



Credit Risk Management and Financial Performance of Deposit Money Banks in Nigeria

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Abstract

This study examines the effect credit risk management on the financial performance of Deposit Money Banks (DMBs) in Nigeria. Analysing panel data from five internationally licensed banks between 2013 and 2022, a log-linear regression model was employed with Return on Equity (ROE) as the performance measure. The results indicate that Loan-to-Deposit Ratio (LDR) ($\beta = 1.288$, $p = 0.00002$), Non-Performing Loan Ratio (NPLR) ($\beta = 0.472$, $p = 0.00099$), and Risk Asset Ratio (RAR) ($\beta = 0.233$, $p = 0.0003$) all have positive and statistically significant effects on ROE. Specifically, a 1% increase in LDR and NPLR leads to approximately 1.29% and 0.47% increases in ROE, respectively, while a 1% rise in RAR improves ROE by about 0.23%. The model explains about 39.8% of the variation in ROE which indicate a moderate explanatory power. The study concludes that effective credit risk management enhances profitability but cautions that excessive risk-taking in pursuit of higher returns could undermine long-term financial stability. It recommends that regulators strengthen supervisory frameworks to balance profitability objectives with sound risk management practices.

Keywords: Credit risk, financial performance, deposit money banks, Non-performing loan

1.0 Introduction

Commercial banks in Nigeria have evolved significantly over the years, transitioning from the foundational role of collecting and safeguarding depositors' funds to becoming critical drivers of economic growth through credit creation, financial intermediation, and the provision of diverse financial services (Mogaji *et al.*, 2021; Yahaya, 2022). As key players in Nigeria's financial system, deposit money banks facilitate economic activities by channeling funds from surplus units to deficit units to support businesses, industrial development, and financial inclusion (Omodero, 2021).

The efficacy of a bank's credit risk management is typically gauged through specific financial metrics that reflect the quality of its loan portfolio and the prudence of its lending practices. Key among these metrics is the Non-Performing Loan (NPL) ratio, which measures the proportion of loans on which debtors have failed to make scheduled payments for a specified period. A high NPL ratio is a direct indicator of poor asset quality and weak credit assessment processes, eroding profitability through loss provisions and impairing the bank's capital base (Kolapo *et al.*, 2020).

Another critical metric is the Loan-to-Deposit Ratio (LDR), which indicates the percentage of a bank's deposits that have been advanced as loans. While a high LDR suggests efficient financial intermediation, an excessively high ratio may signal overexposure to credit risk and potential liquidity shortfalls, prompting regulatory oversight such as the CBN's minimum LDR requirement of 65% to stimulate lending (CBN, 2019; Arogundade and Adegbe, 2024).

Furthermore, the Risk Asset Ratio is often adopted to assess the bank's capital buffer against its risk-weighted assets. This ratio is crucial for determining the bank's resilience to loan losses; a strong capital adequacy position ensures that the bank can absorb unexpected losses without becoming insolvent, thereby safeguarding financial stability (Adeusi *et al.*, 2023). Collectively, these dimensions provide a comprehensive view of the credit risk landscape facing Deposit Money Banks in Nigeria.

Previous studies attention have been directed towards understanding the nexus between credit risk management and bank performance. For instance, Kajola *et al.* (2018) examined the effect of credit risk indicators on the financial performance of ten listed deposit money banks in Nigeria between 2005 and 2016. Using return on assets as proxy for performance, and non-performing loans to total loans ratio (NPLLDR), non-performing loans to total deposit ratio (NPLDR), and capital adequacy ratio (CAR) as credit risk measures, they found a statistically significant relationship between credit risk management and bank performance. Similarly, Ayinuola and Gumel (2023) noted that bad debt tended to have a negative effect on performance deposit money banks.

While these studies have provided valuable insights into the relationship between credit risk and bank performance, several gaps remain unaddressed. The studies rely on aggregate financial indicators without disaggregating across bank sizes, structures, or market strategies, thus overlooking the heterogeneity in how banks manage credit risk. In addition, the interaction between digital credit technologies, risk profiling tools, and loan performance remains underexplored, despite their growing relevance in contemporary banking operations. This study therefore aims to address these gaps by examining the relationship between loan-to-deposit ratio (LDR) and financial performance of deposit money banks in Nigeria, risk asset ratio (RAR) and financial performance of deposit money banks in Nigeria; non-performing loans ratio (NPLR) and financial performance of deposit money banks in Nigeria. The study used return on equity (ROE) as a proxy for assessing the performance of deposit money banks in Nigeria.

