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Risk Management and Financial Performance: Empirical Evidence from the Nigerian Banking Industry

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Douglas Enahoro Elisha

ELSDOU001

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Supervisor: Prof. Abdul Latif Alhassan

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ABSTRACT

The banking industry is an important sector of any economy because banks are primarily tasked with the intermediation role of channeling funds from the deficit unit to the surplus unit through deposit mobilization and the creation of risk assets (Loans and Advances). This intermediation process is fraught with inherent risks, including credit, operational, liquidity, and solvency risks. In ensuring that banks function efficiently, they are obligated to manage these risks to ensure the creation of value for shareholders and other stakeholders. Risk management is critical to the Nigerian banking industry's system architecture. This dissertation sought to examine the relationship between risk management practices, proxied by its various components, including solvency risk (CAR), liquidity risk (LDR), credit risk (NPL), operational risk, and profitability. The study employed a sample of 12 banks, representing 97.0% of the banking industry's total assets over 11 years, from 2012 to 2022. The random and fixed effect panel technique was employed in estimating the static panel model to examine the impact of risk management on the performance of banks.

The regression analysis results indicate a strong adverse effect of credit and operational risks on return on assets, suggesting that higher returns on assets are associated with lower loan loss provisions and operational losses. This indicates the importance of asset quality and risk management practices in banks' delivery of quality financial performance. On the contrary, capital ratio and liquidity risks positively affect returns on assets and equity. The study revealed a negative coefficient for banks' ages and profitability, indicating that older banks tend to have lower profitability, primarily due to Nigeria's rapidly evolving banking landscape, creating discriminating advantages for the new-generation banks. However, ownership type does not exhibit statistically significant coefficients with banks' profitability, suggesting that their direct impact on bank profitability may be limited in the context of the variables considered in the analysis

Based on the findings, banks are encouraged to design data-driven policies on the capital adequacy ratios with the twin objectives of meeting the regulatory hurdle of 15% and pursuing loan book expansion. This will support the growth of the overall economy when credits are channeled to the productive sectors of the economy; moreover, expanded loan books will create interest income that ultimately enhances the profitability of banks. The study also demonstrated that banks are susceptible to time decay. Older banks underperform newer banks; therefore, banks must undertake frequent periodic analyses of their processes, strategies, and supporting infrastructure to adapt to the changing environment and landscape.

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DEDICATION

Horses are prepared for war; victory is of the Lord. – Proverbs 21:31

I would like to express my deepest gratitude to my late sister, Mrs. Anthonia Ibrahim, whose unwavering support and sacrifices paved the way for my educational journey. Her boundless love, encouragement, and determination were instrumental in shaping my path and instilling in me the value of perseverance and dedication. Though she is no longer with us, her spirit lives on in every milestone I achieve, and her memory continues to inspire me to strive for excellence.

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Elisha Douglas.

GLOSSARY OF TERMS

AMCON	Asset Management Corporation of Nigeria
ATM	Automatic Teller Machine
BCBS	Basel Committee on Banking Supervision
CAR	Capital Adequacy Ratio
CBN	Central Bank of Nigeria
COSO	The Committee of Sponsoring Organizations
CR	Credit Risk
ERM	Enterprise Risk Management
FEESINC	The fees-to-total revenue Ratio
Gen Z	Generation Z (people born between 1995 and 2010)
KYC	Know Your Client
LDR	Loan to Deposit Ratio
LLR	Loan Loss Ratio
LNAGE	Natural Log of Age of Bank
NDIC	Nigeria Deposit Insurance Company
NGN	Nigeria Naira
NPL	Non-Performing Loan
NSE	Nigerian Stock Exchange
OPERISK	Operational Risk
OR	Operational Risk

PAT	Profit After Tax
POS	Point of Sale
ROA	Return on Equity
ROE	Return on Assets
SGR	Sustainable Growth Rate
SME	Small and Medium Enterprises
SOR	Solvency Risk
US$	United State Dollars

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Risk management has undergone a significant transition over the years and has recently caught the interest of regulators, investors, and the general public. The concept of risk and, by extension, its management has transitioned from the rudimentary preoccupation of businesses in the context of insurable risks to the idea of enterprise risk management, which involves a systematic and integrated approach to the management of an extensive array of risks faced by a corporation (Dickinson, 2001).

Historically, banks have primarily focused on managing credit risk; however, risk management has shifted towards integrated approaches that consider multiple dimensions of risk, including market, operational, and liquidity risks (Lam, 2003). Similarly, advances in information technology, and financial engineering, which have allowed increased precision in quantifying risks, rapidly consolidating the global financial sector, high-profile corporate failure, and the complexity of the business environment, have all contributed to pushing the case for an integrated risk management approach towards the objectives of delivering value to the numerous stakeholders (Cumming & Hirtle, 2001).

In addition, the maturity of risk management practice has been accelerated by global financial crises, leading to significant regulatory changes and the implementation of several regulations, including the Basel Accord frameworks. These frameworks have influenced risk management practices by emphasizing capital adequacy, stress testing, and liquidity management as crucial components (Basel Committee on Banking Supervision, 2010). For example, the 2008 Financial Crisis prompted financial institutions to drive increased focus on building robust risk governance structures and stress testing to ensure resilience in the face of adverse economic conditions (Kou & Wang, 2014).

In addition to financial crises, high-profile scandals, such as the failures of Enron and WorldCom, prompted regulatory responses, including enacting the Sarbanes-Oxley Act in 2002. This legislation mandated improvements in internal controls, financial reporting, and corporate governance, reinforcing the importance of risk management (Sarbanes-Oxley Act of

2002). The scandals led to a paradigm shift in risk reporting and transparency. Companies began providing exhaustive and transparent disclosures about their risk management practices in financial statements, annual reports, and regulatory filings (Hull & Nelken, 2009).

Although effective risk management is a crucial consideration across all sectors, the banking industry's criticality underscores the sector's importance to the overall health of an economy. Banks' core activities involve taking on various forms of risk, including credit, market, operational, and liquidity risks. Managing these risks is integral to the stability and sustainability of banking institutions (Saunders & Cornett, 2014).

The outsized impacts of risk management on the banking sector stem from its importance to the functioning of modern society. The financial industry is the engine of any economy, and its ability to conduct the intermediation business of linking the surplus units through deposit mobilization to the deficit unit through credit creation is fundamental to theoretical economics and finance (Inegbedion, Vincent, and Obadiaru, 2020). A nation's economic growth and overall health are materially dependent on the ability of the financial service sector to play the asset allocation functions (Allen & Carletti, 2006). From a systemic standpoint, the banking sector serves as a critical channel for the transmission of monetary policy, allowing central banks to influence money supply and interest rates through interactions with commercial banks, impacting overall economic conditions (Mishkin, 1995). Banks support businesses, households, and governments through lending, fostering investment, consumption, and general economic activity (Bernanke & Gertler, 1989). As a result, commercial banks play an essential role in the economy: driving growth, creating jobs, and facilitating the overall efficient allocation of resources.

At the micro level, risk management is a crucial driver of a bank's financial performance. A well-implemented risk management framework helps mitigate potential losses, ensures regulatory compliance, and contributes to a bank's overall stability and profitability (Fraser & Simkins, 2010).

Credit risk, associated with potential borrower defaults, is a central component of the overall risk architecture of a bank. The level of credit risk directly impacts a bank's asset quality and can affect its profitability and capital adequacy (Altman, 2012). Widespread credit defaults or a deteriorating credit environment can have cascading effects on the broader economy, affecting the financial performance of multiple banks (Acharya, Pedersen, Philippon, & Richardson, 2011). In the Nigerian banking industry, Non-Performing Loans have become a significant

metric for the market, given their impact on banks' assets and overall financial health. The significance of managing loan losses for asset quality is emphasized in Nigerian banking (Onaolapo, 2015).

While effectively managing market risks, such as interest rates and currency fluctuations, effective market risk management is essential for stable earnings and capital preservation (Saunders & Allen, 2010). Although market risks are a necessary consideration for banks irrespective of the maturity of the economy, they have outsized implications for institutions in developing economies due to increasing integration into the global economy, which exposes them to external shocks. Banks in developing countries often operate in environments with volatile exchange rates, exacerbating the depth of market risks (Jorion, 2007). Effective market risk management enables banks to identify, assess, and respond to risks arising from global economic events, reducing vulnerability to external shocks (Hull, 2012). Scholars agree that market risks are an essential performance driver in the Nigerian banking sector and the overall economy, given the dependence on oil exports and the susceptibility of the Naira to external shocks. The performance of Nigerian banks is susceptible to the effective management of interest rate risk (Osuji & Eke, 2019), and prudent management of foreign exchange risk is vital for maintaining stability (Adeusi & Okafor, 2017; Adofu & Ebimobowei, 2018), and the interactions of the components of the market risks (Adeniran & Adegbite, 2016).

Operational risk can significantly impact a bank's financial performance, arising from internal processes, technology, and human factors. Operational risk can lead to diverse issues, including financial losses and erosion of customer trust as a result of data breaches (Akingunola & Ibikunle, 2019), customer dissatisfaction, and reputational damage as a result of service downtime (Adewuyi, Adeniji & Salawu, 2020), regulatory fines as a result of fraud malpractices, penalties (Adesina, Adebisi, & Okunola, 2017, Ezeoha, Odusami & Abdullah, 2020), and business continuity issues as a result of natural disasters (Ugwu, Abada, & Nnaji, 2018). As banks ramp up the adoption of new technology, the system increasingly relies on external technology and complex internal processes, thereby exposing these institutions to disruptions and vulnerabilities (Moody's Analytics, 2017). Managing complex processes becomes critical to mitigating operational risks (Serrano-Cinca, Gutierrez-Nieto, & López-Palacios, 2015). A proactive approach to risk management helps prevent disruptions, ensure smooth operations, and avoid financial setbacks.

Liquidity risk refers to the risk that a bank may not be able to meet its short-term obligations due to a shortage of liquid assets or the inability to convert assets into cash without a significant

loss. Effective liquidity management is crucial for maintaining public confidence, meeting depositor demands, and supporting the overall stability of the financial system. Liquidity risk management is essential for banks to meet the withdrawal demands of depositors and fulfil their lending commitments (Acharya et al., 2011). A lack of funding stability can trigger a liquidity crisis, as seen during the global financial crisis. Maintaining stable funding sources and a diversified funding base is essential for banks to withstand liquidity shocks (Borio & Zhu, 2008). Systemic stability relies on individual banks' ability to manage liquidity prudently and contribute to the overall resilience of the financial system (Freixas & Rochet, 2008). Prudent liquidity risk management ensures depositor confidence, supports funding stability, and contributes to the overall strength of the financial system. Banks that face a sudden loss of confidence or have inadequate liquidity buffers may experience severe financial distress, with far-reaching consequences for the broader economy (Holmstrom & Tirole, 1998).

Enterprise Risk Management (ERM), a concept that seeks to adopt a coordinated approach to addressing the risks faced by financial institutions, has gained prominence in the last decades. The integrated approach adopted by ERM provides a holistic framework for managing risks that extends beyond traditional risk silos (credit, market, operational) to include strategic, compliance, and reputational risks, allowing banks to identify interdependencies and manage risks collectively (Fraser & Simkins, 2010). By integrating risk considerations into strategic planning, ERM ensures that risk management becomes an integral part of decision-making processes at all levels of the organization (Lam, 2003). Regulatory guidelines often encourage banks to adopt ERM frameworks to ensure the identification and mitigation of a broader spectrum of risks (Basel Committee on Banking Supervision, 2010).

Given the essential roles banks play in an economy, there has been an increasing focus on the need to ensure the efficient functioning of these institutions to adequately mitigate potential risks that may impact the sustainability of actors in the sector and the overall industry. These considerations have heightened the regulatory environment for commercial banks concerning capital requirements to support risk-taking ability and foster their overall health. According to Agbeja, Adelakun, & Olufemi (2015), institutionalizing robust enterprise risk management practices to identify, quantify, and manage the barrage of risks faced by commercial banks is critical to its sustainability and the ability of the entire financial system to support the economic growth of any country.

There are considerable studies on risk management and its implications for bank performance. The interactions of these factors have significant explanatory power for banks' profitability,

sustainability, and overall health. Therefore, managing these risks is essential for the functioning of these institutions and, by extension, their ability to meet their obligations to the various stakeholders, including shareholders, employees, depositors, creditors, and the larger society.

This study seeks to contribute to the body of knowledge in this field and attempts to understand the nexus between risk management and bank financial performance, focusing on the Nigerian banking industry.

1.2 Research Problem and Questions

The study seeks to understand the influence of risk management on the financial performance of banks in Nigeria. As banks strive to meet the claims of the various stakeholders, they assume risks of varying types and complexity. It is essential to understand that the overarching objective of institutions is to deliver quality risk-adjusted returns to the shareholders and meet the obligations to other interest holders (Herelima, 2017).

This objective is measured through several metrics, including the Return on Equity (ROE) and Return on Assets (ROA). ROA and ROE are the most reliable metrics for assessing banks' performance and financial health (Rose & Hudgins, 2005; Mishkin & Eakins, 2015). These ratios have become popular in the investor relation community, with widespread use as crucial tools for investment decision-making, offering insights into a company's profitability, efficiency, sustainability, and financial performance (Ross, Westerfield & Jordan, 2019).

ROE is a financial metric that measures a company's profitability concerning its shareholders' equity. While ROE does not explicitly recognize specific components of risks, it indirectly reflects the impact of various risk factors on a company's financial performance (Altman, 2013). Credit risk, associated with the likelihood of loan defaults, impacts the asset quality of financial institutions, can reduce a bank's profitability, and affect ROE (Berger & Bouwman, 2013). ROE is also influenced by other risk components, including the interest rate (Higgins, 2012), market risk (Bodie, Kane, & Marcus, 2014), regulatory and compliance risk (Klein, 2018), reputational risk, (Fombrun & Shanley, 1990), and strategic risks, (Simkins & Simkins, 2007).

ROA is a compelling measure of financial performance and a bank's overall health, providing insights into how efficiently it utilizes its assets to generate profits. ROA measures the effectiveness of a bank's asset utilization in generating earnings (Saunders & Cornett, 2014),

the effectiveness of a bank's risk management and lending activities (Mishkin et al., 2015), and the assessment of relative efficiency and profitability of banks, (Rose et al., 2008), Notwithstanding its efficacy and popularity, ROA suffers severe limitations including its failure to capture the quality of assets or the risk associated with portfolio (Saunders et al., 2014) and may be influenced by extraneous factors including rate environment, (Fabozzi, Modigliani, & Jones, 2010), and broader macroeconomic factors, (Freixas & Rochet, 2008), This study seeks to answer the following research question:

a. How has NPL portfolio across the banking sector impacted the performance of banks in Nigeria
b. To what extent have the CAR requirements of the Central Bank of Nigeria impacted the ability of banks to create risk assets and, by extension, the profitability of banks?;
c. How has the rapid adoption of alternative channels (e-channels, POS, web-based banking services) and related operational risks impacted on profitability?
d. What is impact the impact of liquidity risks banks profitability?

1.3 Research Objectives

The overall objective of this study is to assess the role of risk management in determining the financial performance of banks in Nigeria. Specifically, the study seeks:

To examine the effect of the bank risks on the financial performance of selected Nigerian banks:

i. To examine the extent to which non-performing loans impact the profitability of banks
ii. To examine the impact of capital adequacy on banks' capacity to create risk assets and drive profitability;
iii. To examine effect of liquidity risks on profitability;
iv. To examine the effect of operational risks on banks' profitability.

1.4 Limitations

The study will use the audited financial results of listed banks in the Nigerian banking industry. These publicly available data have been subjected to rigorous review and evaluation by market participants, regulators, auditors, and the general public. In addition, the Nigerian banking industry has attained significant influence by adopting uniform data and its foray into the

international capital market to access long-term financing, thereby subjecting it to heightened scrutiny and compliance with best practices.

