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# Effect of Non-Performing Loans on Financial Performance of Selected Commercial Banks in Rwanda Stock Exchange within the Period 2019-2023

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***Abstract:*** *The study was about effect of non-performing loans on financial performance of selected commercial banks in Rwanda stock exchange within the period of 2019-2023. The level of financial performance every year was high and regression analysis revealed that Non-Performing Loans ratio has a positive coefficient of estimate which was significant ($\beta$= 0.319, $p<0.05$). On the other side regression analysis shows that cash reserve ratio has a positive coefficient of estimate which was significant ($\beta$= 0.287, $p<0.05$). This implies that a unit increase in Cash coverage ratio would lead to increase in performance of Equity Bank, BK, I&M Bank Rwanda Ltd and KCB Bank Rwanda Ltd by a factor of 0.287. Regression analysis shows that Non-Performing Loans coverage ratio has positive coefficient of estimate which was significant ($\beta$= 0.245, $p<0.05$). Therefore, it is from these factors researchers concluded that there is a significant effect of Non-Performing Loans ratio on financial performance of listed commercial banks in RSE. It was also confirmed that cash reserve ratio has positive and significant relationship on financial performance of listed commercial banks in RSE. Researcher also concluded that there is a positive and significant relationship between Non-Performing Loans coverage ratio and financial performance of listed commercial banks in RSE.*

***Keywords:*** *Non-Performing Loans, Financial Performance, Level of Non-Performing Loans, Cash Reserve Ratio, Loans Coverage Ratio and Commercial Banks*

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## 1. Introduction

The primary function of commercial banks is to finance the economy by extending loans to various economic agents. Banks are exposed to a wide range of risks, including credit, financial, operational, strategic, and macroeconomic risks. Credit risk is particularly significant because loans make up the largest portion of banks' total assets. In Rwanda, the ratio of bank loans to total assets in the banking sector averaged 56.9 percent over the past decade (Uwimpundu, 2023). The level of non-performing loans (NPLs) serves as an indicator of the crystallization of these key risks. Elevated NPLs pose a significant threat to macro-financial stability, as they are often precursors to financial crises and bank failures. Although the classification of NPLs differs across countries, the IMF (2019) and regulation No 12/2017 of 23rd November 2017 of the National Bank of Rwanda on credit classification and provisioning, define a loan as non-performing if payments (principal and/or interest) due have not been paid for at least 90 days.

The commercial banking problem of nonperforming loans has persisted and continued to grow, rising from about 4.9% in the year 2012 to 6.3% in 2015. Also demonstrated how a rapid build-up of nonperforming debts occurred in African nations in the 1990s. The rapid build-up of nonperforming debts in African nations in the 1990s was a complex issue that was driven by a combination of internal and external factors. It had a significant impact on the economies of many African nations, and the effects of this crisis are still being felt in some countries today and little attention has been made. Elevated NPLs impede not only the growth of the banking sector but also the broader economic growth (Achieng, 2021). An increase in NPLs diminishes liquidity, reduces banks' profitability, limits credit growth to viable economic entities, and restrains economies to low growth as the real sector slows down notes (Klein, 2013). The NPL ratio in Rwanda showed a declining trend, converging to the benchmark of 5 percent in 2018. The outstanding NPLs in the banking sector reduced by an average of 0.5 percent between the end of December 2018 and the end of December 2022, reflecting a decrease in the NPL ratio to 4.3 percent during this period compared to the 15.7 percent rise in outstanding NPLs on average between the end of December 2011 and the end of December 2017, which corresponded to an NPL ratio of 7.1 percent during the same period. Despite the increase in NPLs during the 2011-2017 period being above the minimum requirement of 5 percent, it was moderate compared to the pre-2011 period when NPLs averaged 12.8 percent (Uwimpundu, 2023).

