



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

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ABSTRACT

This research investigates the effect of credit risk management on the financial performance of listed deposit money banks (DMBs) in Nigeria. Specifically, it focuses on analyzing the relationship between the non-performing loan ratio and financial performance, the connection between loan loss provisions and financial performance, and the link between the capital adequacy ratio and financial performance. The study utilized an ex-post facto research design, drawing data from the annual financial reports of 12 listed DMBs over a five-year period (2020-2024). Using regression analysis to evaluate the data, the findings revealed that the loan loss provision ratio (LLPR) has a positive and statistically significant relationship with return on equity (ROE), whereas ROE has a negative and significant impact on LLPR. Additionally, the results indicate a positive and statistically significant relationship between ROE and the capital adequacy ratio. Based on these findings, the study recommends that the Nigerian banking sector should closely monitor credit risk management indicators, as they are essential for assessing financial performance. Furthermore, to enhance the ROE of DMBs in Nigeria, management should consistently promote increased lending activities.

Keywords: Financial Performance, Credit Risk Management, Loan Loss Provision Ratio, ROE

INTRODUCTION

Banks play a pivotal role in any economy by channeling funds from surplus units to deficit units through lending activities (Kajola et al., 2018). Similarly, Okere



et al. (2018) explain that banks operate by accepting deposits from individuals with excess funds and providing loans to those in immediate need of financial resources. Additionally, banks facilitate foreign exchange transactions and promote international trade while offering services such as resource mobilization, distribution, allocation, and financial intermediation. Like all profit-driven organizations, banks aim for strong financial performance to enhance their value. However, the Return on Assets (ROA) for Deposit Money Banks in Nigeria declined from 3.02% in 2021 to 2.88% in 2023, which was lower than the ROA for the same year in countries such as Ghana (4.99%), Sierra Leone (9.66%), the Maldives (5.66%), and Kenya (4.52%). Furthermore, the Central Bank of Nigeria reported a further decrease in the ROA of Nigerian banks from 2.53% in 2023 to 2.17% in 2024, reflecting a continued decline in their financial performance. This decline has persisted despite various reforms implemented since 1999 aimed at strengthening the Nigerian banking sector, which included the removal of eight bank CEOs and the injection of N600 billion into the system (Akomeah et al., 2020). Additionally, in 2015, a recapitalization policy raised the capital requirement from two billion naira to twenty-five billion naira, prompting several banks to merge to meet the new threshold (Mark Jackson et al., 2017). Kajola et al. (2018) also highlighted that integrating risk assessment and monitoring mechanisms into credit administration can help bank management minimize the occurrence of non-performing loans.

Deposit money banks in Nigeria have not effectively fulfilled their critical developmental role, a situation attributed to rising cases of fraud, forgeries, and limited institutional capacity within the sector. Like many other nations, Nigeria continues to grapple with increasing financial and economic instability, affecting various sectors such as electricity, transportation, infrastructure, education, and social systems (Taiwo et al., 2016). The Nigerian banking industry also faces persistent credit risk challenges due to a high rate of loan defaults and a weak capital adequacy ratio, exacerbated by fraud and forgeries (Abdullahi, 2021). Okere et al. (2018) further observed that the prevalence of credit defaulters hampers banks' ability to meet their operational goals, undermines profitability, threatens their sustainability, and may lead to institutional failure. The banking sector's vulnerability to financial distress has resulted in significant bad debts, contributing to widespread job losses and negatively affecting the economy and development efforts (Kalui et al., 2017). Additionally, the Nigerian banking system faces multiple challenges, including weak internal controls, non-compliance with operational procedures, disregard for regulatory frameworks, passive shareholders, and conflicts between boards and management that often result in boardroom disputes. Other issues include ineffective board oversight,



unethical conduct by management, external pressures from stakeholders demanding high returns, technical incompetence, poor leadership, administrative inefficiencies, inadequate adaptability to changing business environments, and weak management information systems (Akomeah et al., 2020). Poor credit risk management remains a significant contributor to bank failures, as banks struggle with cash flow challenges arising from unrecovered loans (Central Bank of Nigeria, 2021). Abdullahi (2021) also notes that such situations expose banks to a high risk of insolvency, which may necessitate forced staff layoffs.