Even with the above, there are some differences in the level of financial disclosure and the use of estimates. Financial statements are a critical aspect of financial reporting, and differences in disclosure practices can impact the reliability of financial statements and the performance measurement for banks in Nigeria (Okafor, 2019). Standardized disclosure practices are essential for stakeholders, including regulators, analysts, and investors, to assess and compare the performance of banks within the industry (Ijiri, 2018). Similarly, differences in estimation methods and assumptions can hinder the ability to compare the performance of institutions. Variances in accounting policies and estimation methods may impair the ability of analysts, investors, and regulators to make meaningful performance comparisons (Uadiale, 2010). For example, specific provisions of the International Accounting Standards (IAS) are subject to interpretations, especially in the provision for loan losses and mark-to-market of illiquid assets. These differences may result in potential bias in the results of the analysis.

Also, using a non-probabilistic sampling technique to select banks may bias the analysis's result, as the sample may not truly represent the Nigerian banking sector. Similarly, the metrics adopted as proxies for the various components of risks have varying definitions across financial institutions.

1.5 Scope and Justification of Study

The study seeks to extend the body of knowledge in the broad area of risk management and its influence on the performance of the Nigerian banking sector. Even though the literature review covers the global phenomenon, the methodology, including data for analysing the relationship between risk management and financial performance, will be limited to the Nigerian banking industry. Firm-specific metrics will be examined to understand the relationship.

In addition to the contribution of this study to the academic literature on the impact of risk management on financial performance, the research will prove valuable to several stakeholders, including regulators, policymakers, board members, committees of boards charged with oversight functions, and future researchers. This stems from the fact that the sphere of risk management as a phenomenon is ever-expanding, and these complexities are influenced by technological development (Harle et al., 2015) as well as a deeper understanding and quantification of risks (Cummings et al., 2001).

The increasing importance of sound risk management practices in the global and local banking industry should be emphasized. From significant corporate failure and recent events of the last decades with the subprime mortgage crisis, which crippled the global financial services industry, it has become evident that the management of credit risk, operational risks, as well as other emerging risks is essential to the sustainability of the global financial services industry (Okafor, 2019). Adeusi et al. (2014) argued that while credit risk and non-performing loans have continued to impact the Nigerian banking industry, other emerging risks, such as operational risks, have become increasingly critical to the long-term sustainability of banks. The functional shift and adoption of new electronic channels for banking services have introduced an expanding realm of third-party risks (Knudson, 2021). These traditional and emerging risks have necessitated the need to assess the increasing role of risk management in the performance of banks in Nigeria.

Although there is a significant body of knowledge in the areas of risk management in the Nigerian banking sector, there is, however, a gap in examining the risks posed by the increasing adoption of alternative channels and emerging risks from the system in the Nigerian banking sector. This study captures this emerging risk in the operational risk component of the overall risk architecture. In addition, it provides a comprehensive review to capture in one study, the significant risk drivers in the sector.

1.6 Organization of Study

The dissertation will consist of five chapters that begin with an introduction and logically transition to the conclusion through a literature review, methodology, findings, and discussion of results. The introductory chapter will provide an overview of the study with a description of risk management, its evolution, and critical terms necessary to understand the research. Chapter two, the literature review, extensively examines the existing knowledge in risk management from a global context and a significant focus on the Nigerian banking industry.

Chapter three presents the research methodology and outlines the method deployed to achieve the research objective by answering the research questions. The chapter also describes the research design, including the strategy, data collection, sampling method, analytical framework, estimation technique, and research reliability. The chapter also highlights the study's limitations due to the research design.

The fourth chapter presents findings from the analysis and interpretation of the results. Finally, chapter five concludes the study with recommendations to the various stakeholders earlier identified in the introduction section, principally the regulators' boards of banks, on the needed intervention to increase the effectiveness of the risk management practices to achieve the desired objective of enhancing the performance of the Nigerian banking industry and the environment.

CHAPTER TWO
LITERATURE REVIEW

2.1. Introduction

This chapter reviews existing literature to examine the nexus between risk management and the financial performance of banks in the global context and for the Nigerian banking industry. The first sub-section defines risk and its various components in the banking industry. The second sub-section delves into an overview of the Nigerian banking industry and the key events that have characterized and shaped the post-colonial Nigerian sector. Subsequent sections focus on the impact of risk management in the banking industry, including its implications for financial stability. This sub-section transitions into the study's theoretical framework by examining theories that have ramifications for the phenomenon, including the principal-agent theory, financial market intermediation theory, financial economic theory, liquidity management theory, and credit risk theory. The following section conducts an empirical review of the subject by examining the body of knowledge on risk management in the banking industry and the interactions of the various components with banks' performance. The last part of the chapter examines the literature gap in the study area and the motivation for the coursework.

2.2. Definition: The concept of Risk

According to the internal control framework developed by the Committee of Sponsoring Organization of the Tradeway Commission (COSO), risk is defined as the possibility of an event that may adversely impact an enterprise's objectives. Although the concept of risk has diverse interpretations by different scholars and professionals, there appears to be a broad alignment on its key elements – uncertainty, event, and impact. Hansel (1999) considers risk to be the event of loss from an adverse event. Olusanmi, Uwuigbe & Uwuigbe (2015) define risk as adverse events derailing expected outcomes. The broad definition of risk revolves around the potential for an adverse event, the probability that such an event may occur, and the negative impact of these occurrences.

In finance, some view risks from the standpoint of variance in the performance of an asset or asset class. The probability that the expected return of an asset differs from the actual return (Elton, Gruber, Brown & Goetzmann, 2014; Bodie, Kane, & Marcus, 2014; Chukwunulu, Ezeabasili, Igbodika, 2019). Others view risk from the overall performance of a market as a result of events that have the potential for disruption (Sharpe, Alexander & Bailer, 1999; Acharya et al., 2019). Systemic risk is closely related to the broad market view, which is concerned with the interconnectedness of financial institutions and the potential for cascading failures that could impact the entire financial system. For example, Acharya et. Al (2019) considers risk as events that can affect the financial system with contagion and widespread adverse effects on the broader economy.

While risks can be viewed from both upside and downside outcomes, some schools of thought consider only events of losses in their definition of risk. For example, Ang & Chen (2002) defined risk as the potential for losses rather than overall variability and included the possibility of extreme outcomes—the asymmetry in the distribution of returns emphasizes adverse outcomes and potential losses (Sharpe et al., 1999). However, a lot of work is linked to the volatility in the prices of assets and the potential for significant fluctuation. The dispersion of asset prices, which could impact the value of financial instruments, is an indication of instruments (Black, 1976; Engle, 1982; French, Schwert, Stambaugh, 1987; Schwert, 1989).

References from academic literature and industry guidelines provide insights into the theoretical foundations and practical strategies for managing these risks in the complex and dynamic banking environment. Risk diversification (Markowitz, 1952), hedging with derivatives (Hull, 2018), transfer through insurance (Harrington & Niehaus, 2003), stress-testing (Drehmann, Borio, & Tsatsaronis, 2012), crisis management and business continuity (Pellegrinelli, Partington, & Hemingway, 2007) are some of the strategies for managing risks.

In the banking industry, risk entails external and internal events likely to impact a bank's performance objectives. At an elementary level, institutions adopt coordinated fundamentals for measuring the various events that may lead to losses and manage these events through multiple means (Cumming, et al., 2001).

2.3. Risk Management and Financial System Stability

The stability of a banking system rests on its ability to continue to deliver sustainable performance while managing risks. Identifying risks, including credit, market, liquidity, and operational risks, is fundamental to maintaining financial stability, as early recognition of potential threats allows institutions to implement proactive measures (Jorion, 2007).

For the banking industry to continue to provide the intermediation function through deposit mobilization, which is funneled to the deficit sections of the economy through risk asset creation, there is the underlying assumption of trust between the depositors and the deposit money banks. The banking business hinges on faith in the ability of the banks to provide safe custody of deposits and meet depositors' requests for withdrawals (Osayeme, 2000). A breakdown in the relationship between a bank and depositors may lead to significant challenges for such a bank and, depending on the extent of this issue, may impact the sector's stability and, by extension, the nation's economic growth. This micro scenario of breach of trust may precipitate the financial system's distress, indicating the banks' failure to meet their contractual obligations to the depositors or the appearance of difficulty meeting such obligations (Isa, 2014).

According to the Basel Committee on Banking Supervision (2009), Financial distress is occasioned by a bank's failure to meet the liquidity requirement to its stakeholders, which may result in liquidation, filing for bankruptcy, merger or acquisition, and other adverse outcomes that threaten the going concern of such institution. For banks, the stakes are high, and failure has an extreme effect on the overall stability of the financial system, as evidenced by the 2008 crisis, including loss of confidence in the system (Ogden, Jen & O'Connor, 2002), loss of investment for shareholders (Boland, 2012), loss of livelihood for depositors (Anthony, 1997), loss of jobs for employees of such institutions, and overall negative impact on economic growth (Saunder et al., 2014). Given the dire consequences of failure, the stability of the financial services sector in any economy is highly dependent on the industry's risk management practices in managing the number of risks the banks face.

Financial performance in banking terminology indicates the overall well-being of a financial institution, which is measured across several metrics, principally the return on equity and the return on asset. Even though there are other financial metrics for measuring the performance of banks, these ratios have enjoyed significant usage in academic literature. According to Bhunia, Mukuti & Roy (2011), financial performance combines objective and subjective measures of how a firm translates its assets to generate business from its primary scope and financial health over a given, typically long period. For banks, the process of assessing financial performance has evolved in recent years, transcending the traditional review of its financial statement for qualitative measures of the efficiency of intermediation business to include other non-quantitative measures such as sustainability practices, diversity, and overall contribution to the wellbeing of all other stakeholders including employee, the environment and the economy (Basel, 2010).

2.4. Types of Risks in the Banking Industry

According to the Basel Committee on Bank Supervision (2004), four types of risk are predominant in the global banking industry: credit, liquidity, operational, and market risks. An evaluation of these risks indicates that some are controllable by financial institutions while others are external to these institutions. From a banking standpoint, some systemic risks include the interest and the foreign exchange rate, primarily driven by the regulatory and economic environment. The unsystematic risks include credit, operational, and liquidity risks, directly influenced by the decisions of the managers of banks (Herelima, 2017)

2.3.1 Credit Risk

Credit risk is a crucial component of the risks faced by banks. It refers to the possibility that borrowers or counterparties may fail to meet their contractual obligations, resulting in financial losses for the Bank. Credit risk emanates from the failure of borrowers to meet their interest and principal repayment

obligations to lenders per the contract terms (Luy, 201perkere, Isiaka, Ogunlowore (2018); the incident of default on repayment of loans is one of the most significant risks faced by banks in their quest to meet their objectives of value creation through intermediation. NPLs can erode a bank's profitability, reduce capital adequacy, and weaken its financial health (Adesulu, Okorie, & Ihejiri, 2021). This risk is primarily a result of moral hazards, the absence of a credit registry, and a collateral registry, which allows obligors to gain exposure to multiple lenders using the same assets as collateral.

Data from the various incidents of bank failures in Nigeria points to the poor credit process, which leads to subprime obligors, including parties' inability or failure of banks to register collaterals and the weak legal process to maintain adequate contracts (Owojori, Akinyoye & Adidu, 2011). Before the banking crisis, which led to the reforms of the CBN in the banking sector, including the incorporation of the AMCON in 2011, the industry's non-performing loan portfolio stood at 31.9% (Atoi, 2018). The impact of a growing NPL remains dire for an economy as banks fail to meet the funding needs of industries (Morakinyo & Sibanda, 2016; Owojori et al., 2011), slows down the growth of the economy (Minsky, 1964, 1995; Inegbedon et al, 2020), and impact the financial performance of banks (Kolapo, Ayeni & Oke, 2012; Adeusi, Adebisi, Oladunjoye, 2014)

The effectiveness of a bank's risk management practices is crucial in mitigating credit risk. Weak risk management practices can leave banks vulnerable to unexpected credit losses, increasing the likelihood of failures (Ezeoha, Odusami, & Abdullah, 2020). Credit risk management is closely tied to capital adequacy requirements imposed by regulatory authorities. Banks must maintain sufficient capital buffers to absorb potential losses from credit risk. Failure to meet regulatory capital requirements can lead to penalties and regulatory intervention (Basel, 2010). Effective credit risk management is fundamental to banks' overall health and stability, influencing their financial performance, regulatory compliance, and reputation in the market.

2.3.2 Liquidity Risk

Liquidity risk refers to the possibility that a financial institution may encounter difficulties meeting its short-term obligations due to an imbalance between its liquid assets and liabilities. It arises from a misalignment between a bank's liquid assets and liabilities, posing threats to solvency and financial stability (Archaya et al., 2011); the emergence of Asset and Liability Management (ALM) in financial institutions is borne out of the need to identify and plug liquidity gaps in the composition, tenure, and quality of assets vis-à-vis the liabilities carried by these institutions (Diamond & Rajan, 2001). Historically, the measurement of risks in banks has been limited to credit and operational risks, ignoring other emerging risk components, including liquidity risk and, to some extent, operational risk. However, recent crises, including the 2008 financial crisis, have shown the importance of liquidity to financial performance and the ongoing concern of banks (Kosmidou et al., 2005).

In defining liquidity risk, Santomero (1997) considers the risk as events that are a result of banks' inability to meet the demand of depositors and creditors that could lead to a large run-on financial institution, loss of confidence by the market, and its extreme, a financial crisis at the national level. Liquidity risks emanate from both the assets and liability sides of the balance sheet due to banks' inability to readily convert assets to cash or excessive commitment to risk asset creation and tenure of deposits and creditors' demand (Koch and MacDonald 2008). Matz & Neu (2006) broke liquidity risk into three components these include market liquidity risk, which emanates from insufficient market depth to absorb a bank's position; funding liquidity risk, which is a result of difficulty in obtaining necessary funds to meet obligations; and asset liquidity risk which is inability to unwind asset position without price impact. These definitions underscore the multifaceted nature of liquidity risk, its sources, management strategies, and the broader implications for financial institutions.

a) Liquidity Risk: Historical Perspective

Before 2008, the banking industry managed liquidity risk, but the focus was often more on credit and market risks. Liquidity risk, though present, was not perceived as a critical issue, and the assumptions regarding market liquidity were more optimistic (Mishkin, 1995). Given the early role of banks in the financial intermediation of funnelling liquidity from the surplus unit to the deficit unit, the underlying assumption was that of a sufficiently deep market to meet obligations (Goodhart, 2008). Another school of thought believed that illiquidity and solvency were frequently indistinguishable. As such, while efforts were being made by the Basel Committee to address capital adequacy, no agreement was reached on illiquidity. In establishing the Basel Committee on Banking Supervision in 1975, the focus was to underpin the capital and liquidity performance of international banks, which resulted in halting the downward trend in banks' capital ratio and reversed by Basel 1 but failed to address illiquidity in the market (Congdon, 2007). These optimistic market assumptions were founded on solid market data as, in the 1950s, liquid assets comprised about 30% of British clearing banks' total assets, consisting of Treasury Bills and short-term government bonds that were risk-free (Goodhart, 2008). These cash holdings are c.0.5% of liquid assets and less than 1% of total liabilities.

However, liquidity risk became a severe concern for the global economies and, by extension, the financial services primarily due to the failure of large institutions and the ensuing economic crises. Adesola & Thomas (2010) analysed the impact of liquidity risk on bank failures during the financial crisis of 2008. He underlined significant weaknesses in banks' liquidity risk management through the sudden freeze in interbank lending and the inability to convert assets to cash, which exposed the inadequacy of traditional liquidity risk models. In response, the Basel Committee on Banking Supervision (2010) developed the international framework for banking supervision. It introduced several measures, reflecting the regulatory response to the liquidity issues exposed during the crisis. Basel introduced new liquidity standards, such as the Liquidity Coverage Ratio (LCR) and the Net

Stable Funding Ratio (NSFR), to enhance banks' resilience to liquidity shocks (Angelini, Neri, & Panetta, 2014).

Other key global events, including the rising intrusion of technology in the financial services space and Covid 19, have continued to extend the dimensional impact of liquidity in the banking system. Technology and its inherent challenges have become a concern for financial systems, impacting liquidity and necessitating robust cybersecurity measures in managing technology-related liquidity risks (WEF, 2020). For example, while blockchain and Distributed Ledger Technology (DLT) provide decentralized and transparent platforms for financial transactions, offering benefits in terms of efficiency, they also present challenges related to liquidity risk, especially in terms of market liquidity for tokenized assets (Narayanan, Bonneau, Felten, Miller, & Goldfeder, 2016). Similarly, the global economy suffered a severe liquidity squeeze due to the pandemic. The COVID-19 pandemic profoundly impacted liquidity risk in the financial sector. The lockdown triggered economic uncertainties and disruptions to supply chains, leading to increased liquidity concerns for businesses and financial institutions (Shin, 2020).