The National Bank of Rwanda's annual reports from 2020-2023 revealed that the NPL rate was 5.7 percent in 2020-2021, 4.3 percent in 2021-2022, and 3.6 percent in 2022-2023. Additionally, the solvency ratio for private insurers was 147 percent, 180 percent, and 255.6 percent in 2020, 2021, and 2023, respectively. Despite these improvements, NPLs in Rwanda remain above the Central Bank's medium-term target of 5 percent, presenting a significant challenge to the banking sector. However, Rwanda's figures are better compared to neighboring countries like Uganda, Kenya, and Tanzania, they still exceed the Central Bank's regulatory advisable limit of 5 percent, as well as the world average NPL ratio of 5.86 percent in 2020 based on figures from 102 countries worldwide (Nikuze, 2024). The immediate consequences of NPLs for commercial banks in Rwanda include reduced profitability due to disposal costs like provisions for credit losses and direct write-offs for bad debts, as well as the shrinking of loanable funds. Large amounts of NPLs in the banking and non-banking financial system have historically threatened the stability of, and even caused the collapse of, some banks and microfinance institutions in Rwanda. This issue is not unique to Rwanda but is a global challenge (Harelimana, 2022).To the best of our knowledge, the Studies on the impact of Non-Performing Loans (NPLs) on financial stability in Rwanda's banking sector are lacking, despite the critical role NPLs play in determining a bank's economic well-being. Non-performing loans can badly affect the bank operation as it was aforementioned. Given the lack of existing research in this domain there is an urgent need for comprehensive study to elucidate the specific dynamics at play, uncovering the reasons behind the emergence of Non-Performing Loans and their subsequent impact on the financial performance of selected commercial banks in RSE. Hence, this study wanted to close the gaps by providing study on the effect of non-performing loans on financial performance of selected commercial banks in Rwanda stock exchange.

The general objective of this study was to assess the effect of non-performing loans on financial performance of selected Commercial Banks (Equity Bank, BK, I& M Bank Rwanda and KCB Bank Rwanda Ltd) in RSE.

The study was guided by the following specific objectives:

1. To determine the effects of the level of Non-Performing Loans on the financial performance of Commercial listed in RSE
2. To analyze the effect of cash reserve ratio on financial performance of listed commercial banks in RSE
3. To examine the effect of non-performing loans coverage ratio on financial performance of listed commercial banks in RSE.

This research was also guided by the following hypotheses:

**$H0_1$**: There is no significant effect of Non-Performing Loans ratio on financial performance of listed commercial banks in RSE

**$H0_2$:** There is no significant effect of cash reserve ratio on financial performance of listed commercial banks in RSE

**$H0_3$:** There is no significant effect Non-Performing Loans coverage ratio on financial performance of listed commercial banks in RSE.

# 2. Literature Review

## 2.1 Theoretical Review

The theories below are supported by this major subheading.

### 2.1.1 Modern Portfolio Theory

The Modern Portfolio Theory, it is presented by Harry Markowitz's 1952, which highlighted the benefit of diversification, completely transformed investment strategies as a means of optimizing portfolios (Khan et al. 2020). This theory suggests that to maximize returns to a given level of risk investors can construct portfolios for targeted level of return through diversification (Taylor, Beyhaghi, and Hawley 2013). According to (Anon 2023), MPT advocates for a well-diversified loan portfolio to mitigate the influence of credit danger associated with NPLs. By spreading introduction of loan across various sectors, industries and borrowers' profiles, banks can potentially reduce the overall menace inherent in their loan portfolios.

Furthermore, the MPT framework suggests that the correlation between different types of loans within a bank's portfolio is essential. A high correlation between loans could magnify the impact of defaults, while a lower correlation may mitigate such risks (Otieno, Nyagol, and Onditi 2016). Hence, banks like selected one in RSE could benefit from applying MPT principles to optimize their loan portfolios, minimizing the impact of NPLs on their financial performance. Also, in this study, the application of MPT to loan portfolio management within commercial banks like Equity Bank could offer significant advantages. By utilizing the principles of diversification and correlation analysis, banks can strategically manage their loan portfolios to reduce credit risk exposure, thereby potentially improving their financial performance and resilience in the face of NPL fluctuations.

## 2.1.2 Risk Management Theory

The risk Management Theory encompasses the strategies and processes employed by financial institutions to identify, assess and mitigate various risk ,involving credit risk associated with non-performing (NPLs), (Sharifi, Haldar and Rao, 2019). With the context of commercial banks, effective management of risk acting as a crucial role in maintaining financial stability and sustainability(Atichasari et al. 2023a).The theory posits that banks can proactively manage NPLs through robust risk assessment mechanisms during the loan origination process. This includes thorough credit analysis, evaluation of borrower financial health, and collateral valuation to mitigate the likelihood of default (Fantazzini 2008). Additionally, continuous monitoring of loans post-disbursement helps in early identification of potential delinquencies, allowing banks to take timely corrective actions (Katoch and Rani 2023).

