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CAMEL Approach and Financial Sector Sustainability of Commercial Banks in Rwanda: A Case of Bank of Kigali, Rwanda

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Abstract

The study analyzed the CAMEL approach and financial sector sustainability of commercial banks in Rwanda, with data collection at the Bank of Kigali (BK). The specific objectives were to find out the effects of capital adequacy on the financial sustainability of Bank of Kigali; to examine the effects of asset quality on the financial sustainability of Bank of Kigali; to evaluate the effects of management efficiency on the financial sustainability of Bank of Kigali; to analyze the effects of Earnings sufficiency on the financial sustainability of Bank of Kigali, and to evaluate the effects of liquidity on the financial sustainability of Bank of Kigali. The qualitative and descriptive approaches were applied in this study with linear regression showing the relationship between two variables using SPSS IBM 22.0 version. The target population of this study was 51 employees from BK headquarters, and 51 respondents are the sample size. Sampling procedures were used is purposive sampling procedure for selecting participants of this study. The questionnaire and interview guide, documentary techniques were used by the researcher to obtain the information for this study. Descriptive statistical methods and linear regression analysis test was used in the analysis of this study. Findings indicated that there is a strong correlation between capital adequacy and financial sector sustainability as Pearson correlation is 0.784** with the p-value of 0.000, which is less than both standard significance levels of 0.05 and 0.01. The results show that there is a strong correlation between asset quality and financial sector sustainability as Pearson correlation is .799**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. The results show that there is a positive and very strong correlation between management efficiency and financial sector sustainability of BK as the Pearson correlation is .891**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. The results show that there is a strong correlation between earnings sufficiency and financial sector sustainability of BK as the Pearson correlation is .572**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. Findings show that there is a strong correlation between liquidity and

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financial sector sustainability of BK as Pearson correlation was 0.616**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. Findings revealed that the p-value is 0.000 which is less than both standard significance levels of 0.05 and 0.01 as it is an indicator of the existence of a significant relationship between the CAMEL approach and financial sector sustainability of BK since, as Pearson correlation value was 0.854** which is a positive and very strong correlation between two variables (CAMEL approach and financial sector sustainability of BK). Based on the findings obtained above, the study concludes that there is a significant and positive relationship between the CAMEL approach and the financial sector sustainability of BK, Rwanda. As a recommendation, Bank management should improve on the management of bank assets and liabilities, especially on the quality of assets portfolio and deposit liabilities to improve on the achievement of corporate objectives.

Keywords: *CAMEL approach, Financial Sector, Sustainability, Commercial Banks, Rwanda*

1. Introduction

According to Olweny and Shipho, (2011) effects of bank factors including capital adequacy, asset quality, liquidity, operational cost efficiency, and income diversification affect the profitability of commercial banks. By the multiple linear regressions method, Olweny and Shipho's (2011) analysis exposed that all the bank-specific factors took a statistically substantial impact on profitability, while none of the market factors had an important impact. Moosa (2018) investigated the effect of liquidity risk and credit risk on the financial sustainability banking industry in Iran using a multiple regression approach. The results indicate the negative and significant impact of these two types of risks on financial sustainability in most reviewed decimals.

According to the Bank of Kigali Report, (2020) total interest income rose by 24.3% y-o-y to FRw 107.8 billion driven by 27.6% loan book growth. Net loan grew by 26.2% to FRw 821.6 billion y-o-y, while investments in other securities increased by 65.2% y-o-y; mostly diversifying any excess liquidity into government securities. Total interest expenses rose by 57.7% y-o-y to FRw 25.2 billion in line with the growth in Customer deposits to FRw 773.3 billion. Overall, the Net Interest Margin was maintained at 10.9% in line with Ye 2019. Non-interest income of FRw 22.3 billion increased by 6.0% y-o-y supported by strong growth from the insurance subsidiary.

