff and is proudly a multiple Best Place to Work awarded. It operates along four key Strategic Business Units (SBUs) Retail Banking, Corporate Banking, Commercial Banking and Public Sector Banking. It was previously structured as an operating holding company before the implementation of a non-operating Holding Company structure (FBN Holdings) in 2011/2012. Consequences of not managing operational risk effectively might include significant operational losses, regulatory fines or censures with the ultimate penalty being the loss of our banking license. Common types of loss include: Direct or indirect losses through the failure of personnel, technology, processes infrastructure, documentation; opportunity loss, regulatory fines, loss through fraud or theft, interest claims and recovery costs. Seeking to minimize actual or potential losses management of operational risk is a key responsibility of all managers. Some losses, such as operational errors are inevitable and are a normal business cost. But acting within policy requirement will help ensure these costs are kept with acceptable levels and potential losses are minimized. This policy is consistent with group's overall strategy and its risk policy and principle. It also complies with standards and rules of regulators and relevant advisory bodies [55-58].

3.2 Activities of the bank

FBN bank Nigeria limited provides a comprehensive range of financial services. FBN bank is committed to delivering the gold standard of value and excellence to customers and always putting their needs first with the provision of sound financial knowledge, first class service and customer experience.

The bank provides various channel to including mobile money, internet banking to facilitate more convenient banking experience to our customers. We provide loans and customer and offer trade services as well as treasury activities. FBN bank, is a bank duly registered under the law of the federal government of Nigeria. The bank current geographical region is located on the west of Sub-saharan continent (west Africa-Nigeria). The bank has increased its various channels to facilitate more convenient banking experience to our customers with establishment of bill payment platforms, VISA and verve acquisition for our on-and offsite ATMs, online banking, transfer and eStatement service.

3.3 Operational risk management in FBN banks

3.3.1 Implementation of internal and external operational risk indicator system

Each organization must be able to capitalize on previous mistakes in order to effectively handle future issues. In order to gather incidents, a clear and rigorous structure is required. This allows the organization to develop a strong risk culture while simultaneously increasing actor vigilance. Furthermore, incident management, notifications, and action plans may be managed and monitored more effectively. Companies should, on the one hand, create an internal incident database, which is a gradual process. Indeed, the first phase entails gathering information about previous instances. It is, nevertheless, critical to specify each person's roles and responsibilities in the discovery of each incident. The second step is to define the perimeter of the incidents that were discovered in the previous step. This is mostly about defining data collection thresholds, deficits, and near-losses. The next step is to analyze strategies for estimating the estimated impact of detected incidents [63,64,66].

Enterprises, on the other hand, may be subjected to rare and extreme situations that aren't always recorded in their internal database. As a result, it is strongly advised to use an external database that contains events that have already occurred in companies operating in the same activity sector, for example, or in the same geographic area. As a result, the organization is able to effectively manage risks.

3.3.2 Installation of a control system

The nature, frequency, and originators of controls are all varied. Their main purpose of installing controls is to maintain the enterprise's activity's stability by ascertaining: Assurance of enterprise integrity; detection of anomalies based on abnormalities in occurrence rates; constant evaluation of the performance of the risk monitoring system. In order to ensure good risk management, which will boost firm performance and sustainability, this sort of control must be dynamic and recurring.

3.3.3 Future risks anticipation

The creation of a detailed risk mapping system that leads to a key risk indicator system improves future risk visibility.

- Risk Mapping: Naturally, the goal of risk mapping system is to identify important hazards in a systematic manner. This system is typically updated once a year, although it might be evaluated more frequently if major events occur. The risk mapping system identifies important operational risks that could have a negative impact on the firm. Their priority, on the other hand, is based on a number of factors, the most important of which are impact, probability, occurrence frequency, and actual level of control. There are too many expected goals from establishing such a risk mapping system, but the most important ones are: Establishing an internal control system and/or risk management program; Enabling management to establish a strategic plan and make decisions when corrective actions are needed about subsequent risk exposure; and Enabling management to establish a strategic plan and make decisions when corrective actions are needed about subsequent risk exposure.
- Scenario Analysis Related to Specific Risks: This enables for the identification of potential risk pathways as well as aggravating variables. Implementing such a system necessitates a high level of knowledge. This is a bottom-up strategy. Risks are, in fact, first identified through their causes and then mapped in each business line. They are then measured, either by control and monitoring indicators or by experts from each business line, based on the frequency of occurrence and the severity of predicted losses. This method complements the company's other risk management tools. Indeed, some actors employ this strategy exclusively in the case of high-impact events with a limited probability of occurrence. However, in order to make good use of subjective risk quantifications, this strategy must be well-structured and logical.
- Key Risk Indicators System: Risk indicators have made it possible to monitor risk exposure and predict the occurrence of dangers through a connected warning system. Given the nature of these indicators and their evolution through time, it is possible to conduct a continuous assessment of risk and its surroundings. As a result, risks can now be detected early. The defined indicators will then be summarized in a dynamic dashboard, allowing industry participants and risk managers to make daily decisions based on the enterprise's risk exposure. However, in order to ensure the system's effectiveness and long-term viability, it's a good idea to double-check that each indicator is appropriate and clear. In addition, each indication should include information on the precise exposure to each indicated risk. Finally, the data utilized to calculate these indicators must be accurate. Finally, in order to have real-time information, the system should be updated as frequently as possible [67,68,70].

3.4 Key Stages in risk management process

The five steps of the risk management process are described in the following parts [7,4].

- Identifying the Risk: All risks that could jeopardize the achievement of the company's goals must be identified. This step necessitates a thorough examination of transaction processing as well as a thorough examination of the existing control system. All material items, activities, processes, and systems, in fact, have operational risk. (ISO/Guide 73, 2009) Risk identification entails identifying risk sources, events, their causes, and their potential effects.
- Risk Assessment: Risk assessment entails calculating the financial impact and frequency of occurrence. This stage allows you to identify big risks that need to be addressed as soon as feasible.
- Risk Processing: This step entails deciding on a risk management strategy and putting it into action. Risk can be managed in a variety of ways, including: transferring risk to the market or another organization;

reducing or eliminating risk's impact through the implementation of an action plan that aims to improve transaction processing and strengthen control systems, among other things; accepting risk without taking any specific action.