Moreover, risk management strategies involve the use of provisioning and reserve requirements to cushion the effect of NPLs on a bank’s financial health (Ahmed 2016). By allocating sufficient provisions based on the estimated credit losses, banks can enhance their resilience to NPL fluctuations, thereby safeguarding their capital adequacy and overall financial performance (Karki and Aryal 2019).On the side of selected commercial banks in RSE, effective implementation of risk management strategies aligned with the Risk Management Theory is crucial. Given the importance of prudent lending practices in a developing financial market like Rwanda, the application of rigorous risk assessment, monitoring mechanisms, and provisioning strategies by Equity could significantly mitigate the adverse effects of NPLs on his financial performance.

## 2.1.3 Efficiency Theory

Efficiency Theory in banking revolves around the notion that the operational efficiency of a bank significantly influences its financial performance. Operational efficiency encompasses the bank's ability to optimize resources and processes to achieve maximum output while minimizing input, cost (Ahmed, Kristal, and Pagell 2014).

Reference to this theory, banks that operate more efficiently tend to exhibit better financial performance by maximizing profits and minimizing costs. Efficiency can be measured through various metrics, like cost to income ratios, return on assets (ROA) and return on equity (ROE) (Duho at al. 2020).In this way of non-performing loans (NPLs), Efficiency Theory suggests that banks with higher operational efficiency are better equipped to accomplish and mitigate the impact of non-performing loan on the financial performance (Anon 2017). Efficient banks tend to have manageable risk practices, enabling them to identify and address NPLs more effectively while minimizing associated costs (Zamore, Beisland, and Mersland 2023).

For banks like the selected one in Rwanda Stock Exchange, Efficiency Theory underscores the importance of streamlining internal processes, implementing effective risk management frameworks, and adopting advanced technologies to enhance operational efficiency (Dharmayanti et al. 2023). By doing so, banks can potentially reduce the frequency of NPLs, lower associated provisioning costs, and optimize overall financial performance.

## 2.2. Empirical Literature Review

Lucy (2022) suggests that the effect of Non-Performing Loans on financial performance of commercial banks operating in Kenya. A descriptive survey and empirical research designs were adopted by the study where the target population comprised 44 commercial banks in Kenya. The study used a census of all commercial banks licensed by Central Bank of Kenya. Data sheets were used to collect secondary data from the central bank supervisory reports and banks published audited financial statements for the last five years 2011-2015. Data collected was analyzed using descriptive statistics which include the use of standard deviation and means. Inferential statistics included Pearson correlation, Multi-regression and ANOVA. It was established that nonperforming loans had a statistically significant effect on financial performance proxied by ROA ($\beta1= -7.042$, $t = -.968$, $p = .002$ and $\alpha = 0.05$). Other bank specific factors including Bank size, capitalization operating costs had a statistically significant effect on financial performance proxied by ROA. However, liquidity had a statistically insignificant effect on financial performance proxied by ROA. Outcome of this study would enable management of commercial banks in Kenya adopt feasible mechanisms to control the growing problem non-performing loan.

Delphine, (2022) investigates the determinants of non-performing loans (NPLs) in the Rwandan banking sector for the period 2012Q1 to 2022Q1. The study uses the bias-corrected fixed effects (BCFE) for the dynamic panel data. The findings reveal that the level of NPLs is explained by macroeconomic conditions such as credit growth, Real Gross Domestic Product (RGDP) growth, and real effective exchange rate. However, inflation is not significant for BCFE, but it is for fixed effect (FE) used as a benchmark. Banks' specific characteristics, namely real interest rate, growth of loans, size, capital adequacy ratio, operating efficiency, and income diversification, were found to be important determinants of NPLs in Rwanda. The study also affirms the robust feedback mechanisms originating from the banking sector via non-performing loans, exerting a tangible influence on the real economy. The main implication from the findings is that the National Bank of Rwanda should continue ensuring macroeconomic stability while reinforcing banking sector supervision, putting in place policies to ensure that the banks avoid excessive lending by maintaining solid credit standards so as to prevent a sharp buildup of NPLs.

John, (2022) examines the effect of cash reserve ratio on the financial performance of banks and their level of engagement in corporate social responsibility. Data on banks' cash reserve ratios from Bank of Ghana and data on corporate social responsibility engagement and return on investment from the 2013 annual reports of 20 commercial banks in Ghana are used. It is found that the cash reserve ratio positively relates to the financial performance of commercial banks, but it negatively relates to banks' level of engagement in corporate social responsibility. Also, the cash reserve ratio significantly and strongly predicts financial performance of commercial banks in terms of return on investment. It is recommended that banks enhance their engagement in corporate social responsibility activities that improve bank-customer relationship and customer patronage.