In response, scholars such as Stanley (2017), Joshua and Oluoch (2018), Tursoy (2018), Osakwe et al. (2019), Okoro and Onuoba (2020), and Bala et al. (2021) have explored the factors contributing to banks' inefficiency in managing their credit operations and monetary mass. However, their studies often reported insignificant relationships between credit risk management and the financial performance of deposit money banks. These studies have faced several criticisms. Firstly, many overlooked other critical dimensions of credit risk management, focusing mainly on non-performing loan ratios and capital adequacy ratios, while neglecting the loan loss provision ratio, which is an important measure for effective credit risk management. This study addresses this gap by including the non-performing loan ratio, capital adequacy ratio, and loan loss provision ratio as independent variables, with return on equity as the dependent variable. Secondly, the methodologies employed in previous studies were insufficient in establishing comprehensive relationships between the variables. While the Nigerian Stock Exchange listed fourteen banks in 2021, this study utilizes twelve listed deposit money banks as its sample size for improved representation. Thirdly, earlier studies did not capture the periods before, during, and after the COVID-19 pandemic or the era of Nigeria's cashless policy, thereby overlooking the pandemic's potential impact on the banking sector. This study addresses this limitation by covering the period from 2018 to 2022, a challenging time marked by economic crises.

Hence, the previous studies did not analyze the influence of credit risk management on the financial performance of listed deposit money banks in Nigeria within this five-year period, nor did they explore the direction of these effects. This study aims to fill these gaps by answering the following questions: To what extent does the non-performing loan ratio affect the financial performance of listed deposit money banks in Nigeria? How does the loan loss provision ratio impact their financial performance? To what degree does the capital adequacy ratio influence the financial performance of Nigeria's listed deposit money banks?



LITERATURE REVIEW

Financial Performance

Financial performance measures how efficiently an organization utilizes resources from its core operations to generate revenue. The term is also broadly used to reflect a company's long-term financial health. Jesse et al. (2019), using regression analysis over a 23-year span (1994–2016), identified a strong negative relationship between risk management practices and financial performance. Similarly, Isedu and Erhabor (2021) reported a negative relationship between the financial performance of 18 deposit money banks over a nineteen-year period and various risk factors, including credit risk, liquidity risk, market risk, and operational risk. Analysts and investors often compare financial performance across similar companies within the same industry or across sectors to evaluate relative performance. Various stakeholders, including trade creditors, bondholders, investors, employees, and management, all have an interest in monitoring a bank's financial performance to inform their decisions and assess the institution's stability.

Return on Equity (ROE)

Return on Equity (ROE) is a financial ratio used to evaluate a company's profitability relative to the total shareholders' equity recorded on its balance sheet. Shareholders expect to earn returns on their investments, and ROE serves as an indicator of how effectively a company generates profits from these investments. Essentially, ROE measures a company's profitability in relation to its equity and can be interpreted as the return generated on assets after accounting for liabilities since shareholders' equity is calculated by subtracting total liabilities from total assets. ROE reflects the amount of profit generated for each dollar of shareholders' equity and indicates how efficiently a company converts equity into earnings. A bank with a high ROE demonstrates a strong capacity to generate internal cash flows, signaling its ability to produce profits effectively. According to Cajano et al. (2019), ROE is calculated by dividing profit after tax by total equity capital, indicating the return earned on funds invested by the bank's shareholders. ROE thus measures the efficiency of a bank's management in utilizing shareholders' funds, with a higher ROE signifying more effective use of equity to generate profits. The formula can be expressed as: $\text{Profit after Tax} = (\text{Total Equity} / \text{ROE})$.

Credit Risk Management

A conceptual framework outlines the key concepts, variables, and components relevant to a study and specifies the assumed relationships among them. In this study, the independent variables are proxies for credit risk management, which include non-performing loans, loan loss provisions, and the capital adequacy



ratio, while the dependent variable is financial performance, measured using return on equity (ROE) (Joshua & Oluoch, 2018). Credit risk management seeks to enhance a bank's risk-adjusted return by maintaining credit risk exposure at acceptable levels. This requires banks to manage both the credit risk inherent in their overall portfolio and the risks tied to individual credits or transactions while also considering the interconnection between credit risk and other types of risk. Effective credit risk management is essential for the long-term sustainability of any banking institution and should form part of a comprehensive risk management strategy. Currently, credit risk management encompasses activities such as portfolio analysis and loan reviews. Additionally, advancements in risk-buying and risk-selling techniques have allowed many banks to move away from the traditional book-and-hold lending model toward a more dynamic strategy that seeks to optimize the asset mix based on the prevailing credit environment, market conditions, and available business opportunities.

