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# Monetary Policy Implementation and Financial Performance of Commercial Bank in Rwanda: A Case of Equity Bank, Rwanda

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## Abstract

This study analyzed the effect of monetary policy implementation on the financial performance of commercial banks in Rwanda. Descriptive research design was adopted to examine how monetary policy variables affect financial performance measured by return on assets and return on Equity in Equity Bank for a period of 5 years (2017- 2021). The Study is established on loanable fund theory, New Keynes model, and classical theory of interest rate and Efficiency theory. Regression coefficient, Analysis of variance, Regression analysis, descriptive statistics (Mean and Standard deviation) and inferential (Correlation and inferential analysis) were used to estimate the joint and effect of monetary policy variables measured by interest rate, reserve requirement and liquidity management on financial performance of commercial bank . The study revealed that the endogenous variables (interest rate, reserve requirement and liquidity management) were significantly related with the dependent variable (financial performance). Thus, these independent variables strongly have an effect on the financial performance of commercial banks in Rwanda. It is concluded that monetary policy implementation has been effective for commercial banks in Rwanda by increasing their financial performance. Therefore, the Study recommended that commercial Banks should consistently adopt monetary policy implementation that will help Rwandan banks to improve on their profitability.

**Keywords:** *Monetary Policy Implementation, Financial Performance, Commercial Bank, Equity Bank, Rwanda*

### 1. Introduction

Monetary policy is one of the principal economic management tools that governments use to form economic performance. Monetary policy compared to fiscal policy, is said to be quicker at resolving economic shock wave. Monetary policy has objective of ensuring price stability, promotion of growth, achieving full employment, preventing financial crises, smoothing the business cycle, stabilizing the real exchange rate and long-term interest rates. Experience shows that main objective is maintaining price stability or ensuring low inflation rates.

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The National Bank of Rwanda (NBR) is responsible for the recommendation and implementation of monetary policy tools in Rwanda. It also recommends the Cash Reserve Requirement, Central Bank Rate and Treasury bill rates. Those tools are implemented through commercial banks and they are aimed at stabilizing the price levels in the economy. The use of cash reserve ratio affects the level of liquidity in the commercial banks. When commercial banks are faced with limited liquidity, they turn to other commercial banks for inter-bank borrowing. Those funds are borrowed at the Central Bank Rate and it is usually very high, which affects the interest expense for the borrowing bank and the interest income for the lending bank. The other way to increase liquidity in the bank will be to borrow by floating a debt instrument. The rate offered for the debt instrument is also tied to the treasury bills or treasury bonds issued by the government through the Central Bank. These effects of the monetary tools are expected to have an effect on the financial performance of commercial banks (Godfrey, 2014)

This research analyzed the monetary policy and its effect on financial performance of commercial banks. The literature reveals that while there is much effort by the government to influence the money supply by establishing various policy tools, an analysis on the effects of those tools on Commercial Banks financial performance, which are the most used channel of transmission of the policies, is inconclusive. This research therefore was motivated to fill the knowledge gap on effects of the various monetary policy tools on financial performance of commercial banks in Rwanda with firm size as the control variable. The following research question were therefore explored: What is the effect of monetary policy implementation on the financial performance of commercial banks in Rwanda?

## 1.2 Objectives of the study

### 1.2.1 General objective

The key objective of the research was to investigate the effect of monetary policy implementation on the performance of commercial bank in Rwanda.

### 1.2.2 Specific objectives

(i) To assess the effect of interest rate on financial performance of Equity Bank Rwanda
(ii) To establish effect of reserve requirement on the financial performance of Equity Bank Rwanda.
(iii) To determine the effect of liquidity management on financial performance of Equity Bank Rwanda

## 1.3 Research Hypotheses

The following null hypothesis was formulated

**$H0_1$**: There is no significant effect between interest rate and financial performance of Equity Bank Rwanda.

**$H0_2$**: There is no significant effect between reserve requirements and financial performance of Equity Bank Rwanda.

**$H0_3$**: There is no significant effect between liquidity management and financial performance of Equity Bank Rwanda.

## 2.1Empirical Review

### 2.1.1 Monetary Policy

Ndubuaku, Ifeanyi, and Chiaka (2017) focused on assessing the impact of monetary policy regimes on the performance of commercial banks, utilizing Descriptive and Ex-post Facto

Research Design. Their findings, drawn from time series data collected from the Central Bank of Nigeria Bulletin, revealed that during the Post SAP Period, the Monetary Policy Rate significantly influenced various aspects of banking activities, including Total Assets Value, Deposit Mobilization, Loans and Advances, and Credit to the Private Sector. They recommended the effective administration of Monetary Policy instruments by policymakers to stimulate desired economic activity in the banking sector, emphasizing the need to minimize political interferences that could distort industry performance.

Bech and Malkhozov (2016) investigated the implementation of negative policy rates by central banks in Europe, highlighting the potential implications for the costs of holding central bank reserves and their transmission to various interest rates. They advised that the efficiency of the bank rate as a tool of monetary policy depended on several factors such as existing banking networks, the interest elasticity of investment demand, and the size and strength of the money market.

Ibekwe (2021) explored the impact of exchange rates on the performance of deposit money banks in Nigeria, discovering that fluctuations in exchange rates adversely affected bank performance, and suggested that increasing deposit interest rates could help attract deposits from the surplus economy. Meshac and Nyamute (2016) studied the effect of monetary policy on the financial performance of commercial banks listed at the NSE, concluding that the cash reserve rate significantly influenced the financial performance of the listed banks, despite the limited sample size of 11 commercial banks.