In the Nigerian banking sector, liquidity risk has evolved in tandem with global development and homegrown challenges faced by the economy and the industry. The sector has, at various points in history, faced liquidity challenges, including the banking consolidation of 2004 and the global financial crisis of 2008, which exposed vulnerabilities in liquidity risk management in the system (Ogbeide & Okeke, 2013). Banks' balance sheets came under significant stress with the double impact of high NPL from an economic downturn and low profitability. In both instances, the CBN provided necessary liquidity support and implemented rigorous measures, including stress test requirements, to address the severe liquidity challenges (Oseni & Ogunleye, 2019). Fluctuations in foreign exchange rates exacerbated the liquidity challenges of Nigerian banks, especially given the country's reliance on oil exports (Adeusi & Olokoyo, 2016). In addition, the rapid transformation in the financial services landscape driven by technology has created both challenges and opportunities for Nigerian banks. The Nigerian banking sector's digital transformation introduces opportunities and liquidity challenges (Adewuyi, Adeniji, & Salawu, 2020).

Liquidity risk remains a critical consideration in the global financial services sector with outsized implications for resource-dependent countries like Nigeria. Many factors influence this risk, including economic conditions, regulatory measures, foreign exchange dynamics, digital transformation, and external shocks like the COVID-19 pandemic. In addition to other risk components, the management of liquidity risk in a comprehensive and structured manner will continue to set banks apart from a performance standpoint.

2.3.3 Operational Risk

Operational risks involve the likelihood of loss due to inadequacies or failure in internal processes, people, and systems or from external events (BCBS, 2006).

Several studies have examined the impact of operational risk on bank performance. A survey by Blum and Hellwig (2016) found that operational risk significantly negatively impacts banks' profitability and risk-adjusted returns. Another study by Mikes and Schrauwen (2017) found that active risk events can lead to declining bank stock prices, indicating that investors view operational risk as a significant concern.

Various factors, including weak internal controls, inadequate systems and processes, human errors, and external events such as cyber-attacks or natural disasters, are some of the Causes of Operational Risk in Banks. A study by the Bank for International Settlements (2011) found that the most common causes of operational risk in banks are people-related factors, such as errors or misconduct, followed by process-related factors, such as inadequate or faulty procedures.

The Management of Operational Risk in Banks is crucial to maintaining financial stability and performance. Banks can manage operational risk through various strategies, including implementing effective risk management systems, establishing strong internal controls, and investing in employee training and education. A study by De Haan and Amel-Zadeh (2013) found that banks that effectively manage operational risk tend to have lower levels of risk and higher levels of profitability.

Unlike market and credit risks, operational risk entails losses due to events occasioned by people, processes, and systems with no potential upsides. Operational risk is broad and encompasses incidents of fraud, work hazards from poor health and safety, faulty product design, damage to assets, system failure from poor handling or integration, and service delivery failure (Olukotun, James & Olorunfemi, 2013). One of the plausible explanations for the increasing importance of operational risks in the risk management sphere is the elaborate sources from which incidents of losses could occur, the high likelihood of the occurrence, and the materiality of the losses that may crystallize as a result.

2.3.4 Solvency Risk

Solvency risk refers to the risk that an entity may become insolvent, indicating its inability to meet its financial obligations, as its liabilities exceed its assets, potentially leading to economic distress, potential bankruptcy, and failure to fulfil long-term obligations. Altman (2013) defines solvency risk as the inability of an entity to meet its commitment to certain classes of interest holders, including creditors, depositors, and governments. Several models have been developed to predict the potential risk of bankruptcy, including the Z-score (Altman, 2013), the Merton Model (Merton, 1974), the Taffler Model (Taffler, 1984), and the Chen Model (Chen, 2005). Investors, creditors, and short sellers have employed distress predictive analyses to take advantage of overvalued assets in the market (Lamont & Stein, 2004).

In the banking industry, solvency risk signifies a situation where a bank's liabilities exceed its assets, raising concerns about the institution's ability to remain financially viable.

There are many studies on solvency risk and its implications for a financial institution. This topic continues to preoccupy regulators, shareholders, and market analysts, leading to the adoption of various

standards to measure a bank's capital adequacy. Mpuga (2002) found in its study of the failure of banks in Uganda that capital adequacy is a leading indicator of the health of banks. Several other studies have found a correlation between weak CAR and bank failure in different markets (Scott & Arias, 2011; Umoru & Osemwegie, 2016). Even though it differs in expected provisioning across countries, regulations require that the Bank set aside shareholders' funds to support bank risks borne by banks through the interplay of risk-weighted assets and qualifying capital. This provision ensures that banks' risk-taking activities are backed by owners' equity in the protection of depositors. Imposing strict capital adequacy ratios moderated banks' risk appetite and limited the expansion of banks' loan books in Japan (Ho & Hsu, 2010).

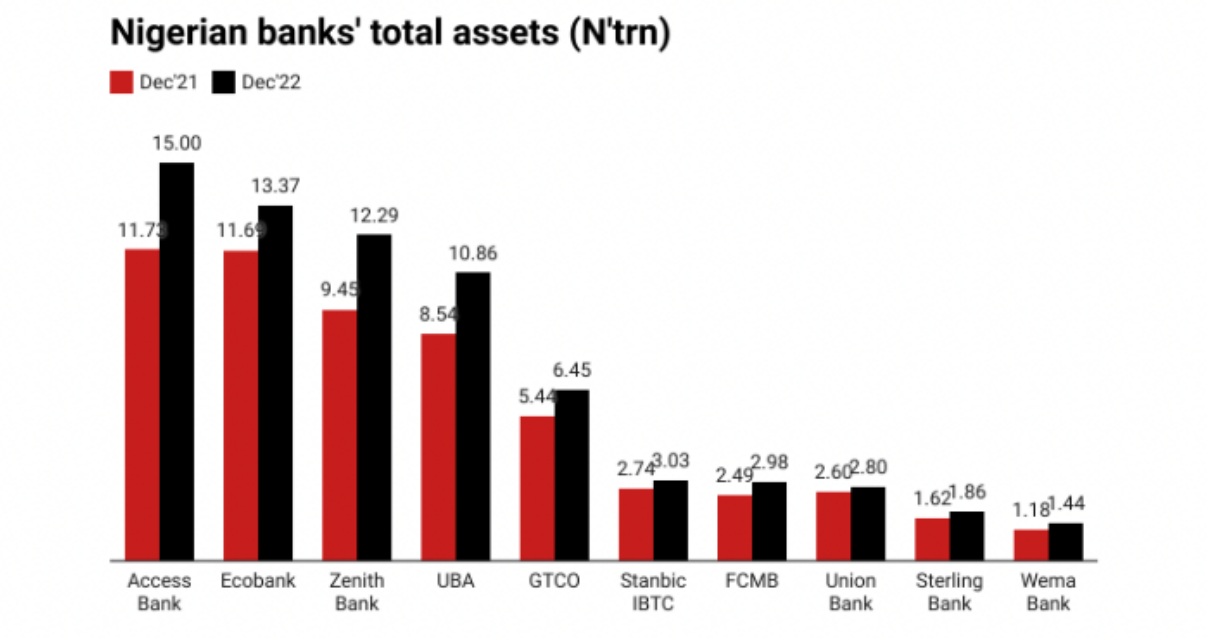
Another study by Athanasoglou, Delis, and Staikouras (2006) found that solvency risk negatively affected the profitability of Greek banks. The authors found that banks with higher levels of solvency risk had lower profitability, indicating that managing solvency risk is critical for bank performance.

2.5. Overview of the banking industry in Nigeria

The Nigerian banking sector is a critical component of the country's financial system, playing a vital role in economic development, financial intermediation, and the facilitation of business activities. The industry is made of an expansive ecosystem of providers of financial services in Nigeria, including Deposit Money Banks (DMBs), Microfinance Banks (MFBs), Merchant Banks (MBs), Development Finance Institutions (DFIs), Discount Houses (DHs), Finance Companies (FCs), Financial Holding Companies (HoldCos), Bureau De Changes (BDCs), Non-Interest Banks (NIBs), Primary Mortgage Banks (PMBs), and Payment Service Banks (PSBs). The Nigerian banking industry is regulated by the Central Bank of Nigeria (CBN), the monetary authority responsible for ensuring the financial stability of the system as well as the country's overall economic policy.

Despite the high number of players in the Nigerian banking industry, the market still exhibits oligopolistic characteristics with few dominant players in the commercial banking subset of the system (Ogwunta, Uchenna, Ugwuanyi & Ugwu, 2012). A handful of banks hold a substantial market share, influencing competition and market dynamics. The industry is characterized by a high level of market concentration, with a few central banks holding a significant share of total assets, deposits, and loans (Olweny, 2019). These oligopolistic tendencies in the sector are reinforced by tremendous barriers to entry, making it challenging for new entrants to establish a substantial market presence, including the high capital requirements and regulatory complexities (Ayadi & Egwaikhide, 2009).

Figure 1: Industry total assets



Source: (CBN Report, 2023)

This oligopolistic structure is further accentuated by interconnectedness among significant banks, often through cross-ownership and strategic partnerships (Odigbo & Abada, 2019) and the recapitalization exercise in 2004, which led to industry consolidation and the emergence of larger banks (Amel & Pollard, 2005). This structure may be detrimental to competition and inhibit the growth and maturity of the sector. In the Nigerian banking sector, this may result in limited price competition, reduced product differentiation, and a tendency for significant banks to move in tandem in response to market conditions (Abiola & Onaolapo, 2017). Regulatory efforts and policies promoting a more competitive landscape are crucial for fostering a healthier banking environment in Nigeria.

The Nigerian banking industry has experienced significant evolution over the last three centuries, from rudimentary quasi-banking activities to modern-day technology-enabled banking services. Pseudo-banking activities, led by Elder Dempster Merchants, started in the 18th century in Nigeria (Oluduro, 2015). However, formal banking operations began in 1892 when the African Banking Corporation for British West Africa, now First Bank of Nigeria Limited, was established. Subsequently, a raft of foreign-owned banks, including the Anglo-Egyptian Bank and National Bank of South Africa, which morphed into Barclays Bank and the British and French Bank for Commerce and Industry, now United Bank for Africa, were established in 1925 and 1948 respectively (CBN, 2020).

The dominance of foreign-owned banks was challenged in 1914 by Nigerians in pursuit of a nationalistic agenda by establishing banks owned by Nigerians (Ajayi and Sosan, 2013). Nigerians sought to address its exclusion from accessing banking services, including credits by foreign-owned banks. Notwithstanding the objectives of these banks, they were plagued by inadequate capital, insufficient

pool of workforce, and mastery of the trade, leading to the early collapse of these institutions (Oluduro, 2015)

2.4.1 The Rise and Dominance of Indigenous Banks

After a prolonged period of the industry under foreign ownership, the Nigerian banking sector saw significant growth in the ownership by local businessmen. Initially, local banks focused more on local customers, mainly SMEs. Given their limited geographical footprints and primary financial services offerings, these banks needed to improve their ability to compete with international banks with extensive resources and capacity to manage their customers remotely (Nkontchou, 2013).

However, this changed as local banks began to expand the bouquet of services they offered, and microfinance banks focused on meeting the emerging demands of SMEs (Aladejebi, 2019). This development has led to the growth of local ownership in Nigeria, ranking as one of the countries in the world with the highest indigenous ownership of banks. Only Israel has more indigenous ownership of banks than Nigeria, with local people in business owning 94% of banks in Nigeria (Nachum & Ogbechie, 2022). Several reasons have been attributed to this development, including the indigenization of the sector through government policies (Adeyinka & Olajide, 2021), knowledge and information asymmetry (Nachum et al., 2022), and the sheer resilience of Nigerian people in business as demonstrated by their global footprints (Nkontchou, 2013).

Table 1: Ownership categorization

	Name	**Ownership**			**Name**	**Ownership**
	Banks with International Authorization				**Banks with Regional Authorization**	
1	Access Bank	Indigenous		1	Globus Bank	Indigenous
2	Fidelity Bank\FCMB	Indigenous		2	Providus Bank	Indigenous
3	FirstBank	Indigenous		3	Sun Trust Bank	Indigenous
4	GT Bank	Indigenous		4	Parallex Bank	Indigenous
5	Union Bank	Indigenous			**Banks with National Authorization**	
6	UBA	Indigenous		1	Jaiz Bank	Indigenous
7	Zenith Bank	Indigenous		2	Taj Bank	Indigenous
	Banks with National Authorization					
1	Citibank	International		6	Stanbic IBTC	International
2	Ecobank	International		7	Standard Chartered	International
3	Heritage Bank	Indigenous		8	Sterling	Indigenous
4	Keystone Bank	Indigenous		9	Titan Trust	Indigenous
5	Polaris	Indigenous		10	Unity Bank	Indigenous
				11	Wema Bank	Indigenous

Source: CBN Annual Report (2021)

2.4.2. The Banking Consolidation of 2004

The Nigerian banking industry has experienced a long history of recapitalization, accentuated by many market-related factors. Between 1952 and 2021, the Nigerian banking industry experienced 11 regulatory-led recapitalizations (Oluitan, Ashamu & Ogunkenu, 2015). These spates of recapitalization have been driven by the need to strengthen the capacity of these banks to undertake risks and drive efficiency. According to Soludo (2004), the Nigerian banking industry is fraught with significant risks, including weak governance, low capacity to bear risks, excessive leveraging, *and* inability to *invest* in human resource development and technology, necessitating increased capital to support the high-risk environment.

The 2004 recapitalization *of* the Nigerian banking industry has had the most significant impact *on* shaping the industry landscape, leading to a market-induced consolidation that reduced the number of banks in Nigeria from 89 to 24 through mergers and *acquisitions* (Oluitan *et al.*, 2015) and organic growth through accelerated capitalization of retained earnings (Jimmy, 2008). Although there have been divergent views on the impact of recapitalization on the performance of banks, ex-post results have indicated that the 2004 recapitalization of the banking industry delivered efficiency gains for the industry.

According to Oluitan et al. (2015), the consolidation of 2004 enhanced the ability of the industry to undertake increased creation of risk assets, deposit mobilization, deployment of quality technology, and an overall improvement in banking habits. This position supports a large body of work that underscores the need for increased loss-absorbing capacity, including views espoused by Demirguc-Kunt & Levine (2003), Imala (2005), and Sharma (2009). Beyond the efficiency gains, the consolidation has significantly reduced regulatory costs in the Nigerian banking industry (CBN, 2009).

Table 2: Evolution of Capital Requirement in the Nigerian Banking Industry

Year	License Type	Required Capital
1958	Commercial	GBP 400,000
1969	Foreign and Local	NGN1.05m & N0.6m
1979	Commercial	NGN2.0m
1988 - Feb	Commercial and Merchant	NGN 5.0m & NGN 3.0M
1988 - Oct	Commercial and Merchant	NGN 10m & NGN 6m
1989	Commercial and Merchant	NGN 20m & NGN 12m
1990	Commercial and Merchant	NGN 50m & NGN 40m
1997	Commercial and Merchant	NGN 500m for both
2001	Existing and New	NGN 1b & NGN 2b
2004	Commercial	NGN 25b
2010	Regional, National and International	NGN 15b, NGN 25b & NGN 100b

Source: (CBN Report, 2009)

2.4.3 The Asset Management Corporation of Nigeria

The global economic meltdown of 2008 severely impacted the international financial market with an outsized impact on emerging markets, including Nigeria. Consequently, some banks suffered severe losses and accumulated a hefty portfolio of Non-Performing Loans (NPLs) as borrowers began to default on the payment of interest and principal obligations. The special audit conducted by the CBN and the Nigerian Deposit Insurance Company (NDIC) revealed that nine banks failed to meet the 10% Capital Adequacy Ratio (CAR) and 25% minimum liquidity ratio (Abata, 2015) due to high exposure to risky sectors including the oil and gas sector and the absence of quality corporate governance and internal control system, (Alawiye, 2013).