- Risk Monitoring and Reporting: Reporting ensures that risks are followed up on. Indeed, they enable entire corporate entities to track the progression of their risks and, if necessary, take remedial action. This risk follow-up also provides information on the success of the action plans that have been implemented. Other preventive or remedial activities could be advised if necessary. Risk monitoring should not be restricted to events or failures, but should also include proactive follow-up based on risk control by operational employees.

Setting Up of Alert Thresholds

All of these completed stages would be worthless to the organization if the project ended with the adoption of a collection of indicators without establishing a strategy to interpret them or an action plan to mitigate their impact. As a result, it's critical to set a limit value for each monitored signal above which the organization should take preventive or corrective action.

Risk managers must determine a normal level and a minimal threshold level for each key indicator, according to the IOR. When this point is reached, a timely corrective or preventive measure must be implemented. For the same indicator, multiple thresholds can be defined. Different degrees of validation are required in this instance. When an indication exceeds the first level of threshold, the operational manager can act on his or her own. When the set threshold is exceeded on the second level, the N + 1 hierarchy should take the necessary action. It's vital to remember that while setting warning thresholds, the enterprise risk appetite should be considered.

Process for selecting these indicators

Following that, a procedure for defining events that should prompt the updating of operational key risk indicators must be established. This technique should also explain how these indicators were chosen. The frequency with which critical risk indicators should be examined; The people or entities who have the authority to authorize adding new indicators, amending or canceling existing ones; and The events that cause indicators to be updated.

Management of operational key risk indicators

In order to eliminate human errors while collecting or processing data, the IOR suggests automating manual processes for calculating indicators as much as possible. However, if automatic indication manufacture is not possible or is too expensive, the corporation can process manually. In this instance, it's a good idea to create a procedures manual that explains how to collect data manually. The institute advises that operational key risk indicators be updated on a regular basis, either by adding new ones or altering current ones. Indeed, the ever-changing environment in which the businesses operate necessitates that they stay current. As a result, they may be exposed to additional risks when launching new goods or business lines. Risks might also arise as a result of changes in the legal and/or regulatory framework. The institute also suggests that thresholds be reviewed on a regular basis. The key goal is to ensure that they are in line with the enterprise's risk aversion level while also remaining compliant with the overall plan.

Reporting of operational key risk indicators

All levels of the organization should have access to the operational critical risk indicators system. According to the Institute of Operational Risk, operations managers, executive managers, and board of directors should get these indicators in the form of a personalized dashboard tailored to their needs and responsibilities. Colors should be assigned to each indicator based on its value: green for normal values, red for values above the alert threshold, and orange for values between normal and threshold values. The following conditions must be met in order for reports to be produced:

- Relevance: As previously stated, indications must be relevant. In addition, special attention should be made to reports in order to prevent producing too numerous and too thorough reports with a high number of indications.

- **Simplicity:** Reports should be free of confusing words, tables, and mathematical calculations.
- **Rapidity:** Reports should be issued as soon as possible to ensure that the data used in calculations is current.
- **Accuracy:** Inaccurate measurements will exaggerate genuine operational risk exposure. As a result, measures for ensuring the correctness of metrics generated should be adopted.
- Reports should show a clear tendency of the selected indicators to give an idea of their volatility and likely direction.

3.5 Implementation strategy for the key risk indicators system

A key risk indicator is a risk management metric that tracks the likelihood and impact of a specific risk in relation to an organization's risk appetite. The operational critical risk indicators offer managers with real-time information so they can make the necessary modifications to meet strategic and operational goals. As a result, key risk indicator systems (KRIs) are effective instruments for predicting the presence of risk in the case of exposure indicators and curbing its negative influence on results. Key risk indicator systems (KRIs) help managers achieve a variety of aims in addition to risk monitoring and management. They can, in fact, create explicit goals for lowering operational risks while simultaneously raising operational managers' risk awareness. They are used to receiving key performance indicators (KPI) dashboards), but this is not the case with KRIs. Receiving key risk indicators (KRI) dashboards will thus raise their awareness of the company's risks and encourage them to consider this essential factor in their everyday decisions. Furthermore, the KRI system allows operational managers to track the progression of upper management's risk appetite. Indeed, the specified alert level for each key risk indicator reflects the company executives' risk appetite, i.e., the amount of risk the organization is ready to absorb and bear.

Finally, the KRI system allows for the production of risk reports for operational managers, directors, and external regulators. Recent increases in operational hazards have necessitated the development of specialist risk management systems, particularly for organizations in the financial or banking sector. Indeed, these types of technologies are frequently used by such businesses to better assess their operational risks.

Nonetheless, the major purpose of this work is to propose to risk professionals at FBN banks, an extensive documentation assistance that will enable them to identify and foresee the difficulties and constraints that will be encountered in the implementation of such a system in general. This research work will also enable them to use a practical technique based on sound risk practices to successfully implement this system. We feel that the proposed strategy will be extremely beneficial to the control of operational risk. Furthermore, financial institutions and companies in a variety of industries can readily use this approach.

3.5.1 Identification of operational key risk indicators methodology

The five-step process we recommend for identifying operating key risk indicators (KRIs) is as follows:

- **Approach 1: Define the risk perimeter to be managed:** The firm should concentrate on significant risks for effective operational risk management. This type of risk can have a genuine and/or significant impact on a business's financial statements. The level of significance used to determine whether a risk is significant or minor varies per firm (revenues, outcomes, total asset, risk sensitivity, and so on). Nonetheless, these should be decided by upper management. As a result, important risks to monitor are those whose annual impact surpasses management's actual standards. Throughout the process of identifying the company's primary risks, managers can return to the operational risk mapping as a guide.
- **Approach 2: Key risk indicator (KRI) dashboard receivers should be identified;** and suitable indicators should be made available to them based on their functions. Sending important indicators related to risks within each operational manager's scope of intervention is recommended by relevant good practices. The hierarchy level must be used to aggregate these indicators. They must also be available for the risk manager, if one exists, as well as internal controllers and auditors to target their checks.
- **Approach 3: Identifying players who will take part in the session on defining indicators:** It is critical to include managers who would utilize indicators in the KRI identification workshops for a successful process. All operational managers in charge of managing and monitoring important risks must be identified and invited to training sessions. The major aim of these sessions is to explain the KRI system's

objectives, as well as the methodology for identifying indicators and setting thresholds. Because of the critical role he will play in the definition of indicators and thresholds, the risk manager should also attend this training session.