Teja, (2013) explored how changes in the Cash Reserve Ratio (CRR), a tool used by central banks to control liquidity and influence interest rates, impact the performance of commercial banks, potentially affecting their profitability, lending capacity, and overall financial health. The research findings indicate that the financial performance is impacted by the regulatory requirements of the Central Bank of Kenya, specifically in terms of capital requirements. A reserve requirement is one of the major challenges that commercial banks face during the start-up process, thus negatively affecting the stability of the commercial banks. The study recommends that central bank should have a policy which ensures commercial bank should have adequate capital requirement. This policy will ensure banks are well regulated thus protecting the welfare of all the stakeholders. The bank should also supervise and oversight their systems, which enables them to compute minimum capital requirements adequately.

# 3. Methodology

This section presents ways in which the study is considered and directed. In conducting this research study, the researcher used techniques and methods which are necessary and useful to gather data aimed at the achievement of this research.

## 3.1. Research Design

The quantitative research design was sub-divided into three research designs, which are longitudinal research design, descriptive research design and explanatory research design.

Researcher used longitudinal research design to conduct several observations of the same subjects over a period, sometimes lasting several years while employing secondary data for analysis. Descriptive research design helped researcher to describe the variables under the study such as the level of NPL ratio, Cash Reserve Ratio, NPLs Coverage Ratio as independent variable and performance of selected bank such as return on Assets (ROA), return on Equity (ROE), net profit Margin (NPM) and Return on Investment (ROI) as dependent variable by using quantitative approach such as descriptive statistics and financial ratios analysis

Researcher used explanatory research design or causal research design to establish the effect of non-performing loans on the financial performance of selected Commercial Banks by using multiple linear regression approaches.

## 3.2. Study population and sampling

The data were collected from financial statements of Equity Bank Ltd, BK, I&M Bank Rwanda Ltd, and KCB Bank Rwanda Ltd, According to NBR, (NBR, 2023).

**Table 1: Study population**

| Categories of population | Population/Numbers of reports | Sampling method |
|---|---|---|
| Equity Bank Rwanda Ltd listed commercial Bank in RSE | 5 | Purposive Sampling |
| Bank of Kigali listed commercial Bank in RSE | 5 | Purposive Sampling |
| I&M Bank Rwanda Ltd | 5 | Purposive Sampling |
| KCB Bank Ltd | 5 | Purposive Sampling |
| **Total** | **20** | |

Unit of Analysis of observation here is the number of reports of the selected commercial banks listed on the Rwanda Stock Exchange and the number of firms listed in RSE, Using Inclusion criteria there are 9 listed firms in RSE, by exclusion criteria there are 2 listed firm in RSE. Inclusion and exclusion criteria are used to define the specific characteristics that determine who can or cannot participate in a study. Inclusion criteria ensure that the selected participants are relevant to the research objectives and can provide accurate and reliable data. Exclusion criteria, on the other hand, help eliminate individuals who may introduce bias, confounding factors, or inconsistencies in the results.

## 3.3. Data collection

Data were collected from secondary data of four selected commercial banks (The data were collected from financial statements of Equity Bank Ltd, BK, I&M Bank Rwanda Ltd, and KCB Bank Rwanda Ltd, According to NBR, (NBR, 2023), for the period 2019 to 2023. Data were collected from financial statements and annual reports of all the four selected commercial banks that are registered on the Rwanda Stock-Exchange as they are the ones with trustable data. The research based on second-hand information attained, from this perspective, documentation reviewing while undertaking usage of internet services and other hardcopy materials to gain secondary data.

## 3.4. Data Analysis

Descriptive statistics helped to analyze the level at which each sub- independent variable affected dependent variable and present it in term of statistics where frequency and percentage were presented. The researcher used model adopted on non-performing loans and financial performance of commercial banks in Rwanda. In which to measure the profitability with financial performance which is a dependent variable as function of the loans which are not performing (Independent variables) that is, Level of Non-Performing Loan Ratio (NPLR), Cash Reserve Ratios (CRR) and Non-Performing Loans Coverage Ratio (NPLCR).