Given the systemic challenges faced by the industry, the CBN took several steps, including the termination of the contract of eight of the nine banks' CEOs, the injection of N620 billion in these banks to meet demands from depositors (Egwuatu, 2012), extension of liquidity lines to these banks to enhance market confidence and reiterated the capacity of the NDIC to backstop the aftermath of this development. In addition to these market interventions, the CBN introduced a raft of reforms, including repealing the universal banking model, limiting the tenure of directors of DMBs, and raising the unique numbering of bank accounts to ensure customers cannot game the system. The introduction of the Asset Management Corporation of Nigeria (AMCON) allowed toxic loans from banks to be bought at discounted prices (Abata, 2015).

Since commencement, AMCON has taken over a loan portfolio above NGN16 trillion, representing 12,537 borrowers from qualifying institutions. By taking over non-performing assets, AMCON provided liquidity to banks, enabling them to resume normal lending activities, thereby facilitating liquidity injection to support credit flows to the real economy (Adesola, 2016). In addition, the intervention of AMCON contributed to restoring confidence among investors and depositors, resolving distressed assets, and the recapitalization of banks helped attract investment into the banking sector (Anyanwu & Oyefusi 2012).

Even with the success of AMCON, a large segment of the market, including professionals and researchers, believed the intervention created structural problems that may impact the long-term fundamentals of the sector. Establishing AMCON may create moral hazard concerns, as banks may perceive that their risky behaviour could be bailed out by the government, potentially leading to a lax approach to risk management (Batten, J. A., & Wagner, N. F. 2014). In addition, the resolution process conducted by AMCON involves high costs to the government, including the injection of funds for recapitalization, which could strain public finances and resources and create public distrust (Anyanwu et al., 2014). More fundamentally, the intervention may distort market forces by temporarily mitigating the consequences of banks' poor decision-making. AMCON, created to terminate in 10 years, has

continued to operate many years after the 10th anniversary due to the challenges in resolving some of the delinquent portfolios and the growing supply of assets to the Corporation (Omosele, 2018).

Table 3: AMCON Loan Portfolio

Eligible Financial Institutions	Number of Loans	% of AMCON Portfolio
Intercontinental Bank	1,735	11.62%
Oceanic Bank	783	11.58%
Union Bank	393	11.43%
Main Street Bank	503	11.40%
Keystone Bank	740	9.15%
UBA	3,326	5.80%
First Bank	289	5.21%
Finbank	782	4.04%
Enterprise Bank	1,062	3.59%
FCMB	575	2.94%
Skye Bank	158	2.62%
Zenith Bank	18	2.42%
Unity Bank	937	2.28%
GT Bank	88	2.25%
Diamond Bank	83	2.13%
Ecobank	155	2.07%
Fidelity Bank	271	1.75%
Access Bank	43	1.63%
Sterling Bank	176	1.22%
Wema Bank	237	1.13%
ETB	171	0.59%
Stanbic IBTC	12	0.13%
Total	**12,537**	**100%**

Source: (AMCON Report, 2019)

In conclusion, while AMCON's intervention has contributed positively to the stability and recovery of the Nigerian banking industry, concerns related to moral hazard, government costs, and potential market distortions remain. Monitoring the ongoing impact of AMCON's activities and addressing any emerging challenges will be essential for the long-term health of the banking sector.

2.4.4 Repeal of Universal Banking in Nigeria

The universal banking license in Nigeria allowed banks to engage in both commercial banking and investment banking activities, leading to increased commingling of commercial banks' assets with investment banking operations, notwithstanding the significant difference in the risk characteristics. This development led to a heightened deterioration of asset quality in the sector as banks took excessive

risks to drive profitability and growth (Okezie,2021). However, in 2010, the CBN announced the repeal of the universal banking license in Nigeria, requiring banks to choose between being a commercial bank or an investment bank.

Several studies have examined the impact of repealing the universal banking license on the Nigerian banking sector. A survey by Ajayi and Ojo (2015) found that the repeal led to increased competition in the banking sector, which improved efficiency and profitability. Specialized banks may focus more on their core competencies, leading to enhanced expertise in specific financial services, improved efficiency, and a better understanding of the associated risks (Demirgüç-Kunt & Detragiache 2002).

One of the primary reasons for repealing the universal banking license was to reduce systemic risk in the Nigerian financial system. Moving toward specialized banking could lead to better risk management as banks concentrate on a narrower range of activities, reducing systemic risk and enhancing the financial system's stability (Laeven & Levine 2009). The CBN believed that the universal banking model exposed banks to excessive risk, as they were engaging in both commercial and investment banking activities. A study by Ujunwa and Akinleye (2016) found that the repeal reduced banks' risk-taking levels, contributing to improved financial stability. By requiring banks to choose between being a commercial bank or an investment bank, the CBN hoped to reduce the risk of bank failures and systemic crises (Iweala, 2010).In addition, the repeal of the universal banking license also aimed to increase focus on core competencies. By requiring banks to choose between being a commercial bank or an investment bank, the CBN hoped to encourage banks to focus on their core competencies and improve the quality of their services (Ajayi, 2015). This would enable banks to compete more effectively and contribute to the growth and development of the Nigerian economy. Furthermore, the repeal aimed to improve regulatory oversight in the Nigerian financial system. By requiring banks to choose between being a commercial bank or an investment bank, the CBN sought to simplify the regulatory framework and improve the effectiveness of regulatory oversight (Omorogbe, 2021). This would enable the CBN to better monitor and manage risks in the financial system.

However, despite the benefits and rationale for the repeal, this regulatory action potentially limits diversification opportunities for financial institutions. Diversification is a risk management strategy, and specialized banks may face challenges in achieving the same level of risk diversification (Berger & DeYoung, R. 1997). Universal banks often play a role in promoting financial inclusion by offering a variety of services. A move toward specialized banking requires careful consideration to ensure that essential financial services are still widely accessible (Beck Demirgüç-Kunt & Honohan, 2009).

2.6 Theoretical framework

Theoretical frameworks for risk management in the context of banks often incorporate concepts from financial economics, agency Theory, and corporate governance. Understanding these frameworks is crucial for assessing how risk management practices influence the economic performance of banks. Some of the critical theoretical frameworks for examining the nexus between risk management and the financial performance of banks are highlighted below:

2.6.1 Principal – Agent Theory

Agency theory explains the relationship between the various components of an entity's governance structure concerning how ownerships are separated from the management of institutions and the resulting managerial motivation to minimise the misalignment of interests. Principal-agent Theory examines the relationship between shareholders (principals) and managers (agents) and the conflicts of interest that may arise and influence risk-taking behaviour, decision-making, and overall organisational outcomes. Managers may engage in risk-taking behaviour to pursue their interests, especially if their compensation is tied to short-term financial metrics (Jensen & Meckling, 1976; Fama and Jensen, 1983)

Smith and Stulz (1985) found that the compensation structure and the extent of information asymmetry between principals and agents significantly influence managerial attitudes toward risk-taking and mitigating these risks. The increasing misalignment of interests among shareholders, professional managers, and debt holders results from asymmetry in information and distribution of interests, which can inform attitudes towards risks and the overall process of value creation (Bouckova, 2015). As a result, various studies have highlighted the potential impact of defined hedging policies on value creation and a firm's overall value (Hiebl, 2015; Lambert, 2017). Similarly, the effect of managerial motivation options has been studied to impact firm value positively (Maksimov et al., 2017; Steinberg, 2010). However, negative evidence was found by Park & Byun (2021) in the analysis of the impact of high managerial compensation on firm value in SMEs in Korea, mainly as a result of low organizational capability.

Principals deploy several mitigants to align interests and ensure sustainable value creation in the banking industry. Compensation contracts are designed to align the interests of managers with those of shareholders, but the design of optimal contracts is challenging due to information asymmetry (Jensen & Murphy 1990). Similarly, effective monitoring mechanisms and corporate governance structures are crucial for mitigating agency problems (Adams & Mehran 2003). In extreme cases, steps are taken to address misalignment in corporate events. Shareholders may engage in activism to influence managerial decisions and protect their interests (Bebchuk & Jackson 2013).

Overall, substantial evidence supports the agency theory hypotheses with solid support for effective risk management to mitigate the mismatch between managerial rewards and shareholder interests.

2.6.2 Financial Intermediation Theory

Financial intermediaries, such as banks, play a critical role in managing and diversifying risks in the financial system. Financial intermediation theory concerning risk management and the performance of banks involves understanding how these institutions manage various risks inherent in their operations. Banks face multifaceted risks, and institutionalising a comprehensive approach to managing these risks ensures the stability and performance of financial institutions (Freixas & Rochet, 2008).

Banks engage in risk transformation by converting short-term, liquid liabilities (deposits) into long-term, illiquid assets (loans), and the ability to assess and mitigate the various risks associated with this transformation is essential to the overall value creation role of these banks (Diamond, & Rajan, 2001). The Theory emphasises aggregating these risks and their various components at the micro and systemic levels. The theory examines the importance of effective loan portfolio management, including credit analysis, monitoring, and diversification, to mitigate credit risk and ensure the protection of banks' bottom line and overall financial health (Saunders et al., 2014). The Theory also emphasizes the identification, quantification, and effective management of liquidity risk and central bank roles (Kashyap & Stein, 2000), interest rate risk and asset-liability management (Rose & Hudgins, 2005), and technology disruption and management of operational risk, (Merton, 2018).

From a broader perspective, the financial intermediation theory acknowledges the existence of systemic risk, where the failure of one institution can lead to a chain reaction affecting the entire financial system. Contagion risks are inherent in interconnected financial markets (Archaya et al., 2011).

In conclusion, financial intermediation theory provides a framework for understanding the risks banks face and the strategies employed to manage these risks. The critical discussion in academics underscores the multifaceted nature of risk management in banking and the need for a comprehensive approach to ensure the stability and performance of financial institutions.

2.6.2 Financial Economic Theory

The financial economics approach to corporate risk management is an extension of the MM paradigm (Miller and Modigliani, 1958), which contends that capital structure is irrelevant to the value of a firm. The Financial Economic Theory extends the MM paradigm to risk management by examining the impact of hedging on the volatility of cash flow and, by extension, the volatility of firm value. This Theory stipulates that since hedging minimizes the volatility of cash flow, it implies a lower volatility for the value of a firm. The overarching outcome of hedging is increased firm value due to hedging premium. Evidence in the academic literature has been diverse, with little support for the ultimate contribution to a substantial value, albeit significantly reducing cash flow variability (Jin and Jorion, 2006). Ahmed, Azevedo & Guney (2014) found no evidence to support the positive impact of hedging on firm value when they examined the effect of hedging with financial derivatives on substantial value and financial performance in non-financial firms in the UK. However, research findings have also linked

the adoption of hedging as a policy to increase firm value (Dan, Gu & Xu, 2015), (Pradana & Naomi, 2018).

2.6.3 Liquidity Management Theory

Liquidity management theory is a popular paradigm in the Nigeran banking industry, given the lack of long-term liquidity in the banking system limits banks' ability to fund projects with long gestation periods. The thrust of the Theory is that banks should primarily lend to support short-term projects with the capacity to self-liquidate (Maness & Zietlow, 2005). This Theory has been contended in practice as a result of the ability of banks to undertake maturity extension since depositors, although short-term, typically do not demand their funds in the same window except in a period of stress. Divergent views have contended that although demand deposits are typically short-tenured, they tend to be stable, allowing banks to lend a portion of the deposits to long-term projects without risking liquidity challenges (Campello et al., 2012). Notwithstanding the shortcomings and opposing views, liquidity theory is still relevant in the banking industry and reflects strongly in the regulatory framework of the banking industry.

2.6.4 Credit Risk Theory

Credit risk arises from the likelihood that a lender from a bank may fail to pay the principal and interest due on the loan within the agreed time or fail to pay a part of it in full. Consequently, commercial banks spend significant money and time conducting due diligence on potential customers to ascertain the inherent credit risks in a transaction. Interest charged on loans is directly proportionate to the implied risks of default in a transaction, leading to increased rates for higher-risk customers (Owojori, Akintoye & Adidu, 2011). In addition to due diligence and Know Your Client (KYC), using insurance products to mitigate credit risk is prevalent in the Nigerian banking industry.

Given that the primary process of achieving the performance objectives of banks involves risk-taking, there is a need for a robust risk management process to ensure such objectives are protected from the crystallization of numerous risks faced by these banks. To achieve their goals, banks must strike the tradeoff between profitability, sustainable growth, adequate returns, and risks, resulting in risk-adjusted returns (Ralph & Kimball, 1998; Girotra, 2020). Since all banks are risk-bearing institutions, returns and profitability must be measured concerning the quantum of risks undertaken rather than in isolation (Allen & Carlleti, 2012). Therefore, effective risk management sits at the heart of the performance of the banking industry as effective risk management protects banks from excessive risk-taking (Alshatti, 2015), provides support for the optimization of its assets (Etale & Ujulu, 2018), and enhances the overall profitability of the sector (Ezelibe & Aniefor, 2017)

2.6. Empirical Review

The impact of risk management on the performance of banks has received significant attention in academic literature as various studies sought to explore the strength and directional relationship between the financial performance of banks and the multiple components of risks as well as their aggregate. While some studies considered how aggregate risks influence the performance of banks, others evaluated the impact of liquidity risk, solvency risk, operational risk, and credit risk.

Risk Management and Performance of Banks

Several studies have supported an inverse relationship between the performance of banks and risk management. Banks with lower composite risks have outperformed banks with high risks across a range of performance metrics, including ROA and ROE. A study by Harelimana (2017) found that credit, operational, interest rate, and liquidity risks are the main drivers of the composite risk profile of the financial institution. The study, conducted over five years for Unguka Bank Limited, employed qualitative and quantitative techniques using linear regression and found a strong influence of risk management on the performance of the Bank in Rwanda. Similarly, Chukwunulu, Ezeabasili & Igbodika, 2019 examined "Risk Management and the Performance of Commercial Banks in Nigeria (1994-2016)" to understand the influence of risk management on the return on assets and return on equity for commercial banks using secondary data covering 23 years. OLS regression analysis was employed to understand the relationship between the return variables and proxies for credit, liquidity, operational, and solvency risks. The studies showed that risk management explained 41% of ROE and 23% changes in ROA. The results further showed that credit risk has a significant negative influence on ROE, while liquidity risk and operational risks do not affect the performance of banks. Solvency risk hurts ROA but has a positive influence on ROE.

Inegbedion, Vincent & Obadiaru (2020) studied the nexus between risk management and the financial performance of banks in Nigeria; the authors employed a longitudinal survey using the audited financial results of 5 banks over eight years to understand the influence of credit risk liquidity risk, solvency risk, and operational risk on the performance of these banks, measured by ROA and ROE. The study deployed GMM and Vector Error Correction Model to estimate the relationship. The finding includes the fact that, in the long run, the profitability of Nigerian banks is influenced by credit, liquidity, solvency, and leverage risks. However, liquidity risk affects the ROA and ROE in the short run.

Adeusi, Akeke, Adebisi & Oladunjoye (2014) conducted a study investigating the influence of risk management on the performance of banks in Nigeria. The study employed longitudinal data covering the performance of ten banks over four years to estimate the nexus between risk management and performance using the panel data technique. The team found an inverse relationship between credit risk and financial performance and a significant positive relationship between the capital adequacy ratio and the performance of banks in Nigeria. Similarly, Okere, Isiaka, and Ogunlowore (2018) conducted a

study to understand the influence of credit and liquidity risks on the performance of commercial banks in Nigeria. The team deployed panel data covering 15 commercial banks, with ten listed on the Nigerian Stock Exchange. The study found a positive relationship between risk management and the performance of deposit money banks in Nigeria. Olusanmi, Uwuigbe, and Uwuigbe (2015) investigated the influence of quality risk management practices on the overall financial performance of banks in Nigeria; they evaluated the performance of these banks by reviewing the audited results of these companies from the NSE over ten years using the OLS regression analysis, the study found no significant relationship between risk management and the performance of banks using ROE as a proxy for the overall financial performance of Nigerian banks.

