EFFECT OF FINANCIAL RISK ON THE PERFORMANCE OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

[1]ALIYU Mohammed Tsafe, & [2]INEAMA, Ogbonna Joseph
[1]Department of Marketing, Federal Polytechnic Kaura-Namoda, Zamfara State, Nigeria.
[2]Department of Business Administration, Nasarawa State University, Keffi
[1]aligerman204@gmail.com & [2]Fenigbo66@gmail.com

Abstract
This study explored the effect of financial risk on the performance of listed deposit money banks in Nigeria. The study's specific objectives were to examine the influence of credit risk, liquidity risk, and capital adequacy risk on the performance of listed deposit money banks in Nigeria. The study is carried out using an ex-post facto research design. The population consist of the fourteen (14) listed DMBs in the Nigerian Exchange Group (NGX). With the convenience sampling technique, the study used secondary panel data from the DMBs annual financial statements for 9 years (2014 – 2023). Descriptive statistics was used to define the data, measure the central tendencies and dispersions. The panel regression was used for data analysis. The results show that credit risk has a negative and significant effect on the performance of listed deposit money banks in Nigeria, liquidity risk has a positive but insignificant effect on the performance of listed DMBs, and capital adequacy risk exerted positive and significant effect on the performance of listed DMBs in Nigeria. The study recommends that deposit money banks should strengthen their credit risk management frameworks. This can be achieved by implementing more rigorous credit assessment procedures and utilizing advanced analytics for credit scoring. DMBs should establish comprehensive frameworks that enable efficient liquidity risk management. This includes maintaining a sufficient level of liquid assets and conducting regular liquidity stress tests to assess their ability to meet short-term obligations during periods of market stress among others.
Keywords: *Financial Risk, Credit Risk, Liquidity Risk, Capital Adequacy Risk, Financial Performance*

INTRODUCTION

The performance of deposit money banks (DMBs) plays a pivotal role in the economic development and financial stability of Nigeria, as these institutions serve as the backbone of the financial system (Olalere et al., 2021). In recent years, the banking sector has faced numerous challenges that have impacted their performance metrics, making it crucial to understand the relationship between financial risks and bank performance. Bank performance, typically measured through profitability indicators such as Return on Assets (ROA) and Return on Equity (ROE), reflects the efficiency and effectiveness of banks in utilizing their resources to generate returns (Ozili, 2020). The Nigerian banking sector has undergone significant transformations, including the 2005 banking sector consolidation and various regulatory reforms aimed at strengthening the financial system and improving bank performance (Adegboye et al., 2019).

A critical aspect affecting bank performance is credit risk, which primarily emanates from the possibility of loan defaults and non-performing loans (NPLs). The increasing levels of NPLs in Nigerian DMBs have raised concerns about their asset quality and potential impact on profitability (Ejem & Jombo, 2022). Credit risk management has become particularly crucial as poor loan quality can erode banks' capital base and threaten their survival. Similarly, liquidity risk, arising from the inability to meet short-term obligations and unexpected deposit withdrawals, has emerged as a significant challenge for Nigerian banks. The mismatch between assets and liabilities maturity profiles often exposes banks to liquidity pressures, potentially affecting their performance and stability (Ndubuisi & Onyema, 2019). The Central Bank of Nigeria (CBN) has implemented various liquidity management frameworks to ensure banks maintain adequate liquid assets to meet their obligations.

Capital adequacy risk, another crucial dimension of financial risk, reflects the banks' ability to absorb losses and maintain stability during adverse economic conditions. The CBN's implementation of Basel II and III requirements has emphasized the importance of maintaining adequate capital buffers. However, some Nigerian DMBs still struggle to meet these regulatory capital requirements, which can

significantly impact their performance and operational capacity (Okoye et al., 2021). The 2008-2009 global financial crisis further exposed the vulnerabilities of Nigerian banks to these financial risks, leading to deteriorating performance metrics and, in some cases, bank failures (Ibrahim & Oke, 2023). This highlighted the critical need for proper risk management practices and understanding of how different risk exposures affect bank performance. The CBN has since implemented various prudential guidelines and regulatory frameworks to enhance the risk management practices of DMBs and ensure sustainable performance.

Despite these regulatory interventions, Nigerian DMBs continue to face challenges in managing these financial risks comprehensively. The interplay between credit risk, liquidity risk, and capital adequacy risk creates a complex risk environment that significantly influences bank performance (Ajibola et al., 2022). Understanding these relationships is crucial for bank managers, regulators, and stakeholders in formulating effective risk management strategies and policies.

The Nigerian banking sector has experienced significant challenges in recent years, with financial risks posing substantial threats to the performance and stability of deposit money banks (DMBs). Despite regulatory reforms and risk management frameworks implemented by the Central Bank of Nigeria, the persistence of various financial risks continues to impact bank performance adversely (Okoye et al., 2021).

A primary concern is the increasing level of non-performing loans (NPLs) in Nigerian DMBs, which stood at 4.8% as of 2022, indicating significant credit risk exposure. This high NPL ratio suggests potential weaknesses in credit risk management practices and raises concerns about the quality of banks' loan portfolios (Ejem & Jombo, 2022). The frequent mismatch between assets and liabilities has exposed banks to significant liquidity risks, potentially compromising their ability to meet short-term obligations. Recent data indicates that some banks struggle to maintain the regulatory liquidity ratio of 30%, highlighting the severity of liquidity risk management issues (Ndubuisi & Onyema, 2019). Capital adequacy has also emerged as a pressing concern, with some Nigerian DMBs finding it increasingly difficult to maintain the required capital adequacy ratio of 15% set by the CBN. This challenge is particularly worrisome as inadequate capital buffers limit banks' ability to absorb unexpected losses and maintain operational stability (Ibrahim & Oke, 2023). The pressure to meet regulatory capital requirements while maintaining profitability has created a complex challenge for bank management.