2.0 Literature Review

2.1 Conceptual Review

Credit Risk is defined as the potential that a borrower or counterparty will fail to meet its obligations in accordance with agreed terms, leading to a financial loss for the institution (Basel Committee, 2001). Beyond this regulatory definition, it represents the probability of default on a debt obligation that may arise from a borrower's declining financial capacity or willingness to repay (Afriyie *et al.*, 2021). Effective credit risk management is not merely about loss avoidance but involves a strategic trade-off: maximizing returns from lending while maintaining exposure within prudent and regulatory limits. This is particularly critical in emerging economies like Nigeria, where economic volatility and information asymmetry can exacerbate default probabilities (Ayinuola and Gumel, 2023). This study focused on NPLR, LDR, and RAR as key indicators of credit risk management because they collectively capture asset quality, liquidity efficiency, and risk-weighted asset exposure which are fundamental determinants of banks' financial performance.

The Non-Performing Loan Ratio (NPLR) is a primary and direct indicator of asset quality within a bank's credit portfolio. It is calculated as the value of non-performing loans (loans where principal and/or interest payments are past due by a specified period, typically 90 days) divided by the total loan portfolio. A rising NPLR signals deteriorating credit quality, leading

to reduced interest income and increased provisions for loan losses, which directly erode profitability (Kolapo *et al.*, 2020). A high NPLR is often linked to capital impairment and can trigger regulatory scrutiny, as it threatens the bank's stability and lending capacity (Almustafa *et al.*, 2023).

Loan-to-Deposit Ratio (LDR) measures a bank's liquidity and its credit expansion strategy, calculated as total loans divided by total deposits (Basel Committee, 2001). It indicates what percentage of a bank's core deposits are deployed into interest-earning loans. While a higher LDR suggests efficient utilization of deposits to generate revenue, it also signifies lower liquidity and potentially higher credit risk exposure. An excessively high LDR may indicate that the bank is over-leveraging its deposit base, which could lead to inadequate liquidity buffers and increased vulnerability if loan defaults spike (Coyle, 2016).

The Risk Asset Ratio (RAR) is often contextualized within capital adequacy frameworks, assesses the riskiness of a bank's asset portfolio. It is frequently expressed as the ratio of risk-weighted assets to total assets. Not all assets carry the same risk; for instance, loans to corporates are riskier than government securities. The RAR reflects the degree to which a bank's assets are concentrated in higher-risk categories. A higher RAR implies a greater potential for volatility in the asset base and necessitates a stronger capital cushion to absorb potential losses, as per the Basel Accords. It is a forward-looking indicator of portfolio risk concentration, and its prudent management is essential for maintaining capital adequacy and long-term solvency (Olanrewaju, 2021).

Within the framework of this study, financial performance is measured using Return on Equity (ROE), which captures how efficiently a bank converts shareholders' equity into net profits. ROE serves as a vital indicator of managerial efficiency, profitability, and capital utilization (Ichsani and Suhardi, 2021; Hertina and Saudi, 2023) which makes it a useful proxy for assessing the outcomes of credit risk management practices. Effective management of credit risk variables such as Non-Performing Loan Ratio (NPLR), Loan-to-Deposit Ratio (LDR), and Risk Asset Ratio (RAR) directly influences ROE by influencing both the income and risk profiles of banks. A lower NPLR and optimal LDR enhance earnings stability (Lusy *et al.*, 2018), while prudent RAR management ensures that profitability is not achieved at the expense of excessive exposure (Hertina and Saudi, 2023). Hence, ROE in this study indicates the dynamic balance between risk-taking and return optimization within Nigeria's banking sector.