Kafidipe, Uwuigbe, Olajide & Okeme (2021) studied the role of corporate governance, risk control, and operational risk on the performance of commercial banks in Nigeria. This study evaluated the measure of risk control in banks using the role of governance in driving the financial performance of banks. The study found a positive relationship between the coefficient of board committee numbers and Tobin's Q. Board sizes, independence, and number of committees have a negative relationship with ROE.

In their 2018 study, Okere, Isiaka, and Ogunlowore investigated the effects of risk management, specifically credit and liquidity risks, on the financial performance of Nigerian deposit money banks. They utilized panel methodology and various econometric techniques, including the Hausman test and descriptive statistics. The study found a positive relationship between NPL and ROA with a coefficient of 2.851973 and a p-value of 0.0003, indicating significance at the 5% level. Similarly, there was a positive correlation between CAR and ROA, with a coefficient of 6.371115 and a p-value of 0.0005, which was also significant at the 5% level. The relationship between LDR and ROA was positive but insignificant, with a coefficient of 0.236733 and a p-value of 0.8378.

Conversely, LEV showed a negative correlation with ROA, having a coefficient of -1.194213 and a p-value of 0.0519, which is significant at the 5% level. The authors recommended that Nigerian banks enhance their liquidity risk analysis, credit analysis, and loan management capabilities. Furthermore, regulatory bodies should ensure stricter compliance with financial regulations and guidelines.

Soyemi, Ogunleye, and Ashogbo (2014) reviewed risk management practices among Nigerian banks, focusing on their financial performance in 2012. This study relied on secondary data from selected banks' annual reports and accounts. The objective was to link risk management practices to financial outcomes. The studies collectively emphasize the importance of robust risk management strategies in enhancing banks' financial performance. They highlight the need for continuous improvement in risk assessment and regulatory compliance to ensure the stability and growth of the banking sector in Nigeria.

The cross-sectional data obtained was analysed using descriptive statistics to depict patterns. After that, a standard error OLS regression was used to estimate any significant influence between the banks' risk

management practices and financial performance. The models indicate a relatively high R^2 [ROA=92% (71.78); ROE=84% (46.55)], implying a significant influence of the Bank's risk management practices on their performance. However, while the credit and capital risk display substantial positive influence on ROA by accounting for 10% (8.31) and 20% (4.14), only the credit risk is positively significant on ROE, having accounted for 45% (5.51) variations in ROE. As indicated by the study's findings, the financial performance of Nigerian Deposit Money Banks is heavily determined by risk management practices.

Ademola, Oladejo, and Adenle (2022) investigated the risk and stability of Nigerian banks through a quasi-experimental ex post facto study. The research focused on banks listed on the NSE from 2010 to 2019. A random sample of ten banks was selected for the study, using panel data regression analysis to evaluate the hypotheses. The findings indicated that credit and liquidity risks significantly affect these banks' financial performance (Return on Equity, ROE). Specifically, the study concluded that financial risk negatively impacts the financial performance of Nigerian banking institutions.

Amelia (2017) studied empirical evidence to understand the nexus between risk management practices and the financial performance of banks in Nigeria. Using an ex post facto research design, the study analysed data from 14 Banks. The results showed a significant inverse relationship between credit risk and Return on Assets (ROA) and a significant positive relationship between capital adequacy risk, liquidity risk, and ROA.

Yusuf (2019) examined the financial performance of Islamic banks in Nigeria over a 15-year period (2004 to 2018) using various risk management techniques. The study showed that methods for managing liquidity, credit, and operational risk significantly negatively impacted performance and capital risk management strategies.

Thomas et al. (2014) explored risk management in the Nigerian banking sector using data from 23 banks. The research employed a descriptive method with questionnaires completed by 88 respondents. The results showed that the performance of banks in Nigeria is highly susceptible to fraud and forgeries, adversely affecting its position and overall performance.

These studies collectively highlight the critical impact of various risk management practices on the financial performance of Nigerian banks. Effective credit, liquidity, and operational risk management are essential for maintaining stability and profitability. Additionally, the detrimental effects of bank fraud and forgeries underline the importance of robust internal controls and regulatory compliance to safeguard financial institutions' performance and reputation.

Credit Risk and Performance of Banks

Omorokunwa and Ogbeide (2020) sought to investigate the effect of credit risk management on the profitability of quoted deposit money banks in the Nigerian capital market. The panel regression system was applied to estimate the panel data from 2006 to 2018, covering 12 banks in Nigeria. Return on asset

was used as a proxy for bank performance, and the bank non-performing loan ratio, bank loan-to-deposit ratio, and bank leverage were used as the independent variables. The result of the empirical tests showed a significant relationship between credit management and bank performance. The bank non-performing loan ratio had an inverse (negative) relationship with the performance of the banks. On the other hand, a bank loan-to-deposit ratio positively impacted the performance of banks in Nigeria. However, bank leverage did not affect the performance of the banks in Nigeria.

Catherine (2020) conducted an empirical study to examine the influence of credit risk management on the Bank of Africa's profitability in Uganda using correlation and regression analysis. The return on asset and equity were used as proxies for profitability, while the diversification of risk, control of credit risk, and appraisal of credit form part of the independent variables in the study. The result from the study showed a positive and significant relationship between credit risk management components and financial performance in the Bank of Africa in Uganda.

Through multiple regression analysis, Rehman, Muhammad, and Sarwar (2019) explored how risk management influences credit risk in Pakistani banks. Their study concluded that effective credit risk management significantly enhances these banks' performance. Consistent with the outcomes of the study by Rehman et. al (2019), Ekinci and Poyraz (2019) found an inverse relationship between credit risk and bank performance, indicating that higher credit risk leads to poorer performance outcomes from their study of the impact of credit risk on the performance of banks in Turkey from 2015 to 2017 using panel regression analysis. These studies emphasise the critical role of credit risk management in maintaining and improving bank performance. While effective risk management strategies in Pakistan have been shown to impact bank performance positively, the findings from Turkey highlight the detrimental effects of high credit risk on bank performance. These insights underscore the necessity for robust risk management frameworks to ensure the stability and success of banks in different regions.

Anthony and Shanise (2018) investigated the influence of credit risk on the financial performance of banks in Barbados, employing a multiple regression model for their analysis. Solvency and interest rate risks were found to significantly impact ROE. However, credit, liquidity, and operational risks exhibited only weakly positive relationships with ROE.

In Imola (2017), the descriptive research analysis, which explored credit risk within the Romanian banking sector, revealed that interest rate risk and return on assets had a negative correlation. Similarly, liquidity risk and ROA exhibited a negative correlation. However, there was a positive correlation between return on Investment and Credit Risk.

The findings from both studies highlight the varying impact of different risk components on the financial performance of banks in different geographical regions. They underscore the importance of understanding and managing various types of risks to enhance financial performance and stability.

Solvency Risk and Performance of Banks

There are divergent views on the impact of CAR on the financial performance of banks. The optimistic view school of thought believes that a higher CAR is often associated with more excellent financial stability (Berger & Bouwman, 2009; Cihak & Hesse, (2010); Delis & Kouretas, 2011; Louzis & Vouldis, 2013). These scholars have found evidence that a well-capitalized bank is better equipped to absorb losses, handle economic downturns, and maintain a resilient financial position. Umoru & Osemwegie (2016) studied the degree of influence exerted by solvency risk, measured by capital adequacy ratio, on the financial performance of banks using the GLS estimator technique and data from Nigerian banks over eight years. The results showed a positive significant influence of capital adequacy ratio on the financial performance of banks.

Similarly, Akhigbe, McNulty & White (2004) investigated the predictive power of capital adequacy measures in anticipating the distress of banks. This study employed an empirical approach, utilizing a sample of banks and financial institutions in Nigeria to analyse the relationship between capital adequacy (CAR) and the incident of distress outcomes. Various financial ratios and capital adequacy indicators are examined to ascertain their efficacy. The study found that capital adequacy plays a significant role in predicting bank distress. CAR is identified as an important indicator, with higher CAR associated with lower incidents of bank distress.

However, contrarian views associate excessive CAR with lower profitability as a result of suboptimal asset utilization. For Example, Berger & Udell (1998) investigated small businesses across various economic cycles and found that higher capital adequacy may impact growth, drive lower profitability, and, in extreme cases, lead to distress. The study employed empirical methods to substantiate its findings, providing a rigorous analysis of the relationships between small business finance, financial markets, and economic development.

Other 'middle-ground' schools believe that the capital adequacy ratio may be moderated to reflect the stages of growth and economic cycles. Borio & Zhu (2008) investigated the relationship between capital regulation and financial stability. The study reviewed how regulatory capital shapes the risk-taking behaviour of banks and its consequential impact on stability and the overall system. The study found that CAR has different implications for the stability of banks depending on the economic cycle, and regulators need to reflect these in setting CAR to enhance its transmission efficacy. Higher CAR may be required during economic expansion to moderate the overheating of the economy and lower CAR during financial stress to drive growth.

2.7. Gap in Literature

There is a large body of knowledge in risk management and financial performance in the Nigerian banking industry. Some of these studies evaluated the nexus between the financial performance of deposit money banks and risk management from a composite standpoint. In contrast, other studies

looked at the impact of specific areas of risk management, such as credit risk, operational risks, and liquidity risk, on the financial performance of banks. The effect of enterprise risk management on the performance of banks has been covered by the following body of work: Adeusi, Akeke, Adebisi & Oladunjoye, 2014; Ezelibe & Aniefor, 2017; Okere, Isiaka & Ogunlowore, 2018; Chukwunulu, Ezeabasili & Igbodika, 2019; and Inegbedion, Vincent, & Obadiaru, 2020. Similarly, the impact of capital adequacy and financial performance of banks in Nigeria have been extensively researched, including Umoru & Osewengie, 2016 Amahalu, Okoye, Nweze & Obi, 2017 Ukinamemen & Ozekhome, 2019 Oyetayo, Osinubi, & Amaghionyeodiwe, 2019. The impact of credit risk management has also been extensively examined by various studies, including Olawale, 2014 Adeusi & Dada, 2017 and Akinselure & Akinola, 2019.

A large number of these studies found that the performance of a bank, measured by ROA and ROE, is significantly influenced by risk management practices (Adeusi et al., 2014; Adeyemi & Fasesin, 2018); credit risk exerts a significant influence on banks' profitability (Chukwunulu et al., 2019; Inegbedion et al., 2020), liquidity risk has a positive impact on the profitability of a bank (Adeusi et al., 2014; Umoru, et al, 2016; Inegbedion et al, 2020). Despite the extensive research on the phenomenon, there has been a high concentration of previous studies on the influence of credit and liquidity risks as a key influencer of the performance of banks.

However, given the changing operating environment of banks and the growing role of technology in banking services, driven by factors including the evolving demands of the millennials, operational risks that address people systems and processes have become a significant consideration for regulators, shareholders, and banks. This study seeks to extend the body of knowledge in this area to understand the influence of operational risks on the performance and sustainability of the banks in Nigeria on a standalone basis and in concert with other risk factors.

CHAPTER THREE
METHODOLOGY

3.1 Introduction

This chapter presents the research design, data collection methods, data sources, and analytical tools utilised in the study. The chapter provides the analytical framework and a building block from previous chapters by presenting the sample size and data collection, processing, and analysis process. It also documents the basis for the selection of banks for the study.

3.2 Research Approach

The study employs a quantitative approach to understand the relationship between risk management and the performance of banks in Nigeria. The use of a quantitative approach is justified for examining the topic of risk management and its impact on the financial performance of banks in Nigeria due to its objectivity, quantifiability of variables, statistical inference capabilities, suitability for large-scale data analysis, comparative analysis potential, forecasting capabilities, and implications for policy and decision making. Quantitative research provides an objective and rigorous method for examining the nexus between two phenomena by allowing researchers to measure these variables precisely and explore their interrelationships quantitatively (Bodla & Danish, 2020).

The quantitative method facilitates the process of drawing statistical inferences and generalizing the population of Nigerian banks based on sample data from 12 banks over a period of 11 years. The study evaluated all 15 listed banks in Nigeria. However, given some recent financial challenges and the lack of financial information, three banks, namely Keystone, Eco, and Polaris, were excluded from the study.

By employing inferential statistics, researchers can test hypotheses, determine the significance of relationships, and identify patterns or trends in the data, providing valuable insights into the impact of independent variables on the dependent variables (Saunders, M., Lewis, P., & Thornhill, A., 2019).

The research design involves data from 12 Nigerian banks over a period of 11 years, making it well-suited for a quantitative approach. Quantitative methods are well-suited for analysing large datasets commonly available in the banking industry, such as financial statements, regulatory reports, and historical performance data. Researchers can conduct comprehensive analyses across multiple banks over extended periods, enhancing the robustness and generalizability of their findings (Creswell, J. W., & Creswell, J. D., 2017)

In addition, quantitative research facilitates comparative analysis among different banks or bank groups, such as listed versus unlisted, concentrated ownership versus diversified ownership, or banks of varying sizes. By comparing key performance indicators and risk management practices quantitatively, the quantitative approach helps to identify disparities, trends, and best practices across various segments of the industry or sectors (Sekaran, U., & Bougie, R., 2016).

More fundamentally, quantitative research allows for developing and testing predictive models to forecast financial performance based on risk management indicators. The quantitative approach utilizes econometric models, time-series analysis, or other statistical tools to forecast future financial outcomes and assess the potential impact of different strategies on performance (Mollah, M. R. A., Hassan, M. K., & Rashid, A., 2018; Fernandes, C., Ferreira, D., & Raposo, C., 2018; Kumar, S., & Sharma, S. (2020).

3.3 Research Design

3.3.1 Sample, Data Source, and period

The study used secondary data from the Central Bank of Nigeria, the Nigerian Stock Exchange, and the investor Relations sites of Deposit Money Banks in Nigeria. Financial information from the Income Statement and Statement of Financial Position, including notes to the financial statements of Nigerian banks covering the period between 2012 and 2022, was also used in the study.

The banks covered in this research are UBA, FirstBank, StanbicIBTC, Zenith, Fidelity, Access, Wema, Sterling, Union, GTbank, FCMB, and Unity Banks. These banks represent 97.0% of the Nigerian banking industry by asset, 93.7% by revenue, and 95.6% by loan portfolio (See Table 3.2). Banks currently receiving liquidity support from CBN, including Heritage, Polaris, and Keystone, have been excluded from the study, given the lack of data and the influence of the ongoing intervention in distorting the state of their affairs. At the time of the research, several new banks had been licensed by the Central Bank of Nigeria. These banks were, however, excluded from the study, given the need for historical financial data and the level of compliance with the reporting framework. In Nigeria, banks prepare their financial reports under IFRS and are obligated to report their financial results to the CBN and the NSE for listed institutions.

Table 3.2: Distribution of industry assets, revenue, and loans across the sample for the 2022 Financial Year

	% of industry assets	% of industry loan	% of industry revenue
Access	20.3%	21.6%	22.9%
FCMB	4.0%	4.1%	1.0%
Fidelity	5.4%	3.2%	1.2%
FirstBank	14.3%	14.2%	19.3%
GTBank	8.7%	16.8%	10.9%
Stanbic	3.9%	2.3%	1.1%
Sterling	2.5%	2.2%	0.6%
UBA	14.7%	11.1%	15.9%
Union	3.8%	1.8%	1.1%
Unity	0.7%	0.3%	0.9%
Wema	2.0%	2.2%	0.3%
Zenith	16.7%	15.8%	18.6%
Total	**97.0%**	**95.6%**	**93.7%**

Source: Nigeria Deposit Insurance Report, 2023, and candidate's estimates from research data

3.3.2 Analytical Framework

The analytical framework for the study seeks to assess the relationship between the financial performance of banks and the effectiveness of enterprise risk management practices. This relationship will be examined using panel regression (Barnett & Salomon, 2006; Adeusi et al., 2014; Garcia, Mendes-Da-Silva, Orsato, 2017; Zhao, Guo, Yuan, Wu, Zhou, & Kang, 2018). The performance of a bank is proxied by return on equity (Adeuis et al., 2014; Harelimana, 2017) and return on assets (Chukwunulu et al., 2019; Inegbedion et al., 2020)

The study will also control for size, age, and ownership structure. Size is proxied by the natural logarithm of the banks' total assets (De Klerk, de Villiers, Kaspereit, Lopatta, 2016). Similarly, the natural logarithm of the difference between the current year and the year of establishment is used as a proxy for the age of banks (Berger et al., 1997; Beck, et al, 2006).

