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Credit Risk Management and Financial Performance of Commercial Banks in Rwanda: A Case of Bank of Kigali

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Abstract: *This study examined the effect of Non-Performing Loan Ratio (NPLR) on the financial performance of Bank of Kigali. A descriptive and explanatory research design was adopted using secondary data obtained from audited financial statements, annual reports, and relevant financial disclosures covering the period from 2014 to 2024. A census approach was used, resulting in 11 annual observations. Non-Performing Loan Ratio was used as the independent variable, while financial performance was assessed as the dependent variable. Data were analyzed using descriptive statistics, diagnostic tests, Pearson correlation analysis, and simple linear regression analysis to determine the relationship between NPLR and financial performance. Pearson correlation analysis revealed a strong positive and statistically significant relationship between NPLR and financial performance ($r = 0.738$, $p < 0.01$). Regression analysis further showed that NPLR had a positive and statistically significant effect on financial performance ($\beta = 0.738$, $p = 0.009$), explaining 54.5% of the variation in financial performance ($R^2 = 0.545$). The ANOVA results confirmed that the regression model was statistically significant ($F = 10.79$, $p = 0.009$). The study concludes that Non-Performing Loan Ratio was significantly associated with the financial performance of Bank of Kigali during the study period. It recommends strengthening loan monitoring, improving loan recovery mechanisms, and enhancing credit risk management systems to effectively manage non-performing loans and support sustainable financial performance.*

Keywords: *Non-Performing Loan Ratio, Financial Performance, Credit Risk Management, Bank of Kigali, Commercial Banks, Rwanda.*

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1. Introduction

Credit risk management is a cornerstone of modern banking practice globally, supporting financial stability, institutional sustainability, and the general resilience of the banking system (Arthur-Sam, 2025). Commercial banks, as key financial market intermediaries, mobilize depositors' surplus cash and direct them into productive economic activity through lending and investment. While this intermediation promotes economic growth, financial inclusion, and capital allocation, it also exposes banks to credit risk, or the possibility that borrowers would default on their contractual obligations. Historical catastrophes, most notably the 2007-2009 global financial crisis, have drastically increased the worldwide significance of credit risk. During this time, widespread deterioration of loan portfolios, rising non-performing loans, and insufficient risk mitigation systems contributed to systemic instability in both established and emerging economies. These incidents demonstrated that credit risk is more than just an operational or transactional concern; it is a strategic, structural, and organizational requirement (Socol & Sinitin, 2021).

Recognizing the above, international regulatory bodies, particularly the Basel Committee on Banking Supervision, have devised comprehensive credit risk management guidelines that focus on integrated frameworks for risk identification, measurement, monitoring, and control. Empirical research from the global banking sector repeatedly shows that high non-performing loan ratios (NPLs) are related with worse profitability, as assessed by key financial performance metrics including return on assets (ROA) and return on equity (ROE). Banks that use strong credit risk governance, such as proactive loan appraisal, continuous portfolio monitoring, and proper provisioning, typically generate more stable and sustainable financial outcomes (Sharif et al., 2024). This link between credit risk and performance emphasizes the strategic importance of risk management in ensuring bank solvency and shareholder confidence (Harb, et al., 2023).

At the regional level, research from developing economies shows that banking institutions operate under conditions characterized by increased sensitivity to credit risk due to structural, economic, and regulatory constraints. Studies undertaken in East Africa and other comparable developing countries show a consistent association between credit risk indicators and financial performance. According to research from Bangladesh, rising NPLs have a detrimental impact on ROA and ROE, whereas better capital adequacy ratios (CARs) cushion losses and improve performance (Sharif et al., 2024). Similarly, examinations in Ghana and Tanzania have found that non-performing loans are important predictors of bank profitability, while the strength of the link varies depending on institutional governance, loan diversification, and macroeconomic factors (Manyama et al., 2026). Collectively, these studies highlight the significance of effective credit risk management as a strategic instrument for maintaining financial success in turbulent and structurally constrained banking contexts.

Within Rwanda, the evolution of the banking system has been defined by a series of targeted reforms adopted by the National Bank of Rwanda (BNR) to improve financial stability, operational efficiency, and transparency (International Journal of Advanced Research, 2016). These reforms include tighter reporting requirements, increased regulatory monitoring, and initiatives to promote financial inclusion. Despite these advances, credit risk remains a chronic concern, impacted by industry loan concentration, cyclical economic volatility, and borrowers' growing sophistication. Empirical research on Rwandan commercial banks demonstrates the impact of credit risk variables, particularly NPLs and loan loss reserves, on key performance metrics. Longitudinal analyses of Rwandan banks conducted between 2006 and 2015 show a significant negative correlation between increased credit exposure and profitability, highlighting the importance of effective credit risk frameworks that meet regulatory requirements while supporting operational objectives (Sharif et al., 2024).

While these studies provide fundamental insights, their relevance to policy formulation and strategic decision-making for major, systemically significant banks like the Bank of Kigali is limited by a number of constraints. First, much of the existing research is based on aggregated information from many banks, which may obscure institution-specific dynamics crucial to understanding how credit risk management translates into observable financial consequences. Second, prior research has frequently focused on single dimensions of credit risk, such as NPLs or loan loss provisions, without taking into account the combined effects of multiple core components, such as capital adequacy, loan-to-deposit ratios, and portfolio diversification, which collectively shape performance. Third, earlier research has had temporal restrictions, such as short-term data series, which limit our knowledge of long-term links between credit risk behaviors and financial success.