Based on review of recent empirical literature, several research gaps have been identified in the study of financial risk and bank performance in Nigeria. While Akande et al. (2021) investigated credit risk impact on bank performance from 2015-2020, their study was limited to credit risk metrics in isolation, neglecting the interactive effects with other financial risks. Ibrahim and Mustapha (2022) focused on liquidity risk and profitability using a limited sample of six banks from 2016-2021, without considering the moderating effects of capital adequacy. Although Okonkwo and Ezeaku (2023) examined capital adequacy and bank performance from 2017-2022, their study was geographically restricted to Southern Nigeria, limiting its generalizability. Similarly, Nwosu and Adegbite (2023) analyzed financial risk and bank performance from 2019-2022 using annual data, which may not capture the dynamic nature of risk exposure. These limitations in existing literature create a significant research gap concerning the comprehensive analysis of financial risks' impact on bank performance. Therefore, this study seeks to address these gaps by examining the combined and interactive effects of credit risk, liquidity risk, and capital adequacy risk on the performance of all listed deposit money banks in Nigeria, utilizing data from 2018-2023.

This study aims to examine the effect of financial risk on the performance of listed deposit money banks in Nigeria. Other specific objectives are to:

i. Determine the effect of credit risk on the performance of listed deposit money banks in Nigeria.
ii. Investigate the effect of liquidity risk on the performance of listed deposit money banks in Nigeria.

iii. Examine the effect of capital adequacy risk on the performance of listed deposit money banks in Nigeria.

To achieve the specific objectives of the study, the following hypotheses will be tested:

$H0_1$: Credit risk has no significant effect on the performance of listed deposit money banks in Nigeria.

$H0_2$: Liquidity risk has no significant effect on performance of listed deposit money banks in Nigeria.

$H0_3$: Capital adequacy risk has no significant effect on the performance of listed deposit money banks in Nigeria.

LITERATURE REVIEW

Financial Risk

According to Bessis (2022) financial risk is defined as the potential for monetary loss or adverse variation in the future financial position of an institution, arising from uncertainty in financial markets, changes in economic conditions, and the behavior of stakeholders that can affect the institution's ability to meet its obligations and maintain sustainable performance. Kashyap and Stein (2020) conceptualized financial risk as the probability of unfavorable outcomes resulting from the mismatch between financial assets and liabilities, market volatility, operational failures, or external events that could impair an organization's ability to maintain its financial stability and achieve its business objectives. The Basel Committee on Banking Supervision (BCBS, 2021) defined financial risk as the exposure to potential financial loss or instability arising from various sources including credit activities, market movements, liquidity positions, and operational processes, which collectively impact an institution's capital adequacy and overall financial health.

Credit Risk

According to the Basel Committee on Banking Supervision (BCBS, 2023), credit risk is defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms, leading to financial loss through default or deterioration in credit quality of borrowers or counterparties. Ozili (2021) conceptualizes credit risk as the probability of loss arising from a borrower's inability or unwillingness to repay loans or meet contractual obligations, resulting in the impairment of bank assets and reduction in their economic value, which ultimately affects the bank's profitability and capital position. Ahmad and Ali (2019) define credit risk as "the exposure to potential financial losses due to the failure of customers to honor their contractual lending agreements, including both principal and interest payments, which encompasses default risk, concentration risk, and counterparty risk in banking operations.

Liquidity Risk

The Basel Committee on Banking Supervision (BCBS, 2023) defined liquidity risk as the potential inability of a bank to meet its obligations as they fall due without incurring unacceptable losses, encompassing both the risk of being unable to fund increases in assets and meet obligations as they come due (funding liquidity risk) and the risk that a bank cannot easily offset or eliminate a position at the prevailing market price because of inadequate market depth or market disruption (market liquidity risk). According to Ndugbu and Osuji (2021), liquidity risk is defined as the probability that a bank will be unable to meet expected and unexpected current and future cash flow needs and collateral requirements without affecting either daily operations or the financial condition of the institution, arising from its inability to convert assets into cash or access new funding sources in a timely and cost-effective manner.

Capital Adequacy Risk

According to Kosmidou and Zopounidis (2022), capital adequacy risk is defined as the potential inability of a bank to maintain sufficient capital relative to its risk profile, which could impair its capacity to absorb unexpected losses, meet regulatory requirements, and maintain market confidence while supporting its strategic business objectives and growth opportunities. The Basel Committee on Banking Supervision

(BCBS, 2023) conceptualizes capital adequacy risk as the exposure to potential financial instability arising from insufficient capital buffers to absorb unexpected losses from credit, market, and operational risks, while maintaining compliance with regulatory capital requirements and supporting the bank's risk appetite framework, strategic initiatives, and overall resilience.

Performance

Performance refers to the financial stability and growth of an organization, evaluated through metrics such as profitability, asset quality, and efficiency ratios. In the context of deposit money banks, performance encompasses the bank's ability to sustain profitable operations while managing risks, maintaining liquidity, and fostering growth. This perspective aligns with the goal of ensuring resilience and competitiveness within the financial industry (Akingunola et al., 2019). Performance is the bank's ability to generate returns on investment while effectively managing risks associated with its operations. This includes measures like return on assets (ROA) and return on equity (ROE), which capture profitability in relation to the bank's assets and equity. For deposit money banks, performance highlights the balance between maximizing shareholder value and mitigating financial risks (Olaleye, 2020).

Empirical Review

Mushafiq et al (2023) examined the relationship between credit risk and financial performance in non-financial firms. To test the relationship between Altman Z-score model as a credit risk proxy and the Return on Asset and Equity as indicator for financial performance with control variables leverage, liquidity and firm size. Least Square Dummy Variable regression analysis is opted. This research's sample included 69 non-financial companies from the Pakistan Stock Exchange KSE-100 Index between 2012 and 2017. This study establishes the findings that Altman Z-score, leverage and firm size significantly impact the financial performance of the KSE-100 non-financial firms. However, liquidity is found to be insignificant in this study. Altman Z-score and firm size have shown a positive relationship to the financial performance, whereas leverage is inversely related. This study brings in a new and useful insight into the literature on the relationship between credit risk and financial performance. The results of this study provide investors, businesses and managers related to non-financial firms in the KSE-100 index with significant insight about credit risk's impact on performance. The evidence of the credit risk and financial performance on samples of non-financial firms has not been studied; mainly it has been limited to the banking sector. This study helps in the evaluation of Altman Z-score's performance in the non-financial firms in KSE-100 index as well.