Net impairment on loans and advances rose by 46.5% y-o-y to FRw 27.5 billion, impacted significantly by COVID-19 assessment of the significant increase in credit risk, particularly for the large exposures and SMEs clients. Non-performing loans increased to FRw 55.9 billion from FRw 45.6 billion in December 2019, while the NPLs ratio improve slightly to 5.5% from 5.7% at YE 2019. The cost of risk increased to 4.5% from 2.7% in FY19. The percentage of loans on the Covid-related moratorium period reduced to 15% from 43% restructured facilities. Excluding provisions, operating expenses decreased by 0.9% y-o-y to FRw 35.0 billion due to cost management and operating efficiency. Cost to income ratio was reduced to 34.0% from 42.2% in FY19. Profit after tax (Net Income) rose by 10.5% y-o-y to FRw 27.6 billion.

As of 30 September 2020, the Group's Total Assets stood at Fw 1,205 billion; up 27.6% y-o-y. Net Loans/Total Assets ratio stood 68.2% down from 69.0% in the same period last year. Total dividend payable balance increased to FRw 23.0 billion; including FRw 13 billion

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approved dividend from last year's profits which is payable in 2021 as per Regulatory guidance. Shareholders' equity stood at FRw 238.8 billion, up 12.2% y-o-y. Bank of Kigali Plc as the largest subsidiary in the Group, is adequately capitalized with a core capital to risk-weighted assets ratio of 19.6%; 6.1% above the statutory requirement. The bank's liquidity coverage ratio and net stable funding ratio increased to 163% and 150.4% respectively from 116.6% and 117.1% at YE 2019.

According to the above information followed by the existing scarcity of the studies in Rwanda related to the effect of the CAMEL approach and financial sector sustainability of commercial banks in Rwanda, this study pursues to fill the knowledge gap by answering the questions of how capital adequacy, asset quality, management capability, earnings efficiency and liquidity of commercial banks in Rwanda could affect financial sustainability with a specific focus on Bank of Kigali, Rwanda.

1.1 Objectives of the study

1.1.1 General objective

The main objective of this study was to investigate the CAMEL approach and financial sector sustainability of commercial banks in Rwanda.

1.1.2 Specific Objectives

This study was guided by the following objectives of the study:

(i) To find out the effects of capital adequacy on the financial sustainability of the Bank of Kigali
(ii) To examine the effects of asset quality on the financial sustainability of the Bank of Kigali
(iii) To evaluate the effects of management efficiency on the financial sustainability of the Bank of Kigali
(iv) To analyze the effects of Earnings sufficiency on the financial sustainability of the Bank of Kigali
(v) To evaluate the effects of Liquidity on the financial sustainability of the Bank of Kigali

1.4 Research Hypotheses

The study verified five null hypotheses:

Ho1: There are no significant effects of capital adequacy on the financial sustainability of the Bank of Kigali

Ho2: There are no significant effects of asset quality on the financial sustainability of the Bank of Kigali

Ho3: There are no significant effects of management efficiency on the financial sustainability of the Bank of Kigali

Ho4: There are no significant effects of Earnings sufficiency on the financial sustainability of the Bank of Kigali

Ho5: There are no significant effects of Liquidity on the financial sustainability of the Bank of Kigali

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2.1 Empirical Literature Review

2.1.1 Effect of Capital Adequacy on financial sustainability

Mwongeli and Ariemba (2018) studied the effect of capital structure on the financial sustainability of deposit-Taking Microfinance Institutions in Kenya. The purpose of this research was to empirically investigate the effect of capital structure on the financial sustainability of deposit-taking microfinance institutions (DTMs) in Kenya. The specific objectives were to determine the impact of debt on the financial sustainability of DTMs in Kenya, to assess the influence of retained earnings on the financial sustainability of DTMs in Kenya, to examine the effect of ordinary share capital on the financial sustainability of MFIs in Kenya, and to investigate the impact of preferred share capital on the financial sustainability of DTMs in Kenya. The target population of the study was all the 13 DTMs in Kenya registered with the Central Bank of Kenya. Secondary data was collected on all the DTMs financial data from the Central Bank of Kenya reports. Data were analyzed using a multiple regression model using SPSS and R as the data analysis tool. Based on the findings 76.9% of the DTMs did not earn enough revenue to cover the actual financing direct costs, which include the total operating costs, loan loss provisions, and the financing costs but excluding the cost of capital. The analysis of variance (ANOVA) table indicated that the predictor variables influenced the predictor variable significantly at a 5% significance level. Among the four variables; debt and retained earnings were statistically significant variables at a 5% significance level with 1.265 and 1.630 coefficient respectfully. Whereby the financial sustainability change by 1.265 and 1.630 for every unit change of debt or retained earnings respectfully. Therefore, for the deposit-taking microfinance institutions to remain afloat in the lending business, they should utilize any borrowing opportunity, plow back profits to the business, and low proportion of preferred share capital. Deposit-taking microfinance institutions should avoid the usage of ordinary share capital as it negatively affected financial sustainability.

