

Credit Risk Management Practices and Financial Performance: An Empirical Study of Banks

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Abstract: Credit risk management is a crucial determinant of financial performance in the banking sector. This study examines the impact of credit risk management practices on the financial performance of selected public and private sector banks in India using panel data for the period 2020–2024. Key credit risk indicators such as non-performing loans (NPLs), capital adequacy ratio (CAR), and loan-to-deposit ratio (LDR) are considered, while financial performance is measured using return on assets (ROA) and return on equity (ROE). The study adopts a comparative and empirical approach using descriptive statistics and trend analysis. The findings reveal that private sector banks outperform public sector banks in terms of profitability due to lower NPL levels and more efficient risk management practices. However, public sector banks have shown notable improvement in asset quality in recent years. The study emphasizes the importance of effective credit risk management in enhancing bank performance and stability.

Keywords: Credit Risk Management, Financial Performance, Non-Performing Loans, Public and Private Sector Banks, Capital Adequacy Ratio.

1 INTRODUCTION

The banking sector plays a critical role in economic development by facilitating financial intermediation, promoting investment, and ensuring efficient allocation of resources. However, the performance and stability of banks are significantly influenced by their exposure to various risks, among which credit risk is the most prominent. Credit risk arises when borrowers fail to fulfill their contractual repayment obligations, leading to financial losses and deterioration in asset quality. Studies have consistently highlighted that ineffective credit risk management adversely affects bank profitability and stability [1]. In recent years, the growing complexity of financial systems and increased regulatory scrutiny have intensified the importance of managing credit risk effectively. Empirical evidence suggests that higher credit risk exposure not only reduces bank earnings but also increases financial instability, particularly in emerging economies [2].

Furthermore, the interplay between financial risk and governance mechanisms has been found to significantly influence bank performance, emphasizing the need for strong institutional frameworks [3]. The adoption of advanced techniques, including data-driven credit assessment models, has further enhanced the ability of banks to evaluate and mitigate credit risk [4]. Macroeconomic factors and sectoral developments also contribute to variations in credit risk levels. For instance, economic growth dynamics and sector-specific lending practices have been shown to impact credit risk behavior and banking performance [5]. Additionally, the integration of sustainable and green banking practices has introduced new dimensions to credit risk management, linking organizational values and environmental considerations with financial outcomes [6].

In emerging financial systems, structural and behavioral credit models have been increasingly utilized to improve credit allocation and reduce default risks [7]. Technological advancements, particularly in artificial intelligence and explainable AI (XAI), are transforming traditional risk management practices by enabling better transparency and predictive accuracy in credit assessment [8]. At the same time, central banks and regulatory authorities have strengthened capital policies and risk management frameworks to enhance financial system resilience and maintain credibility [9]. Despite these advancements, non-performing loans (NPLs) continue to remain a major concern, as they directly reduce profitability and constrain lending capacity. Existing literature further indicates that credit risk indicators such as NPLs and capital adequacy significantly influence bank performance, although the extent and direction of impact may vary across regions and banking structures [10]. However, most prior studies focus on isolated variables or specific banking systems, with limited emphasis on a comparative analysis of public and private sector banks using multiple financial indicators.

Against this backdrop, there is a strong need to examine the relationship between credit risk management practices and financial performance in a comprehensive manner. This study aims to analyze the impact of key credit risk indicators—non-performing loans (NPLs), capital adequacy ratio (CAR), and loan-to-deposit ratio (LDR)—on the financial performance of selected public and private sector banks in India during the period 2020–2024 [11]. By adopting a comparative empirical approach, the study contributes to the existing body of knowledge and provides valuable insights for bankers, policymakers, and regulators to strengthen risk management practices and enhance financial stability [12].

2 LITERATURE REVIEW

Credit risk management has been extensively studied as a fundamental determinant of financial performance in the banking sector. Numerous empirical investigations have explored the relationship between credit risk indicators and bank profitability, highlighting the critical role of effective risk management practices. Saeed and Donkoh [1] examined the influence of credit risk management on bank performance and found that non-performing loans (NPLs) have a significant negative impact on profitability, indicating that poor asset quality weakens financial outcomes. Similarly, Liang et al. [2] reported that increased exposure to credit risk adversely affects bank earnings and contributes to financial instability, particularly under stringent financial supervision environments.

Faqera et al. [3] emphasized the importance of capital adequacy in enhancing bank performance, demonstrating that adequate capital buffers help absorb potential losses and improve financial resilience. Supporting this perspective, Jiang et al. [4] highlighted the role of advanced credit assessment mechanisms and regulatory frameworks in strengthening credit risk evaluation and maintaining stability within banking systems. In the broader economic context, Plikas and Kenourgios [5] observed that macroeconomic factors and sectoral developments significantly influence credit risk behavior, with rising non-performing assets posing a major challenge to banking stability. Sheehy et al. [6] further established that effective credit risk management practices, including structured internal systems and governance mechanisms, positively contribute to financial performance.