Apochi and Baffa (2022) examined the credit management committee's role on the effect of credit risk on financial performance of 13 deposit money banks in Nigeria from 2012 to 2021. Finance distress theory was adopted for the study. The study adopted census sampling technique. Regression model used to analyze the panel data. The multiple regression result revealed that credit risk has a negative and significant effect on financial performance. The moderating role of risk management committee revealed that credit risk has a positive and significant impact on financial performance of deposit money banks in Nigeria. The study did not conduct pre-estimation test.

Yousef et al (2022) explored the nexus between the bank's financial performance and credit in MENA region. In this regard, credit risk is measured through loans and advances to total deposits, while three different measures of the banks' returns are incorporated to capture their financial performance. Return on assets, net interest margin, and return on equity represent examples of these measures. Panel regression analysis was conducted on the sample data of 135 MENA region banks, covering the time period from 2015 to 2019. This research found that profitability and financial performance were adversely and seriously impacted by credit risk. Results indicate that loans and advance to total deposits ratio adversely affected MENA banking institutions' performance. Moreover, the bank size was also found as a vital aspect in influencing financial performance. This research's results did not align to any previous study.

Bencharles and Abubakar (2020) investigated the impact of liquidity risk on Islamic and conventional banks profitability in Nigeria for the period 2012-2019. First bank plc and Jaiz bank were both used to represent the conventional and Islamic banks in Nigeria respectively. Time series data were sourced from the quarterly bulletin of selected banks used for the study. Time series data were first subjected to preliminary analysis (descriptive statistics, unit root test & co-integration test) so as to ascertain the background characteristics of dataset. The ordinary least square estimation technique was used to capture the relationship between liquidity and profitability. Liquidity was measured by the liquid asset to operating asset ratio, current ratio and cash ratio while bank size was used as a control variable. Profitability was measured using the return on asset. Empirical result indicated that profitability and liquidity have an inverse relationship in both conventional and Islamic banks; hence it was found to follow the risk return trade off. However, Islamic bank profitability was found to respond more significantly to changes in liquidity level than in conventional banks. The study concluded that liquidity and profitability relationship follow the risk return theory, although liquidity was found to be more significant in the Islamic banks. The study therefore recommended that banks keeps liquidity as needed to meet up defined liabilities and not needlessly keeping too much liquidity as it erodes banks' profits. However, the study conducted unit root test which is not applicable to panel analysis.

Mwangudza, et al (2020) adopted post-positivist research paradigm to interpret the effect of liquidity management on the financial performance of deposit-taking Saccos in Kenya. The study adopted a descriptive, survey research design. The target population was 18 Saccos classified under teachers' based DT SACCOs according to SASRA records of December 2017 (SASRA, 2018). Census Methodology was used. The study used a data capture form that has been designed by the researcher to collect the data on the independent variables of liquidity management, moderator variable size and dependent variable which was DT Saccos financial Performance. Data were analysed using a combination of descriptive and inferential statistics with the statistical package STATA. Analysed data was presented using graphs and tables. The study established that there was a significant effect of capacity and purchased funds on the financial performance of Teachers DT Saccos. The study also established that cash position, total deposit, and core deposit had an insignificant effect on the financial performance of Teachers DT Saccos and that size of the Sacco affects the relationship between liquidity management and financial performance of Teachers DT Saccos. However, Hausman test was not stated to know whether the study will adopt fixed effect or random effect.

Gerio and Wahome (2020) determined the influence of liquidity management on the financial performance of agricultural firms listed on Nairobi Securities Exchange. A descriptive survey research design was applied. A Census of all the 6 companies listed at Nairobi Securities Exchange as at July 2014 to July 2019 constituted the study population. The study employed secondary data extracted from audited financial statements and individual companies annual report for the five-year period covering July 2014 to July 2019. Record survey sheet was used when collecting data for independent and dependent variables. Data collected was analyzed by using descriptive and inferential statistics. Under descriptive statistics the study considered; Mean, Minimum, Maximum and Standard deviation. For inferential statistics the study considered correlation and multiple regression. Statistical Package of Social Science (SPSS) software program was applied in the analysis of the study with respect to the objectives of the study. The study found out that liquidity management has a positive significant effect on financial performance. The liquidity management has positive relationship with the Return on Investment (ROA) of the firms under study. However, there is no justification to start from 2014.

Emmanuel et al (2022) investigated the impact of capital adequacy risk and the financial performance of listed deposit money banks in Nigeria for the period 2008-2019. The proxies are capital adequacy risk (CAR), liquidity risk (LR), and credit risk (CR) while for Financial Performance are Return on Asset (ROA) and Return on Equity (ROE) to identify the gaps that underpin the problem under investigation. Secondary data were sourced from the Nigeria Exchange Group (NXG) factbook for the filter sample of Listed Deposit Money Banks (DMBs) that met some criteria. The study employed multiple regression techniques in analyzing the data that were gathered using Ordinary Least Square (OLS) with Eviews-10.

The study revealed that CAR has a negative but insignificant effect on ROA but positively and significantly correlated with the ROE while a negative relationship of LR is significant on ROA but insignificant on the ROE, However, a negative relationship of CRR is significant on ROA but insignificant on the ROE of DMBs in Nigeria. However, the study did not conduct post estimation test, the current study will conduct post estimation test to enrich result and make it reliable in enhancing decision making.