### 2.1.2 Reserve Requirement

Ajayi and Atanda (2012) investigated the impact of monetary policy instruments on the performance of banks in Nigeria. Adopting the Engle-Granger two-step co-integration approach, they found that the cash reserve ratio had a significant negative effect on banks' performance. Otalu et al. (2014) examined the relationship between monetary policy and commercial banks' performance in Nigeria, emphasizing the role of credit creation. Their study revealed that the cash reserve ratio negatively affected commercial banks' performance. Waweru (2013) analyzed the effect of monetary policy on commercial banks' financial performance in Kenya, discovering that the cash reserve ratio had a significant positive impact.

Mulwa (2015) explored the impact of monetary policy on the financial performance of commercial banks in Kenya, revealing that the cash reserve ratio had a negative and insignificant effect. Ndugbu and Okere (2015) focused on monetary policy's impact on the performance of deposit money banks in Nigeria, finding an insignificant relationship between the cash reserve ratio and performance. MacCarthy (2016) investigated the effect of the cash reserve ratio on the financial performance of commercial banks in Ghana, revealing a significant positive effect.

Rao (2006) concluded that the cash reserve ratio did not significantly affect the profitability of Indian banks. Thuc et al. (2019) and Oganda et al. (2018) arrived at contrasting conclusions regarding the influence of the cash reserve ratio on the financial performance of commercial banks in Kenya. Similarly, Abid & Lodhi (2015) found that reserve requirements had a significant negative relationship with the financial performance of Pakistani banks, signifying that an increase in the cash reserve ratio led to decreased profitability.

### 2.1.3 Liquidity Management

Raheman and Mohamed (2007) examined the factors determining the performance of institutions, focusing on the cash conversion cycle, net trade cycle, and inventory turnover in

days. Their findings emphasized the importance of effective working capital management and financing in boosting profitability.

Dong and Su (2010) highlighted the impact of working capital management, particularly on the cash conversion cycle and the debtor's collection period, revealing a strong negative relationship among these variables. Macaulay (1988) assessed liquidity management risk practices in the United States, reporting the widespread adoption of these practices in financial institutions. The study emphasized the crucial role of effective credit risk management in maximizing an institution's rate of return.

Similarly, Nazir and Afza (2009) discovered a negative relationship between profitability and working capital financing policies, indicating that firms with aggressive policies had lower ROA. Nyanga (2012) conducted an extensive analysis of the impact of various factors on financial performance, uncovering both positive and negative associations with different financial indicators. These studies collectively underscore the significance of effective management practices in enhancing the financial performance of institutions..

### 2.1.4 Interest Rate

Afzal, Raja, Imran, Chhapra, and Saima (2018) aimed to evaluate the impact of interest rate fluctuations on the profitability of banks in Pakistan, using a sample of 20 banks operating in the country. Employing correlation and regression analyses, the study found that deposits with other banks and interest rates had a negative effect on bank profitability, while advances, loans, and investments had a positive influence. Lucas and Anne (2010) investigated the effect of macroeconomic developments on the performance, credit quality, and lending behavior of banks in Kenya, using a dynamic panel data model estimated through the Generalized Method of Moments.

The study recommended that banks continue to pursue risk-sensitive loan pricing policies to mitigate countercyclical behavior during economic upswings or downswings, thereby reducing the risk of supply-driven credit crunch effects. Macharia (2013) explored the effects of the global financial crisis on the financial performance of Kenyan banks offering mortgage finance, discovering a negative relationship between inflation, interest rates, and financial performance, and a positive effect of exchange rates. Otuori (2013) investigated the determinant factors of exchange rates and their effects on the performance of commercial banks in Kenya, highlighting the high correlation between exports, imports, interest rates, inflation, and exchange rates.

Mboka (2013) analyzed the relationship between macroeconomic variables and non-performing loans of commercial banks in Kenya, finding strong correlations between various macroeconomic indicators and non-performing loans. Kiruri and Olkalou (2013) studied the ownership structure's impact on the profitability of 43 banks in Kenya from 2007 to 2011, revealing the effects of ownership concentration, state ownership, foreign ownership, and domestic ownership on bank profitability..

## 2.2 Research Gap

Ndubuaku, Ifeanyi, and Chiaka (2017) focused solely on the impact of Monetary Policy Rate (MPR) in Nigeria, neglecting other crucial monetary tools. Bech, & Malkhozov (2016) explored negative policy rates in Europe but didn't consider liquidity management and exchange rates. Ibekwe (2021) emphasized exchange rates in Nigeria's deposit money banks, overlooking other monetary policy elements.

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Afzal et al. (2018) concentrated on the influence of interest rates on bank performance in Pakistan without considering other factors. Meshack & Nyamute (2016) and Rao (2006) limited their studies to specific monetary tools and small sample sizes in Kenya and India, respectively. Oganda et al. (2018) centered solely on cash reserves in Kenya, and MacCarthy (2016) investigated CRR's impact in Ghana without broadening the scope. Abid & Lodhi (2015) restricted their focus to reserve requirements in Pakistani banks.

This current study, however, bridges these gaps by comprehensively analyzing multiple monetary tools, including interest rates, reserve requirements, and liquidity management, in the context of commercial banks in Rwanda. By considering a wider range of monetary policy elements and their impacts on financial performance, this research provides a more holistic understanding of the dynamics between monetary policy and bank performance, contributing to a more comprehensive and nuanced perspective on the subject.