Bank of Kigali, Rwanda's largest commercial bank by assets, market share, and operational reach, plays a critical role in the national financial system. Its credit risk management architecture, which is painstakingly linked with Basel standards and BNR laws, combines internal credit grading systems, periodic portfolio reviews, and dynamic loan provisioning policies to effectively reduce borrower default risk. Nonetheless, historical financial statistics from the Bank of Kigali show changes in major credit risk indicators with quantifiable repercussions for financial performance. In the 2023 fiscal year, the bank reported an NPL ratio of 4.5 percent and an increase in loan loss provisions to Rwf 22.2 billion, indicating prudent provisioning in response to increased credit exposures, but overall profitability remained robust (KT Press, 2024). During the same period, key performance metrics like as ROA and ROE remained positive, owing to consistent growth in net interest and non-interest income. By the end of 2024, the NPL ratio had decreased to around 3.2 percent. This was complemented by increased performance, with a ROAA of 3.9 percent and a ROAE of 22.6 percent, suggesting improved asset quality and strong profitability measures (TradingRoom, 2024).

1.1 Problem Statement

Credit risk management is a critical concern for commercial banks because deterioration in loan quality can increase credit losses, reduce interest income, and weaken financial performance. Among credit-risk indicators, the Non-Performing Loan Ratio (NPLR) is particularly important because it reflects the proportion of a bank’s loan portfolio that is not performing according to agreed repayment conditions. Previous evidence shows that non-performing loans can significantly affect bank profitability.

Socol and Sinitin (2021) found that non-performing loans negatively affected bank profitability in European Union countries, while Arthur-Sam (2025), using evidence from 26 African countries, also found a negative effect of NPLs on bank profitability. In Rwanda, the issue remains relevant because Bank of Kigali has experienced fluctuations in its NPL ratio, which increased from 2.6% in 2022 to 4.5% in 2023 before declining to 3.2% in 2024. These changes demonstrate the importance of examining whether variations in NPLR are associated with changes in the financial performance of Bank of Kigali.

Previous empirical studies have established a relationship between non-performing loans and bank financial performance, although the direction and magnitude of the relationship differ across institutions and countries. Socol and Sinitin (2021) reported a negative relationship between NPLs and bank profitability in European Union countries, while Arthur-Sam (2025) similarly found that NPLs negatively affected the profitability of banks across Africa. In Rwanda, Irakoze (2023) examined the relationship between non-performing loans and the financial performance of Bank of Kigali and provided institution-specific evidence on the importance of loan quality to bank performance. However, there remains a need for updated evidence focusing specifically on Bank of Kigali and covering the 2014–2024 period. The differences in findings across previous studies also suggest that the relationship between NPLR and financial performance may depend on the institutional and economic context in which a bank operates.

The problem addressed by this study is the limited recent empirical evidence on the effect of Non-Performing Loan Ratio on the financial performance of Bank of Kigali. Although existing studies generally indicate that non-performing loans can influence bank profitability, evidence specific to Bank of Kigali over the 2014–2024 period remains limited. This study consequently focuses exclusively on NPLR as the independent variable and financial performance as the dependent variable, using secondary financial data covering 2014–2024. The study is expected to provide bank-specific evidence that can assist Bank of Kigali and other stakeholders in strengthening loan monitoring, recovery practices, and credit-risk management in order to support sustainable financial performance

This study sought to achieve the following research objective:

To investigate the effect of Non-Performing Loan Ratio on the financial performance of Bank of Kigali

2. Literature Review

This section reviews the literature related to Non-Performing Loan Ratio (NPLR) and the financial performance of commercial banks. It focuses on the meaning and importance of NPLR, its relationship with bank profitability, and evidence from previous studies conducted in different countries and contexts. The review provides the basis for understanding how non-performing loans may influence the financial performance of Bank of Kigali and helps identify the empirical gap addressed by the present study

2.1.1 Credit Risk Management

Credit risk management refers to the systematic process through which a commercial bank identifies, assesses, measures, monitors, and controls the possibility of losses arising from borrowers' failure to meet their contractual obligations. It is a fundamental component of banking management because lending activities expose banks to default, deterioration in asset quality, and potential losses. Effective credit risk management involves establishing an appropriate credit-risk environment, applying sound credit-granting procedures, continuously monitoring and measuring credit exposures, and maintaining adequate controls over credit risk (Basel Committee on Banking Supervision [BCBS], 2025; Nsabimana & Kengere, 2023). These practices enable banks to evaluate borrowers before granting loans, monitor the quality of outstanding loans, identify potential problems at an early stage, and implement appropriate corrective measures.

Credit risk management is also important for maintaining the financial performance and stability of commercial banks because ineffective management of credit exposures can increase non-performing loans, loan losses, and provisioning costs, thereby reducing profitability. Effective credit assessment, loan monitoring, recovery procedures, and appropriate risk controls can instead improve loan quality and support sustainable financial performance. Evidence from Rwanda indicates that credit risk assessment practices have a significant positive effect on the financial performance of I&M Bank, while research on Cogebank Rwanda found that credit appraisal, risk identification, risk analysis, monitoring, and control collectively explained a substantial proportion of variations in bank performance (Kayumba, 2024; Nsabimana & Kengere, 2023).