Adeleke and Ibrahim (2022) assessed the effect of capital adequacy risk on the financial performance of deposit money banks in Nigeria from 2011 to 2020. The capital adequacy was proxied by capital adequacy, liquidity, leverage, and asset quality as the independent variables while the financial performance is proxied by earnings per share (EPS) as dependent variable. The data was sourced from the annual reports of the thirteen (13) quoted deposit money banks and analysed using descriptive statistics and Panel Data Regression to determine the relationships between the variables. As a form of diagnostics test, Jarque-Bera test was engaged for checking for normality, Pearson Correlation was employed to evaluate the degree of relationship among variables and extent of linearity, Unit root test was used to test for stationarity and the Hausman test to determine whether to use fixed or random effect panel least square regression of which fixed effect model was favoured. Data were estimated with STATA 15. The findings from the study reflect that capital adequacy have a positive and non-significance level on financial performance using the EPS. Liquidity has a positive and non- significance level on the EPS. Asset quality has non-significance level on the EPS. Leverage has non-statistical significance level on the EPS. The study concludes that an increase in capital does not necessarily translate to higher EPS, higher liquidity lessens banks' liquidity risk, asset quality in form of non-performing loans reduces the bank's capacity to create further loans, hence less earnings for the bank and leverage negatively influences financial performance. However, the theory of the study did not align with the findings.

Risk Management Theory

Risk Management Theory, developed through various contributions over the years, became a prominent framework in the early 2000s with formal development credited to works like James Lam's Enterprise Risk Management and Jean-Paul Louisot's Risk Management frameworks. These foundational texts established Risk Management Theory to identify, evaluate, and mitigate risks that can affect an organization's performance. Bessis (2015) further refined this theory in his book Risk Management in Banking, emphasizing its relevance to financial institutions.

This theory centers on the premise that effective risk management is crucial for organizational success, particularly for banks, where exposure to financial risks such as credit, market, operational, and liquidity risks is significant. Risk Management Theory posits that organizations can enhance their resilience and performance by proactively managing these risks, thus preventing financial loss, ensuring stability, and maintaining investor confidence (Bessis, 2015). For banks, this means maintaining the optimal balance between risk and profitability, as poorly managed risks can erode financial performance, disrupt liquidity, and even lead to insolvency. Proponents argue that Risk Management Theory is essential for ensuring sustainable performance and resilience in banks. The theory highlights the importance of comprehensive risk assessment, which enables banks to reduce exposure to financial losses, maintain stability, and adapt to regulatory requirements. Bessis (2015) argues that with proper risk management, banks can manage their capital more effectively, boost investor confidence, and stabilize long-term growth. Critics, however, contend that Risk Management Theory can lead to excessive caution, reducing a bank's competitiveness by focusing too heavily on risk minimization overgrowth. Some scholars argue that risk management can be costly and complex, potentially leading to diminished returns due to conservative strategies. Taleb (2007) argues that relying on risk management may create a false sense of security, leading firms to underestimate unpredictable, high-impact risks.

In examining the effect of financial risk on the performance of listed deposit money banks in Nigeria, Risk Management Theory provides valuable insights into how these banks navigate risks to maintain profitability and ensure financial stability. Nigerian banks face numerous risks, including credit defaults,

exchange rate volatility, and regulatory pressures. By applying risk management practices, banks can manage these uncertainties, safeguarding their financial performance while aligning with stakeholder expectations. Risk Management Theory explains how an effective risk management system helps deposit money banks assess and respond to these financial risks, ultimately influencing performance outcomes (Olaleye, 2020). This theory supports the study's focus on exploring the relationship between risk factors and bank performance, providing a foundation for evaluating whether risk mitigation positively impacts financial stability and profitability in Nigeria's banking sector.

METHODOLOGY

The study is carried out using an *ex-post facto* research design. The population consist of the fourteen (14) listed DMBs in the Nigerian Exchange Group (NGX) as of December 2023. Table 1 shows the list of DMBs:

Table 1: Listed DMBs as of December 2023

S/N	Deposit Money Banks	Year of incorporation	Date Listed
1.	Access bank Plc	February, 1989	-
2	Ecobank Transnational	-	January, 2010
3.	FBN Holding	March, 1894	November, 1971
4.	FCMB	November 2012	June, 2013
5.	Fidelity Bank Plc	November, 1988	May, 2005
6.	Guaranty Trust bank Plc	July, 1990	-
7.	Stanbic IBTC	March 2012	November, 2012
8.	Jaiz Bank Plc	January, 2018	
9.	Sterling Bank Plc	April, 1992	August, 1993
10.	Union Bank Plc	May, 1969	-
11.	United Bank for Africa	February, 1949	March, 1970
12.	Unity Bank Plc	April, 1987	-
13.	Wema bank Plc	May, 1945	January, 1984
14.	Zenith Bank Plc	May, 1990	October, 2004

Source: NGX (2023)

With the convenience sampling technique, the study used secondary panel data from the DMBs annual financial statements for 9 years (2014 – 2023). Data from the annual reports and accounts of the twelve (12) DMBs listed on Nigeria Exchange Group (NGX). Descriptive statistics is used to summarize the basic characteristics of the results. The statistics included average, median, minimum, and maximum. The study also used Correlation analysis for multicollinearity and interaction between dependent and independent variables. Panel regression technique was also used for this study given its superiority over pure cross section or pure time series.

The panel regression model that captures the effect of financial risk on performance in Nigeria is state below:

$ROE_{it} = \beta_0 + \beta_1 CRR_{it} + \beta_2 LIR_{it} + \beta_3 CAR_{it} + \varepsilon_{it}$

Where,

ROE – Return on equity.
CRR – Credit risk
LIR – Liquidity risk
CAR- Capital adequacy risk
β_0 - constant term
$\beta_1, \beta_2, \beta_3$ - beta coefficients
ε - error term

Table 2: Variables Measurement

S/N	Variable	Nature	Measurement	Source
1	Return on Equity	Dependent Variable	Measured as the Net income divided by total amount of shareholder equity invested	Copel and Koller and Murnin, (2000)
2	Credit risk	Independent variable	Measured as loan loss provision divided by total loans	Epure and Lafuente (2015
3	Liquidity risk	Independent variable	Current assets divided by current liabilities	Gatsi, Gadzo, & Akoto, (2017)
4	Capital adequacy risk	Independent variable	Total capital / Total risk weighted assets	John & Ezejiofor (2017)

Source: Authors Compilation (2024)

RESULTS AND DISCUSSION

Data Presentation

Descriptive statistics, including measures such as the mean, median, maximum, minimum, skewness, kurtosis, and the Jarque-Bera test, were calculated to assess the statistical characteristics of the variables central to the study. The results are displayed in Table 4.1. On the other hand, the results of the correlation analysis are presented in Table 4.2.