- Approach 4: Players who will participate in the session on defining indicators in the KRIs identification approach should be trained. i.e., A training session on the process of identifying risk indicators is required for designated actors. This session should cover the following topics: Definition of basic concepts: risk, major risk, key risk indicator, exposure indicator, proven risk indicator, environment indicator, specific indicator; presentation of the objectives for establishing an operational key risk indicators system; presentation of the methodology for identifying key risk indicators and their thresholds and presentation of the objectives for establishing an operational key risk indicators system.
- Approach 5: Holding workshops for KRI identification and threshold defining in accordance with the pre-planned schedule. However, there are two sorts of indicators: (a) exposure indicators and (b) proven risk indicators, which can be assessed before or after a danger occurs. Therefore, the following steps should be followed in order to determine exposure indicators: Determine the indicator that would quantify each identified source of risk; identify potential sources of each selected significant risk.

In terms of proven risk indicators, the following is the procedure for identifying indicators: Determine the ramifications of each key risk; Define an indicator that will be used to quantify each risk consequence that has been identified.

Although, for one risk, the two types of indicators can be combined to ensure effective monitoring both before and after the risk occurs.

3.5.2 Creating alert thresholds for the banking management process

It is suggested that the KRI identification work be formalized in the form of data sheets that include all characteristics of each defined key risk indicator, such as the type of indicators (automatic or manual), the calculation frequency, the alert thresholds, and the person responsible for implementation, among other things. It is appropriate to create two thresholds for each recognized indicator, which may be numbers, amounts, percentages, or ratios, depending on the nature of the indicator:

- A threshold SL, referred to as the soft limit, below which the indicator indicates that the probability of occurrence is lower than the company's acceptable level;
- A threshold HL, referred to as the hard limit, above which the indicator indicates that the probability of occurrence of the underlying risk is high.

However, each warning level should be determined in cooperation with the bank's operational managers as well as the risk manager. In addition, when determining those thresholds, the institutions strategy and risk aversion should be considered. Consider the following scenario: an organization wants to determine the average number of vulnerabilities per system on its network. It establishes the following:

Green = <15% system-wide high-level vulnerabilities

Amber= [15%-20%] high-level vulnerabilities per system

Red = any system with more than >20% high-level vulnerabilities.

Table 3.1 Key risk indicator dashboard template

Risk	indicator	Date/period	Actual value	Previous value	Trend	Alert threshold		
						Green	Amber	Red
Issuer risk	Issuer ratio		14%	13%	↑	<15%	[15%-20%]	>20%

Table 3.2. The color code used to understand the KRI

GREEN	The indicator's value is normal, indicating that the company is not vulnerable to any underlying risks. The threshold's value is less than 'SL'. As a result, no action is necessary at this level.
AMBER	The management must pay close attention when deciding whether or not to take action. reasons being that the indicator's value is higher above the typical value, indicating a significant danger of exposure. Hence, the threshold value is somewhere between 'SL' and 'HL.'
RED	The indicator's value is rising, indicating a high level of exposure to a major risk. i.e., The threshold value is greater than 'HL'. therefore, to manage risk, immediate action should be taken.

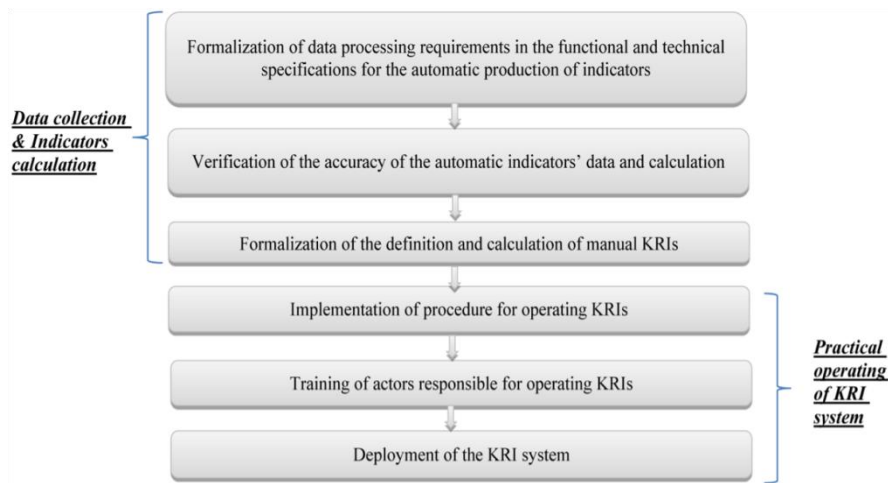


Fig. 3.1. Implementation steps for the KRI system

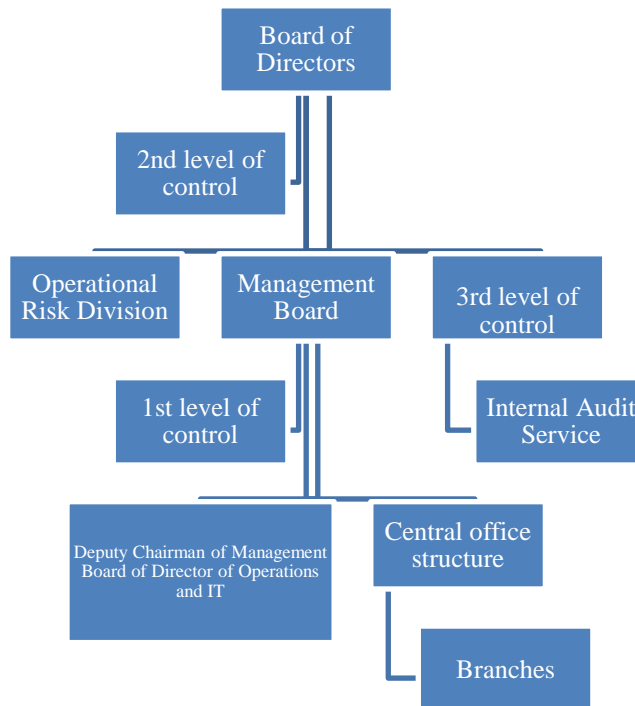


Fig. 3.2. Operational risk management bodies in Fbn Bank of Nigeria

4 Methodology

The study's population is the first banks of Nigeria (FBN), which is currently estimated to be a Nigerian multinational banking and financial services corporation based in Lagos. It is West Africa's leading bank, having an impact that is woven into the fabric of society. However, because First Bank of Nigeria Plc is Nigeria's oldest and largest bank, it was chosen as the sample to be used. In this chapter we explained which are functions and activities of banks in general.