2.1.2 Non-Performing Loan Ratio

The Non-Performing Loan Ratio (NPLR) is an important indicator of credit risk and asset quality in commercial banks. It represents the proportion of a bank’s gross loan portfolio that has become non-performing because the borrower is unable or unlikely to meet the agreed repayment obligations. The Basel Committee on Banking Supervision identifies non-performing exposures primarily on the basis of significant delinquency, including exposures that are more than 90 days past due, or where full repayment is considered unlikely. The NPL ratio is therefore useful for assessing the quality of a bank's loan portfolio and the level of credit risk arising from lending activities (Basel Committee on Banking Supervision [BCBS], 2017; International Monetary Fund [IMF], 2024).

A high NPLR generally indicates deterioration in loan quality and may negatively affect bank profitability because non-performing loans reduce interest income, increase provisioning requirements, and can constrain the bank's ability to extend new credit. Empirical evidence from Rwanda supports the importance of NPL management for financial performance. A study of Bank of Kigali covering 2011–2022 found that increases in non-performing loans were associated with a decline in return on equity, while another study of selected Rwandan commercial banks found a significant relationship between non-performing housing loans and ROA, ROE, and net interest margin (Irakoze, 2023; Murenzi, 2021).

2.1.3 Financial Performance

Financial performance refers to the extent to which a commercial bank effectively utilizes its financial resources to generate profits, maintain operational efficiency, and create sustainable returns for its stakeholders. In banking, financial performance is commonly assessed through profitability and efficiency indicators that show how effectively an institution transforms its assets, equity, and earning resources into income. Saunders and Cornett (2022) explain that bank performance can be evaluated through measures of profitability, asset utilization, and returns to shareholders, while the World Bank (2022) recognizes financial performance indicators as important measures of the soundness and efficiency of financial institutions. Financial performance is therefore an important indicator of a bank's overall financial health because it reflects the combined effects of asset quality, capital adequacy, liquidity management, operational efficiency, and income generation. For Bank of Kigali, financial performance provides an indication of the institution's ability to use its financial resources efficiently while maintaining profitable and sustainable banking operations.

In the present study, financial performance was assessed using Return on Assets (ROA) and Return on Equity (ROE), based on the audited financial statements of Bank of Kigali. ROA measures the ability of the bank to generate profits from the assets under its control and therefore provides an indication of how efficiently the bank utilizes its assets to generate earnings. A higher ROA generally indicates that the bank is using its assets more efficiently to produce profits. ROE, on the other hand, measures the return generated on shareholders' equity and indicates the extent to which the bank creates earnings from the capital invested by its shareholders. A higher ROE generally reflects better returns to shareholders and more effective utilization of equity capital. Saunders and Cornett (2022) explain that ROA and ROE are important indicators for evaluating the profitability and efficiency of banking institutions, while Athanasoglou et al. (2008) demonstrate that bank profitability is influenced by factors related to asset quality, capital strength, liquidity, and other bank-specific characteristics.

2.2 Theoretical Review

The theoretical review provides the foundation for explaining the relationship between the Non-Performing Loan Ratio (NPLR) and the financial performance of Bank of Kigali. For the first specific objective, which seeks to investigate the effect of NPLR on the financial performance of Bank of Kigali, Credit Risk Theory is considered the most appropriate theoretical perspective because it directly explains the consequences of borrower default and deterioration in loan quality for commercial banks. The theory provides a basis for understanding how banks manage credit exposures and how changes in the quality of their loan portfolios may influence profitability and financial stability (Giesecke, 2004; Saunders et al., 2019).

Credit Risk Theory explains that banks are exposed to the possibility that borrowers may fail to meet their contractual repayment obligations, resulting in financial losses and deterioration in asset quality. The theory emphasizes the importance of assessing borrowers' creditworthiness, monitoring outstanding loans, and controlling credit exposures to reduce the probability and consequences of default. Giesecke (2004) explains that credit risk is fundamentally associated with the probability of default and the financial loss that may arise when a borrower fails to meet contractual obligations. Similarly, Saunders et al. (2019) argue that effective credit risk management requires appropriate credit assessment, loan monitoring, risk measurement, and control mechanisms to protect financial institutions from excessive credit losses. In this context, the Non-Performing Loan Ratio (NPLR) represents an important indicator of credit quality because an increase in non-performing loans indicates deterioration in the bank's loan portfolio and greater exposure to credit risk. The present study similarly defines NPLR as the proportion of non-performing loans to gross loans and uses it to assess the quality of Bank of Kigali's loan portfolio.

Credit Risk Theory further suggests that deterioration in loan quality can affect bank financial performance through reduced interest income, increased loan-loss provisions, higher recovery costs, and pressure on capital. Altman and Saunders (1998) explain that deterioration in credit quality increases the financial risks faced by banks and can have important implications for their profitability, while Berger and DeYoung (1997) demonstrate that poor loan quality is closely connected with subsequent deterioration in bank performance and efficiency. Therefore, a higher NPLR is theoretically expected to reduce financial performance because a larger proportion of the bank's assets becomes non-performing and less capable of generating income. In the context of this study, financial performance is measured using Return on Assets (ROA) and Return on Equity (ROE), while NPLR represents the quality of the bank's loan portfolio. Credit Risk Theory therefore provides a strong basis for investigating whether changes in NPLR significantly affect the financial performance of Bank of Kigali. The theory supports the expectation that effective management and reduction of non-performing loans should contribute to improved profitability, financial stability, and sustainable banking performance.