Sharma and Rupeika-Apoga [7] demonstrated that credit risk indicators strongly affect profitability in emerging economies, where higher levels of risk are associated with reduced financial performance. Akter [8] identified that weak credit appraisal processes and inadequate monitoring systems significantly increase credit risk, thereby negatively impacting bank efficiency. Additionally, De a Da Silva Junior et al. [9] recognized credit risk management as a strategic tool for improving asset quality and profitability, particularly through effective capital policies and risk control mechanisms. Hu et al. [10] confirmed that non-performing loans have a negative effect on profitability, whereas capital adequacy exhibits a positive, though sometimes statistically insignificant, relationship with bank performance.

Despite the extensive body of literature, most studies focus on individual credit risk variables and lack a comprehensive comparative analysis across different banking sectors. Furthermore, limited research has examined the combined impact of multiple credit risk indicators on various financial performance measures within the Indian banking context. Therefore, this study addresses these research gaps by adopting a comparative approach between public and private sector banks and integrating multiple financial indicators to provide a more holistic understanding of the relationship between credit risk management and financial performance.

3 PRELIMINARIES

This section presents the fundamental concepts and variables used in the study to examine the relationship between credit risk management and financial performance in banks. Credit risk is defined as the potential loss that arises when a borrower fails to meet contractual repayment obligations. It is one of the most critical risks faced by financial institutions, as it directly impacts asset quality, profitability, and overall financial stability. One of the primary indicators used to measure credit risk is non-performing loans (NPLs), which represent loans that are in default or close to being in default. A higher level of NPLs indicates poor asset quality and inefficient credit risk management practices. Therefore, NPLs serve as a key metric in assessing the effectiveness of a bank's lending and recovery mechanisms.

Another important variable considered in this study is the capital adequacy ratio (CAR), which reflects a bank's financial strength and its ability to absorb potential losses. A higher CAR indicates that a bank has sufficient capital buffers to withstand financial stress and maintain stability. In addition, the loan-to-deposit ratio (LDR) is used to evaluate a bank's liquidity position and lending efficiency. It measures the proportion of loans granted relative to deposits received, thereby indicating how effectively a bank utilizes its available funds.

Financial performance in this study is measured using return on assets (ROA) and return on equity (ROE), which are widely accepted indicators of profitability and operational efficiency. ROA reflects how efficiently a bank utilizes its assets to generate profits, while ROE indicates the return generated on shareholders' equity. The relationship between credit risk management and financial performance is analyzed using a regression model, where NPL, CAR, and LDR are treated as independent variables, and ROA and ROE are considered dependent variables.

4 METHODOLOGY

4.1. Objectives of the Study

1. To examine the impact of credit risk management indicators (NPLs, CAR, and LDR) on the financial performance of banks.
2. To analyze the relationship between credit risk and profitability measured through return on assets (ROA) and return on equity (ROE).
3. To compare the credit risk management practices of public and private sector banks in India.
4. To evaluate the relative financial performance of public and private sector banks.

4.2. Hypotheses of the Study

The study is based on the following hypotheses:

H1: Credit risk management indicators (NPLs, CAR, and LDR) have a significant impact on the financial performance of banks.

H2: Non-performing loans (NPLs) have a significant negative impact on the profitability of banks.

H3: There is a significant difference in financial performance between public and private sector banks.

4.3. Research Design

The study adopts a quantitative and comparative research design to examine the impact of credit risk management on the financial performance of banks. It focuses on comparing public and private sector banks in India.

4.4. Data Source

The study is based on secondary data collected from:

- Annual reports of selected banks
- Publications of the Reserve Bank of India (RBI)
- Financial databases and official bank websites
- The data covers a period of five years (2020–2024).

4.5. Sample Selection

The study includes a sample of ten major banks in India, comprising Public Sector Banks, Private Sector Banks. Table 1 shows the variables of the study.

Table. 1 Variables of the Study

Type	Variables
Independent Variables	Non-Performing Loans (NPLs), Capital Adequacy Ratio (CAR), Loan-to-Deposit Ratio (LDR)
Dependent Variables	Return on Assets (ROA), Return on Equity (ROE)

- **Public Sector Banks:** State Bank of India, Punjab National Bank, Bank of Baroda, Canara Bank & Union Bank of India
- **Private Sector Banks:** HDFC Bank, ICICI Bank, Axis Bank, Kotak Mahindra Bank & IndusInd Bank

4.6. Analytical Tools and Techniques

The study uses the Descriptive Analysis to examine trends in financial performance and credit risk indicators, Comparative Analysis to evaluate differences between public and private sector banks, Correlation Analysis to measure the relationship between variables, regression Analysis to assess the impact of credit risk indicators on financial performance.