Table 4.1: Summary Statistics of the Variables used in the Study

Statistic	ROE	CRR	LIR	CAR
Mean	12.710858	5.521583	15.33344	14.672627
Median	4.314950	3.404800	14.85370	13.33970
Maximum	48.09140	33.58050	34.32490	23.75350
Minimum	4.15890	4.25000	0.579000	2.15000
Std. Dev.	10.47336	6.264419	6.674006	22.08430
Skewness	0.739994	2.559390	0.137692	-5.679787
Kurtosis	16.50074	9.427800	2.750554	36.67138
Jarque-Bera	971.9010	337.5926	0.690299	6314.008
Probability	0.000000	0.000000	0.708114	0.000000

Source: Researcher's Computations from Eviews, 2024.

The statistical analysis reveals significant insights into the financial performance and risk management metrics of the banking sector. The Return on Equity (ROE) demonstrates robust performance with a mean of 12.71%, ranging from 4.16% to 48.09%, indicating strong profitability and efficient use of shareholders' equity across the banking institutions. The positive skewness (0.739994) suggests a favorable distribution with potential upside opportunities, while the high kurtosis (16.50074) indicates the presence of some extreme positive returns, reflecting periods of exceptional performance.

The Credit Risk Ratio (CRR) exhibits a mean of 5.52% with a range of 4.25% to 33.58%, demonstrating prudent credit risk management practices. The positive skewness (2.559390) and high kurtosis (9.427800) suggest that while banks generally maintain conservative credit risk levels, there are instances of higher risk exposure that remain within manageable limits. The Liquidity Impact Ratio (LIR) shows a healthy mean of 15.33%, ranging from 0.58% to 34.32%, with relatively lower skewness (0.137692) and kurtosis (2.750554), indicating stable and well-managed liquidity positions across the banking sector.

The Capital Adequacy Ratio (CAR) presents a strong mean of 14.67%, well above regulatory minimums, with a range from 2.15% to 23.75%. The positive skewness (1.679787) and high kurtosis (36.67138) suggest that banks generally maintain capital levels above the required threshold, with some institutions holding substantially higher capital buffers. The Jarque-Bera statistics and corresponding probability values (0.000000 for ROE, CRR, and CAR) indicate non-normal distributions for most metrics, except

LIR (probability 0.708114), suggesting the presence of significant variations and outliers in the banking sector's performance metrics.

Table 4.2: Correlation Analysis Results

Variable	ROE	CRR	LIR	CAR
ROE	1	-0.266059	0.212205	0.136279
CRR	-0.266059	1	-0.197867	0.155416
LIR	0.212205	-0.197867	1	0.220726
MAR	0.212143	0.249628	0.019917	0.196078
CAR	0.136279	0.155416	0.220726	1
OPR	-0.365126	-0.048186	0.048392	0.119601

Source: Researcher's Computations from Eviews, 2024.

The results of the correlation analysis results presented in Table 4.2 show the pairwise correlations between Return on Equity (ROE), Credit Risk (CRR), Liquidity Risk (LIR), and Capital Adequacy Risk (CAR). None of the correlation coefficients exceed ±0.5, which is a common threshold for identifying potential multicollinearity issues. This indicates that multicollinearity is not a significant concern among these variables, allowing for more reliable estimates in the panel regression analysis. However, multicollinearity of the explanatory variables was further tested, subsequently using VIF.

Panel Regression Model Selection

Two tests – the redundant fixed effects-likelihood ratio test and the correlated random effects-Hausman test – were conducted to evaluate the suitability of different panel data regression models for the dataset. The results of both tests are presented in Table 4.3.

Table 4.3: Summary of Panel Regression Model Selection Results

Redundant Fixed Effects Tests – Likelihood Ratio			
Effect test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	2.508774	(11,103)	0.0077
Cross-section Chi-square	28.486925	11	0.0027
Correlated Random Effects – Hausman Test			
Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random	25.465090	5	0.0001

Source: Researcher's Computations from Eviews 12, 2024

The results of the redundant fixed effects test conducted in the study examining the effect of financial risk on the performance of listed deposit money banks in Nigeria provides crucial insights into the appropriateness of the model. The results indicate that both the cross-section F statistic and the cross-section Chi-square statistic are statistically significant. The cross-section F statistic is 2.508774 with degrees of freedom (11, 103) and a probability value of 0.0077, while the Chi-square statistic is 28.486025 with 11 degrees of freedom and a probability value of 0.0027. These findings suggest that there are significant differences in performance among the banks, which are not captured by a simple pooled ordinary least squares (OLS) regression, thus validating the use of a fixed effects model for this analysis. Following the validation of the fixed effect model, the Hausman test was used to choose between it and the random effect model. The Hausman test, tests the null hypothesis that the random effects model is consistent and efficient. In simpler terms, it helps us decide whether unobserved individual-specific effects are correlated with the independent variables. In this case, the Hausman test statistic is 25.465090 with a p-value of 0.0001. Since the p-value is less than the significance level of 0.05, we reject the null hypothesis, which states that the random effects model is appropriate. This implies that the random effects model is not consistent and efficient, and the fixed effects model is preferred. The fixed effects model controls for unobserved time-invariant heterogeneity across individuals (in this case, banks). This means that the model accounts for differences between banks that are not explicitly captured by the

included variables. By doing so, it provides a more accurate and precise estimate of the relationship between the financial risk variables and ROE.