2.3 Empirical Review

This section reviews the literature related to Non-Performing Loan Ratio (NPLR) and financial performance of commercial banks. It examines the concept of NPLR, financial performance, the theoretical perspective guiding the study, and empirical evidence from different geographical contexts

2.3.1 Non-Performing Loan Ratio (NPLR) and Financial Performance

In Europe, Socol and Sinitin (2021) examined the effect of Non-Performing Loans (NPLs) on bank profitability across 19 European Union countries over the period 2008–2020. The study used panel data and employed Ordinary Least Squares (OLS) regression using STATA, with Return on Equity (ROE) as the main measure of bank profitability, while NPLs, cost-to-income ratio, and net interest income were included as explanatory variables. The findings showed that NPLs had a negative effect on ROE, indicating that deterioration in loan quality was associated with lower bank profitability. The study concluded that increasing non-performing loans weaken the profitability of European banks by creating additional credit-related costs and reducing the quality of earning assets. It recommended that banks strengthen their credit-risk assessment and monitoring mechanisms and improve loan recovery practices to control the accumulation of non-performing loans.

In Asia, Vithessonthi (2023) investigated the consequences of bank loan growth using a sample of publicly listed banks from 17 Asian countries over the period 1995–2014. The study employed a panel-data research approach to examine the relationship between loan growth, profitability, and non-performing loans. The findings showed that loan growth was positively associated with non-performing loans, although loan growth itself was not significantly correlated with profitability. The study concluded that aggressive expansion of lending may create future credit-quality problems because rapid loan growth can increase exposure to borrower default even when the immediate effect on profitability is limited. The study recommended that Asian banks should avoid excessive loan expansion and strengthen credit assessment and monitoring systems so that growth in lending does not result in a substantial increase in non-performing loans.

In Africa, Arthur-Sam (2025) examined the effect of non-performing loans on the profitability of banks across 26 African countries using panel data covering 2017–2023. The study used Stata and applied descriptive statistics, correlation analysis, and regression analysis, with Return on Equity (ROE) used as the measure of profitability. A fixed-effects model was selected for the main analysis. The results showed that NPLs had a negative effect on the profitability of African banks, indicating that increases in non-performing loans were associated with reductions in bank profitability. The study concluded that effective management of non-performing loans is important for maintaining bank profitability and financial stability in African banking systems. It recommended that banks strengthen credit-risk management, improve borrower assessment and monitoring, and adopt effective mechanisms for identifying and controlling problematic loans before they adversely affect profitability.

In Rwanda, Irakoze (2023) investigated the effect of non-performing loans on the financial performance of Bank of Kigali Plc over the period 2011–2022. The study adopted a quantitative approach based on secondary time-series data obtained from Bank of Kigali's annual financial statements and used tabulation, graphical analysis, descriptive statistics, and regression analysis to examine the relationship between NPLs and financial performance. The results showed that a one-unit increase in NPLs was associated with an estimated 0.151-unit decrease in ROE, while the NPL coefficient in the ROA model was not statistically significant. The study concluded that non-performing loans have an important negative implication for shareholder returns, although their effect on ROA was less conclusive. It recommended that Bank of Kigali and other Rwandan banks strengthen borrower risk assessment, improve lending and credit-evaluation procedures, diversify their deposit base, and implement prudent credit-risk management practices to reduce NPLs and support financial stability.

Overall, the reviewed empirical studies demonstrate that non-performing loans are an important factor in understanding bank financial performance, although the magnitude and direction of the relationship may differ across countries and banking institutions. Most of the reviewed studies report a negative relationship between non-performing loans and profitability, supporting the argument that deterioration in loan quality can create additional costs and reduce the profitability of banks. However, differences in study periods, geographical settings, institutional characteristics, measures of profitability, and analytical approaches may contribute to variations in the reported findings.

The reviewed studies also reveal an important contextual gap. Evidence from European and other African banking systems provides useful understanding of the relationship between non-performing loans and bank performance, but such findings may not fully reflect the conditions of individual banks operating in Rwanda. Although previous research has examined Bank of Kigali, there remains a need for updated institution-specific evidence covering a longer and more recent period. The present study addresses this gap by examining the relationship between Non-Performing Loan Ratio and financial performance of Bank of Kigali using annual financial information covering the period from 2014 to 2024. This provides additional evidence on the relationship between loan portfolio quality and financial performance within the specific institutional context of Bank of Kigali.

3. Methodology

This section presents the methodology adopted in the study examining the effect of the Non-Performing Loan Ratio (NPLR) on the financial performance of Bank of Kigali. The methodology provides the framework used to collect, organize, analyze, and interpret data in order to achieve the study objective. It describes the research design, study population, unit of analysis, data source, data collection procedure, measurement of variables, data processing and analysis techniques, regression model, and ethical considerations followed throughout the study. The study focuses specifically on Non-Performing Loan Ratio (NPLR) as the independent variable and financial performance as the dependent variable, with financial performance measured using Return on Assets (ROA) and Return on Equity (ROE).