### 2.3 Conceptual Framework

A conceptual framework can be explained as a combination of concepts and doctrines acquired from related fields of analysis and used to build a successive demonstration. Reichel & Ramey (1987). Conceptual framework, clearly expressed, is an efficient tool which assists a researcher to make meaning of successive outcomes. It is part of the agenda for negotiation to be examined and verified, revised and improved because of investigation Guba& Lincoln, (1989).

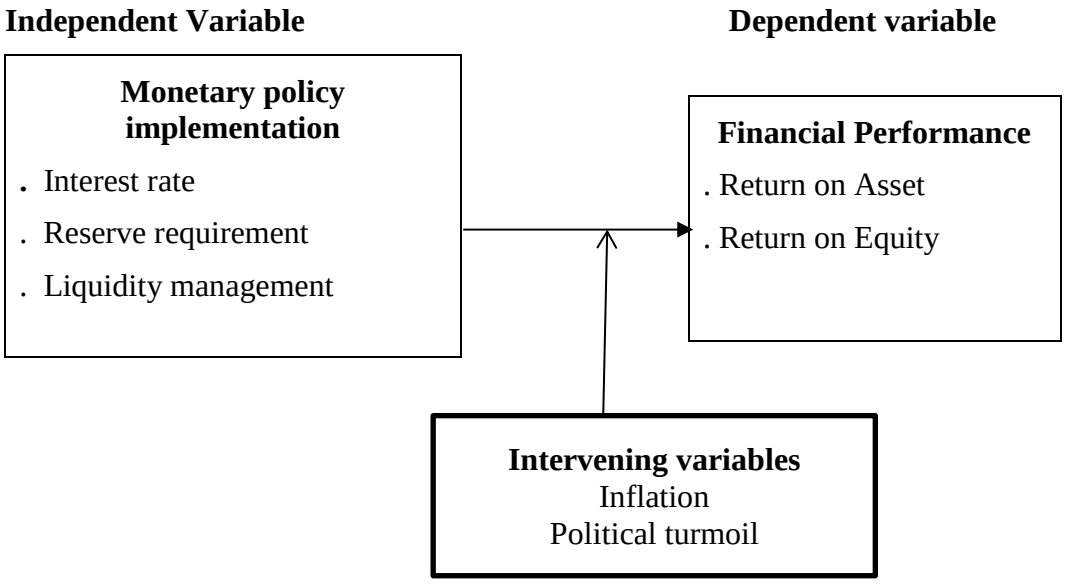


**Figure 2.1: Conceptual framework**

**Source: Researcher developed (2021)**

The conceptual framework assessed the impact of monetary policy, including interest rates, reserve requirements, exchange rates, and liquidity management, on the financial performance of commercial banks, measured through return on assets and return on equity. The anticipated effect suggests that an increase in central bank rates prompts commercial banks to raise their interest rates, deterring local borrowing and thereby affecting their financial performance. Conversely, maintaining reserve requirements and liquidity encourages commercial banks to invest in diverse assets, leading to an increase in return on assets. Additionally, inflation and political turmoil were considered as intervening variables influencing the relationship between monetary policy and financial performance.

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## 3. Materials and Methods

The research design was employed to gather and analyze data aiming to enhance the research's relevance, as per Kothari (2011). The study adopted a descriptive research design to outline the impact of the independent variable, monetary policy, on the dependent variables, the performance of commercial banks in Rwanda. Alvi (2016) characterizes a descriptive research design as a process for describing specific occurrences in the present scenario or associations among various elements. According to Creswell (2013), quantitative research in contrast to qualitative methods operates under the naturalistic paradigm, assuming that reality is not predetermined but is constructed through the participation of research respondents. Qualitative methods were utilized, employing open-ended values, semi-structured or structured interviews, group discussions, and personal observations to understand the views, opinions, attitudes, behaviors, and feelings of individual respondents or groups, as declared by Henning et al. (2004).

In terms of the target population, the study focused on 109 staff members working at Equity Bank's main branch, comprising top management, middle-level managers, and lower-level employees, as sourced from Equity Holding (2021). The sample design involved considering all 109 staff members as the sample, employing the census method suitable for small populations, as recommended by Kothari (2011). The study utilized both probability and non-probability sampling techniques, including stratified sampling to ensure proportional representation across different levels within the bank, following Creswell's (2013) description of stratified sampling.

For data collection, the research instruments included questionnaires, interview guides, and documentary analysis. A Likert scale was used in the questionnaire to capture respondents' agreement levels. The researcher administered the data collection and obtained consent from the sample population, ensuring confidentiality, and adhering to the policies and regulations of Mount Kenya University. In analyzing the data, descriptive and correlation statistics were employed, along with an E-Views software for regression analysis. Ethical considerations were observed throughout the research process, acknowledging the sources of information to avoid plagiarism and obtaining permission from the respondents while ensuring the confidentiality and safety of the data provided.

### 4.1 Presentation of findings

The study has three specific objective what are (1) to assess the effect of *interest rate on financial performance of Equity Bank* Rwanda, (2) to establish effect of reserve requirement on the financial performance of *Equity Bank* Rwanda and (3) to determine the effect of liquidity management on financial performance of Equity Bank Rwanda. In this section all these objectives are presented. However, first the extent of the dependent variable was determined as shown in Table 4.1. Following this the results are presented according to the specific objectives.