Table 4.4: Summary of Fixed Effect Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
CRR	-0.602763	0.134517	-4.480943	0.0000
LIR	0.189044	0.124257	1.521395	0.1309
CAR	0.075407	0.036821	2.047935	0.0392
C	3.562611	2.243130	1.588232	0.4982

Effect specification

Cross-section fixed (dummy variables)	
R-squared	0.642385
Adjusted R-squared	0.597629
F-statistic	6.320594
Prob(F-statistic)	0.000000
Durbin-Watson stat	2.007626

Note: Dependent variable is ROE.
* indicates significance at 5% level.
Source: Researcher's Computations from Eviews 12, 2024.

Table 4.4 presents the fixed effects model results. A cursory look at the results reveal a significant negative relationship between credit risk (CRR) and ROE, with a coefficient of -0.6028. This indicates that an increase in credit risk leads to a decline in equity returns, meaning that financial institutions with higher exposure to credit risk experience reduced profitability. The statistical significance of this result, as shown by the t-statistic of -4.48 and a p-value of 0.0000, underscores the importance of managing credit risk in order to maintain or improve ROE. Credit risk is therefore a critical factor that negatively impacts the financial performance of institutions, emphasizing the need for effective risk management strategies in this area. Since the p-value associated with CRR variable has a probability value of 0.0000, which is less than 0.05 (5%) level of significance, we reject null hypothesis one, and conclude that credit risk has significant effect on the performance of listed deposit money banks in Nigeria.

Table 4.4 also revealed that liquidity risk (LIR), on the other hand, has a coefficient of 0.1890 suggests a positive relationship between liquidity risk and ROE, meaning that higher liquidity risk is associated with improved equity returns. However, this relationship is not statistically significant, as indicated by the t-statistic of 1.52 and a p-value of 0.1309. Thus, we accept null hypothesis two which states that liquidity risk has no significant effect on performance of listed deposit money banks in Nigeria. While the positive effect of liquidity risk on ROE could be noteworthy, its lack of statistical significance implies that liquidity risk does not play a decisive role in determining equity returns within the studied institutions. Therefore, while liquidity may contribute positively to financial performance, its influence is not as robust as other risk factors.

Capital adequacy risk (CAR) also shows a positive relationship with ROE, with a coefficient of 0.0754 and a p-value of 0.0392. This result is statistically significant, suggesting that institutions with stronger capital adequacy are better positioned to generate higher returns on equity. Since the probability value (0.0392) is less than the 5% level of significance, the third null hypothesis that capital adequacy risk has no significant effect on the performance of listed deposit money banks in Nigeria, is rejected and its alternative accepted. Adequate capital buffers may provide institutions with the resilience needed to absorb shocks and maintain profitability, thus contributing positively to financial performance. This finding underscores the importance of maintaining sufficient capital reserves to support equity returns, especially in times of economic or financial stress.

Post-estimation Tests

Table 4.5: Residual Normality Test Results

Test	Statistic	Probability
Jarque-Bera Normality Test	3.306964	0.191382

Source: *Researcher's Computation using Eviews, 2024.*

Table 4.5: Multicollinearity Test Results

Variables	VIF
CRR	2.534
LIR	2.613
CAR	1.765

Source: Researcher's Computation from Eviews, 2024.

The study used the Variance Inflation Factor (VIF) to assess the presence of multicollinearity among the variables. A VIF value between one and five suggests only a modest correlation, while a VIF of one indicates no correlation between variables. Additionally, VIF values exceeding five signal potential collinearity issues among the predictor variables. The VIF results in Table 4.5 show that none of the values are close to 5, confirming that there are no indications of multicollinearity problems among the predictors in this study.

Table 4.6: Panel Cross-section Heteroscedastic LR Test Results

Test	Value	Probability
Likelihood Ratio	2.564230	0.2463

Null hypothesis: Residuals are homoscedastic

Source: *Researcher's Computation using Eviews, 2024.*

The results of the cross-section heteroscedastic LR test revealed a value of 2.564230, and the corresponding p-value is 0.2463. Since the p-value is greater than the conventional significance level of 0.05, we accept the null hypothesis that residuals are homoscedastic. This indicates that there is no evidence to suggest that the residuals are heteroscedastic. The absence of heteroskedasticity is a positive outcome for the regression model. It suggests that the standard errors of the regression coefficients are likely to be unbiased, and the t-tests and F-tests used for hypothesis testing are likely to be reliable.

Table 4.7: Residual Cross-Section Dependence Test Results

Test	Statistic	d.f.	Probability
Breusch-Pagan LM	1.280199	66	0.7613
Pesaran scaled LM	1.768008		0.2056
Pesaran CD	0.621258		0.1562

Note: null hypothesis: No cross-section dependence (correlation) in residual

Source: *Researcher's Computation using Eviews, 2024.*

The results of the Residual Cross-Section Dependence Test presented in Table 4.7 show that all three tests (Breusch-Pagan LM, Pesaran Scaled LM, and Pesaran CD) have high p-values, which are individually greater than 0.05 (5%) level of significance. This means that the null hypothesis of no cross-sectional dependence in the residuals is accepted, indicating that there is no evidence of cross-sectional dependence in the residuals of the model. This absence of cross-sectional dependence is a good sign for the validity of the econometric analysis.

Discussion of Findings

In the first place, this study sought to determine the effect of credit risk on the performance of listed deposit money banks in Nigeria. The results obtained from the fixed effect panel regression model show that credit risk has a negative and significant effect on the performance of listed deposit money banks in Nigeria. This implies that as credit risk increases—often due to a higher volume of non-performing loans or defaults—bank performance deteriorates. Financial institutions face greater challenges in maintaining

profitability when the proportion of loans that are not repaid as scheduled rises. This situation affects banks' liquidity, profitability, and overall financial health, as they may need to set aside more provisions for bad debts, thus reducing available funds for investment or lending. The significant nature of this relationship suggests that credit risk is a crucial determinant of financial performance, and its mismanagement could lead to severe implications for the banks' stability.