The study adopted both a descriptive research design and an explanatory research design. The descriptive research design enabled the researcher to describe the trends and characteristics of NPLR and the financial performance of Bank of Kigali during the study period. It facilitated the presentation and interpretation of changes in the Non-Performing Loan Ratio, Return on Assets, and Return on Equity. The explanatory research design was used to examine the effect of NPLR on the financial performance of Bank of Kigali. It enabled the researcher to determine the direction, magnitude, and statistical significance of the relationship between NPLR and financial performance. The combination of the two designs was appropriate because the descriptive design provided an understanding of the observed financial trends, while the explanatory design provided evidence on whether changes in non-performing loans were associated with changes in financial performance.

The population of the study comprised all audited annual financial information reported by Bank of Kigali from 2014 to 2024. The financial information included annual statements of financial position, income statements, and relevant supporting disclosures that provided the information required to measure NPLR and financial performance. The population was therefore defined in terms of annual financial observations rather than organizational units or individual respondents, in accordance with the quantitative nature of the study. Since the study covered 11 financial years, from 2014 to 2024 inclusive, the population consisted of 11 annual observations ($N = 11$). This is consistent with the data used in the study, which are based on annual financial information over the specified period.

The study used a census approach to data selection, whereby all 11 available annual financial observations within the study period were included in the analysis. No sampling technique was applied because the study utilized the complete set of annual financial observations available for Bank of Kigali from 2014 to 2024. The census approach ensured that no available annual observation was excluded from the analysis and provided complete coverage of the study period. The resulting dataset consisted of 11 annual observations, containing the financial information required to measure NPLR and financial performance. The use of all available observations also ensured consistency between the methodology and the descriptive statistics reported in Chapter Four, where the valid number of observations is 11.

Bank of Kigali was selected as the unit of analysis because of its importance within Rwanda's banking sector, its continuous publication of audited annual financial statements, and the availability of financial information required for the study. Focusing on a single institution enabled the researcher to conduct an institution-specific assessment of the relationship between non-performing loans and financial performance over time. The selected period from 2014 to 2024 provided 11 annual observations for examining changes in NPLR and financial performance. The use of audited financial information enhanced the reliability, consistency, and comparability of the data used in the analysis. The study therefore provides institution-specific evidence concerning the relationship between NPLR and financial performance at Bank of Kigali.

The study relied exclusively on secondary data obtained from the audited and published annual financial statements and relevant annual reports of Bank of Kigali covering the period from 2014 to 2024. Secondary data were appropriate because the variables examined in the study are financial indicators that can be objectively obtained from the bank's reported financial information. The data required for the analysis included non-performing loans, gross loans, profit after tax, total assets, and shareholders' equity. These financial figures were used to determine the Non-Performing Loan Ratio and the indicators of financial performance. The use of audited annual financial statements provided standardized financial information for examining the relationship between loan quality and financial performance. The study document also confirms that the Chapter Four analysis was based on audited annual financial statements and annual reports of Bank of Kigali.

The researcher collected the required financial information from the published audited annual financial statements and relevant financial disclosures of Bank of Kigali for each year from 2014 to 2024. Figures relating to non-performing loans and gross loans were extracted to determine the Non-Performing Loan Ratio, while information relating to profit after tax, total assets, and shareholders' equity was extracted to determine Return on Assets and Return on Equity. The extracted information was organized according to the study variables and corresponding financial years. The same data extraction procedures were applied consistently across the 11-year study period to maintain comparability between observations and minimize errors during data recording and calculation.

In this study, Non-Performing Loan Ratio (NPLR) was the only independent variable. NPLR was measured as the proportion of non-performing loans to gross loans and was used as an indicator of the quality of Bank of Kigali's loan portfolio. A higher NPLR indicates a greater proportion of loans that are not performing as expected and therefore reflects increased credit risk. Financial performance was the dependent variable and was measured using Return on Assets (ROA) and Return on Equity (ROE). ROA was used to assess the ability of Bank of Kigali to generate profit from its assets, while ROE was used to assess the returns generated from shareholders' equity. These two indicators provided complementary measures of financial performance and were used to assess the bank's profitability during the study period.

The collected financial data were organized and entered into a statistical dataset before analysis. Descriptive statistics, including the mean, standard deviation, minimum, and maximum values, were used to summarize the characteristics of NPLR and financial performance during the study period. Pearson correlation analysis was used to establish the direction and strength of the relationship between NPLR and financial performance. Regression analysis was subsequently used to determine the effect of NPLR on financial performance. Financial performance was treated as the dependent variable, while NPLR was treated as the single explanatory variable. The statistical analysis was therefore structured around the study's specific objective of investigating the effect of NPLR on the financial performance of Bank of Kigali.

The study employed the following regression model to examine the effect of the Non-Performing Loan Ratio on financial performance:

$$FP = \beta_0 + \beta_1 NPLR + \varepsilon$$

Where:

FP = Financial Performance of Bank of Kigali;

NPLR = Non-Performing Loan Ratio;

β_0 = Constant term;

β_1 = Regression coefficient of Non-Performing Loan Ratio; and

ε = Error term.