2.2 Theoretical framework

This study is anchored on Credit Risk Theory (Merton, 1977) and Agency Theory (Jensen & Meckling, 1976). Credit Risk Theory provides a structural framework for understanding default risk which emphasized that a borrower's default occurs when the value of its assets falls below its debt obligations. In banking, this shows the vulnerability of financial institutions to borrower default and the importance of managing credit exposures to safeguard capital and maintain profitability. The use of the NPL aligns with this theory, as it represents the realized form of default risk. Agency Theory, on the other hand, explains how conflicts of interest between bank managers and shareholders can lead to excessive risk-taking. Managers pursuing growth targets or short-term gains may raise the LDR and RAR without due consideration of credit quality, which can increase default rates and reduce profitability. These theories provide a coherent foundation for examining how credit risk management variables used in this study influence the financial performance of DMBs which is reflected in their ROE.

2.3 Empirical Review

Several studies have assessed the relationship between credit risk management and the financial performance of commercial banks, both within Nigeria and internationally. The findings from these studies provide valuable insights for understanding how credit risk indicators influence bank performance over time.

Mogaji *et al.* (2021) assessed the effect of credit risk indicators on the financial performance of ten listed deposit money banks in Nigeria, using data from 2005 to 2016. Return on assets (ROA) and return on equity (ROE) were employed as performance indicators, while non-performing loans to total loan ratio (NPLLR), non-performing loans to total deposit ratio (NPLDR), and capital adequacy ratio (CAR) served as proxies for credit risk management. Their study revealed that the selected credit risk measures had statistically significant effects on both ROA and ROE, suggesting a strong link between credit risk management and financial performance.

Yahaya (2022) explored the effect of credit risk and bank-specific factors on the performance of commercial banks in South Asia, drawing on data from ten banks in Pakistan and nine in India between 2009 and 2018. Using the generalized method of moments (GMM), the study found that non-performing loans, cost-efficiency ratio, and liquidity ratio negatively and significantly influenced both ROE and ROA. In contrast, capital adequacy ratio and average lending rate showed a positive and significant association with both performance metrics, underscoring the regional applicability of credit risk indicators.

Olanrewaju (2021) examined the impact of credit risk management on the profitability of commercial banks in Ethiopia using data spanning 2008 to 2018. Return on assets (ROA) was adopted as the proxy for profitability. Their regression results indicated that capital adequacy ratio, loan-to-deposit ratio, and provision for loan loss to total loans had significant positive effects on ROA. Conversely, non-performing loans, loan-to-total asset ratio, and cost-per-loan ratio exerted significant negative effects on bank profitability.

Mudanya *et al.* (2022) investigated the relationship between credit risk management practices and financial performance of commercial banks in Vihiga County, Kenya, using a mixed-method approach that included secondary data (2016–2021) and questionnaire responses. Their findings demonstrated that loan default monitoring, credit scoring techniques, and adherence to credit policies significantly influenced financial performance, as measured by ROA.

More recently, Bhatt *et al.* (2023) studied the determinants of credit risk and their relationship with the performance of commercial banks in Nepal. Using partial least squares structural equation modeling (PLS-SEM) to analyze data from a structured questionnaire, they found that environmental risk, credit appraisal mechanisms, and market risk analysis had significant effects on credit risk. Furthermore, credit risk management served as an intermediary variable, linking these determinants to the performance of commercial banks.

3.0 Methodology

This study adopted a correlational research design to examine the effect of credit risk management on financial performance of banks. The study population consists of all 25 Deposit Money Banks (DMBs) operating in Nigeria as of 2022. A purposive sampling technique was employed to select a sample drawn from Access Bank, First Bank, Fidelity Bank, Guaranty Trust Bank and Zenith Bank. The selection was guided by two criteria: the banks must hold

an international operating license from the Central Bank of Nigeria (CBN) and must be listed on the Nigerian Exchange Group (NGX). These criteria were implemented to ensure the consistent availability of high-quality, audited financial data and to enhance the comparability of the institutions across the study period which covered 2013 to 2022.