4.1 Data sources

The main source of data for this research was primary, with secondary sources supporting it. The information was gathered by administering questionnaires to 60 employees of First Bank Nig PLC at their headquarters on mainland Street in Lagos. Only 50 surveys were returned from the served respondents, and the analysis was focused on those 50. Moreover, the secondary datas were derived from the sampling deposit money institutions audited and publicly available financial statements. The data's trustworthiness is confirmed by external auditors and regulators certifying the financial statements, as well as the board of directors' approval.

4.2 Research design

The sample size of this study consisted of FBN banks selected from the total population of twenty-four deposit money banks in Nigeria as at November 30, 2020 and the data collected covered twenty-one-year period from 1999 to 2020.

Simple percentages were used to assess the data acquired from the questionnaires. The hypothesis of the study was tested using the multiple regression analysis statistical technique with a significance threshold of 5%. In order to acquire existing secondary data from the FBN bank, this research used an ex post facto research design. In order to choose samples from the study population, this study used a convenient sampling strategy, which is one of the non-probability sampling strategies. This sampling strategy was utilized since FBN bank was purposefully chosen as sample from the general population due to the ease with which the relevant data for the study could be generated.

4.3 Model specification

The independent variable or explanatory variable in this study is operational risk management, while the dependent variable is FBN bank financial stability. The study used the following multiple linear regression model to investigate the association between operational risk management and financial stability in FBN banks. The study used the following models from the work of Adegbe Fojajimi Festus and David Olumuyiwa Sunday to evaluate the relationship between operational risk management and financial stability of deposit money banks in Nigeria (2017).

Ratio of Non-Performing Loans to Total Loan (RNPL), Ratio of Cost to Income (ROCI), and Ratio of Total Loan and Advances to Total Deposit were used to assess operational risk management (RTLTD). Conversely, return on equity (ROE) was used to assess financial stability (dependent variable).

$$\begin{aligned}
 FS &= f(\text{ORM}) \\
 \text{ROE} &= f(\text{RNPL}, \text{ROCI}, \text{RTLTD}) \\
 \text{ROE} &= \beta_0 + \beta_1\text{BRNPL} + \beta_2\text{BROCI} + \beta_3\text{BRTLTD} + \Sigma
 \end{aligned} \tag{1}$$

Where:

Y = Return on Equity (ROE)
 X1=Bank Ratio of Non-Performing Loans to Total Loan (BRNPL),
 X2= Bank Ratio of Cost to Income (BROCI),
 X3= Bank Ratio of Total Loan and Advances to Total Deposit (BRTLTD).
 Σ = Error Term

4.4 Research expectations

In order to evaluate the relationship between operational risk management and financial stability of FBN banks, We expect that there should be a negative impact of operational risk management on the financial stability of FBN banks. This would be supported by the hypothesis that extreme value theory is a useful tool for analyzing activities, or financial risks that could result in large operational risk losses for financial institutions, and that risk theory of profit is a useful indicator for managers in determining earning capacity in relation to risk exposure. The risk theory of profit postulated by Hawley who believed that production elements should not be restricted to the three variables of land, capital, and labor, but should also incorporate risk taking, with the bigger the risk, the larger the profit.

5 Analysis and Interpretation of Result

Simple percentages were used to assess and analyze the data acquired from the questionnaires. However, the hypothesis of the study was tested using the multiple regression analysis statistical technique with a significance threshold of 5%.

5.1 Respondents age group

Table 1 below reveals the respondents age categories. It appears that there were no respondents within the age group of 19 and under. However, 30% of the respondents fall within the age category of 20-29 years, 4% of the respondents fall within the age category of 50-59 years, 10% fall within the age category of 40-49 years, 4 % falls within the age group of 60 years. Nevertheless, majority (52%) of the respondents fall within the age category of 30-39 years.

Table 1. Respondents age group

Respondents Age Group	Frequency	Percentage
19 and under	0	0.0
20-29	15	30.0
30-39	26	52.0
40-49	5	10.0
50-59	2	4.0
60+	2	4.0
Total	50	100

Source: researchers field survey, 2021

5.1.1 Respondents gender

Fig. 1 shows the gender of respondents in terms of male and female classification respectively. We deduce that, 45% of the respondents were male while 55% of the respondent were females. This connotes that both genders are represented true and fair without biases in the recruitment process and employee selection.

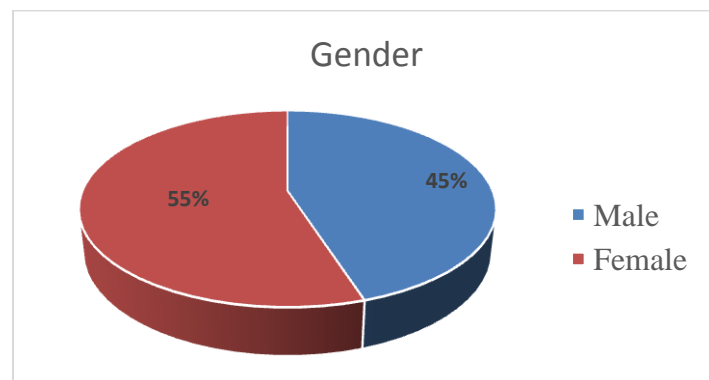


Fig. 1. Respondents gender (management and employees)

5.1.2 Respondents educational background

Table 2 represents the educational background of respondents. It shows that none were high school graduates, 6% of the respondents were two year/diploma/college leavers respectively. 40% of the respondents were bachelor degree certificate holder, 34% of the respondents were master’s degree certificate holder, 8% of the respondents hold a professional degree from the institute of chartered accountants of Nigeria (ICAN) and association of accounting technicians (AAT) respectively, while 4% of the respondents were PhD degree holders.