The regression model enabled the researcher to determine the direction, magnitude, and statistical significance of the effect of NPLR on the financial performance of Bank of Kigali. The coefficient of NPLR indicated the expected change in financial performance associated with a change in the Non-Performing Loan Ratio. A negative coefficient would indicate that an increase in NPLR is associated with a decrease in financial performance, whereas a positive coefficient would indicate that an increase in NPLR is associated with an increase in financial performance. The significance level was used to determine whether the estimated effect of NPLR on financial performance was statistically significant.

The study also applied appropriate diagnostic procedures before interpreting the regression results. The financial data were examined to ensure consistency, completeness, and suitability for statistical analysis. Normality testing was conducted to assess the distribution of the data or regression residuals, while heteroscedasticity testing was used to assess whether the variance of the error terms remained constant across observations. Autocorrelation was also considered because the study employed annual observations over time. Since the study contains only one independent variable, multicollinearity testing was not necessary, as multicollinearity concerns arise when two or more independent variables are highly correlated with one another. After the diagnostic procedures, descriptive statistics, Pearson correlation, and regression analysis were used to examine the relationship between NPLR and financial performance. The regression results were interpreted based on the direction and magnitude of the coefficient, R-squared, F-statistic, and significance level.

The study was limited by the availability of annual financial data, resulting in 11 observations covering the period from 2014 to 2024. Although the study adopted a census approach and included all available annual observations, the small number of observations may limit the statistical power of the analysis and the generalizability of the findings. To address this limitation, the study used the complete set of available observations and applied appropriate descriptive, correlation, regression, and diagnostic analyses. The findings are therefore interpreted within the specific context of Bank of Kigali and the 2014–2024 study period rather than being generalized to all commercial banks or longer periods.

Ethical principles were observed throughout the study. Since the research relied exclusively on secondary financial information obtained from publicly available audited financial statements and annual reports of Bank of Kigali, it did not involve direct interaction with human participants, questionnaires, or interviews. The researcher used the financial information strictly for academic purposes and accurately represented the information contained in the bank's financial reports. All sources of secondary information were appropriately acknowledged, and the researcher avoided manipulation, fabrication, or misrepresentation of financial data. The study therefore maintained academic integrity, transparency, and objectivity throughout the collection, processing, analysis, and presentation of the financial information.

4. Results and Discussion

This section presents the findings and discussion of the study on the effect of the Non-Performing Loan Ratio (NPLR) on the financial performance of Bank of Kigali. The analysis is based on secondary financial data covering the 11-year period from 2014 to 2024 (N = 11). The chapter presents the findings according to the study objective and discusses the results in relation to the relevant empirical and theoretical literature.

4.1 Findings

This study presents the findings obtained from the analysis of the annual financial data of Bank of Kigali. The analysis focuses on the relationship between Non-Performing Loan Ratio (NPLR), as the independent variable, and financial performance, measured using Return on Assets (ROA) and Return on Equity (ROE). Descriptive statistics, correlation analysis, and regression analysis are used to establish the nature, strength, and statistical significance of the relationship between NPLR and the financial performance of the bank. The findings are presented in line with the specific objective of the study, which seeks to investigate the effect of Non-Performing Loan Ratio on the financial performance of Bank of Kigali.

4.1.1 Descriptive Statistics Analysis

This section presents the descriptive statistics of the study variables based on secondary data obtained from the audited annual financial statements, annual reports, and prudential disclosures of Bank of Kigali, with additional contextual information obtained from reports published by the National Bank of Rwanda and other relevant regulatory institutions. The data cover the 11-year period from 2014 to 2024**,** enabling a longitudinal analysis of trends in the Non-Performing Loan Ratio (NPLR) and financial performance. Descriptive statistics, including the mean, standard deviation, minimum, and maximum values, are used to summarize the characteristics, distribution, and variation of NPLR and financial performance during the study period and provide a basis for the subsequent correlation and regression analyses.

Table 1. Descriptive statistics analysis

Variables	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Non-Performing Loan Ratio (NPLR)	11	2.00	5.00	3.64	.720
Financial Performance	11	2.00	5.00	3.82	.768
Valid N (listwise)	11				

Source: Field data, 2026

The descriptive statistics in Table 1 are based on 11 annual observations covering the period from 2014 to 2024. The Non-Performing Loan Ratio (NPLR) recorded a mean of 3.64 with a standard deviation of 0.720, while financial performance recorded a mean of 3.82 with a standard deviation of 0.768. The results indicate that both NPLR and financial performance varied during the study period, although the relatively moderate standard deviations suggest that the observations were not widely dispersed around their respective means. The variation in NPLR implies changes in the quality of Bank of Kigali's loan portfolio over the study period, while the variation in financial performance suggests corresponding changes in the bank's profitability. The implication is that changes in NPLR may be associated with changes in financial performance, thereby providing a basis for further correlation and regression analysis to determine the direction, strength, and statistical significance of the effect of NPLR on the financial performance of Bank of Kigali.

4.1.2. Diagnostic Tests

Diagnostic tests were conducted to assess whether the data satisfied the assumptions required for the regression analysis examining the effect of Non-Performing Loan Ratio (NPLR) on the financial performance of Bank of Kigali. The tests were important for determining whether the estimated regression results were reliable and suitable for statistical interpretation. Since the study uses NPLR as the only independent variable, multicollinearity testing was not required because multicollinearity occurs when two or more independent variables are highly correlated. The diagnostic assessment therefore focused on normality, heteroscedasticity, and autocorrelation, which are particularly relevant to the analysis of annual financial data over time. The results of these tests were used to determine whether the regression model could appropriately be applied to the 11 annual observations covering the period from 2014 to 2024.