The data analysis for this study involved a multi-stage process to examine the relationship between the variables using the specified log-linear panel regression model. The results of the regression, including the coefficients, t-statistics, p-values, and the overall model fitness (R-squared), were then interpreted to draw conclusions on the impact of the credit risk metrics on bank performance. The variables considered in this study include the Loan-to-Deposit Ratio (LDR), Risk Asset Ratio (RAR), and Non-Performing Loans Ratio (NPLR) as proxies for credit risk, while Return on Equity (ROE) is used as the dependent variable and serves as a proxy for financial performance. To address issues of non-normality and heteroscedasticity often present in financial data, all variables were transformed using their natural logarithms prior to analysis.

3.1 Model Specification

The regression model adopted for this study is based on the model of Ayustina *et al.* (2023). However, the model for this paper was changed to the natural log to take care of the likelihood of a false result.

$$\text{Log}_{ROE} = F(\text{Log}_{RAR}^{\text{LDR}} \text{Log}_{NPL}^{\text{RAR}})$$

Where

ROE = Return on equity

LDR = Loan – to – Deposit Ratio

RAR = Risk Asset Ratio

NPL = Non = Performing Loans

$$\text{Log}_{ROE} = \text{Log}\alpha_0 + \text{Log}\alpha_1 \frac{\text{LDR}}{\text{RAR}} + \text{Log}\alpha_2 \frac{\text{RAR}}{\text{NPL}} + u$$

Where

α_0 = constant t / intercept

$\alpha_1 - \alpha_2$ = coefficients t of IV / intercept

U = error terms

4.1 Result and Discussion

4.2 Overall Model Fit and Diagnostics

The overall model fit provides a reasonable indication of the explanatory power and reliability of the estimated regression. The R-squared value of approximately 0.3984 suggests that about 39.8% of the variation in the log of return on equity (ROE) across the sampled banks and time periods is explained jointly by changes in the log functions of the independent variables. While this is moderate by econometric standards, it is not unusual for models using financial panel data, where unobserved institutional and macroeconomic factors may account for additional

variation in performance outcomes. The adjusted R-squared, which accounts for the number of explanatory variables, stands at 0.2742, indicating that after adjusting for degrees of freedom, roughly 27.4% of the variation in ROE remains attributable to the included predictors.

The F-statistic of 12.11, accompanied by a p-value of 0.0323, confirms that the joint explanatory power of the regressors is statistically significant at the 5% level. This implies that the model as a whole has predictive value and that the included credit risk indicators (LDR, NPLR and RAR) are not jointly irrelevant in explaining changes in bank profitability. Furthermore, the Durbin-Watson statistic of 2.1610 suggests that the model does not suffer from first-order autocorrelation in the residuals, which strengthens the reliability of the coefficient estimates. The diagnostic criteria such as the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn also help in comparing model fit across alternative specifications, with lower values indicating better model efficiency. Taken together, these diagnostics affirm the adequacy of the model in capturing key dynamics between credit risk management and bank performance.

Table 1.1: Natural log regression result

	<i>Coefficient</i>	<i>Std. Error</i>	<i>T-ratio</i>	<i>P-value</i>	
<i>C</i>	1.24611	0.276101	4.1732	0.00003	***
<i>LogNPL</i>	0.471921	0.12617	3.1315	0.00099	***
<i>LogLDR</i>	1.28842	0.210560	4.2200	0.00002	***
<i>LogRAR</i>	0.2329	0.12706	3.2710	0.0003	***

Dependent variable: *LogROE*

Mean dependent var	-3.226048	S.D. dependent var	1.313191
Sum squared resid	76.92370	S.E. of regression	1.006789
R-squared	0.398411	Adjusted R-squared	0.274206
F- statistic	12.11352	P-value(F)	3.23e-02
Log-likelihood	-120.1780	Akaike criterion	213.9510
Schwarz criterion	134.8191	Hannan-Quinn	221.1143
		Durbin Watson	2.1610

Source: Author's Calculation

Table 1.1 presents the result of the data analysis. The coefficient on $\ln(\text{NPL}) = 0.4719$ ($P = 0.00$) indicates that a 1 % increase in the non-performing loans ratio is associated with roughly a 0.50 % increase in ROE, all else equal. This positive coefficient may appear counterintuitive, one might expect that rising non-performing loans would erode profitability. However, in the Nigerian DMB context, this result can be interpreted thus. Banks that maintain higher NPL ratios may be those that take on riskier credit exposures (e.g., lending at higher spreads to marginal borrowers). If the riskier loans generate higher interest margins (before being written off), the bank's overall ROE can rise even as NPLs mount. In other words, the bank's asset-pricing strategy might "front-load" returns at the cost of increased future credit losses.