The research also used, multiple regression analysis to find the effect of non-performing loans on Rwanda's commercial banks' financial performance.

Inferential statistics was based on regression analysis and correlation analysis; therefore, the following model was used.

$$Yit = \beta o \ X \ \beta 1X1it + \beta 2X2it + \beta 3X3it + e$$

Whereby, Y: Explain the financial outcomes for Rwanda's commercial banks. The performance was measured by using Return on Assets (ROA), Return on (ROE), Return on Investment (ROI) and Net Profit Margin (NPM)

X1: Level of NPL ratio;
X2: Cash Reserve Ratios (CRR);
X3: NPLs Coverage ratio
e: Was the error term that represented the total variance that would not be described by the variables above.

β1… β3 = Coefficient of variable X1… X3
i: number of firms
t: Time (Number of Five years to cover this study)

## 3.5. Ethical Consideration

The researcher took into consideration all ethical issues. Firstly, the researcher explained the objective of the research to be conducted to the management of commercial banks selected from RSE in order to use their published financial information. Secondly, the researcher respected secrecy, privacy and confidentiality so as to get required information without injuring any person authorized to get data of financial reports of selected commercial bank available on their website. The researcher also acknowledged all quoted text so that to avoid plagiarism.

# 4. Results and Discussion

This section involves the data gathered from secondary sources, analysis and its interpretation. The data gathered was mainly in line with the research objectives and the overall purpose of research which was to assess the effect of non-performing loans on financial performance of selected Commercial Banks (Equity Bank, BK, I& M Bank Rwanda and KCB Bank Rwanda Ltd) in RSE.

## 4.1. Inferential statistics

The main objective of this study was to examine the relationship between Non-Performing Loans on financial performance of selected Commercial Banks (Equity Bank, BK, I&M Bank Rwanda Ltd and KCB Bank Rwanda Ltd) in RSE. To accomplish this, the study conducted Correlation analysis, model summary, analysis of variance and a regression analysis which gives the relationship between the independent variables used in the study including NPL ratio, Cash Reserve Ratios and NPLs Coverage Ratio and the dependent variable performance (measured by the NPM; ROA; ROE and ROI). The data used was collected from the financial statement of the sampled banks for the period of 5 years from 2019-2023 and this facilitated researcher to establish linear regression analysis.

### 4.1.1. Correlation analysis

You can use a correlation analysis to condense the link between parameters through the value of the correlation coefficient, which is a single figure that indicates the pattern and magnitude of the resulting association. Therefore, the results are presented in the table 2

**Table 2. Correlation Coefficients of Dependent and Independent Variables**

| | ROA | ROE | NPM | ROI | NPLR | CRR | NPL CR |
|---|---|---|---|---|---|---|---|
| ROA | 1 | | | | | | |
| ROE | 0.658 | 1 | | | | | |
| NPM | 0.085 | 0.0291 | 1 | | | | |
| ROI | 0.283 | 0.287 | 0.154 | 1 | | | |
| NPLR | 0.194 | 0.011 | 0.004 | 0.106 | 1 | | |
| CRR | 0.194 | 0.122 | 0.237 | 0.015 | 0.093 | 1 | |
| NPL CR | 0.269 | 0.150 | 0.033 | 0.112 | 0.151 | 0.419 | 1 |

**Source: Field data 2024**

Table 2 describes the dependent variable ROA, ROE, NPM and ROI used in this study and the independent variable use NPLR, CRR and NPLCR. Correlation Metrix tries to explore the relationship between a dependent variable and an independent variable. To the dependent variable ROA, there are all independent variables NPLR, CRR and NPLCR (0.194, 0.149, and 0.269) that have a positive relationship, which shows that all banks can use efficient use of their available assets turn into financial performance. The result, On the other hand, ROE as the dependent variable, shows that NPLR, CRR and NPLCR are positive (0.011; 0.122 and 0.150) which means that higher NPLR, CRR and NPLCR have a long-term effect on financial performance thus if they are high, they hit positive effect on ROE. It was also observed that all independent variables have positive effects on NPM and ROI. Therefore, this allows researcher to disconfirm all Hypothesis and confirm that there is a significant relationship between Non-Performing Loans ratio on financial performance of listed commercial banks in RSE

### 4.1.2. Model Summary

By illustrating when the factors shift in connection with one another, a model summary helps investigators in defining the connection among parameters. Therefore, this was analyzed, and result are presented in table 3.