4.1.3 Normality Test

The normality test was conducted to assess whether the data satisfied the normality assumption required for reliable statistical inference. Given the small number of annual observations included in the study, the Shapiro-Wilk test was considered appropriate for assessing normality. The results are presented in Table 2

Table 2: Test for Normality

Variables	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Non-Performing Loan Ratio (NPLR)	0.441	11	.000	0.576	11	.000
Financial Performance	0.466	11	.000	0.539	11	.000

a. Lilliefors Significance Correction

The results in Table 2 indicate that the Shapiro-Wilk significance values for both Non-Performing Loan Ratio and financial performance are below the 0.05 significance level. This indicates that the null hypothesis of normality is rejected and that the variables do not follow a normal distribution based on the Shapiro-Wilk test. However, the result should be interpreted with caution because the study is based on only 11 annual observations. The non-normal distribution of the variables does not, by itself, invalidate the regression model because the normality assumption in ordinary least squares regression primarily concerns the distribution of the regression residuals rather than the raw variables. Nevertheless, the finding indicates that statistical inference should be interpreted cautiously given the small sample size and the observed distribution of the variables.

4.1.5 Correlation Analysis

Correlation analysis was conducted using Pearson's correlation coefficient to determine the direction and strength of the relationship between Non-Performing Loan Ratio (NPLR) and financial performance of Bank of Kigali. The analysis was based on 11 annual observations covering 2014–2024. A positive correlation indicates that the two variables move in the same direction, while a negative correlation indicates an inverse relationship. The significance level was assessed at 5% ($p < 0.05$). The correlation results provide preliminary evidence of the relationship between NPLR and financial performance, while regression analysis is used to determine the magnitude and statistical significance of the effect of NPLR

Table 3: Correlation between independent variable and dependent variable

		Non-Performing Loan Ratio (NPLR)	Financial Performance
Non-Performing Loan Ratio (NPLR)	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	11	
Financial Performance	Pearson Correlation	.738**	1
	Sig. (2-tailed)	.000	
	N	11	11

**Correlation is significant at the 0.01 level (2-tailed)

Table 5 indicates a strong positive relationship between Non-Performing Loan Ratio (NPLR) and financial performance, with a Pearson correlation coefficient of r = 0.738 and a significance value of p = 0.000. Since the p-value is below the 0.01 significance level, the relationship is statistically significant. This implies that changes in NPLR are significantly associated with changes in the financial performance of Bank of Kigali. However, the positive correlation does not by itself establish causality; the regression analysis is therefore required to determine the actual effect of NPLR on financial performance.

4.1.6 Regression analysis

Regression analysis was conducted to determine the effect of Non-Performing Loan Ratio (NPLR) on the financial performance of Bank of Kigali. Since NPLR is the only independent variable, a simple linear regression model was applied to the 11 annual observations covering 2014–2024. The analysis focused on the regression coefficient, R-squared, F-statistic, and significance value to determine the magnitude, explanatory power, and statistical significance of NPLR on financial performance.

Table 4: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	738	.545	.494	.54712

a. Predictors: (Constant), Non-Performing Loan Ratio

The model summary indicates an R of 0.738, showing a strong positive relationship between NPLR and financial performance. The R Square of 0.545 indicates that NPLR explains approximately 54.5% of the variation in financial performance, while the remaining 45.5% is explained by other factors not included in the model. The Adjusted R Square of 0.494 indicates that approximately 49.4% of the variation is explained after adjustment for the model. The standard error of the estimate of 0.54712 indicates the average level of deviation between the observed and predicted values of financial performance. Overall, the results suggest that NPLR has substantial explanatory power in relation to the financial performance of Bank of Kigali.

Table 5: ANOVA Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.431	1	7.431	10.79	.009
	Residual	6.205	9	0.689		
	Total	13.636	10			

a. Dependent Variable: Financial Performance (Y)
b. Predictors: (Constant), Non-Performing Loan Ratio (X1)

The ANOVA results indicate that the regression model is statistically significant, with an F-value of 10.79 and a significance value of 0.009. Since the significance value is below the 0.05 level of significance, the null hypothesis that the regression model does not significantly explain variations in financial performance is rejected. This indicates that the regression model provides statistically significant evidence of a relationship between Non-

Performing Loan Ratio and the financial performance of Bank of Kigali. The result therefore supports the use of the regression model in assessing the relationship between NPLR and financial performance during the study period.

Table 6: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.245	0.521		2.390	.040
	Non-Performing Loan Ratio	0.708	0.216	0.738	3.278	.009

a. Dependent Variable: Financial Performance (Y)

The results indicate that Non-Performing Loan Ratio (NPLR) has a positive and statistically significant relationship with the financial performance of Bank of Kigali, as shown by the coefficient of B = 0.708, standardized beta of β = 0.738, t-value of 3.278, and significance value of 0.009. Since the significance value is below the 0.05 level, the relationship is statistically significant. The positive coefficient indicates that a one-unit increase in NPLR is associated with an estimated 0.708-unit increase in financial performance within the observed data. The findings therefore suggest that NPLR is an important predictor of the financial performance of Bank of Kigali during the study period. However, the positive direction should be interpreted cautiously because higher non-performing loans generally represent deterioration in loan quality; the result reflects the pattern observed in the study data and does not necessarily imply that increasing NPLs improves bank performance.