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**Table 4.1: Extent of financial performance**

| Statements on financial performance | Strongly Disagree, n(%) | Disagree, n(%) | Neutral, n(%) | Agree, n(%) | Strongly Agree, n(%) | Mean | Std Dev |
|---|---|---|---|---|---|---|---|
| The shareholders' capital is utilized more effectively | 3(3.1) | 10(10.4) | 7(7.3) | 47(49.0) | 29(30.2) | 3.93 | 1.04 |
| Much profit a commercial bank earned compared to the total amount of shareholder equity invested | 0(0.0) | 9(9.4) | 1(1.0) | 31(32.3) | 55(57.3) | 4.38 | 0.91 |
| Resources of the commercial bank are used efficiently to generate the income. | 2(2.1) | 7(7.3) | 13(13.5) | 37(38.5) | 37(38.5) | 4.04 | 1.00 |
| The Return on Assets (ROA) shows the profitability of a commercial bank. | 2(2.1) | 17(17.7) | 9(9.4) | 44(45.8) | 24(25.0) | 3.74 | 1.09 |
| Overall or aggregate or composite mean | | | | | | 4.02 | 0.55 |

**Source: Primary, 2022**

Table 4.1 demonstrates that most respondents had a positive opinion toward the financial performance. More than half of respondents (57.3%) strongly agree that when there is much profit the commercial bank earned compared to the total amount of shareholders' equity invested, there is a well performance of a financial institution. Almost half of respondents (49%) agreed that there is a positive performance of a financial institution when the shareholder's capital is utilized more effectively. Almost half of respondents (45.8 %) agreed that the return on assets (ROA) shows the profitability of a commercial bank. However, the proportion of respondents who disagreed with items was very low. The aggregate mean is 4.02, respondents have a positive opinion for all items for the financial performance. The standard deviation shows that all data are gathered around the mean.

In the literature it is indicated that the Return on Asset indicates the efficiency of the management of a company in generating net income from all the resources of the institution (Khrawish, 2011). Wen (2010), stated that a higher ROA shows that the company is more efficient in using its resources.

It is further explained by Khrawish (2011) that ROE is the ratio of Net Income after Taxes divided by Total Equity Capital. It represents the rate of return earned on the funds invested in the bank by its stockholders. ROE reflects how effectively a bank management is using shareholders‟ funds. Thus, it can be deduced from the above statement that the better the ROE the more effective the management in utilizing the shareholders capital.

### 4.1.1 Effect of *interest rate on financial performance of Equity Bank* Rwanda

#### 4.1.1.1 Descriptive statistics analysis of *interest rate on financial performance*

The statements measuring the notion of interest rates were given to the respondents to score. A rating of strongly disagree (1), disagree (2), Neutral (3), agree (4), and strongly agree was utilized (5). In Table 4.2, the descriptive results are displayed.

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**Table 4.2: Descriptive statistics analysis of interest rate on financial performance**

| Statements on interest rate | Strongly Disagree, n(%) | Disagree, n(%) | Neutral, n(%) | Agree, n(%) | Strongly Agree, n(%) | Mean | Std Dev |
|---|---|---|---|---|---|---|---|
| Interest rate affect foreign exchange gain/loss of the Bank | 0(0.0) | 3(3.1) | 3(3.1) | 62(64.6) | 28(29.2) | 4.20 | 0.64 |
| Interest rate is negatively affecting advances and loans. | 0(0.0) | 7(7.3) | 8(8.3) | 41(42.7) | 40(41.7) | 4.19 | 0.87 |
| Interest rate is negatively affecting the profitability of Banks | 8(8.3) | 13(13.5) | 6(6.3) | 48(50.0) | 21(21.9) | 3.64 | 1.21 |
| The interest on a credit is determined through creation of rate at which amount is borrowed. | 3(3.1) | 4(4.2) | 15(15.6) | 42(43.8) | 32(33.3) | 4.00 | 0.97 |
| National Bank lending rate affects the actual availability and the cost of the credit | 0(0.0) | 11(11.5) | 10(10.4) | 41(42.7) | 34(35.4) | 4.02 | 0.96 |
| Overall or aggregate or composite mean | | | | | | 4.01 | 0.61 |

**Source: Primary, 2022**

According to Table 4.2 most of respondents had a positive opinion toward the effect of interest rates and financial performance. Most of respondents (64.6%) agreed that the interest rate. affect foreign exchange of the bank. Half of respondents (50%) agree that the interest rate is negatively affecting the profitability of the bank. Almost a half of respondents (41.7%) are strongly in agreement that Interest rate is negatively affecting advances and loans. The aggregate mean is 4.01, respondents have a positive opinion for all items for the effect of interest rate on the performance. The standard deviation shows that all data are gathered around the mean.

#### 4.1.1.2 Regression analysis for the effect of interest rate

The first objective of the study was to ascertain the influence of interest rates on financial performance. To investigate how interest rates affect financial performance, a straightforward linear regression was used. The model summary findings are shown in Table 4.3.

**Table 4.3: Model summary for interest rate on financial performance**

| R | R Square | Adjusted R Square | Standard error of the Estimate | Durbin-Watson |
|---|---|---|---|---|
| 0.689 | 0.474 | 0.469 | 0.403 | 0.964 |
| Predictors: Interest rate<br>Dependent Variable: Financial performance | | | | |

Table 4.3 presents R and R square values for coefficient of correlation and extent of variation respectively. The R value of 0.689 indicates a positive association and this implies a relatively moderate level of correlation between interest rates and financial performance. The R-square value of 0.474 explains that 47.4% of the financial performance is contributed by