4.7. Model Specification

The relationship between credit risk management and financial performance is estimated using the following regression model:

$$ROA = \beta_0 + \beta_1(NPL) + \beta_2(CAR) + \beta_3(LDR) + \varepsilon$$

$$ROE = \beta_0 + \beta_1(NPL) + \beta_2(CAR) + \beta_3(LDR) + \varepsilon$$

where:

β_0 = Constant term

$\beta_1, \beta_2, \beta_3$ = Coefficients of independent variables

ε = Error term

5 DATA ANALYSIS AND INTERPRETATION

5.1. Impact of credit risk management indicators on the financial performance of banks

Table 1 shows the regression results (ROA as dependent variable).

Table 1. Regression Results (ROA as Dependent Variable)

Variable	Coefficient (β)	Std. Error	t-value	Significance
Constant	0.95	0.12	7.91	Significant
NPL	-0.52	0.08	-6.50	Significant
CAR	+0.28	0.10	2.80	Significant
LDR	+0.10	0.06	1.67	Moderately Significant

Interpretation:

The regression results shown in Table 1 indicate that non-performing loans (NPLs) have a strong negative and statistically significant impact on return on assets (ROA), confirming that higher credit risk reduces profitability. Capital adequacy ratio (CAR) shows a positive and significant relationship with financial performance, suggesting that well-capitalized banks achieve better profitability. Loan-to-deposit ratio (LDR) exhibits a positive but moderate influence on ROA, indicating that efficient lending contributes to performance, though its impact is less pronounced compared to NPL and CAR.

Table 2. Correlation Analysis

Variable	ROA	NPL	CAR
ROA	1.00	-0.76	0.68
NPL	-0.76	1.00	-0.52
CAR	0.68	-0.52	1.00

Interpretation:

The correlation analysis shown in Table 2 reveals a strong negative relationship between non-performing loans (NPL) and return on assets (ROA) ($r = -0.76$), indicating that higher credit risk significantly reduces bank profitability. Capital adequacy ratio (CAR) shows a positive correlation with ROA ($r = 0.68$), suggesting that well-capitalized banks perform better financially. Further, NPL and CAR exhibit a moderate negative relationship ($r = -0.52$), implying that banks with stronger capital positions tend to maintain lower levels of non-performing assets, H1 is accepted.

5.2. Relationship between credit risk and profitability through ROA and ROE

Table 3 shows the NPL vs Profitability (Average 2020–2024)

Table. 3 NPL vs Profitability (Average 2020–2024)

Bank	Avg. NPL (%)	Avg. ROA (%)	Avg. ROE (%)
SBI	4.02	0.67	12.85
PNB	10.92	0.44	9.10
BOB	7.18	0.70	13.20
Canara	6.63	0.68	12.75
Union	7.10	0.57	11.40
HDFC	1.27	1.75	16.20
ICICI	3.81	1.57	15.85
Axis	2.86	0.87	13.60
Kotak	2.10	2.36	17.90
IndusInd	2.25	1.46	15.20

Interpretation:

The data in Table 3 clearly shows an inverse relationship between non-performing loans (NPLs) and profitability indicators (ROA and ROE). Banks with higher levels of NPLs, such as Punjab National Bank and Union Bank of India, exhibit lower profitability. In contrast, banks with lower NPLs, such as HDFC Bank and Kotak Mahindra Bank, demonstrate significantly higher returns. For example, Punjab National Bank, with the highest NPL ratio of 10.92%, reports the lowest ROA (0.44%) and ROE (9.10%). On the other hand, Kotak Mahindra Bank, with a low NPL ratio of 2.10%, records the highest ROA (2.36%) and ROE (17.90%). The findings indicate a strong negative relationship between credit risk and profitability. As NPL increases, both ROA and ROE decline, reflecting reduced income generation and inefficient asset utilization. High levels of bad loans lead to increased provisioning requirements, which directly affect bank profitability. Thus, effective management of non-performing assets is crucial for improving financial performance. The empirical evidence confirms that credit risk, measured through NPLs, has a significant negative impact on bank profitability. H2 is accepted.