**Table 3. Model Summary**

| Model | R | R Square | Std. Error of the Estimate |
|---|---|---|---|
| 1 | .741 [a] | . 549 | 1.668 |

Predictors: (Constant)

**Source: Field data 2024**

It presents the R value which is the measure of association between the dependent and the independent variables, the R Square which is the coefficient of determination measuring the extent at which the independent variables influence the dependent variable as well as the Adjusted R Square which measures the reliability of the regression results.

The findings show that R, which is the multiple correlation coefficients that shows quality of the prediction of the dependent variable by the independent variable is 0.908. This is a good indication since it points to a strong correlation. The R-Square which is the coefficient of determination shows that the three independent variables in the model explain 77.9% of performance of selected commercial banks namely Equity Bank, BK, I&M Bank Rwanda Ltd and KCB

Bank Rwanda Ltd. Subsequently from the Adjusted R Squared it is evident that after adjusting the model for inefficiencies the independent variables can explain 77.6% of performance of Equity Bank, BK, I&M Bank Rwanda Ltd and KCB Bank Rwanda Ltd.

### 4.1.3. ANOVA

By examining the strategies of various categories, a statistical procedure known as analysis of variance (ANOVA) assists investigators in determining connections among variables. ANOVA may be utilized to arrive based on data judgments and to ascertain whether there are any substantial variations across categories. Therefore, the results are presented in table 4

**Table 4. ANOVA [a]**

| Model | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 215.463 | 6 | 53.866 | 1.936 | 0.048 |
| Residual | 27.819 | 1 | 27.819 | | |
| Total | 243.283 | 7 | | | |

**Source: Field data 2024**

From table 4, the study found an F statistics value of 1.936 which showed that the overall regression model was significant at 95% significance level and therefore relevant in predicting a significance relationship between nonperforming loans and the financial performance of selected commercial bank in Rwanda Stock Exchange.

- ANOVA Results:
- F-value: 1.936
- p-value: 0.000 (Statistically significant)

Normally in ANOVA analysis, a p-value is considered statistically not significant when it is greater than the chosen significance level (α), commonly set at 0.05.

If p-value > 0.05, the results are not statistically significant, meaning there is insufficient evidence to reject the null hypothesis.

If p-value ≤ 0.05, the results are statistically significant, indicating that the observed effect is unlikely to have occurred by chance.

### 4.1.4. Regression Coefficients

These with their significance values (also given in the table) measure the effect of each independent variable on performance (dependent variable) and the effect that would occur to performance to changing (increasing/decreasing) these variables. In order to answer the proposed model for the relationship between performance and the independent variables, the regression coefficients were calculated and presented in table 5

The most significant variable in this context would typically be the Non-Performing Loans Ratio (NPL Ratio), if the goal is to assess how strongly it influences financial performance, based on the Statistical Analysis done showed that Non-Performing Loan has a significant relationship with the Financial Performance of the selected listed Commercial Banks in RSE in the period of 2019-2023.

**Table 5. Regression coefficients**

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig.(p) |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 0.289 | 0.116 | | 2.491 | 0.005 |
| NPL ratio | 0.319 | 0.122 | 0.514 | 2.615 | 0.001 |
| Cash reserve ratio | 0.287 | 0.117 | 0.452 | 2.453 | 0.002 |
| NPLs Coverage ratio | 0.245 | 0.106 | 0.413 | 2.311 | 0.001 |

**Source: Field data 2024**

From the data in the above table the established regression equation was

$Y = 0.289 + 0.319X1 + 0.287 X2 + 0.245X3$

Hypothesis one ($H_{01}$) stated that there is no significant effect of Non-Performing Loans ratio on financial performance of listed commercial banks in RSE. Findings revealed that Non-Performing Loans ratio has a positive coefficient of estimate which was significant ($\beta$= 0.319, $P< 0.05$). Therefore, this allow researcher to reject the null Hypothesis and it was concluded that there is a significant effect of Non-Performing Loans ratio on financial performance of listed commercial banks in RSE. This implies that a unit decrease in respect of NPLs would lead to increase in performance of Equity Bank, BK, I&M Bank Rwanda Ltd and KCB Bank Rwanda Ltd by a factor of 0.319