When examining the determinants of banking performance, certain factors stand out. They are bank-specific and within the scope of banks to influence using policy and decisions. These factors will differ from bank to bank and thus are suitable when conducting a comparative study of various commercial banks with regards to performance. They comprise capital adequacy, asset quality, management efficiency, earnings, and liquidity. The CAMEL rating system is extensively used, particularly by supervisory bodies in the evaluation and ranking of bank safety and soundness (Altan et al., 2014). It includes studying different areas of a bank based on various sources of information including financial statements, budgets, financing sources, and others. CAMEL remains an acronym for the five bank-specific factors named above which will be analyzed in detail about banking performance (Nimalathasan, 2008).

Obamuyi (2013) initiates a positive and significant relationship between profitability and capitalization of banks in Nigeria. The banks with extra capital can admission funds economically; improve their ability to undertake risk and capitalize on better quality assets which prove favorable with regards to liquidity and loaning and thus productivity of the banks. The positive relationship reproduces the statements that originate in the estimated bankruptcy costs hypothesis and the gesturing hypothesis. Some writers exposed that capital adequacy takes a negative impact on bank acts in their studies.

For example, the study on banks in Uganda by Frederick (2014) established an undesirable relationship and clarified that the banks may have been evading potentially risky but profitable activities in an approach believed too practical. This displays that capital regulatory

obligation can have adverse implications on bank performance if not adjusted with increased investments. Swarnapali (2014) originated capital has a damaging impact on bank profitability.

Kabir and Dey (2012) mention net investment margin (NIM), return on assets (ROA), diversification ratio, net profit margin, earnings per share (EPS), and return on capital employed (ROCE). NIM, ROA, and ROE remain the greatest commonly used ratios in measuring bank profitability in banking literature. Ratios are not affected by variations in general price levels making them extra suitable to use than tangible values of profit when measuring bank profitability. Profit expansion remains the main objective for most organizations, including commercial banks, and is often observed as an indicator of sound performance, Nimalathasan (2008) claimed that earnings remain a reflection of a bank's ability to endure leading business in the present and future. Thus, the earnings or profits element in the CAMEL rating system observes the quality of a bank's profitability as well as the sustainability of profits and potential for future growth (Altan *et al*., 2014).

2.1.2 Effect of asset quality on financial sustainability

According to Muhman and Hashim (2015), loan loss provisions declined bank performance that rises assets funded by loans leads to an increase in bank profitability, thus concluding that asset quality has a significant association with the performance of banks in Malaysia. Sangmi and Nazir (2010) find that asset quality has an important impact on the performance of banks in India, and decided that a low ratio of NPL to total loans is related to a financially sound bank portfolio. Ongore and Kusa (2013) found that the NPL ratio has a robust negative relationship with bank profitability showing that poor asset quality was associated with poor commercial bank performance in Kenya. Kosmidou (2008) discovered that poor asset quality presented an undesirable effect on bank profitability as it pulls down interest income revenue and enhances provision cost.

Onuonga (2014) said that certain investigators used the ratio of loans to assets to measure credit risk. In this regard, the higher the ratio, the higher the number of loans decided which upsurges chances of default or credit risk. It is clarified that a bank's lending rate remains ordinarily higher than its deposit rate and thus when more payments are distorted into loans, a larger interest margin and profits are expected. Banks usually grow their margins on interest on loans to make up for the higher credit risk expected, which in turn surges the NIM and bank profits (Onuonga, 2014).