Table 2. Respondents educational background

Respondents Educational Background	Frequency	Percentage
High school graduate	0	0.0
Two year/ diploma/ college	3	6.0
Four year/bachelor’s degree	20	40.0
Graduate/ master’s degree	17	34.0
Professional degree for example ICAN, AAT, MD, DOS etc.	8	16.0
Postgraduate degree/ PhD	2	4.0
Total	50	100

Source: researchers field survey, 2021

5.1.3 Respondent units

From Table 3 the various units to which the respondents are attached to are been demonstrated. 16% happens to work at the head office while 84% of the respondents works at the branch office.

Table 3. Respondents units

Respondents’ units	Frequency	Percent
Head Office	8	16.0
Branch Office	42	84.0
Total	50	100

Source: researchers field survey, 2021

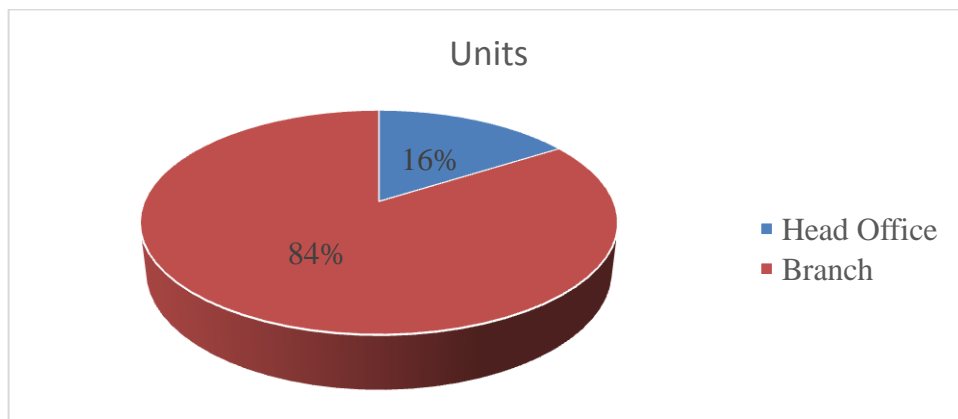


Fig. 2. Respondents gender (management and employees)

5.1.4 Respondents job position

Table 4 and Fig. 2 represents the various job positions held by respondents. It indicates that majority (32%) of the respondents works in the operation management department, 16% of the respondents works at the credit management department, 26% of the respondent’s position in retail credit management department, 6% positions are in the company business management. Conversely, 20% position are in other departments.

Table 4. Respondents job position

Respondents Job Position	Frequency	Percent
Credit Management Department	8	16.0
Operation Management Department	16	32.0
Retail Credit Department	13	26.0
Company Business Department	3	6.0
Other	10	20.0
Total	50	100

Source: researchers field survey, 2021

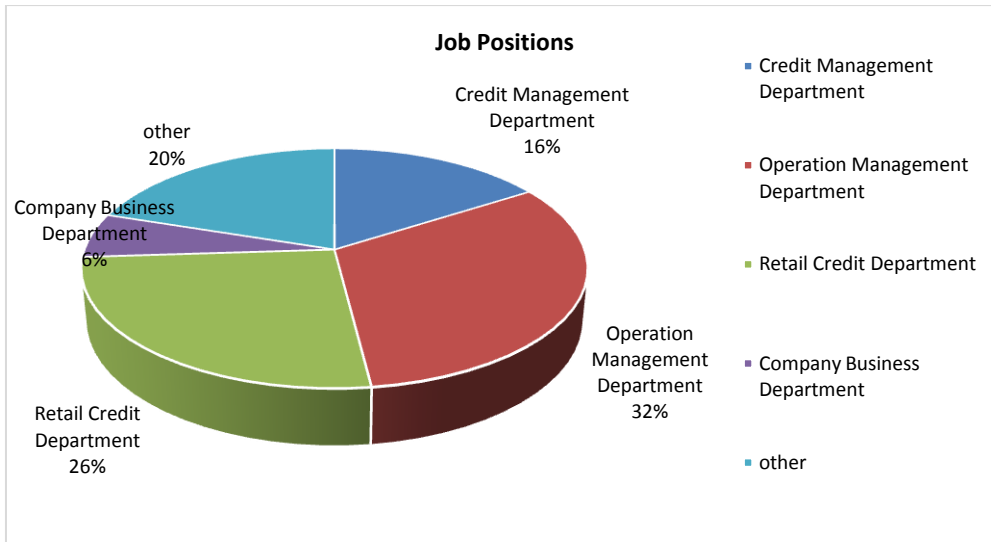


Fig. 3. Respondents job positions (management and employees)

5.1.5 Respondent’s banking experience

Fig. 4 shows the respondents banking experience. It represents that 22% of the respondents have 1-2years banking experience, majority (40%) of the respondents have between 3-5 years banking experience. However, 30% have 6-10 years banking experience, and 8% have 10 or more years banking experience.

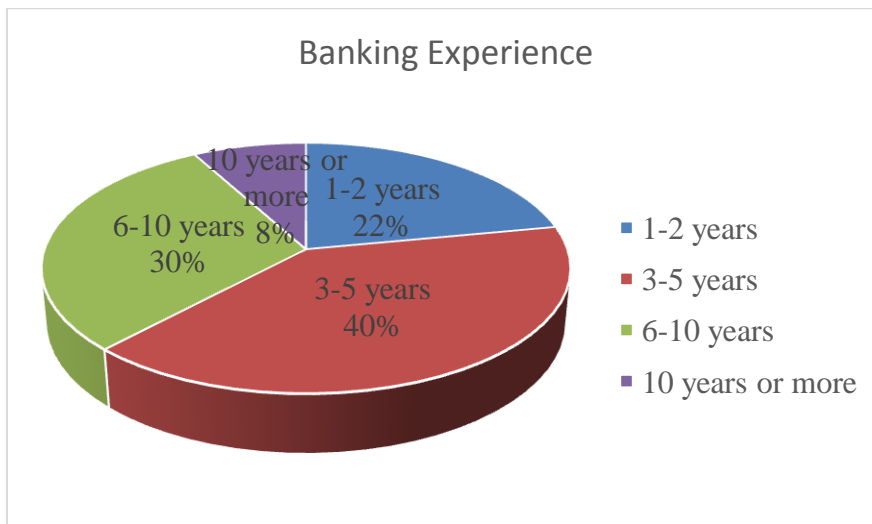


Fig. 4. Respondents banking experience

5.2 Main data analysis

5.2.1 Type of risk in the FBN bank

According to Table 5, 18 respondents regarded credit risk as the most serious threat to the bank's operations. system risk and Operations risk come in next ranking, with 24 percent and 32 percent of respondents, respectively. The survey also revealed that Interest rate risk and liquidity risk have less impact on FBN bank because the banks benefit more during periods of high interest rates and may choose to lower loan and advance amounts during periods of poor liquidity. As a result, only a small fraction of respondents believes the bank is vulnerable to them.