The study employs indicator variables to represent different ownership structures in quantifying bank ownership as a control variable in examining bank performance. Binary indicator variables will be used, taking a value of 1 if the bank falls into a particular ownership category and two otherwise. For example, an indicator variable will be created to represent publicly traded banks. It takes a value of 1 if the bank is publicly traded and two otherwise. This will be repeated for the various ownership structures.

To examine the relationship between the risk management performance of firms and their financial performance, time-random effects panel data models will be estimated using the degree of Credit Risk (CR), Operational Risk (OR), Solvency Risk (SOR), and Liquidity Risk

(LR) as independent variables and return on equity and return on assets as the dependent variable. The model is set up below to achieve the estimate

$$ROE_{i,t} = \beta_0 + \beta_1 CR_{i,t} + \beta_2 OR_{i,t} + \beta_3 SOR_{i,t} + \beta_4 LR_{i,t} + \beta_5 X_{i,t} + \varepsilon_{i,t} \text{ ……..1}$$

$$ROA_{i,t} = \alpha_0 + \alpha_1 CR_{i,t} + \alpha_2 OR_{i,t} + \alpha_3 SOR_{i,t} + \alpha_4 LR_{i,t} + \alpha_5 X_{i,t} + \gamma_{i,t} \text{ ……..2}$$

where $ROE_{i,t}$; $ROA_{i,t}$; is the return on average equity of banks and return on average asset i in year t. β_0, α_0 and δ_0 are the intercepts, while $CR_{i,t}$, $OR_{i,t}$, $SOR_{i,t}$, and LR_i are the coefficients for credit risk, operational risk, solvency risk, and liquidity risks, respectively, in year t. X is a vector control variable, including bank size, age, and ownership type. ε, γ and $\gamma_{i,t}$ The error terms for equations 1, 2, and 3, respectively.

3.3.3 Measurement and description of variables

a) Dependent Variables: Financial Performance

A Bank's financial performance is determined by how the institution efficiently executes its intermediation role of allocating resources between the surplus and the deficit unit by mobilizing deposits and creating risk assets from these funds generated through deposits. The core of this analysis will be measured by cost and profit efficiency, principally by return on equity (ROE) and return on assets (ROA); these ratios are detailed below:

- Return on Asset: Theoretically, ROA is measured by dividing a bank's profit after tax by the average of its opening and closing total assets. The ROA measures how efficiently a bank utilizes its assets to create value during a financial period, typically a year. This information will be derived from the financial statements of the banks under review in this study.

Return on Equity: For a bank, ROE is ROA multiplied by leverage in line with the Dupont analysis. The ROE is a powerful metric for Banks as it measures how the bank utilizes funds provided by shareholders to create value during the period. This information will be derived from the financial statements of the banks under review in this study.

b) Independent Variables: Risks

Risk management theory posits that banks are required to put processes and infrastructure in place to effectively identify, assess, and mitigate risks to ensure financial stability and optimize performance for the benefit of the stakeholders. This theory suggests that the relationship

between risk and performance is complex and multifaceted, influenced by various internal and external factors (Jorion, 2007). Notwithstanding the above, Modigliani & Miller (1958) highlighted the needed trade-off between risk and return, where higher levels of risk are associated with higher returns within a reasonable threshold to avert diminishing return and financial distress. Given this context, it is safe to posit that although banks are required to manage risk, higher returns are associated with higher risk in a competitive market.

Consequently, banks are set up to drive operational efficiency to enhance performance while managing risk effectively. Inefficient risk management practices can lead to wasted resources, increased costs, and suboptimal performance (Berger & Humphrey, 1997). Over the years, risk management has become a differentiating factor in the Nigerian banking industry. To a great extent, it has supported the performance of thriving banks from failed banks and those currently receiving liquidity support from the CBN. Effective risk management practices are essential for maintaining depositor confidence, attracting funding, facilitating lending activities, and influencing bank performance (Diamond & Dybvig, 1983).

In addition, market forces, such as investor expectations and market perceptions of risk, play a crucial role in shaping bank behaviour and performance. Banks with transparent risk management practices and risk-adjusted solid returns will likely attract investor confidence and perform well in the market (Demirgüç-Kunt & Huizinga, 2010).

The study's analytic framework decomposes total risk management into various components: credit risk, liquidity risk, solvency risk, and operational risk. Each factor is analysed using secondary data from the financial statement to examine the relationship among variables.

To examine the relationship, the following proxies have been adopted:

Credit risk (NPL)

Non-performing loan' NPL' is a significant proxy for credit risk in the banking industry as it indicates the credit quality of its assets and the potential for financial losses. The ratio of NPLs to the total loan portfolio is a widely used metric in the industry to gauge credit risk exposure (Berger & DeYoung, 1997). High levels of NPLs can have significant implications for a bank's financial health, affecting profitability and capital adequacy, reflecting the potential for credit losses, and the effectiveness of the bank's credit risk management practices (Laeven & Majnoni, 2003). As a result of its importance and wide use in the sector, NPL is an essential tool in banking supervision as regulators set NPL standards in many economies. Policymakers and

regulators use NPL data as part of macroprudential assessments to identify vulnerabilities and implement appropriate measures (Repullo & Saurina, 2011).

Similarly, high levels of NPLs can have significant implications for investor confidence and impact a bank's market valuation. Investors closely monitor NPL ratios as a critical indicator of the effectiveness of credit risk management (Gropp & Vesala 2004). Non-performing loans are a key proxy for credit risk, reflecting the potential for loan defaults and losses. Academic literature and regulatory guidelines provide insights into the measurement, implications, and management of NPLs in the context of credit risk in banking.

These studies suggest a strong linkage between credit risk and bank financial performance. Banks with lower NPLs outperform banks with higher NPLs.

H1: NPL has a significant negative relationship with Banks' financial performance.

Liquidity Risk (Loan/ Deposit):

The Loan-to-Deposit Ratio (LDR) is a measure of liquidity for banks and serves as a gauge for determining the financial health of deposit-money banks. The LDR is expressed as customer loans (excluding loans from other commercial banks, the Central Bank of Nigeria, and impairment) divided by total customer deposits. A high LDR indicates the reliance of a bank on borrowed funds to create risk assets (loans) and may imply a higher liquidity risk compared to a bank with a lower LDR. A high Loan-to-Deposit Ratio suggests that a bank heavily relies on borrowed funds to extend loans, potentially leading to liquidity challenges if many depositors withdraw their funds simultaneously (Allen & Gale, 1998). The stability of a bank's funding base is crucial for managing liquidity risk as high LDR may be sustainable if the bank has a stable and diverse deposit base. In contrast, heavy reliance on short-term or volatile funding sources may increase liquidity risk (Demirgüç-Kunt & Huizinga1999).

Given the importance of LDR to the overall health of banks, investors and regulators tend to focus extensively on this ratio. A consistently high or rising LDR must have appropriate risk management measures to maintain investor confidence and affect a bank's stock performance (De Jonghe, 2010). Similarly, comparing LDR across banks within the same jurisdiction or across different financial systems can provide insights into relative liquidity risk; hence, significantly higher LDR than industry peers may warrant closer scrutiny (Hasman, Hirth, & Schoenmaker, 2018)

From a financial performance standpoint, higher LDR will result in increased interest income and, consequently, increased profitability. Kuntchev, R., Ramayandi, A., & Riungu, C. (2013) find that banks with higher LDRs tend to exhibit more aggressive lending behaviour, as they utilize a larger proportion of their deposits to extend loans. This increased lending activity may lead to higher interest income and profitability for banks, particularly in environments where loan demand is robust and creditworthy borrowers are available. Similarly, Beck, Demirgüç-Kunt, and Merrouche (2013) provide empirical evidence supporting the notion that banks with higher LDRs may outperform banks with lower LDRs, particularly in the context of Islamic banking where reliance on deposits is a fundamental aspect of the business model.

In summary, the linkages between liquidity risk and bank financial performance are complex and multifaceted, with different studies highlighting different relationships. However, this study believes that banks with higher LDR increase their lending activities, expanding their interest income and enhancing their financial performance. Conversely, lower LDR negatively impacts financial performance.

H2: LDR has a significant positive correlation with banks' profitability.

Solvency Risk (Capital Adequacy Ratio)

Capital adequacy ratio (CAR) measures a bank's solvency risk and financial stability. It assesses the adequacy of a bank's capital relative to its risk-weighted assets, providing insights into its ability to absorb losses and meet its financial obligations. The capital adequacy ratio is calculated by dividing a bank's capital by its risk-weighted assets (Basel, 2004). CAR is designed to ensure that banks maintain a sufficient buffer of capital to cover potential losses arising from credit, market, and operational risks (Basel, 2010). A robust CAR is essential for maintaining financial stability at both individual bank and systemic levels. Banks with higher capital adequacy are better positioned to withstand economic downturns, credit losses, and other adverse events, contributing to the overall stability of the financial system (Haldane, 2009). Beyond its influence on the solvency risk, CAR is an essential tool for banks' capital management strategies. Banks with lower CAR may need to prioritize capital retention or seek additional capital to enhance solvency (Altman et al., 1998).

Divergent views exist on the impact of CAR on a bank's financial performance. While maintaining a sufficient capital buffer is generally seen as essential for financial stability and

regulatory compliance, opinions on how CAR influences financial performance can vary from negative to positive, moderate, and dynamic.

The optimistic school of thought believes that a higher CAR is often associated with more excellent financial stability (Berger & Bouwman, 2009; Cihak & Hesse, (2010); Delis & Kouretas, 2011; Louzis & Vouldis, 2013). From this perspective, a well-capitalized bank is better equipped to absorb losses, handle economic downturns, and maintain a resilient financial position. For example, a study by Olawale and Adeyemi (2019) found a significant negative relationship between solvency risk and financial performance in Nigerian banks. The study used data from 15 banks in Nigeria over ten years and found that higher solvency risk was associated with lower profitability, lower return on assets, and lower return on equity. Similarly, a study by Akhtar and Olivero (2016) examined the relationship between solvency risk and financial performance in US banks. The study found that higher solvency risk was associated with lower profitability, asset quality, and capital ratios. Also, the study revealed that banks with higher solvency risk were more likely to experience financial distress.

Some argue that excessively high capital requirements, leading to a very conservative CAR, might result in an opportunity cost for banks. The funds that could have been used for more profitable lending or investment opportunities are instead held in low-risk, low-return assets to meet regulatory capital requirements, potentially hindering short-term financial performance (Houston et al., 1997). The moderate view believes that the impact of CAR on financial performance depends on striking the right balance. While maintaining an adequate capital buffer is essential for stability, excessive capital may lead to underutilization of funds, impacting profitability (De Jonghe, 2010). The challenge is finding the optimal capital level that ensures stability without sacrificing potential returns.

The dynamic view school of thought acknowledges that the impact of CAR can be dynamic and depends on the economic environment. During periods of economic expansion, a bank might prioritise growth and deploy capital more aggressively. Conversely, in times of economic uncertainty, a higher CAR may be considered prudent for mitigating risks (Akhigbe et al, 2004). This study has taken the view that higher CAR produces superior profitability relative to banks with lower CAR. Consequently, the study expects a strong positive correlation between CAR and profitability.

H3: CAR has a significant positive correlation with banks' financial performance

Operational Risk (Losses from Fraud and System Failure/ Total earnings):

Operational risk is rapidly emerging as a significant component of banks' overall risk, including losses resulting from inadequate or failed internal processes, systems, people, and external events. Fraud and system failure losses are prominent components of operational risk, indicating weaknesses in internal controls and procedures and requiring banks to invest in fraud detection and prevention measures (Lopes & Rodrigues 2016). Operating losses resulting from system failures can lead to service disruptions, financial losses, and reputational damage (Groeneveld, 2005). The combined impact of fraud and system failures amplifies a bank's overall operational risk profile. Active risk events often involve interconnected elements, and losses from fraud and system failures may exacerbate each other (Cruz & Domingues, 2015).

Academic research supports the consensus that operational risk negatively impacts banks' financial performance. Operational risk, encompassing losses from internal processes, systems, people, and external events, can lead to direct financial losses and indirect costs such as reputational damage (Peek & Rosengren, 2005; Altunbas, Gambacorta & Marqués-Ibáñez, 2010; Mollah, & Zaman, 2015). In addition to adverse financial outcomes, operational risks could lead to other non-financial losses, including reputational damage and brand erosion. According to a study by Flannery and Samolyk (2005), active risk events that result in reputational damage can significantly negatively impact a bank's financial performance. Similarly, a study by Cumming and Johan (2007) found that legal and regulatory penalties associated with operational risk events can have a significant negative impact on a bank's financial performance.

This study aligns with the broad consensus in academia that operational losses negatively impact banks' financial performance. Fines, losses from system failure, and other sources of operational risks increase a bank's cost of operations, which, in consequence, reduces its profitability.

H4: Losses from fraud and system failure/ total earnings have a significant negative relationship with banks' financial performance.

c) Control Variables

Bank Size

The size of a bank is a crucial control variable in assessing its performance, as it can significantly influence various aspects of a bank's operations, risk profile, and market position. In exploring the relationship between problem loans and cost efficiency in commercial banks, Berger et. Al (1997) considered bank size as a control variable, recognizing the influence of size on a bank's ability to manage and mitigate problem loans, thus affecting overall efficiency. Similarly, Altunbas (2007) included bank size as a control variable in assessing how variations in size may impact the observed relationships between capital, risk, and efficiency of banks.

Larger banks tend to have more complex operations, higher levels of assets, and a greater degree of capacity to absolve losses, which can all impact banks' risk appetite and overall performance (Wheelock & Wilson, 2000). Also, Demirgüç-Kunt et al. (1999) recognized the potential impact of size on interest margins and profitability across different international settings by examining the relationship between commercial bank interest margins and profitability. In addition, a study by Zoromé (2016) examined the relationship between risk management and profitability of US banks while controlling for bank size. The study found that risk management positively impacted bank profitability and that the effect was more pronounced for larger banks.

Overall, these studies suggest that controlling for bank size is an important consideration when examining the impact of risk management on bank performance. Bank size is considered an important control variable in assessing a bank's performance across various dimensions, including efficiency, risk management, profitability, and likelihood of failure or acquisition.

Bank Age

The age of a bank, or its vintage, is often considered an important control variable when examining the financial performance of banks. Bank age can influence various aspects of a bank's operations, risk management, and overall financial health (Angbazo, 1997; Casu, Girardone, & Molyneux, 2006). Berger, DeYoung, Genay, & Udell (2000) In studying the globalization of financial institutions, the authors explored cross-border banking performance. They suggested that the age of a bank could be one such factor influencing performance. Older

banks may have established risk management frameworks and a more experienced management team, which can potentially impact their risk management practices and, ultimately, their financial performance (Bikker & Hu, 2002). Moreover, studies by Vithessonthi and Tongurai (2018) & Nguyen and Nguyen (2019) reviewed the implications of risk management on the financial performance of Thai and Vietnamese banks, respectively, and found that risk management positively affected the financial performance of banks. That bank age had a positive moderating effect on this relationship.

Overall, these studies suggest that bank age can be a relevant control variable when examining the impact of risk management on bank performance. Researchers often recognize the importance of considering banks' vintage to obtain a more nuanced understanding of their performance dynamics.

Bank Ownership

Bank ownership can be an important control variable for the impact of risk management on a bank's performance. A bank's ownership structure, whether foreign or locally owned, publicly traded, privately held, government-owned, or a combination thereof, can have significant implications for the bank's behaviour, risk-taking, and overall financial performance. For example, Demirgüç-Kunt & Huizinga (1999) found that in investigating commercial bank interest margins and profitability, including the impact of ownership structure, ownership of banks can influence their financial performance in an international context. Focusing on the effect of foreign entry on domestic banking markets, Claessens, Demirgüç-Kunt, & Huizinga (2001) found the influence of ownership structure in shaping the performance of banks. It emphasized the need to control ownership structure when assessing the effects of foreign entry.