Non-Performing Loan Ratio (NPLR)

A non-performing loan (NPL) refers to a loan on which the borrower has failed to make scheduled payments for a specified period, leading to the loan being classified as in default. While the exact criteria for non-performing status can vary depending on the terms of the specific loan agreement, it generally implies that the borrower has not made any payments on either the principal or interest. The duration used to determine non-performing status differs across sectors and loan categories, typically being set at either 90 days or 180 days of non-payment. Okoro and Onuoba (2020) found that indicators such as the non-performing loan ratio, loan-to-deposit ratio, and capital adequacy ratio exhibited positive relationships with return on equity (ROE) and return on assets (ROA).

Loan Loss Provision Ratio (LLPR)

A loan loss provision is an expense recorded on the income statement to set aside funds for potential losses from unpaid loans and loan repayments. It serves to cover different types of loan defaults, including non-performing loans, customer bankruptcies, and restructured loans where repayment terms are less favorable than initially agreed. These provisions contribute to the loan loss reserves reflected on the balance sheet, representing the total estimated losses subtracted from the company's loan assets. In the banking industry, lenders earn income through interest and fees from various lending activities, providing credit to individuals, small businesses, and large corporations. Since the 2008 financial crisis, regulatory measures have become significantly stricter, with lending standards and reporting obligations continuously evolving. The Dodd-Frank Act introduced more rigorous requirements, emphasizing the need for higher lending



standards, better credit quality among borrowers, and increased capital and liquidity requirements for banks (Bala et al., 2021).

Capital Adequacy Ratio (CAR)

The capital adequacy ratio (CAR) is an indicator that measures a bank's available capital as a percentage of its risk-weighted credit exposures. In their study spanning bank mergers from 1995 to 2016, Okoro and Onuoba (2020) found a positive relationship between non-performing loans, the loan-to-deposit ratio, capital adequacy ratio, and measures of financial performance such as return on equity (ROE) and return on assets (ROA). Also known as the capital-to-risk weighted assets ratio (CRWAR), the CAR is designed to protect depositors and promote the stability and soundness of the global financial system. It comprises two main components: Tier 1 capital, which can absorb losses while allowing the bank to continue operating, and Tier 2 capital, which provides additional protection but only absorbs losses in the event of liquidation, offering less security for depositors. A bank's CAR is calculated by dividing its total capital by its risk-weighted assets. Stanley (2017) also explored the impact of credit risk management on the performance of Nigerian commercial banks, finding that non-performing loans and the capital adequacy ratio significantly influence both ROA and ROE.

Conceptual Model

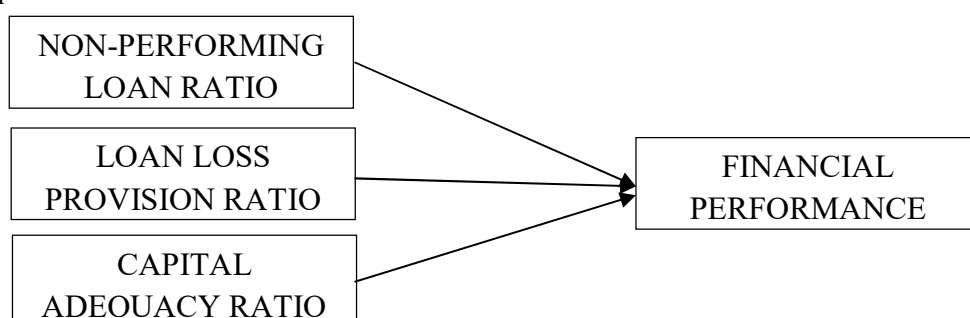


Figure 1: Conceptual Model

EMPIRICAL REVIEW

Non-Performing Loan Ratio and Financial Performance

Tursoy (2018) discovered that within the banking sector, there is a positive relationship between risk management indicators such as credit risk, liquidity risk, operational risk, market risk, interest rate risk, and solvency or default risk. The study utilized content analysis; however, it was not empirical in nature and did not apply reliable proxies for its variables.