Table 5. The type of risk the first bank is prone to

Types	Frequency	Percentage	Cumulative percentage
Valid credit risk	18	36.0	36.00
Interest rate risk	01	02.0	38.00
Liquidity risk	03	06.0	44.00
Operation risk	16	32.0	76.00
System risk	12	24.0	100.00
Total	50	100	

Source: field survey, 2021

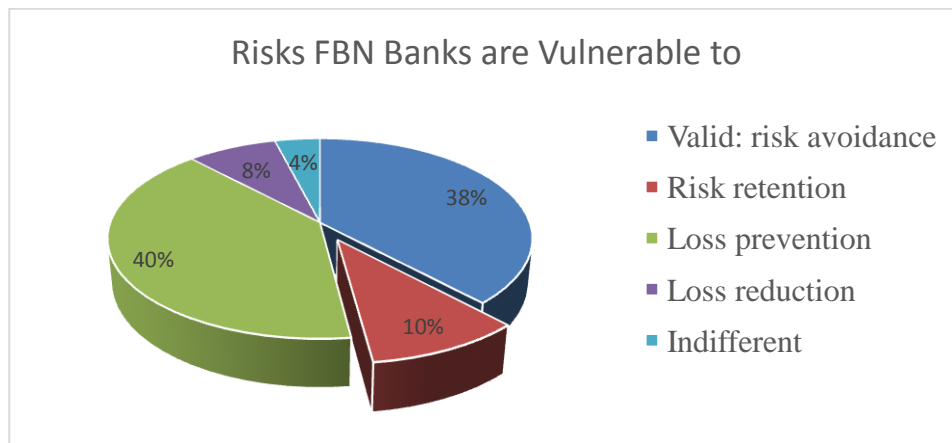


Fig. 5. Pie-chart distribution of FBN Banks vulnerable risks

5.2.2 Methods used by bank to hedge against risk

According to the data shown in Table 6, 38 percent of respondents chose risk avoidance, 10 percent chose risk retention, and 40 percent chose loss prevention as the various ways utilized in the bank to hedge against risk. Only 8% of those polled chose loss reduction as a risk management strategy. As a result, loss prevention is the most widely utilized type of risk hedging in the banking industry, followed by risk avoidance.

Table 6. Various methods used by banks to hedge against risk

Feedback	Frequency	Percentage	Cumulative percentage
Valid: risk avoidance	19	38.0	38.00
Risk retention	05	10.0	48.00
Loss prevention	20	40.0	88.00
Loss reduction	04	08.0	96.00
Indifferent	02	04.0	100.00
Total	50	100	

Source: field survey, 2021

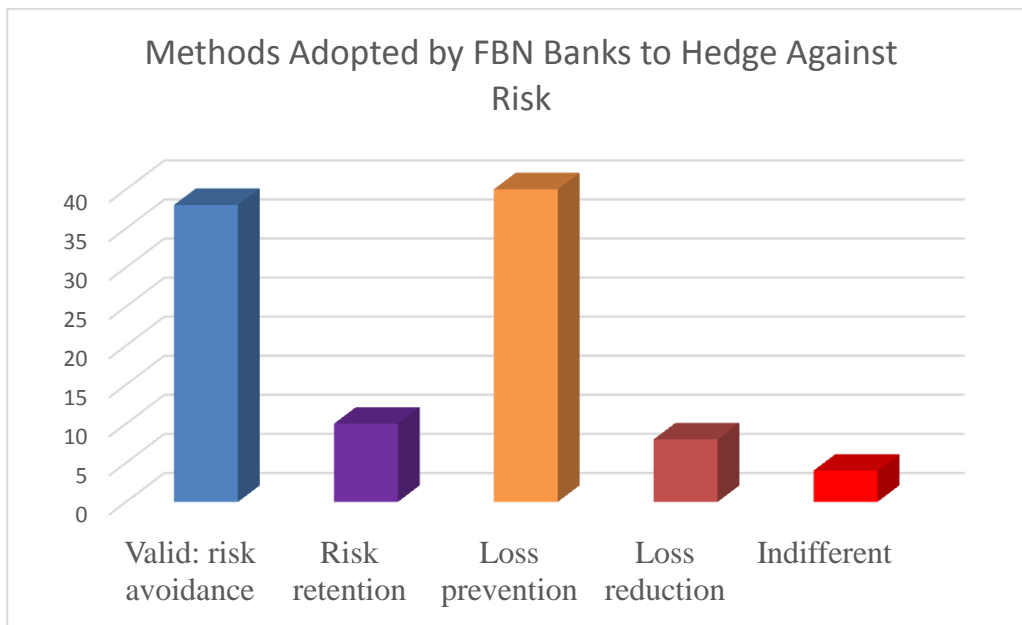


Fig. 6. Histotrophic representation of methods adopted by FBN banks to hedge against risks

5.2.3 Risk exposures in the FBN bank

According to Table 7, 70 percent of respondents strongly agree that fraud and forgeries add to risk exposures in the banking business, whereas 24 percent agreed. Conversely, only 4% and 2% of respondents were indifferent and disagreed with the premise, respectively. As a result, we can conclude that fraud and forgeries play a crucial role in the FBN banking industry's risk exposure.