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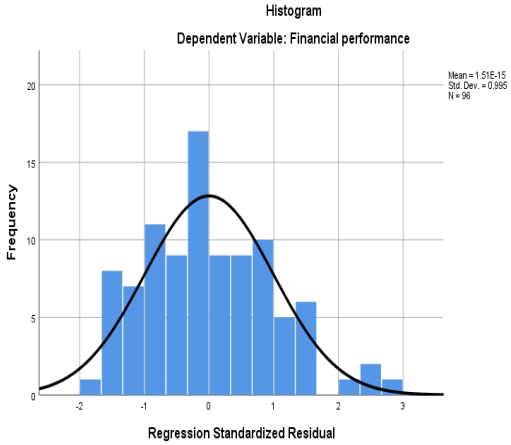
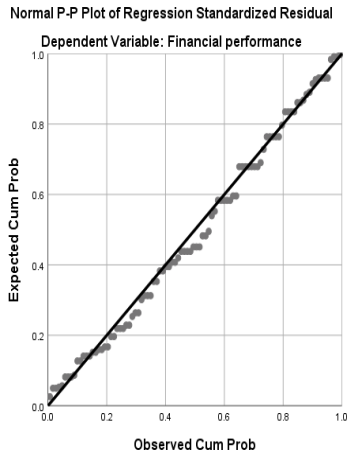
interest rate. The remaining 52.6% of the financial performance variation could be explained by factors other than interest rate. Moreover, to validate the regression analysis, histogram and P-P plot presented in Figure 4.1 below shows reasonable normality of data.




| | Sum of Squares | df | Mean Square | F | P value |
|---|---|---|---|---|---|
| Regression | 13.79 | 1 | 13.79 | 84.755 | <0.001 |
| Residual | 15.294 | 94 | 0.163 | | |
| Total | 29.083 | 95 | | | |
| Dependent Variable: Financial performance<br>Predictors: Interest rate | | | | | |

Table 4.3 demonstrates analysis of variance (ANOVA) test between interest rate and financial performance. The F statistic value was 84.755 and ρ-value of less than 0.001. This implies that the regression model predicts significantly the dependent variable (financial performance). This means that there is a significant relationship between interest rate and financial performance so the null hypothesis for this is rejected.

**Table 4.4: Regression coefficient for interest rate on financial performance**

| Model | Unstandardised Coefficients | | Standardized Coefficients | t | p value |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 2.056 | 0.217 | | 9.458 | <0.001 |
| Interest rate | 0.513 | 0.056 | 0.689 | 9.206 | <0.001 |
| Dependent Variable: Financial performance | | | | | |

Table 4.4 above shows the statistical coefficients of interest rate on financial performance with the value of standardized coefficient (Beta) of 0.689 (t =9.206; ρ-value <0.001), which implies that interest rate is significantly predicting the financial performance. The linear regression model equation is presented as follows.

$FP = \beta 0 + \beta 1IR,$

Where,

FP = Financial Performance.

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β0 = Constant.

β1 = Coefficient of Interest Rate.

IR = Interest Rate.

Therefore, FP = 2.056 + 0.531IR. From this equation, the model predicts that when interest rate is zero, the financial performance is 2.056. It also predicts that for a one unit increase in interest rate, financial performance increases by 0.531 holding the other predictors fixed.

### 4.2.1 Effect of reserve requirement on the financial performance of *Equity Bank* Rwanda

#### 4.2.1.1 Descriptive statistics analysis of reserve requirement on the financial performance

The statements measuring the notion of reserve requirement were given to the respondents to score. A rating of strongly disagree (1), disagree (2), disagree (3), agree (4), and strongly agree was utilized (5). In Table 4.5, the descriptive results are displayed.

**Table 4.5: Descriptive statistics analysis of reserve requirement *on financial performance***

| Statements on reserve requirement | Strongly Disagree, n(%) | Disagree, n(%) | Neutral, n(%) | Agree, n(%) | Strongly Agree, n(%) | Mean | Std Dev |
|---|---|---|---|---|---|---|---|
| If cash reserve ratio is increased banks will find themselves with less money at their disposal to advance loans. | 0(0.0) | 26(27.1) | 0(0.0) | 58(60.4) | 12(12.5) | 3.58 | 1.02 |
| Reserve requirement has a significant effect on performance of banks. | 0(0.0) | 19(19.8) | 4(4.2) | 61(63.5) | 12(12.5) | 3.69 | 0.93 |
| Reserve requirement improves the ability of the bank to increase credit. | 3(3.1) | 7(7.3) | 4(4.2) | 37(38.5) | 45(46.9) | 4.19 | 1.03 |
| A higher cash reserve ratio leads to lower bank performance. | 0(0.0) | 31(32.3) | 9(9.4) | 32(33.3) | 24(25.0) | 3.51 | 1.19 |
| Overall or aggregate or composite mean | | | | | | 3.74 | 0.54 |

Table 4.5 indicates that most of respondents (63.5%) agreed that reserve requirement has a significant effect on performance of banks. It is also noted that more than half of respondents (60.4 %) agreed that if the cash reserve ratio is increased banks will find themselves with less money at their disposal to advance loans. Almost half of respondents (46.9%) agreed that reserve requirement improves the ability of the bank to increase credit. 33.3% of respondents agreed that higher cash reserve ratio leads to lower bank performance and 32.3% disagreed with that statement.

#### 4.2.2.2 Regression analysis for the effect of reserve requirement

The second objective of the study was to ascertain the influence of reserve requirement on financial performance. To investigate how reserve requirements affect financial performance, linear regression was used. The model summary findings are shown in Table 4.7.