Additionally, Noor et al. (2018) carried out a study in Bangladesh titled “The Effect of Credit Risk on the Banking Profitability-State Owned Banks in Bangladesh.” The research utilized secondary data collected from the annual reports of selected state-owned banks (Janata, Sonali, Agrani, and Rupali) covering the period from 2000 to 2015. The study employed the percentage of classified loans (POCL) as the independent variable to assess its impact on ROI, ROE, and ROA, which served as the dependent variables. The findings indicated that POCL had a significant negative impact on ROI, while its effect on ROA and ROE was minimal. Furthermore, the study identified short-run causality between POCL and ROI and found evidence of co-integration among the variables. However, there was a long-term causality identified between POCL and both ROE and ROA. While Noor et al.’s study was conducted in Bangladesh, the present study will focus on the Nigerian context.

Similarly, Hamza (2017) examined the impact of credit risk management on the performance of banks in Pakistan and found mixed results, with both positive and negative effects of credit risk management indicators (including capital adequacy ratio, loan loss provisions, liquidity ratio, and non-performing loans) on ROE and ROA. His research employed regression analysis to measure these relationships. However, Hamza’s study differs from the current research as it was confined to Pakistani banks.

Loan Loss Provision Ratio and Financial Performance

Okoro and Onuoba (2020), in their study spanning the period of 1995 to 2016 during the era of bank mergers, identified a positive relationship between non-performing loan ratios, loan-to-deposit ratios, capital adequacy ratios, and financial performance indicators such as return on equity (ROE) and return on assets (ROA). However, the study did not include loan loss provisions (a critical and reliable component) as part of its proxies, resulting in a gap that limits the ability to comprehensively verify the relationship among the variables examined. Instead, the study utilized the loan-to-deposit ratio in place of this variable.

Additionally, Ofeimum and Okeke (2019), using panel model analysis, found that credit risk was positively associated with the performance of commercial banks in Nigeria over an eleven-year period (2000-2010). The study employed proxies such as non-performing loans, the ratio of total loans, and return on equity to represent credit risk. However, the components used in their analysis were insufficient to fully capture the variables under investigation, whereas the current study intends to utilize more reliable proxies.



Egide and Paul (2017) examined the influence of credit risk management on the performance of commercial banks in Rwanda, concluding that effective monitoring of credit risk management practices helps ensure alignment and enables bank management to detect potential issues promptly. The study found that credit risk management positively impacts the financial performance of Rwandan commercial banks, indicating that poor bank performance is often linked to low asset quality or a high ratio of non-performing loans to total assets. While Egide and Paul's study included all commercial banks in Rwanda, the present study will focus specifically on listed deposit money banks in Nigeria.

Capital Adequacy Ratio and Financial Performance

Isedu and Erhabor (2021) reported a negative relationship between credit risk, liquidity risk, market risk, operational risk, and the financial performance of 18 deposit money banks over a nineteen-year period. However, the components used in their analysis were inadequate to establish a clear relationship among the variables examined. The findings of Isedu and Erhabor (2021) and Ofeimum and Okeke (2019) also presented inconsistencies when compared to Hamza (2017), likely due to limitations in sample size, contextual differences, and measurement techniques that were insufficient to test the intended relationships.

Furthermore, Osakwe et al. (2019), employing multi-collinearity correlation, demonstrated a positive relationship between bank efficiency ratios, non-performing loans, and return on assets over the period 1999–2018. Although the timeframe of the study was appropriate, the statistical methods and components used were not robust enough to establish a strong and reliable relationship among the variables.

METHODOLOGY

This study employed an ex-post facto research design to examine the impact of credit risk management (measured by the non-performing loan ratio, loan loss provision ratio, and capital adequacy ratio) on the financial performance, represented by return on equity (ROE), of listed deposit money banks in Nigeria. The study population comprised all deposit money banks listed on the Nigerian Stock Exchange as of December 31, 2022. From this population, a sample of twelve listed deposit money banks that have consistently traded on the Nigerian Stock Exchange over the past five years was selected. Data analysis was conducted using Stata version 14.0. The analysis involved estimating three sets of regression models, beginning with the pooled ordinary least squares (OLS) approach.