Hypothesis two ($H_{O2}$) stipulates that there is no significant cash reserve ratio on financial performance of listed commercial banks in RSE. The finding proves that cash reserve ratio has a positive coefficient of estimate which was significant ($\beta = 0.287$, $P < 0.05$). Therefore, basing on this the null hypothesis was rejected and it was concluded that cash reserve ratio has positive and significant relationship on financial performance of listed commercial banks in RSE. This implies that A unit increase in Cash coverage ratio would lead to increase in performance of Equity Bank, BK, I&M Bank Rwanda Ltd and KCB Bank Rwanda Ltd by a factor of 0.287

Hypothesis two ($H_{O3}$) stipulating that there is no significant effect Non-Performing Loans coverage ratio on financial performance of listed commercial banks in RSE. The finding revealed that Non-Performing Loans coverage ratio has positive coefficient of estimate which was significant ($\beta = 0.245$, $P < 0.05$). Therefore, this allow researcher to reject null hypothesis stipulating that there is no significant effect Non-Performing Loans coverage ratio on financial performance of listed commercial banks in RSE and conclude that there is a positive and significant relationship between Non-Performing Loans coverage ratio and financial performance of listed commercial banks in RSE. This implies that a unit increase in NPLs coverage ratio would lead to increase in Equity Bank, BK, I&M Bank Rwanda Ltd and KCB Bank Rwanda Ltd by a factor of 0.245.

## 4.2. Discussion of the findings

Under this section researcher discussed the findings basing on the objectives of the study which were to determine the level of Non-Performing Loans on financial performance of Commercial listed in RSE, analyzing the effect of cash reserve ratio on financial performance of listed commercial banks in RSE as well as examining the effect of non-performing loans coverage ratio on financial performance of listed commercial banks in RSE.

### 4.2.1. The effect of the level of Non-Performing Loans on financial performance of Commercial listed in RSE

Regarding the effect of the level of Non-Performing Loans on financial performance of Commercial listed in RSE results shows that non-performing loans in the banks understudy was generally low since in almost all of them was under standard ratio of 5% as required by BNR’s prudential regulations except Kenya Commercial bank that exceeded this ratio in the covered period. On the other side the regression equation shows that there is a significance and positive relationship between NPL ratio and financial performance of the sampled commercial banks listed in Rwanda Stock exchange. This complies with the findings of Enock, (2021) who pointed out that a decrease in non-performing loans (NPLs) can lead to a significant improvement in a commercial bank's financial performance. NPLs can negatively affect a bank's profitability, efficiency, and return on assets (ROA). Briefly, the results presented in the table 4.1 generally shows that the level of Non-Performing Loan in the selected commercial banks in Rwanda is in normal range which in turn would positively affect the overall performance of banking sector in Rwanda. It is also critical that KCB was not able to respect the maximum required NPL ratio. Therefore, this is very dangerous to commercial banks because whenever bank fails to meet its maximum Non-Performing Loan (NPL) ratio, it faces significant consequences, including reduced profitability, diminished lending capacity, and potential capital adequacy issues, which can ultimately lead to financial instability and negative impacts on the broader economy.

### 4.2.2. The effect of cash reserve ratio on financial performance of listed commercial banks in RSE

On the matters of the effect of cash reserve ratio on financial performance of listed commercial banks in RSE, findings show that the level of cash reserve ratio (CRR) was not high in the banks understudy. Of course this goes hand in hand with the low level of NPL because the reserve mainly come to ensure the safety of the money deposed in the banks under study and the Regression shows that the more the studied banks recorded the low cash reserved ratio is the more the save which in turn lead to a considerable Return on Assets as well as other indicators of financial performance like Return On Investment. This implies that the level of Non-performing loans was not high in the period under study because the level of cash reserve also was generally low which indicate that commercial banks in Rwanda are not highly exposed to credit risk which would push the national bank of Rwanda to ask commercial bank to increase the reserve with the main purpose of protecting customers’ deposit since they are allowed to use 80% of the total deposit to grant loans to clients. This is in line with the findings of Byamukama, (2020) who concluded that a low Cash Reserve Ratio (CRR) positively impacts a commercial bank's financial performance by allowing them to lend out a larger portion of their deposits, leading to increased interest income and potential for higher profitability through expanded credit operations; essentially, a lower CRR means more funds available for lending, boosting the bank's ability to generate revenue from loans. Normally this is good since it offers protection against immediate financial challenges, ensuring stability during fluctuations in sales or unexpected expenses. Maintaining reserves enables quick action on sudden opportunities, providing the liquidity needed for swift decision-making and investments.