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**Table 4.7: Model summary for reserve requirement on financial performance**

| R | R Square | Adjusted R Square | Standard error of the estimate | Durbin-Watson |
|---|---|---|---|---|
| 0.488 | 0.238 | 0.23 | 0.48547 | 0.395 |

Predictors: Reserve requirement
Dependent Variable: Financial performance

Table 4.7 presents R and R square values for coefficient of correlation and extent of variation respectively. The R value of 0.488 indicates a positive association and this implies a relatively moderate level of correlation between reserve requirement and financial performance. The R-square value of 0.238 explains that 23.8% of the financial performance is contributed by reserve requirement. The remaining 76.2% of the financial performance variation could be explained by other factors other than reserve requirement. Moreover, to validate the regression analysis, histogram and P-P plot presented in Figure 4.2. Below shows reasonable normality of data.

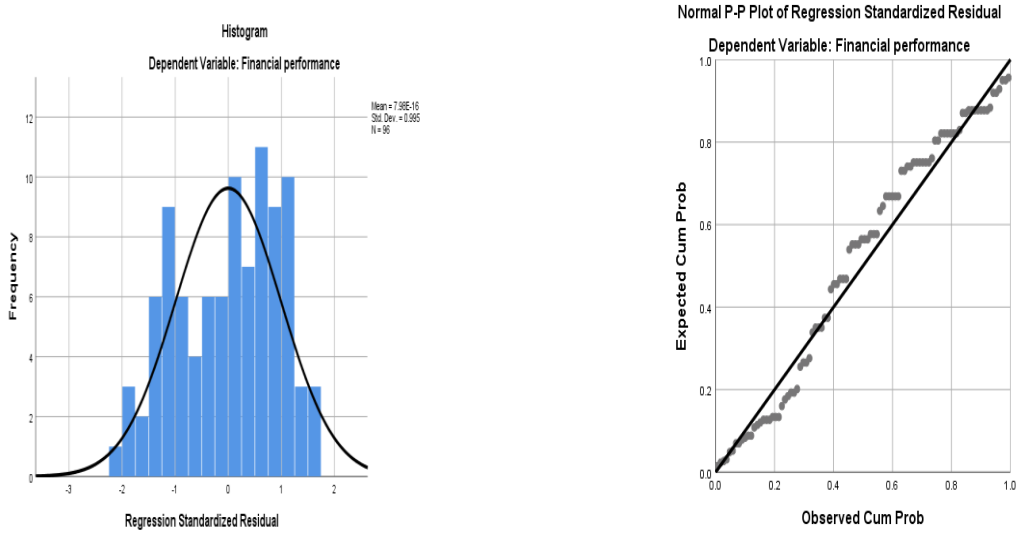


**Figure 4.2: Histogram and P-P plot for reserve requirement and financial performance**

**Table 4.8: ANOVA Test for reserve requirement on financial performance**

| Model | Sum of Squares | df | Mean Square | F | p value |
|---|---|---|---|---|---|
| Regression | 6.93 | 1 | 6.93 | 29.403 | <0.001 |
| Residual | 22.154 | 94 | 0.236 | | |
| Total | 29.083 | 95 | | | |

Dependent Variable: Financial performance
Predictors: Reserve requirement

**Source:** Primary data (2023)

Referring to the Table 4.8 it demonstrates analysis of variance (ANOVA) test and shows a positive significant relationship between reserve requirement and financial performance ($F = 29.4$; $\rho$-value $< 0.001$). This confirms that reserve requirement significantly affects financial performance.

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**Table 4.9: Regression coefficient for reserve requirement on financial performance**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | p value |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 2.294 | 0.322 | | 7.117 | <0.001 |
| Reserve requirement | 0.469 | 0.087 | 0.488 | 5.422 | <0.001 |
| Dependent Variable: Financial performance | | | | | |

As indicated in Table 4.9 above, the statistical coefficients of reserve requirement showed that the value of standardized coefficient (Beta) was 0.488 (t =5.422; ρ-value <0.001).

This implies that reserve requirement is significantly predicting financial performance.

The linear regression model equation is presented as follows.

FP= β0 + β1RR,

Where, FP = Financial Performance.

β0 = Constant.

β1 = Coefficient of Reserve Requirement

RR = Reserve Requirement.

Therefore, FP = 2.294 + 0.469RR. From this equation, the model predicts that when reserve requirement is zero, the financial performance is 2.294. It also predicts that for a one unit increase in reserve requirement, financial performance increases by 0.469 holding the other predictors fixed.

In the literature it is mentioned that reserve requirement is a monetary policy tool for controlling the economy. This preserves liquidity of commercial banks. A decrease in the Cash Reserve Requirement relieves liquidity, hence improving the ability of commercial banks to increase credit. Liquidity is tightened when the Cash Reserve Requirement is increased, and this may depress demand-driven inflationary pressures (Central Bank of Kenya, 2014).

### 4.2.3 Effect of liquidity management on financial performance of Equity Bank Rwanda.

#### 4.2.3.1 Descriptive statistics analysis of liquidity management on financial performance

Statements measuring the notion of liquidity management were given to the respondents to score. A rating of strongly disagree (1), disagree (2), Neutral (3), agree (4), and strongly agree was utilized (5). In Table 4.10, the descriptive results are displayed.