The finding that credit risk has a negative and significant effect on the performance of listed deposit money banks in Nigeria aligns with those of Apochi and Baffa (2022), who found a similar negative and significant impact of credit risk on the financial performance of Nigerian deposit money banks, reinforcing the idea that poor credit risk management can weaken financial outcomes. However, they also noted that a well-functioning risk management committee can positively moderate this effect, highlighting a nuance not explored in the current study. Similarly, Yousef et al. (2022) observed an adverse effect of credit risk on the profitability of banks in the MENA region, supporting the finding that credit risk negatively influences bank performance. Ara, Bakaeva, and Sun (2019) reported that there is a negative impact of credit risk on profitability in Swedish banks, while Kargi (2019) also found that high levels of non-performing loans negatively affect Nigerian banks' profitability.

Contrariwise, Mushafiq et al. (2023) found that credit risk, proxied by the Altman Z-score, had a positive relationship with financial performance, which contradicts the negative relationship found in the banking sector in Nigeria in the present study. This divergence may stem from differences in the operational and financial dynamics between banks and non-financial firms.

Second, this study investigated the effect of liquidity risk on the performance of listed deposit money banks in Nigeria. The results show that liquidity risk has a positive but insignificant effect on return on equity – the performance of listed DMBs in Nigeria, which suggests that while liquidity risk may slightly influence bank profitability, its impact is not statistically strong enough to be considered meaningful in the context of the Nigerian DMBs. The insignificance of the relationship implies that fluctuations in liquidity levels may not directly drive changes in performance, as measured by ROE. This could be due to several factors, such as the banks' ability to manage liquidity efficiently or access external funding sources when needed, minimizing the potential risks. Additionally, Nigerian banks might have a robust regulatory framework and liquidity reserves that cushion against short-term liquidity pressures, making liquidity risk less impactful on overall profitability. Despite the positive direction of the relationship, the results indicate that liquidity management alone may not significantly enhance the performance of DMBs, suggesting that other risk factors or operational efficiencies are more critical drivers of profitability.

The finding from the current study, which reveals that liquidity risk has a positive but insignificant effect on the performance of listed deposit money banks (DMBs) in Nigeria, is inconsistent with those of Bencharles and Abubakar (2020), who found an inverse relationship between liquidity and profitability for both Islamic and conventional banks in Nigeria, which aligns with the risk-return trade-off, suggesting that excessive liquidity negatively impacts profitability. This finding contradicts the positive but insignificant relationship observed in the current study, where liquidity risk does not erode profitability, and its effect is minor. In a similar contradictory manner, Mwangudza et al. (2020) found a significant relationship between liquidity management and financial performance of deposit taking Saccos in Kenya, specifically noting that liquidity management positively affects performance. This contrasts with the current study's insignificant relationship, implying a discrepancy in the impact of liquidity management on financial outcomes in different financial sectors and geographical contexts.

In contrast, the findings from Gerio and Wahome (2020), which demonstrated a positive and significant effect of liquidity management on the financial performance of agricultural firms in Kenya, partially align with the positive nature of the relationship in the current study. However, the significant influence found in their study contradicts the insignificance observed in the current context of Nigerian DMBs.

In the third place, this study examined the effect of capital adequacy risk on the performance of listed deposit money banks in Nigeria. Fixed effect regression was used to analyse the data and findings revealed that capital adequacy risk exerted positive and significant effect on return on equity – the performance of listed DMBs in the study area. This suggests that banks with higher capital adequacy ratios are better positioned to generate returns for shareholders. This outcome suggests that well-capitalized banks have greater financial flexibility, enabling them to take advantage of profitable investment opportunities while maintaining resilience against economic shocks. By ensuring that capital reserves are adequate, DMBs in Nigeria can enhance their operational efficiency, reduce financial distress, and ultimately improve their overall profitability, as reflected in higher ROE. This finding underscores the importance of capital adequacy as a key determinant of bank performance in the Nigerian financial sector.

The finding that capital adequacy risk has a positive and significant effect on return on equity (ROE) in listed deposit money banks (DMBs) in Nigeria aligns with those of Emmanuel et al. (2022) who also found a positive and significant relationship between capital adequacy risk and ROE in Nigerian DMBs, suggesting that well-capitalized banks perform better in terms of equity returns, as they are more resilient to financial shocks and able to take on profitable investments. However, the finding of the current study contradicts that of Adeleke and Ibrahim (2022), who found that while capital adequacy was positively related to financial performance, the effect was not significant when using earnings per share (EPS) as the performance metric, suggesting that the significance of capital adequacy may depend on the specific performance indicator used.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study, it can be concluded that higher credit risk significantly undermines the financial performance of listed deposit money banks (DMBs) in Nigeria. The increase in non-performing loans and defaults leads to reduced profitability, liquidity challenges, and financial instability, underscoring the need for stricter credit risk management to safeguard bank performance. Effective strategies for managing credit risk will be crucial in ensuring the long-term stability of Nigerian DMBs. It can also be concluded that liquidity risk has a positive but statistically insignificant effect on the financial performance of listed DMBs in Nigeria. While efficient liquidity management might slightly improve profitability, other factors, such as operational efficiencies and risk management, appear to play a more significant role in driving bank performance. This suggests that liquidity alone may not be a key determinant of profitability in this context. More so, we can conclude that capital adequacy risk influences financial performance of DMBs positively, as banks with higher capital reserves are better positioned to withstand economic shocks and generate higher returns for shareholders. This highlights the importance of maintaining adequate capital ratios to improve profitability and ensure operational resilience in Nigeria's banking sector. Therefore, financial risk has a significant effect on performance of listed DMBs in Nigeria.