Results and Discussion

This subsection presents the descriptive statistics, correlation analysis, and regression results for the dependent and independent variables of the study. Table 1 provides a summary of the statistical characteristics of the study variables, including the minimum and maximum values for both the dependent and independent variables, along with measures of central tendency (mean) and measures of dispersion (standard deviation) to illustrate the distribution of the data. These summary statistics help to enhance the understanding of the dataset and provide context for interpreting the subsequent analysis.

Table 1 Descriptive Statistics of the Variables

Variables	Observations	Minimum	Maximum	Mean	Std. Dev.
ROE	60	.331	.997	.907	.117
NPLR	60	0	.988	.159	.230
LLPR	60	.000	.985	.133	.215
CAR	60	.002	.655	.197	.093

Source: Computed by the Author using Stata Statistical Software (2024)

Table 1 presents the mean return on equity (ROE) for the sampled listed deposit money banks, recorded at 0.907, or 91%. This indicates that the banks experienced a satisfactory increase in ROE over the study period, as financial performance in this study is assessed based on the absolute value of ROE. The minimum and maximum ROE values during the period were 0.331 (33%) and 0.997 (99%), respectively, with the highest observed ROE supporting the earlier indication of elevated earnings, as reflected in the high mean value. The standard deviation for ROE was 0.117 (11%), suggesting that the banks generally maintained consistent earnings with limited variations during the period. The table further shows that the mean non-performing loan ratio (NPLR) was 0.159 (15%), indicating that most of the sampled banks managed to maintain relatively low levels of non-performing loans throughout the study period. The standard deviation of 0.230 (23%) suggests that the NPLR values were moderately dispersed around the mean, with observed values ranging between 0.231 (23%) and 0.988 (99%).

Additionally, the table indicates that the mean values for the loan loss provision ratio (LLPR) and capital adequacy ratio (CAR) were 0.133 (13%) and 0.197 (19%), respectively. The standard deviations for LLPR and CAR were 0.215 (21%) and 0.093 (9%), respectively, showing that the data points were closely clustered around the mean for CAR and moderately dispersed for LLPR. The minimum and maximum values recorded for LLPR were 0.003 and 0.985, while CAR ranged from 0.002 to 0.655 during the study period.



Table 2 presents the correlation values generated using Pearson correlation analysis, displaying the correlation matrix that shows the relationships between the dependent variable (ROE) and the independent variables (NPLR, LLPR, and CAR), as well as the inter-correlations among the independent variables themselves.

Table 2 Correlation Matrix of Dependent and Independent Variables

Variables	ROE	NPLR	LLPR	CAR	BA	BS
ROE	1.000					
NPLR	0.125	1.000				
LLPR	-0.591	0.015	1.000			
CAR	-0.442	0.012	0.144	1.000		
BA	0.193	-0.309	-0.124	-0.073	1.000	
BS	-0.168	-0.005	0.145	-0.059	-0.360	1.000

Source: Computed by the Author using Stata Statistical Software (2024)

Table 2 indicates that the independent variables in the study exhibit low correlations with each other, ranging from -0.360 to 0.125. None of the correlations among the independent variables exceed 0.125, indicating no issues of multicollinearity or data singularity within the dataset. Therefore, the relationships among the independent variables are weak and statistically insignificant. The table further reveals a modest positive correlation of 0.125 (12%) between the non-performing loan ratio (NPLR) and return on equity (ROE). This suggests that an increase in NPLR is associated with a slight increase in ROE, and vice versa, indicating that higher non-performing loans may be linked to higher returns for the sampled banks during the study period.