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**Table 4.10: Descriptive statistics analysis of liquidity management on financial performance**

| Statements on liquidity management | Strongly Disagree, n(%) | Disagree, n(%) | Neutral, n(%) | Agree, n(%) | Strongly Agree, n(%) | Mean | Std Dev |
|---|---|---|---|---|---|---|---|
| Liquidity level influence positively performance of banks. | 0(0.0) | 5(5.2) | 10(10.4) | 70(72.9) | 11(11.5) | 3.91 | 0.65 |
| Liquidity management have a positive impact on Return on Equity. | 0(0.0) | 2(2.1) | 16(16.7) | 58(60.4) | 20(20.8) | 4.00 | 0.68 |
| Liquidity management of bank is its productivity. | 0(0.0) | 11(11.5) | 20(20.8) | 26(27.1) | 39(40.6) | 3.97 | 1.04 |
| Overall or aggregate or composite mean | | | | | | 3.96 | 0.52 |

Table 4.10 demonstrates that most respondents had a positive opinion toward the effect of liquidity management and financial performance. Most of respondents (72.9 %) agreed that Liquidity level influence positively performance of banks. More than half of respondents (60.4 %) agreed that Liquidity management has a positive impact on Return on Equity. 40.6% agreed that Liquidity management of bank is its productivity. However, the proportion of respondents who disagreed with items was very low. The aggregate mean is 3.96, respondents have a positive opinion for all items for the liquidity management. The standard deviation 0.52 shows that all data are gathered around the mean.

### 4.2.3.2 Regression analysis for the effect of liquidity management

The third objective of the study was to ascertain the influence of liquidity management on financial performance. To investigate how liquidity management, affect financial performance, linear regression was used. The model summary findings are shown in Table 4.11.

**Table 4.11: Model summary for liquidity management on financial performance**

| R | R Square | Adjusted R Square | Standard error of the estimate | Durbin-Watson |
|---|---|---|---|---|
| 0.557 | 0.31 | 0.303 | 0.462 | 0.401 |

Predictors: Liquidity management
Dependent Variable: Financial performance

Table 4.11 presents R and R square values for coefficient of correlation and extent of variation respectively for peers counselling of community policing on security enhancement. The R value of 0.557 indicates a positive association and this implies a moderate level of correlation between liquidity management and financial management. The R-square value of 0.31 explains that 31 % of the financial performance is contributed by liquidity management. The remaining 69 % of the financial management could be explained by other factors other than liquidity management. Moreover, to validate the regression analysis, histogram and P-P plot presented in Figure 4.3 below show reasonable normality of data.

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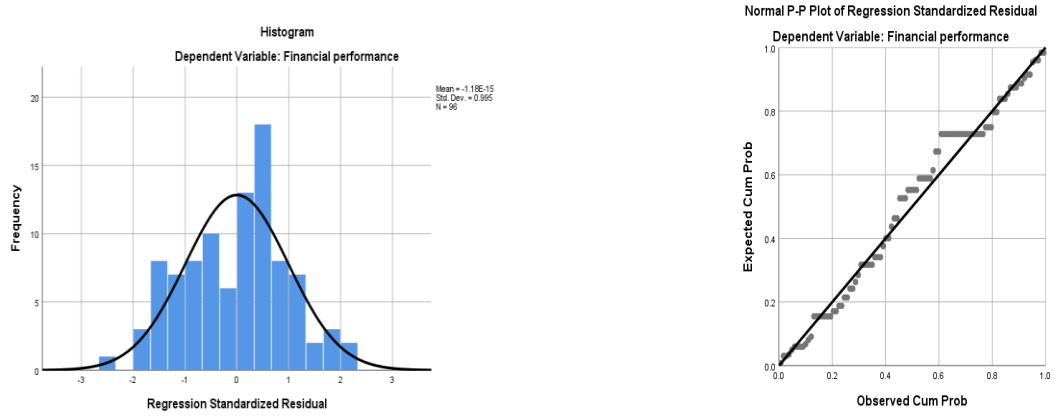


**Figure 4.3: Histogram and P-P plot for liquidity management and financial performance**

**Table 4.12: ANOVA Test for liquidity management on financial performance**

| Model | Sum of Squares | df | Mean Square | F | p value |
|---|---|---|---|---|---|
| Regression | 9.016 | 1 | 9.016 | 42.23 | <0.001 |
| Residual | 20.068 | 94 | 0.213 | | |
| Total | 29.083 | 95 | | | |
| Dependent Variable: Financial performance<br>Predictors: (Constant), Liquidity management | | | | | |

Referring on Table 4.12 it demonstrates analysis of variance (ANOVA) test and shows a positive significant relationship between liquidity management and financial performance ($F = 42.23$; $\rho$ value $< 0.001$). This confirms that liquidity management significantly affects financial performance.

**Table 4.13: Regression coefficient for liquidity management on financial performance**

| Model | Unstandardised Coefficients | | Standardized Coefficients | t | p value |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 1.922 | 0.326 | | 5.886 | <0.001 |
| Liquidity management | 0.53 | 0.082 | 0.557 | 6.498 | <0.001 |
| Dependent Variable: Financial performance | | | | | |

As indicated in Table 4.13 above, the statistical coefficients of liquidity management showed that the value of standardized coefficient (Beta) was 0.557 ($t = 6.498$; $\rho$ value $<0.001$). This implies that liquidity management is significant predicting financial performance.

The linear regression model equation is presented as follows.

$FP = \beta 0 + \beta 1LM$,

Where, FP = financial performance.

$\beta 0$ = Constant.

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β1 = Coefficient of liquidity management.

LM = Liquidity management.

Therefore, FP = 1.922 + 0.53LM. From this equation, the model predicts that when liquidity management is zero, the financial management is 1.922. It also predicts that for a one unit increase in liquidity management, financial management increases by 0.53 holding the other predictors fixed.

The literature indicates that the National Bank withdraws liquidity from the commercial banks by selling government securities. The same objective is achieved when the T-bills rate is increased to trigger banks to purchase government securities. Banks that trade in T-bills during such times improve their profitability (Ekpung *et al.,* 2015). This means that there is an effect of liquidity management on the profitability of a financial institution, and this also affects the performance of that financial institution.