5.3. Credit risk management practices of public and private sector banks in India

Table 4 shows the Sector-wise Credit Risk Comparison (Average 2020–2024)

Table. 4 Sector-wise Credit Risk Comparison (Average 2020–2024)

Sector	Avg. NPL (%)	Avg. CAR (%)	Risk Level
Public Sector Banks	7.17	14.38	High
Private Sector Banks	2.46	18.01	Low

Interpretation:

The comparative analysis shown in Table 4 reveals a significant difference in credit risk management practices between public and private sector banks. Public sector banks exhibit higher levels of non-performing loans (NPLs), indicating weaker credit risk management systems. In contrast, private sector banks maintain considerably lower NPL levels, reflecting more effective credit appraisal, monitoring, and recovery mechanisms. Additionally, private sector banks demonstrate higher capital adequacy ratios (CAR), which enhances their ability to absorb potential losses and maintain financial stability. Public sector banks, although showing improvement over the study period, still lag behind in terms of risk management efficiency.

The findings suggest that private sector banks adopt more efficient and proactive credit risk management practices compared to public sector banks. Lower NPL levels and stronger capital positions indicate better control over credit risk and improved financial discipline. Public sector banks, however, have shown a positive trend in reducing NPLs in recent years, indicating the impact of regulatory reforms and improved management practices. There exists a clear difference in credit risk management practices between public and private sector banks, with private banks performing more efficiently.

5.4. Financial performance of public and private sector banks

Table 5 shows the Sector-wise Financial Performance (Average 2020–2024)

Table. 5 Sector-wise Financial Performance (Average 2020–2024)

Sector	Avg. ROA (%)	Avg. ROE (%)
Public Sector Banks	0.61	11.86
Private Sector Banks	1.60	15.75

Interpretation:

The comparative analysis of financial performance shows a clear distinction between public and private sector banks. Private sector banks consistently record higher values of return on assets (ROA) and return on equity (ROE), indicating superior profitability and operational efficiency. Public sector banks, although improving over the study period, show comparatively lower performance. The gap in performance can be attributed to higher levels of non-performing loans and relatively weaker credit risk management practices in public sector banks. The results indicate that private sector banks are more efficient in utilizing their assets and equity to generate profits. Their strong financial performance reflects better management practices, effective risk control, and efficient resource utilization. Public sector banks, while showing signs of recovery and improvement, still lag behind due to legacy issues such as higher NPAs and operational inefficiencies. There is a significant difference in financial performance between public and private sector banks, with private sector banks outperforming public sector banks. H3 is accepted.

5.5. Implications of the Study

The study shows that effective credit risk management is essential for improving bank profitability. Banks should reduce non-performing loans through better credit appraisal and monitoring, and maintain adequate capital to ensure financial stability. Public sector banks need to strengthen their risk management practices by adopting efficient strategies followed by private banks. The findings also suggest that regulators should continue strict supervision to control credit risk and improve overall banking performance.

6 SUGGESTIONS

Based on the findings of the study, banks should strengthen their credit risk management frameworks to effectively reduce non-performing loans and enhance overall financial performance. Public sector banks, in particular, need to improve their credit appraisal, risk assessment, and monitoring systems by adopting efficient practices followed by private sector banks. Maintaining adequate capital levels is essential to ensure financial stability and to absorb potential losses during periods of stress. Banks should also implement continuous monitoring mechanisms, enabling early identification of risky assets and timely corrective actions. Effective recovery strategies, including restructuring and strict follow-up of overdue accounts, are necessary to minimize credit losses. Furthermore, the adoption of technology-driven risk assessment tools can improve decision-making and operational efficiency. Regulatory authorities should continue to enforce stringent norms and supervision to promote disciplined lending practices and ensure transparency. Overall, a proactive and integrated approach to credit risk management is vital for improving banking sector efficiency and sustainability.

7 CONCLUSION

The study concludes that credit risk management is a crucial determinant of the financial performance of banks, significantly influencing profitability and stability. The empirical analysis indicates that non-performing loans (NPLs) have a strong negative impact on profitability, as higher levels of bad loans reduce income and increase provisioning requirements. In contrast, the capital adequacy ratio (CAR) demonstrates a positive effect, highlighting the importance of maintaining sufficient capital buffers to absorb potential losses and support sustainable operations. The correlation results further reinforce that increased credit risk weakens bank performance, while stronger capital positions enhance financial outcomes. Additionally, the comparative analysis reveals that private sector banks outperform public sector banks in terms of profitability and operational efficiency, primarily due to more effective credit risk management practices. Overall, the findings emphasize that robust credit risk management frameworks are essential for improving financial performance, strengthening resilience, and ensuring long-term stability in the banking sector.

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ETHICS STATEMENT

This study did not involve human or animal subjects and, therefore, did not require ethical approval.

STATEMENT OF CONFLICT OF INTERESTS

The authors declare that they have no conflicts of interest related to this study.

LICENSING

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