The coefficient on $\ln(\text{LDR}) = 1.288$ ($P = 0.00$) indicates that a 1 % increase in the loan-to-deposit ratio is associated with about a 1.3 % increase in ROE, holding other factors constant. This result aligns with standard financial intermediation theory which shows banks that lend a larger proportion of their deposits typically generate higher interest income (spread), which feeds directly into equity returns, provided credit quality does not deteriorate too sharply. In

practical terms, a bank that pushes its LDR from, say, 50 % to 51 % (roughly a 2 % relative increase) could see its ROE expand by approximately 2.6 % ($2 \% \times 1.3$).

The coefficient on $\ln(\text{RAR}) = 0.2329$ ($P = 0.0003$) indicates that a 1% increase in the risk asset ratio is associated with approximately a 0.23% increase in Return on Equity (ROE), ceteris paribus. This positive and statistically significant relationship suggests that Nigerian banks with a higher proportion of risk-weighted assets in their portfolio tend to experience higher profitability. This finding aligns with the fundamental risk-return paradigm in finance, which posits that higher expected returns are a compensation for bearing greater risk (Coyle, 2016). In practice, this implies that banks are generating higher returns by allocating more capital to riskier, higher-yielding assets such as corporate loans and commercial mortgages, as opposed to low-risk, low-return government securities.

The positive relationship between non-performing loans (NPLs) and profitability found in this study presents an intriguing contrast to the predominant findings in the Nigerian banking literature. For instance, the results of Kolapo *et al.*, (2020), who established a significant negative impact of NPLs on bank performance, align with the conventional expectation that asset quality deterioration erodes profitability. Similarly, Olanrewaju (2021) identified high NPL levels as a core challenge to profitability in the post-consolidation era. The counterintuitive positive coefficient in the current analysis, however, may not necessarily invalidate these earlier findings but rather suggest a more nuanced, short-term strategic behavior. It is plausible that the period under review captures a scenario where certain banks engaged in higher-risk lending at premium interest rates, thereby "front-load" returns. This strategy would temporarily boost interest income and ROE, even as NPLs accumulate, a risk that may materialize fully in a subsequent period. Conversely, the strong positive relationship between the loan-to-deposit ratio (LDR) and ROE is consistent with financial intermediation theory and aligns with (Mudanya *et al.*, 2022) who highlighted the profitability benefits of efficient fund utilization following the Central Bank of Nigeria's LDR policy.

5.1 Conclusion and Recommendation

This study assessed the relationship between credit risk management and the financial performance of selected deposit money banks (DMBs) in Nigeria over a ten-year period (2013–2022). Utilizing a log-linear panel regression model on data from five systemically important banks, the analysis confirms that credit risk metrics are statistically significant determinants of bank performance, as measured by Return on Equity (ROE).

The findings reveal two key insights. First, the loan-to-deposit ratio (LDR) demonstrated a strong positive influence on ROE, underscoring the fundamental profitability of financial intermediation for Nigerian banks. Second, and more notably, a positive relationship was found between the non-performing loans ratio (NPLR) and ROE. This counterintuitive result suggests a nuanced credit environment where banks may be engaging in risk-based pricing, generating higher interest income from riskier loans in the short term, even as this strategy leads to an accumulation of non-performing assets. This highlights a potential trade-off between immediate profitability and long-term asset quality stability within the Nigerian banking sector. To strengthen credit risk management and promote sustainable financial performance, regulatory authorities such as the Central Bank of Nigeria should enhance risk-based supervision, including stress testing, while also reviewing monetary policy tools like the Cash Reserve Requirement to avoid unintended constraints on deposit funding and exposure to foreign exchange risk. At the institutional level, bank management and boards should reinforce

internal credit governance by investing in data-driven assessment systems, adhering strictly to risk management policies, and developing risk-based pricing models, while also ensuring diversification of loan portfolios across sectors, borrower sizes, and regions to reduce concentration risks.

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