#### 4.2.4 Correlation analysis result

The relationship between financial performance, interest rate, reserve requirement, and liquidity management were investigated using a correlation analysis employing the Pearson correlation coefficient and p value (Table 4.17).

**Table 4.14: Correlation matrix**

| | Interest rate | Reserve requirement | Liquidity management | Financial performance |
|---|---|---|---|---|
| **Interest rate** | 1 | | | |
| **Reserve requirement** | 0.355** | 1 | | |
| **Liquidity management** | 0.410** | 0.582** | 1 | |
| **Financial performance** | 0.689** | 0.488** | 0.557** | 1 |

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

There was a positive significant linear relationship between the study variables. Multi-collinearity test which is used to measure the extent of correlation among the independent variables was tested to verify the regression analysis. It exists if the correlation value is beyond 0.90 among the independent variables and affects the multiple regressions result to be unreliable. According to this study, all correlation values below 0.7 and are greater than the minimum acceptable of 0.3 with significant relationship (Table 4.14) which indicates that the estimate of the regression analysis will not be affected.

#### 4.2.5 Multiple regression analysis

To evaluate the combined impact of the predictor variables (interest rates, reserve requirement and liquidity management), multiple regression models were utilized (security enhancement). The model summary findings are shown in Table 4.18.

**Table 4.15: Model summary for predictors of financial performance**

| Model | R | R Square | Adjusted R Square | Standard error of the estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | 0.689[a] | 0.474 | 0.469 | 0.40336 | |
| 2 | 0.752[b] | 0.565 | 0.555 | 0.3689 | 0.837 |

[a] Predictors: (Constant), Interest rate

[b] Predictors: (Constant), Interest rate, Liquidity management

Dependent Variable: Financial performance

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As indicated in Table 4.15 interest rate come out strongly significant in first model and explained 47.4% ($R^2$=0.474) of the changes in the financial performance. Liquidity management was added in the second model which led to 56.5% ($R^2$=0.565)

Table 4.18 above also shows that there is autocorrelation, or the residuals are correlated as the Durbin Watson is 0.837 which is not close to 2.0

**Table 4.16: ANOVA test for predictors of financial performance**

| Model | | Sum of Squares | df | Mean Square | F | p value |
|---|---|---|---|---|---|---|
| 1 | Regression | 13.79 | 1 | 13.79 | 84.755 | <0.001[c] |
| | Residual | 15.294 | 94 | 0.163 | | |
| | Total | 29.083 | 95 | | | |
| 2 | Regression | 16.427 | 2 | 8.214 | 60.355 | <.001[b] |
| | Residual | 12.656 | 93 | 0.136 | | |
| | Total | 29.083 | 95 | | | |

Dependent Variable: Financial performance
[a] Predictors: (Constant), Interest rate
[b] Predictors: (Constant), Interest rate, Liquidity management

Table 4.16 displays the analysis of variance (ANOVA) test for the model. It shows that a positive significant relationship between the different components of monitory policy (Interest rate, Liquidity management) and financial performance with each component of ρ-value less than 0.001.

**Table 4.17: Regression coefficients for predictors of financial performance**

| Model | | Unstandardised Coefficients | | Standardized Coefficients | t | p value |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.056 | 0.217 | | 9.458 | <0.001 |
| | Interest rate | 0.513 | 0.056 | 0.689 | 9.206 | <0.001 |
| 2 | (Constant) | 1.197 | 0.279 | | 4.298 | <0.001 |
| | Interest rate | 0.412 | 0.056 | 0.553 | 7.38 | <0.001 |
| | Liquidity management | 0.314 | 0.071 | 0.33 | 4.402 | <0.001 |

According to Table 4.17 it is indicated that, the standardized coefficient (Beta) for interest rate and liquidity management are 0.55 and 0.33 respectively, which are statistically significant at probability value less than 0.001. The linear regression model equation is presented as follows.

$Y = \beta 0 + \beta 1X1 + \beta 2X2$

Where

Y=Financial performance

β0= constant

β = Coefficients estimated

X1= Interest rate

X2=Liquidity management

Fixing in the regression equation

Y=1.197+0.553X1+0.33X2

The above equation indicates that when all the independent variables are zero, the financial performance will be 1.197 when interest rate increase by one unit, the financial performance will increase by 0.55. When the liquidity management increase by one unit, the financial performance will increase by 0.33 holding the other predictors fixed.

### 5.1 Conclusion

The study concluded that Interest rate influences the financial performance of commercial bank in Rwanda because the linear regression model equation predicts that for one unit increase of interest rate, the financial performance increases by 0.531 holding the other predictors fixed. Reserve requirement also influences financial performance of commercial bank in Rwanda because for one unit increase the financial performance increases by 0.469 holding the other predictors fixed. It also noted that the liquidity management influences the financial performance of commercial bank in Rwanda because one unit of its increase the financial performance increases by 0.33 holding the other predictors fixed.

Considering that interest rate, reserve requirement and liquidity management are some determinants of monetary policy, and our study was to investigate the effect of monetary policy implementation on the performance of commercial bank in Rwanda; it is noted that monetary policy has an effect on the performance of commercial bank in Rwanda.

### 5.3 Recommendations

The study recommends that commercial banks prioritize internal factors such as interest rates, liquidity management, and reserve requirements to improve their financial performance. It suggests implementing expansionary monetary policy by reducing the Reserve Requirement, enabling banks to hold more cash and increase lending to stimulate economic growth. Furthermore, lowering the National Bank rate could reduce the cost of credit, allowing banks to create more credit and achieve better returns. Conversely, an increase in these rates may limit banks' lending capacity, leading to decreased profitability.

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