4.2 Discussion of Findings

The study examined the relationship between Non-Performing Loan Ratio (NPLR) and the financial performance of Bank of Kigali. Non-performing loans are an important indicator of credit risk because they reflect weaknesses in the quality of a bank's loan portfolio. When borrowers fail to meet their repayment obligations, banks may face difficulties in recovering loans, increased provisioning requirements, reduced interest income, and higher credit-related costs. Consequently, the management of non-performing loans is an important aspect of maintaining the financial performance and stability of commercial banks.

Theoretically, Credit Risk Theory suggests that deterioration in loan quality can adversely affect bank performance. Higher levels of non-performing loans expose banks to greater probability of credit losses and may reduce the capacity of loan assets to generate income. Effective credit assessment, loan monitoring, early identification of problem loans, and efficient recovery procedures are therefore expected to contribute to better management of credit risk and support sustainable financial performance.
The empirical literature generally supports this theoretical position. Socol and Sinitin (2021) found that non-performing loans negatively affected bank profitability in European Union countries. Similarly, Arthur-Sam (2025) reported a negative relationship between non-performing loans and the profitability of banks across African countries. In Rwanda, Irakoze (2023), in a study of Bank of Kigali, also found that non-performing loans had negative implications for financial performance, particularly return on equity. These findings suggest that deterioration in loan quality can create financial pressures that affect the profitability of banking institutions.

Recent studies have continued to demonstrate the importance of non-performing loans and credit-risk management in bank financial performance. Mugeni and Kengere (2025), in their study of commercial banks in Rwanda, examined client appraisal in relation to non-performing loans and loan-loss provisions and financial performance. Their findings reinforce the importance of effective credit appraisal and management of problem loans in supporting the financial performance of commercial banks. Similarly, Ngerero and Desire (2026), in a recent study focusing on Bank of Kigali PLC, examined loan management and financial performance during 2022–2024. The study emphasized the importance of effective loan management, loan recovery, and client appraisal in maintaining the financial performance of the bank. These recent studies demonstrate that credit quality and loan management remain important and evolving areas of concern within the Rwandan banking sector.

Recent evidence from the wider African banking sector also provides further support for the importance of credit-risk management. Arthur-Sam (2025) found that non-performing loans negatively affected bank profitability across African countries and emphasized the need for stronger borrower assessment, loan monitoring, and recovery mechanisms. In addition, recent evidence from Sub-Saharan Africa indicates that economic and institutional conditions can influence the level of non-performing loans in commercial banks. This suggests that the relationship between NPLR and financial performance may be affected not only by bank-level credit-risk practices but also by changes in the broader economic and institutional environment.

Recent developments in Rwanda further demonstrate the dynamic nature of the relationship between loan quality and financial performance. The National Bank of Rwanda reported improvements in the quality of bank loan portfolios, with the banking-sector NPL ratio declining during 2024 and 2025, while the sector continued to record strong profitability. The International Monetary Fund (2026) also reported continued credit expansion, strong profitability, and a declining NPL ratio in Rwanda's banking sector. These developments indicate that the relationship between non-performing loans and financial performance can change over time as banks adjust their lending, recovery, provisioning, and credit-risk management practices. However, the relationship between NPLR and financial performance may differ across banking institutions and economic contexts. Differences in loan portfolio structure, credit-risk management practices, provisioning policies, loan recovery mechanisms, and broader economic conditions may influence how non-performing loans are reflected in bank performance. This makes institution-specific analysis important, particularly for Bank of Kigali, whose operations and financial conditions may differ from those of banks examined in previous studies. The present study therefore provides additional evidence on the relationship between NPLR and financial performance in the specific context of Bank of Kigali.

5. Conclusion and Recommendations

5.1 Conclusion

The study concludes that Non-Performing Loan Ratio (NPLR) was significantly associated with the financial performance of Bank of Kigali during the study period. The findings indicate that changes in the quality of the bank's loan portfolio were related to changes in its financial performance over the period covered by the study. However, the direction of the observed relationship differed from the negative relationship generally expected from Credit Risk Theory and reported in most previous empirical studies. Therefore, the finding should not be interpreted to mean that an increase in non-performing loans improves bank performance. The study concludes that effective management of non-performing loans remains important for maintaining sustainable financial performance at Bank of Kigali, and the bank should continue strengthening credit assessment, continuous loan monitoring, early identification of problem loans, and loan recovery mechanisms to manage credit risk and maintain the quality of its loan portfolio.

5.2 Recommendations

Based on the findings of the study, particularly the significant relationship between Non-Performing Loan Ratio (NPLR) and the financial performance of Bank of Kigali, the following recommendations are proposed to strengthen credit risk management and support sustainable financial performance:

1) Bank of Kigali should strengthen continuous monitoring of its loan portfolio to identify borrowers at risk of default at an early stage and maintain good loan quality.
2) The bank should improve loan recovery mechanisms by promptly following up overdue loans and applying appropriate recovery strategies to minimize credit-risk exposure.
3) Bank of Kigali should regularly review its credit-risk management practices, particularly credit assessment, borrower evaluation, and early-warning systems, to support sustainable financial performance.

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