Table 7. Whether fraud and forgeries contribute to risk exposures in banks

Feedback	Frequency	Percentage	Cumulative percentage
Valid: SD	00	0.0	00.00
D	01	02.0	02.00
I	02	04.0	06.00
A	12	24.0	30.00
SA	35	70.0	100.00
Total	50	100	

Source: Researchers Field Survey, 2021

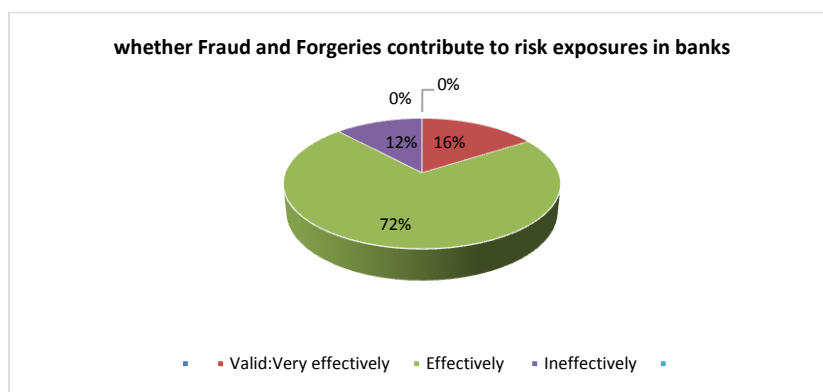


Fig. 7. Graphical percentage representation of fraud and forgeries contribution to risk exposures in banks

5.2.4 Attitudes factor in the FBN bank

According to the Table 8, 16 percent of the respondents strongly agreed with the assertion that borrowers' attitudes toward loan repayment are a risk factor for banks, and 70 percent agreed with the statement. However, 2% of respondents disagreed with the assertion, while the remaining 8% were indifferent.

Table 8. Whether borrowers' attitudes towards loan repayment are a risk factor for the bank

Feedback	Frequency	Percentage	Cumulative percentage
Valid: SD	02	04.0	04.00
D	01	02.0	06.00
I	04	08.0	14.00
A	35	70.0	84.00
SA	08	16.0	100.00
Total	50	100	

Source: field survey, 2021

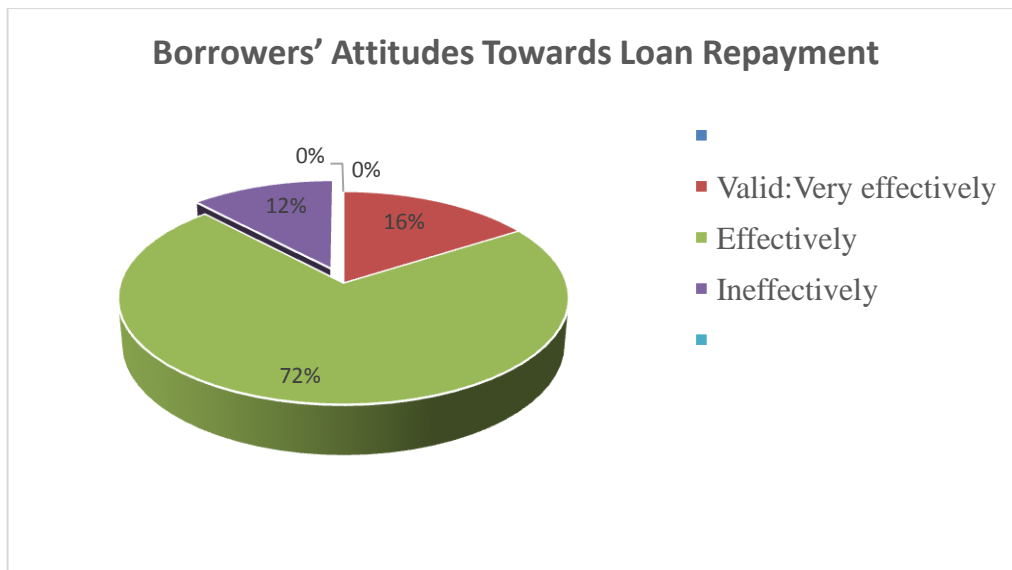


Fig. 8. Pie chart of borrowers attitudes towards loan servicing

5.2.5 Risk management techniques in the FBN bank

Table 9 shows how well the bank's various risk management approaches have worked to mitigate the various operational risks it faces. Only 12% chose ineffectively, whereas 16% choose very effectively, 72% chose effectively, and 60% chose very effectively. This demonstrates that the numerous risk management approaches implemented by first bank's management have aided in reducing the bank's operational hazards effectively.

Table 9. Whether the risk management techniques put in place have curbed the various operational risk in the bank

Feedback	Frequency	Percentage	Cumulative percentage
Valid: Very effectively	08	6.0	16.00
Effectively	36	72.0	88.00
Ineffectively	06	12.0	100.00
Total	50	100	

Source: Field Survey, 2021

The brown upward sloping line from Fig. 9 shows the pareto line and it can be concluded that FBN bank possesses the requirements and criteria's for assessing operational risk. However, the FBN bank still needs to improve existing risk control systems in use.

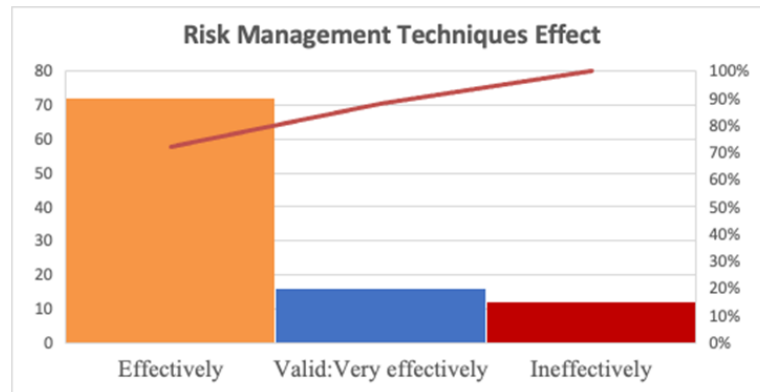


Fig. 9. Histogram representation of risk management techniques effectiveness on various operational risks in the bank

5.3 Impact of operational risk on FBN bank's stability

The hypothesis of the study was tested using the multiple regression analysis statistical technique with a significance threshold of 5%.

H0: Operational risk management has no substantial positive relationship with FBN banks financial stability' using ROE in Nigeria.

H1: Operational risk management has substantial positive relationship with FBN banks' financial stability' using ROE in Nigeria.

$$\text{Using ROE} = \beta_0 + \beta_1 \text{BNPL} + \beta_2 \text{BROCI} + \beta_3 \text{BRTL} + \varepsilon$$

5.3.1 Regression result

From Table 10 Operational risk management has a shared significant link with return on equity of the FBN banks in Nigeria. According to the regression results in Table 10 bank ratio of non-performing loan (BNPL) has a strong negative relationship and significant negative impact on return on equity at (1=-0.585692), p=0.0074 less than 5% level. Therefore, a percentage increase in bank ratio of nonperforming loans (BNPL) would result to 58% decrease in return on equity (ROE). This follows the extreme value theory which can be used to explain the behavior of tips (Maxima) and or dips (Minima) in a series of asset returns, among other things.