i. To enhance the performance of listed deposit money banks (DMBs) in Nigeria, it is essential for these institutions to strengthen their credit risk management frameworks. This can be achieved by implementing more rigorous credit assessment procedures and utilizing advanced analytics for credit scoring. Regular monitoring of loan performance is crucial to identify potential defaults early, allowing banks to take proactive measures to mitigate non-performing loans. By adopting these practices, banks can significantly reduce credit risk and improve their overall financial health.
ii. DMBs should establish comprehensive frameworks that enable efficient liquidity risk management. This includes maintaining a sufficient level of liquid assets and conducting regular liquidity stress tests to assess their ability to meet short-term obligations during periods of market stress. By ensuring access to external funding sources, banks can enhance their resilience to liquidity fluctuations and safeguard their profitability.
iii. The government should consider increasing capital adequacy requirements for DMBs. By raising the minimum capital adequacy ratios, banks will be better positioned to absorb potential losses during economic downturns. Higher capital buffers will not only improve

financial stability but also encourage banks to adopt more prudent lending practices, ultimately benefiting shareholders and fostering a healthier banking environment.

References

Adegboye, F. B., Babajide, A. A., & Omankhanlen, A. E. (2019). Corporate governance and bank performance: A study of selected deposit money banks in Nigeria. *International Journal of Economics and Business Administration*, 7(1), 318-337.

Ahmad, N. H., & Ali, R. (2019). Credit Risk Management and Bank Performance: A Conceptual Framework. *International Journal of Banking and Finance*, 15(2), 98-112.

Ajibola, A., Wisdom, O., & Qudus, O. L. (2022). Financial risk management and bank performance in Nigeria: A panel analysis approach. *Journal of Finance and Banking Studies,* 11(2), 1-15.

Akande, O. O., Adedeji, A. O., & Oladele, P. O. (2021). Credit risk management and financial performance of deposit money banks in Nigeria. *International Journal of Banking Research,* 15(3), 112-128.

Akingunola, R. O., Olowofela, E. O., & Oyetayo, O. (2019). Impact of financial risk on corporate performance of commercial banks in Nigeria. *European Journal of Business and Management*, 11(4), 57-65.

Basel Committee on Banking Supervision (BCBS). (2021). Principles for the Management of Financial Risks in Banking Organizations. Bank for International Settlements, Basel, Switzerland.

Basel Committee on Banking Supervision (BCBS). (2023). Basel Framework: Capital Adequacy and Risk Management Guidelines (Rev. ed.). Bank for International Settlements, Basel, Switzerland.

Basel Committee on Banking Supervision (BCBS). (2023). Guidelines on Credit Risk Management Principles for Banking Organizations (Rev. ed.). Bank for International Settlements, Basel, Switzerland.

Basel Committee on Banking Supervision (BCBS). (2023). Principles for Sound Liquidity Risk Management and Supervision. Bank for International Settlements, Basel, Switzerland.

Bessis, J. (2015). Risk Management in Banking. John Wiley & Sons.

Bessis, J. (2022). Risk Management in Banking (5th ed.). John Wiley & Sons, United Kingdom.

Ejem, C. A., & Jombo, C. O. (2022). Credit risk management and performance of deposit money banks in Nigeria: A post-consolidation analysis. *International Journal of Financial Research,* 13(1), 89-102.

Ibrahim, M., & Mustapha, A. (2022). Liquidity risk and profitability: Evidence from selected Nigerian banks. *Journal of Finance and Banking Studies*, 11(4), 78-94.

Ibrahim, M., & Oke, M. O. (2023). Risk management practices and financial performance of Nigerian deposit money banks. *African Journal of Business and Economic Research*, 18(1), 45-67.

Kashyap, A. K., & Stein, J. C. (2020). Financial Risk Management: Theory and Practice in Banking Institutions. *Journal of Banking and Finance*, 42(3), 215-234.

Kosmidou, K., & Zopounidis, C. (2022). Capital Adequacy Risk in Banking: Measurement, Regulation and Management. *Journal of Financial Services Research*, 41(3), 178-196.

Ndubuisi, P., & Onyema, J. I. (2019). Risk management practices and financial performance of deposit money banks in Nigeria. *International Journal of Economics and Financial Issues*, 9(3), 45-56.

Ndugbu, M. O., & Osuji, C. C. (2021). Liquidity Risk Management and Financial Performance: Theoretical Perspectives in Banking Industry. *Journal of Economics and Financial Research*, 6(2), 89-104.

Nwosu, E. O., & Adegbite, T. A. (2023). Financial risk and bank performance in Nigeria: A panel data analysis. *African Journal of Banking and Finance*, 14(2), 45-63.

Okonkwo, C. N., & Ezeaku, H. C. (2023). Capital adequacy regulation and bank performance: Evidence from Southern Nigeria. *Nigerian Journal of Management Sciences*, 24(1), 156-172.

Okoye, L. U., Adetiloye, K. A., Erin, O., & Modebe, N. J. (2021). Financial risk management and the performance of deposit money banks in Nigeria. *Banks and Bank Systems*, 16(1), 117-128.

Olalere, O. E., Bin Omar, W. A., & Kamil, S. (2021). Bank performance and financial risk management in the Nigerian banking sector. *Journal of Asian Finance, Economics and Business,* 8(3), 49-61.

Olaleye, M. O. (2020). Effect of risk management on financial performance of Nigerian deposit money banks. *Journal of Financial Risk Management*, 9(2), 147-156.

Olaleye, M. O. (2020). Effect of risk management on financial performance of Nigerian deposit money banks. *Journal of Financial Risk Management*, 9(2), 147-156.

Ozili, P. K. (2020). Bank profitability determinants: Comparing the United Kingdom, Nigeria and South Africa. *International Journal of Banking and Finance*, 15(1), 1-28.

Ozili, P. K. (2021). Credit Risk Drivers: Evaluation of Credit Risk in African Banking Systems. *Research in International Business and Finance*, 58(1), 42-56.

Taleb, N. N. (2007). The Black Swan: The Impact of the Highly Improbable. Random House.