In contrast, the loan loss provision ratio (LLPR) shows a negative correlation with ROE at -0.591 (59%). This indicates that as LLPR increases, ROE tends to decrease, suggesting that higher allocations to loan loss provisions are associated with reduced profitability for the listed deposit money banks in Nigeria. Similarly, the capital adequacy ratio (CAR) has a negative correlation with ROE, recorded at -0.442 (44%). This implies that higher CAR levels are not associated with improved financial performance and may correspond to lower ROE for the banks under study. Overall, with the exception of the modest positive correlation between NPLR and ROE, the findings from Table 2 demonstrate negative relationships between LLPR and ROE, as well as CAR and ROE, indicating that increases in LLPR and CAR are associated with declines in the financial performance of the listed deposit money banks in Nigeria during the study period.



Table 3 Summary of Random-Effect GLS Regression Result

ROE	Robust Coef.	Std. Err.	Z	P> z	[95% Conf. Interval]	
NPLR	.090	.050	1.80	0.072	-.008	.190
LLPR	-.279	.052	-5.36	0.000	-.382	-.177
CAR	-.454	.119	-3.81	0.000	-.688	-.220
CONs	.960	.061	15.62	0.000	.840	1.081
sigma_u	0					
sigma_e	.082					
Rho	0	(fraction of variance due to u_i)				
R-Square	0.617					
Wald						
chi2(5)	59.73					
Prob > chi2	0.000					

Source: STATA output result (2024)

Table 3 shows an R^2 value of 61%, which indicates that the explanatory variables in the model account for 61% of the total variation in the dependent variable, return on equity (ROE), for listed deposit money banks in Nigeria. The interpretation of an acceptable R^2 value varies by discipline. In the social sciences, even an R^2 of 0.5 can be considered substantial, while in other fields, higher values such as 0.9 may be expected. In finance, an R^2 above 0.7 is typically regarded as indicating a strong correlation, whereas a value below 0.4 suggests a weak correlation (Fernando, 2023). Additionally, Ozili (2023) notes that in social science research, an R^2 between 0.10 and 0.50 can still be meaningful if the explanatory variables are statistically significant.

Given that the R^2 in this study exceeds 50%, it suggests that the model's results are significant and reliable. Specifically, the R^2 value confirms that the independent variables (non-performing loan ratio, loan loss provision ratio, capital adequacy ratio, bank age, and bank size) jointly explain 61% of the variability in ROE among listed deposit money banks in Nigeria. The model demonstrates a good fit, further supported by the R^2 value of 61.75% and the Wald chi-square statistic of 59.73 (Prob > χ^2 = 0.000), indicating that the explanatory variables are appropriately selected and applied within the model. When compared to previous studies, the R^2 obtained here performs well, while also indicating that 38.25% of the variation in ROE is influenced by other factors not captured within this model. This implies that beyond the credit risk management indicators and bank characteristics examined, other factors may also significantly affect the financial performance of listed deposit money banks in Nigeria.



CONCLUSION

Based on the data analysis, the following conclusions are drawn:

This study provides empirical evidence on the relationship between credit risk management and financial performance, proxied by return on equity (ROE), for listed deposit money banks in Nigeria. The findings reveal that the non-performing loan ratio has a minor and negative influence on ROE, indicating that defaults on principal and interest payments do not significantly affect the profitability of the banks. Additionally, the study concludes that the loan loss provision ratio has a significant but modest positive impact on ROE, implying that banks with effective management practices, reflected in lower loan loss provisions, are likely to experience increased profitability. This emphasizes the crucial role of deposits and advances in determining a bank's profitability.

Furthermore, the study finds a significant positive relationship between the capital adequacy ratio and ROE among the listed banks. A higher capital adequacy ratio indicates a stronger financial position, allowing banks to adequately cover their obligations and mitigate various risks, including credit, operational, and market risks.

RECOMMENDATIONS

Based on the study's findings, the following recommendations are made:

- i. **Prioritize Credit Risk Management Indicators:** The Nigerian banking sector should give serious attention to credit risk management indicators as they serve as valuable tools in assessing financial performance.
- ii. **Strengthen Credit Risk Management Practices:** Since non-performing loans influence financial performance through return on assets, while loan loss provisions and capital adequacy ratios impact financial performance through return on equity, efforts should be directed toward establishing accurate and effective credit risk management practices.
- iii. **Enhance Credit Risk Strategies for Global Competitiveness:** To achieve internationally competitive financial performance within Nigeria's emerging investment market, greater emphasis should be placed on adopting and consistently implementing robust credit risk management strategies.



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