The result also reveals that the bank non-performing loan to total loan ratio and cost to income ratio of FBN banks have a negative significant association with return on equity (2=-0.2590), p=0.0438 respectively). This is consistent with the predictions, indicating that a percentage rise in operational costs will result in a 0.2590 percent decrease in (ROE) return on equity, respectively. This study backs up Adegbe Fojajimi Festus and David Olumuyiwa Sunday (2020) conclusion that the percentage of non-performing loans to total loans, as well as the ratio of operational costs to operating revenue, have a significant negative impact on banks' return on equity and earnings per share in Nigeria. Furthermore, the findings of Elkelish [38]. Non-performing loans to net total loans ratio and cost to income ratio have negative substantial effects on return on equity.

In contrast, the findings revealed that the total loan and advances to total deposit ratio of banks had a positive but insignificant association with the return on equity of selected deposit money institutions in Nigeria (p > 0.05) (3= 0.237, t-test= 0.788). This also means that a bank's total loan and advances to total deposit ratio isn't a key element in determining changes in return on equity in FBN's deposit money institutions.

This indicates that the total bank loans and advances to total deposit ratio did not meet a priori assumptions. This study also contradicts Saifu's [71] findings, which indicated that the loans-to-deposit ratio had a positive significant link with Indonesian banks' return on equity. The data did not confirm the findings of Yousfi [73], who claimed that utilizing return on asset, the ratio of loans and advances to total deposit has a negative and significant effect on profitability.

Table 10. Regression result

Variables	Coefficients	T-stat	Probabilities
C	3.671328	0.404647	0.0427
BNPL	-0.585692	-4.338601	0.0074
BROCI	-0.259033	-0.270179	0.0438
BRTL	0.624715	1.204620	0.2823
R-Squared	0.853543		
Adjusted R-Squared	0.765669		
Prob(F-Statistic)	0.015821		
Durbin -Watson stat	2.020069		

*Dependent variable: ROE; *significant at 5%*

5.3.2 The Durbin Watson statistics

A test for autocorrelation in residuals from a statistical model or regression study is the Durbin Watson (DW) statistic. Nevertheless, the decision rule is that a number between 0 and 4 will always be assigned to the Durbin-Watson statistic. A score of 2.0 implies that the sample contains no autocorrelation. Positive autocorrelation is defined as a value between 0 and less than 2, whereas negative autocorrelation is defined as a value between 2 and 4. Therefore Durbin-Watson state shows 2.120069 which insinuates that there is no autocorrelation in the regression model.

5.3.3 Variation and fitness of the model

R-squared (R²) is 85 percent, this is a statistical measure that quantifies the proportion of variation explained by the operational risk management measures or variables in the regression model for the financial stability (ROE) variable measure.

Following, the Adjusted R², which measures the proportion of changes in return on equity of FBN banks as a result of changes in non-performing loan to total loan ratio, cost to income ratio, and total loan and advances to total deposit ratio of the banks, explains about 76% of changes in return on equity of FBN banks in Nigeria, with other factors accounting for the remaining 24 percent.

6 Conclusion

Based on the conclusions of this study, it can be concluded that bank fraud and forgeries are a risk factor for FBN banks' performance and hence have a negative role in their operations. It was also discovered that operations risk and credit risk are the most common types of risk confronting FBN banks' performance. These dangers are related to the banking industry's management and employees' actions. Eventually, the analysis found that some risk management approaches in place were effective to curb or mitigate the FBN bank's numerous operational risks. This can be seen in the peaceful atmosphere that currently surrounds the first bank of Nigeria's banking industry, as opposed to a few years ago, when the banking system was in the midst of a liquidation period, even though the managements of the various banks have not yet risen to the task of completely avoiding the system's avoidable risks.

Furthermore, the impact of operational risk management on the financial stability of FBN bank was investigated in this study. The results of the hypothesis revealed that operational risk management had a considerable impact on FBN banks' return on equity in Nigeria. For the period 1999 to 2020, operational risk management as measured by the Ratio of Non-Performing Loans to Total Loans (BRNPL), Ratio of Cost to Income (BROCI),

and Ratio of Total Loans to Total Deposit (BRTLD) has a negative significant effect on the financial stability of deposit money banks in Nigeria as measured by Return on Equity (ROE).

As shown by the adjusted R-squared, the result also confirms the extent to which fluctuations in the dependent variable are caused by the independent variables addressed in the models. Therefore, from the evidence of our result, the null hypothesis that Operational risk management has no substantial positive impact on FBN banks Return on Equity is been rejected.

7 Recommendations and Contributions

As operational risk has a negative influence on the return on equity ratio, banks should manage it properly. As a result, banks should adhere to the laws governing credit facilities, as non-performing loans jeopardize their financial viability and also makes them vulnerable. Banks should implement proper laws and fines in managing their loan portfolio and operational costs in order to improve financial stability. Finally, because of the negative effects on return on equity, the study also suggests that operational risk management be improved. This is because potential investors are unlikely to participate in a business where non-performing loans and high operating costs will erode their money. FBN bank should upgrade its risk indicator systems or infrastructure to reduce the systemic risk that FBN banks face. This would also keep the system from malfunctioning or failing. Finally, the FBN bank should use a risk-based management approach that adheres to international norms and focuses on the financial and operational risks that banks confront. Overall, FBN banks should also establish inspection departments to do internal checks and prevent operational issues.

In order to ensure financial system stability, the report also offers information that could aid financial regulators in developing new rules and frameworks and revising existing policies and frameworks on operational risk management methods. The study's findings supported the hypothesis that extreme value theory is a useful tool for analyzing activities, or financial risks that could result in large operational risk losses for financial institutions, and that risk theory of profit is a useful indicator for managers in determining earning capacity in relation to risk exposure.

The study also acts as a resource for academics interested in operational risk management and provides a foundation for future research.

Competing Interests

Authors have declared that no competing interests exist.

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