Different types of banks may have different risk management strategies, and these strategies may be influenced by their ownership structure. For example, publicly traded banks may focus more on short-term financial performance, while privately held banks may focus more on long-term stability. Ownership structure is considered a key element in assessing the quality of corporate governance and its impact on bank performance (De Nicolo, Laeven, & Ueda, 2008). More broadly, a banking system's ownership structure may influence an economy's overall health and performance. Beck, Demirgüç-Kunt, & Levine (2000) found in their review of the new database on financial development and structure the relevance of considering ownership

structure when examining economic growth, indicating that the ownership of banks is a fundamental aspect of the financial system.

Several studies have examined the impact of risk management on the performance of banks, considering the effect of bank ownership. For instance, a survey by Abor and Biekpe (2007) examined the impact of credit risk management on the financial performance of banks in Ghana and found that ownership structure significantly moderated the relationship between credit risk management and financial performance. Similarly, a study by Akintoye et al. (2018) examined the impact of risk management on the performance of Nigerian banks and found that ownership structure had a significant moderating effect on the relationship between risk management and financial performance. The study found that privately owned banks had a stronger positive relationship between risk management and financial performance than publicly owned banks.

Another study by Miah et al. (2020) examined the impact of risk management on the performance of banks in Bangladesh and found that ownership structure had a significant moderating effect on the relationship between risk management and that foreign-owned banks had a stronger positive relationship between risk management and financial performance, compared to domestically owned banks. Overall, these studies suggest that bank ownership can be an essential control variable when examining the impact of risk management on the performance of banks. Ownership structure influences a range of factors, from risk-taking behaviour to corporate governance, and considering it allows for a more nuanced understanding of the dynamics affecting bank performance.

Table 3.3: Measurement of Variables

nVariable	Symbol	Measurement	Expected Sign	Source of data
		Dependent Variables		
Return on Average Equity	ROE	Profit after tax divided by average of opening and closing shareholders' funds	+/-	CBN, Banks Annual Reports, NSE
Return of Average Asset	ROA	Profit after tax divided by average of opening and closing total assets	+/-	CBN, Banks Annual Reports, NSE
		Dependent Variables		
Credit Risk	CR	Non-performing loan divided by total loan	+	CBN, Banks Annual Reports, NSE
Liquidity Risk	LR	Total loan divided by total deposit	+	CBN, Banks Annual Reports, NSE
Solvency Risk	SR	Banks' core capital divided by risk-weighted assets	+	CBN, Banks Annual Reports, NSE
Operational Risk	OR		+	CBN, Banks Annual Reports, NSE
		Control Variable		
Bank Size	Sz	Natural logarithm of total assets	+	CBN, Banks Annual Reports, NSE
Bank Age	Ba	Natural logarithm of the year under consideration – date of incorporation	+	Corporate Affairs Commission
Banks Equity	Bo	Random binary variables	0 or 1	CBN, Banks Annual Reports, NSE

3.4 Estimation Technique

The study employs random and fixed effects models to analyse the impact of risk management on bank financial performance in Nigeria. Fixed effects models control for unobserved time-invariant heterogeneity by including dummy variables for each individual or entity in the panel. These dummy variables capture the differences between entities that do not change over time (Cameron & Trivedi, 2010). The fixed effects estimator eliminates the individual-specific effects by differencing the data, thereby focusing on within-individual variation over time (Wooldridge, 2010). Random effects models, on the other hand, assume that the individual-specific effects are random variables drawn from a population distribution. Unlike fixed effects models, random effects models allow these effects to be correlated with the regressors (Wooldridge, 2010).

The use of random and fixed effects in a panel dataset offers several advantages, including the ability to account for unobserved heterogeneity, exploit panel data structure, ensure efficiency and consistency of estimates, address endogeneity concerns, conduct longitudinal analysis, and control for time-varying factors.

The study analysed the data of 12 banks over an 11-year period. The panel dataset consisting of multiple banks observed over multiple time periods provides valuable information on both cross-sectional and time-series variations. Random and fixed effects models are well-suited for analysing panel data, as they exploit both within-entity and between-entity variations in the data (Cameron & Trivedi, 2010).

This estimation technique allows us to examine the dynamics of risk management practices and their impact on financial performance over time. Random and fixed effects models accommodate longitudinal analysis by capturing changes within entities over time while controlling for time-invariant factors (Baltagi, 2008). Similarly, risk management practices may be endogenous, with the capacity to influence the financial performance of banks simultaneously. Random and fixed effects models help mitigate endogeneity concerns by exploiting variations over time and across entities to identify causal relationships between risk management and financial performance (Wooldridge, 2010).

Overall, the random effects models offer efficiency gains by efficiently pooling information across entities, while fixed effects models provide consistent estimates by controlling for

individual-specific effects. By using both random and fixed effects specifications, we can assess the robustness of our results and account for potential biases (Greene, 2008).

CHAPTER FOUR
DISCUSSION OF FINDINGS

4.1 Introduction

This chapter discusses the outcomes of the data from the Nigerian banking industry to evaluate the impact of risk management on the financial performance of banks. The section is divided into four subsections, with Sub-section One providing the descriptive statistics of the dependent and independent variables. Sub-section Two depicts the correlation of the variables, while Sub-section Three presents the regression analysis and discussion of the findings in Sub-section Four.

4.2 Descriptive statistics

Table 4.1 presents the descriptive statistics of the independent and dependent variables. Independent variables are operational risks measured by loan loss ratio, capital adequacy ratio, operational losses, loan-to-deposit ratio, age of banks, fees to total revenue, ownership of banks, and listing status. Dependent variables are return on asset and return on equity.

The table shows a mean of 1.55% for Return on Assets (ROA) and a median of 0.0133, suggesting that half of the banks have returns below 1.33%. The standard deviation of 0.0166 indicates moderate variability, with a range of -0.0953 to 0.0562, highlighting the presence of both loss-making and profitable banks. Return on Equity (ROE) displays a mean of 0.0947 and a median of 0.1213, indicating an average return on equity of 9.47% and that half of the banks have returns above 12.13%. The substantial standard deviation of 0.3711 suggests considerable variability in the performance of the banks as measured by RoE, with a range of -3.9432 to 0.3208.

The Loan Loss to Loan Ratio (LLR) has a mean of 0.0563, indicating an average loan loss ratio of 5.63%, and the high standard deviation of 0.4292 indicates significant variability, with a range of -0.0135 to 4.9402, highlighting the diverse loan portfolio performance among banks.

Variations in banks' market segmentation strategies, customer demographics, and business models can exert significant influence on the composition and performance of loan portfolios, contributing to the observed variation in loan loss portfolios (Olawale et al., 2019; Adeusi et al., 2017).

The Capital Adequacy Ratio (CAR) exhibits a mean of 0.2109, representing an average capital adequacy ratio of 21.09%, 6.09 percentage points above the regulatory threshold of 15% set by the CBN. The substantial standard deviation of 1.3164 suggests considerable variability, ranging from -2.0159 to 14.6100, revealing a wide range of capital adequacy among banks. Variations in corporate governance structures, risk management frameworks, and internal controls across banks may contribute to differences in capital adequacy positions of banks, resulting in higher CAR for banks with robust risk management practices and effective governance mechanisms (Aduda & Yomere, 2019; Naceur & Omran, 2011).

Operational Risk (OPERISK) displayed a mean of 0.0964, indicating an average operational risk of 9.64%. Although the moderate standard deviation of 0.1282 indicates a mild level of variability in operational risks among banks, with a range of -0.0480 to 0.7854, banks appear to have diverse operational risk profiles. Akinola & Owolabi (2019) highlighted that the rapid adoption of new technologies, such as digital banking platforms, mobile banking apps, and online payment systems, has transformed the landscape of banking operations in Nigeria and is introducing a new dimension of operational risks, including cyber threats, data breaches, system failures, and IT disruptions leading to financial losses, fines, loss of customers, and reputational damages.

The Loans to Deposit Ratio (LOANDEPR) has a mean of 0.6851, representing an average loan-to-deposit ratio of 68.51%. The moderate standard deviation of 0.3574 indicates the influence of the regulatory policies on LDR as part of the prudential role of the CBN. The CBN has periodically issued directives and guidelines to regulate the loan-to-deposit ratio of banks operating in Nigeria, aimed at ensuring prudent lending practices, promotion of financial stability, and supporting the real sector of the economy by encouraging banks to extend credit to productive sectors (Adeusi et al., 2017; Olayinka et al., 2020). During the measurement period, CBN's LDR stood at 65% and lowered to 50% in 2024 as part of its tightening policy to curb inflation (CBN, 2024).

The fees-to-total revenue Ratio (FEESINC) displays a mean of 0.1572, representing an average fee-to-total revenue ratio of 15.72%. The high standard deviation of 0.7465 suggests significant variability, ranging from -7.3077 to 0.9991, revealing a wide range of fee structures among banks. Nigerian banks utilize various channels to generate fee income, including traditional branch banking, digital banking platforms, ATMs, mobile banking, internet banking, and POS terminals. The extent to which banks adopt and effectively leverage digital channels can significantly impact their fee income streams (Ogunmuyiwa et al., 2019)

The Age of Bank (AGE) exhibits a mean of 50.5000, indicating an average age of 50.5 years. The median AGE is 33.0000, suggesting that half of the banks are younger than 33. The substantial standard deviation of 33.1143 indicates considerable variability. Similarly, Ownership Type (OWNER) and Listing Status (LISTINGS) are categorical variables, with means and medians of 1.0833 and 1.0000, respectively, indicating that most banks have diversified ownership and are listed on the Nigerian Stock Exchange.

Table 4.1: Summary statistics

	Mean	Median	SD	Min	Max	N
ROA	0.0155	0.0133	0.0166	-0.0953	0.0562	132
ROE	0.0947	0.1213	0.3711	-3.9432	0.3208	132
LLR	0.0563	0.0101	0.4292	-0.0135	4.9402	132
CAR	0.2109	0.1824	1.3164	-2.0159	14.6100	132
OPERISK	0.0964	0.0556	0.1282	-0.0480	0.7854	132
LOANDEPR	0.6851	0.6423	0.3574	0.0355	3.4103	132
AGE	50.5000	33.0000	33.1143	6.0000	128.0000	132
FEESINC	0.1572	0.2143	0.7465	-7.3077	0.9991	132
OWNER	1.0833	1.0000	0.2774	1.0000	2.0000	132
LISTINGS	1.0833	1.0000	0.2774	1.0000	2.0000	132

Notes: ROA=Return on assets; ROE=Return on equity; LLR= Loan loss to loans ratio; CAR=Capital Adequacy ratio; OPERISK=Operational risk; LOANDEPR=Loans to deposit ratio; AGE=Age of bank; FEESINC=Fees to total revenue ratio; OWNERS=Ownership type; LISTING= Listing status. Source: candidate's estimates from research data.

4.3 Correlation results

Table 4.2 presents the findings from estimating the correlation coefficient of the dependents and independent variables to examine the strength of the relationships among these variables. A summary of the key outcomes of the estimations is discussed below:

Strong Positive Correlation among Return on Asset, Return on Equity and Fee Income

The correlation results show a moderate positive correlation (0.40) between ROA and ROE, which suggests that higher returns on assets are associated with higher returns on equity, indicating better profitability and financial performance. This finding is consistent with previous studies that have identified a positive relationship between ROA and ROE in the banking sector (Berger & Bonaccorsi di Patti, 2006; Ogunmuyiwa et al., 2019)

Similarly, the positive correlation between ROA and FEESINC (0.40) indicates that banks with hefty fees and non-interest income tend to post higher asset returns. This finding aligns with

research highlighting the importance of fee-based income in enhancing bank profitability (Beck et al., 2012; Naceur & Omran, 2011)

There is strong Negative Correlation between Return on Asset, Loan Loss Ratio, and Operational Risk.

The table highlights a strong negative correlation (-0.60) between ROA and LLR, suggesting that higher returns on assets are associated with lower loan loss ratios, indicating the importance of asset quality and risk management practices in delivering quality financial performance by banks. This finding is consistent with studies emphasizing the detrimental impact of non-performing loans on bank profitability (Molyneux et al., 2004; Olayinka et al., 2020).

The moderate negative correlation (-0.31) between ROA and OPERISK implies that banks with higher returns on assets tend to have lower operational risk levels. This highlights the importance of effective operational risk management in enhancing the profitability and financial stability of banks and is consistent with the academic studies that seek the linkages between operational risk management and banks' profitability (de Haan et al., 2016; Olayinka et al., 2020)

Weak Positive Correlation among Capital Adequacy Ratio, Loan to loan-to-deposit ratio, Ownership Status, and Profitability Metrics (ROA and ROE)

The weak correlations observed for CAR (ROA:0.1, ROE:0.04), LOANDEPR (ROA:0.1, ROE:0.04), and OWNERS (ROA:0.8, ROE:0.10), with profitability metrics suggest that these factors may have a less direct influence on the bank. This is consistent with studies that explored the nexus between these variables in the context of the financial performance of banks and risk management (Ogunmuyiwa et al., 2019; Samad, 2018)

Moderate Negative Correlation Listing Status, Return on Asset, and Return on Equity

The correlation results show negative correlations between LISTING and the profitability metrics (ROA: -0.40 and ROE: -0.11). These results suggest that listed banks may exhibit lower assets and equity returns than non-listed banks. This finding may reflect the implication of regulatory costs on listed entities from the standpoints of cost of meeting regulatory requirements, market perceptions, and governance structures. This is consistent with the findings of Beltratti & Stulz, 2012; Demirgüç-Kunt et al., 2018.

Table 4.2: Correlations results

	ROA	ROE	LLR	CAR	OPERISK	LOANDEPR	AGE	FEESINC	OWNERS	LISTINGS
ROA	1.0000									
ROE	0.3987	1.0000								
	0.0000									
LLR	-0.5966	-0.0231	1.0000							
	0.0000	0.7930								
CAR	0.1050	0.0436	-0.1500	1.0000						
	0.2310	0.6194	0.0860							
OPERISK	-0.3108	-0.1401	0.3412	-0.1014	1.0000					
	0.0003	0.1092	0.0001	0.2474						
LOANDEPR	0.1077	0.0384	-0.1534	0.0257	0.0256	1.0000				
	0.2189	0.6623	0.0790	0.7699	0.7712					
AGE	-0.1493	-0.0661	-0.1092	0.2006	-0.0493	0.0688	1.0000			
	0.0876	0.4516	0.2127	0.0211	0.5748	0.4330				
FEESINC	0.3965	0.2045	-0.0265	0.0113	-0.1416	0.0201	-0.0189	1.0000		
	0.0000	0.0187	0.7628	0.8979	0.1054	0.8191	0.8298			
OWNERS	0.1770	0.0962	-0.0259	-0.0009	-0.0071	0.0286	-0.2056	0.0816	1.0000	
	0.0423	0.2726	0.7681	0.9919	0.9358	0.7445	0.0180	0.3526		
LISTING	-0.3922	-0.1095	0.3049	-0.2465	0.2471	-0.0287	-0.3610	-0.2749	-0.0909	1.0000
	0.0000	0.2113	0.0004	0.0044	0.0043	0.7438	0.0000	0.0014	0.2999	

Notes: ROA=Return on assets; ROE=Return on equity; LLR= Loan loss to loans ratio; CAR=Capital Adequacy ratio; OPERISK=Operational risk; LOANDEPR=Loans to deposit ratio; AGE=Age of bank; FEESINC=Fees to total revenue ratio; OWNERS=Ownership type; LISTING= Listing status. Source: candidate's estimates from research data.

4.4 Regression results

The random effects regression results presented in Table 4.2 provide insights into the relationship between independent variables and the two dependent variables in the context of the Nigerian banking industry. The Wald χ^2 statistic tests the overall significance of the regression model. The high values indicate that the model is statistically significant. R-squared values measure the proportion of variance explained by the independent variables. In this case, the models explain 61.08% and 39.45% of the variance in ROA and ROE, respectively; Hausman χ^2 statistic tests for the presence of endogeneity in the model. The insignificant p-values suggest that the random effects model is appropriate. The random effects regression results provide valuable insights into the determinants of bank profitability in the Nigerian banking industry, highlighting the significance of loan quality, capital adequacy, fee income, and listing status.