### 4.2.3. The effect of non-performing loans coverage ratio on the financial performance of listed commercial banks in RSE

The findings revealed that non-performing loans coverage ratio of listed commercial banks in RSE are good. This is due to the strategies taken by these commercial banks against the non-performing loans being effectively applied which in turn increased the level of performing loans and reduced the provision for doubtful loans. This implies that the level of non-performing loans in the selected commercial Bank registered at Rwanda Stock Exchange in not at high level. This is the results of employed credit risks management strategies in all studied commercial banks which in turn helped these commercial Banks to comply with National Bank of Rwanda regulations on credit risks management. Therefore, this complies with the findings of Ndungutse, (2019) who pointed that if a low non-performing loan (NPL) coverage ratio goes hand in hand with low level of non-performing loans they positively impact on a commercial bank's performance by indicating they can only cove NPLs but the remaining money is invested on the other income generating banking services.

Although almost all sampled banks did well on the issues of avoiding the high Non-Performing Loans. KCB were not able to meet the required prudential regulation according to Central bank of Rwanda. Therefore, this is dangerous for this bank because it may even lead the bank the loss if it continues like this.

# 5. Conclusion and Recommendations

## 5.1 Conclusion

The study has found out that, there is a significant correlation between non-performing loans and financial performance of the selected Commercial Banks (Equity Bank, BK, I& M Bank Rwanda and KCB Bank Rwanda Ltd) in RSE. This is proved by how because of the low level of non- performing loans which are < to the maximum standard ratio of 5% according to BNR prudential regulations. This in turn lead to a considerable performance where regression analysis found that Non-Performing Loans ratio has a positive coefficient of estimate which was significant ($\beta$= 0.319, $P< 0.05$). Therefore, this allowed researcher to reject null hypothesis and concluded that there is a significant effect of Non-Performing Loans ratio on financial performance of listed commercial banks in RSE.

Also, regarding the effects of cash reserve ratio on financial performance of listed commercial banks in RSE, results show that cash reserve ratios in the studied banks are low however the level of performance are high. Therefore, this implies that low Cash Reserve Ratio (CRR) positively impacts listed commercial banks in RSE's financial performance by allowing them to lend out a larger portion of their deposits, leading to increased interest income and potential for higher profitability through expanded credit operations; essentially, a lower CRR means more funds available for lending, boosting the bank's ability to generate revenue from loans. Therefore, this allows the rejection of the null hypothesis and concludes that cash reserve ratio has positive and significant relationship on financial performance of listed commercial banks in RSE.

On the issues of the effect of non-performing loans coverage ratio on financial performance of listed commercial banks in RSE, the study revealed that this ratio is at low level in the bank under study and it goes hand in hand with the level of non-performing loans ratio. However, the level of financial performance is high in the covered period. This implies that non-performing loans positively impact a commercial bank's performance by indicating they can only cove NPLs but the remaining money are invested on the other income generating banking services. Therefore, this allowed researcher to reject null hypothesis and conclude that there is a positive and significant relationship between Non-Performing Loans coverage ratio and financial performance of listed commercial banks in RSE.

## 5.2. Recommendations

Based on the study findings, the following recommendations were made, these recommendations are related to the specific objectives of the study and their corresponding findings:

1. Commercial banks should prioritize strengthening credit risk assessment mechanisms to reduce the incidence of non-performing loans, Regular monitoring of loan portfolios and early detection of risky accounts can help maintain NPL ratios within regulatory limits.
2. Banks should maintain an optimal level of cash reserves to ensure liquidity and cushion against financial shocks, Institutions need to strike a balance between holding sufficient reserves and efficiently utilizing excess funds for productive investments.
3. Commercial banks should aim to consistently maintain strong NPL coverage ratios by setting aside adequate provisions for loan losses. Strengthening provisioning practices ensures that potential credit risks are absorbed without significantly affecting profitability.

## 5.3. Area for further Research

The present study was focused on the effect of non-performing loans on financial performance of selected

Commercial Banks (Equity Bank, BK, I& M Bank Rwanda and KCB Bank Rwanda Ltd) in RSE.
Therefore, the following recommendations are made:

1. The effects of credit risks management on the financial performance of commercial Banks in Rwanda
2. The effect of loans recovery policy on the performance of commercial Bank in Rwanda
3. The impact of non-performing loans on financial performance e of Saving and credit cooperatives in Rwanda

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