The results indicate a negative effect of the **Loan Loss to Loans Ratio (LLR)** of profitability at a 1% significance level, indicating that higher loan loss ratios are associated with lower ROA and ROE. Loan loss represents an impairment charge in the Income Statement of a Bank, and a high impairment charge relative to the loan portfolio results in lower net income from banks' intermediation activities, which translates to a lower Profit After Tax (PAT) and, consequently, in lower ROA and ROE. These coefficients are highly statistically significant, suggesting a strong relationship between loan quality and bank profitability and highlighting the importance of asset quality in determining bank profitability. Ugbeda and Okpachu (2021) found evidence of a negative relationship between non-performing loans and ROA in Nigerian banks, indicating that higher loan loss provisions reduce net income, which in turn lowers ROA. Similarly, Adeusi et al. (2017) noted a negative correlation between non-performing loans and ROE in Nigerian banks, emphasizing that higher loan loss provisions reduce the net income available to shareholders, resulting in lower ROE.

CAR (Capital Adequacy Ratio): The positive coefficient (0.0002 for ROA and 0.0035 for ROE) suggests that higher capital adequacy ratios are associated with higher ROA and ROE, although the effect is relatively small. Although a high CAR may constrain lending activities in the short run. However, the benefit from lower borrowing costs, enhanced deposits from customers, quality of risk-weighted assets (low), and size of capital to cushion provisions may enhance the lending capacity and growth opportunities, thereby leading to increased revenue and lower costs which results in higher ROA and ROE. In the Nigerian banking industry and consistent with the Basel Accord, a high CAR is indicative of quality risk management, higher

asset quality, and reduced loan provision (Ovia, 2019; Nwude et al., 2021), attract cheaper funding (Olawale et al., 2019), pursue credit expansion and higher income (Adeusi et al., 2017). The coefficients are statistically significant at the 5% level (**). The positive coefficients for the Capital Adequacy Ratio underscore the role of capitalization in bolstering bank profitability and resilience (Beck et al., 2012; Naceur & Omran, 2011).

LOANDEPOSIT (Loans to Deposit Ratio): The positive coefficient (0.0034) for ROA suggests that a higher loan-to-deposit ratio is associated with higher ROA. However, the coefficient for ROE is not statistically significant. The mixed impact of LDR to ROA and ROE is not unusual in the banking industry given that a higher LDR may result in higher net interest income and ROA but can also increase banks' risk profile, especially if short-term funding is deployed in creating long-tenured risk assets, resulting in mismatch and potential liquidity issues. The increased risk associated with a higher LDR can affect ROE negatively, as it exposes shareholders' equity to greater volatility and potential losses. In adverse economic conditions or a liquidity crisis, the bank may incur losses eroding shareholders' equity, reducing ROE.

While there is a broad consensus on the positive correlation between LDR and ROA in the Nigerian banking industry through the transmission mechanism of higher interest income and margins (Aduda et al., 2019; Ademola et al., 2020), the relationship with ROE is more complicated. Ugbeda and Okpachu (2021) observed that a higher LDR in Nigerian banks could lead to higher financial risk, potentially reducing ROE due to increased shareholder equity volatility. Similarly, Ovia (2019) found that regulatory constraints and capital requirements in Nigeria may limit the extent to which banks can leverage deposits to increase lending, thereby impacting ROE.

Furthermore, the positive coefficients for the Fees to Total Revenue Ratio (FEESINCDIV) and ROE, as well as ROA, suggest that a more significant proportion of fee income to total revenue is associated with higher profitability, emphasizing the importance of fee-based revenue streams in enhancing bank performance (Beck et al., 2012; Naceur & Omran, 2011). Fee income is considered less risky for banks due to its stability, diversification benefits, lower credit and interest rate risk, operational efficiency, and regulatory treatment. Consequently, it has a higher impact on a bank's profitability from a risk-weighted standpoint and, by extension, on ROA and ROE. Adeusi et al. (2017) & Ugeda and Okpachu (2021) found that banks with higher fee income relative to total income tend to exhibit higher ROE, indicating that fee-based

revenue streams contribute positively to shareholders' equity returns and the value-added nature of fee-based services.

Interestingly, the negative coefficients for the Listing Status variable imply that listed banks may exhibit lower profitability compared to non-listed banks, indicating potential market perceptions and regulatory influences on bank performance (Beltratti & Stulz, 2012; Demirgüç-Kunt et al., 2018). Listed banks may underperform unlisted entities due to market pressures, short-term focus, regulatory compliance burdens, market volatility, imperfections in the market, corporate governance requirements, and constraints on strategic flexibility. While there may be limited specific evidence in the Nigerian context, studies on market perception and liquidity premiums in emerging markets (Baker & Wurgler, 2006) provide theoretical insights into factors affecting listed banks' performance relative to unlisted entities. Similarly, several studies have underscored the significant costs of listed banks, including regulatory compliance (Ovie, 2019) and increased scrutiny (Olayinka et al.,2020).

LNAGE (Natural Log of Age of Bank): The negative coefficients for LNAGE (-0.0166 for ROA and -0.0669 for ROE) suggest that older banks tend to have lower profitability. These coefficients are statistically significant at the 1% level. As a result of the rapidly evolving banking landscape in Nigeria, new-generation banks have exhibited higher agility in responding to the dynamic environment, investing in cutting-edge technology to drive operations and reduce costs. They are devoid of legacy issues that have continued to impact the performance of old-generation banks. Adedeji & Ajayi (2020) stated that new-generation banks are often characterized by their agility, innovation, and focus on leveraging technology to deliver banking services more efficiently through their deployment of digital banking platforms, mobile banking apps, and other technological advancements to reach a broader customer base and provide seamless banking experiences. In contrast, old-generation banks have faced challenges adapting to rapidly changing market dynamics and technological advancements due to legacy systems, bureaucratic structures, and traditional banking practices (Olayinka et al., 2019).

However, certain variables such as Operational Risk (OPERISK) and Ownership Type (OWNERSHIPTYPE) do not exhibit statistically significant coefficients, suggesting that their direct impact on bank profitability may be limited in the context of the variables considered in the analysis.

Table 4.2: Random effects regression results

	Return on assets			Return on equity		
	Coefficient	*std. err.*	*Z*	*Coefficient*	*std. err.*	*z*
Constant	0.0778***	0.0123	6.31	0.3913***	0.1086	3.6
LLR	-0.0200***	0.0006	-33.06	0.0109***	0.0031	3.56
CAR	0.0002**	0.0001	2.36	0.0035**	0.0017	2.07
OPERISK	-0.0072	0.0067	-1.08	-0.0627	0.0405	-1.55
LOANDEPOSIT	0.0034***	0.0010	3.52	0.0020	0.0084	0.24
LNAGE	-0.0166***	0.0030	-5.57	-0.0669**	0.0271	-2.47
FEESINCDIV	0.0087***	0.0007	12.44	0.0103***	0.0022	4.78
2.OWNERSHIPTYPE	-0.0020	0.0039	-0.5	0.0404	0.0261	1.55
2.LISTINGSTATUS	-0.0311***	0.0056	-5.55	-0.1845***	0.0499	-3.69
Wald χ^2	427.44***			34.65***		
R-squared	0.6108			0.3945		
Hausman χ^2	2.55			6.665		
Prob > χ^2	0.8633			0.3529		
BPCW Hettest	5.73			1.56		
Prob > χ^2	0.0167			0.2118		
AR(1): F	10.339			13.61		
Prob > F	0.0082			0.0036		
Number of banks	12			12		
Observations	132			132		

Notes: ROA=Return on assets; ROE=Return on equity; LLR= Loan loss to loans ratio; CAR=Capital Adequacy ratio; OPERISK=Operational risk; LOANDEPR=Loans to deposit ratio; AGE=Age of bank; FEESINC=Fees to total revenue ratio; OWNERS=Ownership type; LISTING= Listing status. BPCW Hettest=Breusch-Pagan/Cook-Weisberg test for heteroskedasticity; AR(1)=Wooldridge test for autocorrelation; ***, ** & * denote significance at 1%, 5% and 10% respectively. Source: candidate's estimates from research data.

CHAPTER FIVE
POLICY RECOMMENDATIONS

5.1 Introduction

This chapter summarises the study, which seeks to examine the influence of risk management practices on the financial performance of banks in Nigeria. The findings rely on the preceding chapters and mainly on the previous chapters, which analysed twelve banks in the Nigerian banking sector between 2012 and 2022. The first sub-section summarizes the outcomes of the quantitative analysis of the last chapter. The subsequent sub-section presents the policy recommendations, carefully tailored to address the needs and concerns of the various study users. These include key players in the global banking industry, the Nigerian banking sector ecosystem, the Central Bank of Nigeria, market analysts, investors, and current and future researchers. Each recommendation is designed to foster a more robust and resilient banking sector.

5.2 Summary and Conclusion

Based on the outcomes of the results of the data from the twelve banks in the Nigerian banking industry, which represents 94% (CBN, 2022) of the total assets of the banking industry, the following summaries and conclusions have been reached:

The results indicate a negative effect of Loan Loss to Loans Ratio on banks' profitability in the Nigerian banking sector. Directionally, banks with high loan loss ratios report lower ROA and ROE due to the impact of loan loss on net interest income and profit after taxes. The mean Loan loss ratio in the banking industry is consistent with market expectations and prudential recommendations. However, the range of -1.4% and 494% and a mean of 5.6% indicates a wide variation in the loan loss ratio, with larger banks keeping their asset quality within the prudential limits.

The study found a positive relationship between the capital adequacy ratio (CAR) and banks' profitability. This finding indicates that banks with high CARs report higher profitability. Even though this result is broadly supported in academia, significant schools of thought provide contrarian views based on academic studies. For example, Alenoghena, E. J. & Odia, J. O. (2019), in the investigation of the relationship between capital adequacy and bank performance in Nigeria, found evidence that suggests lower levels of CAR may be associated with higher profitability metrics such as ROA and ROE, particularly in the context of emerging market

economies. Similarly, Gaganis, C., Hasan, I., Pasiouras, F., & Zopounidis, C. (2013) Analysed the impact of regulations on the profitability and risk-adjusted returns of European banks. They found that stringent capital requirements (higher CAR) may constrain profitability in the short term, while lower capital levels could lead to higher ROA and ROE, albeit with increased risk.

Regarding the impact of the Loan-to-Deposit Ratio on banks' profitability, the study found a statistically significant positive correlation between LDR and ROA but found that the correlation with ROE was not statistically significant. This indicated that higher LDR positively impacts ROA and not ROE. This is largely inconsistent with the body of knowledge in this study area, given that ROA and ROE are positively correlated.

Theoretically, ROE and ROA share the same numerator (PAT) with different denominators. Consequently, the expectation is consistency in the direction of impact from LDR. However, research exists to support the outcome of the study, as an increased risk associated with a higher LDR can affect ROE negatively, as it exposes shareholders' equity to greater volatility and potential losses in adverse economic conditions or during a liquidity crisis, the bank may incur losses that erode shareholders' equity, reducing ROE. Ugbeda and Okpachu (2021) observed that a higher LDR in Nigerian banks could lead to higher financial risk, potentially reducing ROE due to increased shareholder equity volatility. Similarly, Ovia (2019) found that regulatory constraints and capital requirements in Nigeria may limit the extent to which banks can leverage deposits to increase lending, thereby impacting ROE.

The positive coefficients for the Fees to Total Revenue Ratio and profitability suggest that the higher the fee income in the total income mix, the higher the profitability. The industry average of 15.7% fee income to total income indicates the prevalence of fee-based revenue streams from the rapid transition to electronic channels by leading banks in Nigeria and the less reliance on fees based on the creation of risk assets (loans). For example, Guarantee Trust Bank, one of the leading institutions with e-banking platforms, grew its fee income as a proportion of total income from 23.7% in 2012 to 45.5% in 2022, representing a 1.9x growth over the study period.

The negative coefficients for the Listing Status variable imply that listed banks may exhibit lower profitability than non-listed banks. Even though this is consistent with relatively large academic studies, the data may have been skewed in the Nigerian context, given that Unity Bank, which is ordinarily listed but with a tiny trading volume, may have skewed outcomes. However, explanations abound for this outcome, including the significant regulatory compliance cost, market volatility, imperfections in the market, corporate governance

requirements, and constraints on strategic flexibility. More studies may be required to thoroughly examine the implication of banks' listing on financial performance.

The study shows a negative relationship between bank age and profitability, suggesting that older banks underperform 'new generation' banks. Market observations have shown that newer banks have demonstrated the capacity to adapt to rapidly evolving environmental changes, invest in cutting-edge technology to drive operations and reduce cost, and be devoid of legacy issues associated with older banks. Recently, there has been an increased proliferation of cutting-edge technologies in the Nigerian banking industry, championed by alternative banks that are predominantly considered new-generation banks. The average age of banks in Nigeria is 50.5 years, with FirstBank being the oldest bank at 128 years as of 2022.

Operational risk and ownership type do not exhibit statistically significant coefficients, suggesting that their direct impact on bank profitability may be limited in the context of the variables considered in the analysis. For operational risk, even though this is becoming increasingly important in the overall context of risk management architecture in the banking industry, the reporting needs to be more standardized, making it easier to compare and analyze. Similarly, ownership type (concentrated vs. diversified) and its implications for financial performance are areas for further study in the Nigerian banking industry.

5.3 Policy Recommendations

This study examines the impact of risk management practices on the financial performance of banks in Nigeria. The overriding role of banks in an economy is embedded in their intermediation role of channeling funds from the surplus units of the economy to the deficit units through deposit mobilization to create risk assets (loans). This process involves risks, from credit to liquidity, operational, and solvency risks. As banks seek to manage these risks, they inadvertently impact their financial performance and the ability to deliver value to shareholders. Consequently, there is a need for a carefully balanced risk management architecture that helps mitigate risks with minimal adverse impact on profitability.

One recommendation is for banks to enhance their value-adding services to generate significant fee income to enhance ROA and ROE. Fee incomes are generated from services without liquidity, solvency, and credit risks. Similarly, banks must design data-driven policies on the CAR to meet the regulatory hurdle of 15% and pursue loan book expansion. This will support the growth of the overall economy when credits are channeled to the productive sectors of the

economy, and expanded loan books will create interest income that ultimately enhances the profitability of banks.

As demonstrated by the analysis of bank age and financial performance, banks are susceptible to time decay. Older banks underperform newer banks for several reasons, including loss of business agility, legacy issues, and business bureaucracy. Therefore, banks must undertake frequent periodic analyses of their processes, strategy, and supporting infrastructure to adapt to the changing environment and landscape.

Although data has not shown that operational risks significantly influence the performance of banks, leading indicators and global trends on fraud and other components of operational risks have demonstrated that banks may be exposed to heightened operational risk in the future. This trend is driven primarily by the increasing adoption of technology, the demand for on-the-go services by the emerging customers of banks, including millennials and Gen Z, and the growing customer awareness driving a spate of legal issues for banks. Consequently, it is recommended that banks in Nigeria invest in understanding their vulnerability and architecture to support the identification, mitigation, and reporting of operational risks.

Finally, given that many banks in Nigeria are listed on the Nigerian Stock Exchange and the prohibitive cost of compliance, it is recommended that banks design a deliberate strategy to optimize the benefit from their listing status to help lower the cost of borrowing and net-off the cost of compliance. For example, timing the market and rate environment to refinance existing obligations and enhancing the shareholders' funds will support the overall business outlook and investor confidence.

5.4 Opportunities for Future Research

The study's findings create avenues for future research to deepen the body of knowledge to understand the nexus between risk management and bank financial performance. This subsection considers the need for future research primarily based on the research design and the outcomes of the analyses.

First, financial performance is one side of the coin when considering banks' overall health and sustainability. In addition to profitability, which is susceptible to volatility due to reporting standards and financial engineering, future researchers could focus on Sustainable Growth Rate (SGR) as a dependent variable. SGR's higher explanatory power in measuring banks' health lies in its ability to comprehensively assess a bank's long-term viability, considering both

profitability and sustainability factors. SGR offers a more thorough and forward-looking perspective on the health of banks, emphasizing sustainability, resilience, and long-term value creation.

Similarly, more studies are needed to structure the impact of operational risk on bank performance into dimensions, given the increasing penetration of technology platforms and the pressure for banks to meet the needs of the technology-savvy class of customers. Also, the blurring line between other service providers, such as e-commerce companies, and traditional banking operations is creating additional areas of vulnerability for banks and regulators.

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