Flamini *et al*., (2009) expected a positive association between credit risk and bank earnings, based on standard advantage pricing influences. Sufian and Kamarudin (2012) astoundingly initiate a destructive but momentous association between economic growth and bank performance which remains negative and significant. He explains that while demand for financial services surges with a growing economy and as societies developed wealthier, the high volatility in economic growth in Bangladesh for the relevant period of study might have produced the lower demand for financial facilities and augmented loan avoidances experienced.

2.1.3 Effect of management efficiency on financial sustainability

Management efficiency, although it is often expressed qualitatively, can be measured using financial ratios as a proxy for factors such as efficient use of resources, income maximization, reduced operating costs (Sangmi & Nazir, 2010). The operating profit to total income (revenue) ratio remains a popular ratio, conferring to Mohiuddin (2014) displays income

generation by management as well as the ratio of functioning expenses to a total asset which probably has an undesirable impression on bank success.

Sufian and Kamarudin (2012) clarify the ratio that can deliver details about the non-interest expenses of a bank such as the number of wages and salaries, cost of running branch and office facilities. Reduced expenses show efficient management and tend to improve the profitability of commercial banks. Works deliver other ratios counting credit to deposit ratio, asset utilization ratio, diversification ratio, earnings per employee ratio, and expenditure per employee ratio.

Flamini et al., (2009) described that although the impact of operation costs on earnings may seem obvious, meaning that high expenses lead to reduced profits; this might not always remain the case. The rationale for this remains higher costs that may suggest a higher volume of banking activities and in turn higher revenues. In less competitive markets, where banks appreciate market power, costs can be accepted by customers and this would then make a positive correlation between outlays costs and profitability.

2.1.4 Effects of earnings sufficiency on financial sustainability

The research of Sara (2011) conducted on the implications of financial sustainability in the microfinance industry. Microfinance is a relatively young and somewhat ambiguous concept. The phenomenon has, however, proven to contribute to making the lives better for many poor people, thus the interest for the industry has grown substantially. The increased attention has stimulated the movement towards more financially sustainable organizations. Along with this transformation, concerns regarding how it affects the poor have been raised. This study aims to map the key characteristics of financially sustainable microfinance institutions (MFIs) and what features separate them from their non-sustainable counterparts.

By analyzing data from 1109 MFIs, some significant differences between sustainable and non-sustainable organizations have been found. The study shows that for-profit MFIs are self-sufficient to a greater extent than non-sufficient ones, which might be caused by the pressure to deliver value to shareholders. Furthermore, there are indications that self-sufficient MFIs are more efficient, which can be assumed to be caused by technological advantages, or different lending methods. The findings on outreach are somewhat contradictory; sustainable MFIs are reaching more clients on average, which discards a mission drift.

On the other hand, self-sufficient MFIs have larger average loan sizes and fewer female borrowers, two indications that a mission drift exists. Self-sufficient MFIs have also proven to have lower loan loss rates and lower yields on the loan portfolio. Positive findings indicate that the MFIs have sound loan portfolios and that they have managed to become self-sustainable not by exploiting the poor, but by reducing costs and increasing efficiency. Financial sustainability can therefore be assumed to be achieved without forsaking the poor if the social aims of the organizations are consistent with the financial objectives.

Rai (2012) carried out the study on Factors Affecting Financial Sustainability of Microfinance Institutions. Millions of people in developing countries have been given access to formal financial services through microfinance programs. Nevertheless, millions of potential clients remain un-served and the demand for financial services far exceeds the currently available supply. Given significant capital constraints, expansion of microfinance programs remains a formidable challenge facing the microfinance industry. Moreover, it is observed that microfinance organizations have had various degrees of sustainability. One such sustainability is financial sustainability. Financial sustainability has been defined by

various researchers differently. As such, there is no clear-cut definition of the word financial sustainability. The MIX Market and various other agencies like ACCION, Women's World Banking, etc. have attempted to define the term financial sustainability in their limited way. Therefore, this paper attempts to find out the factors which affect financial sustainability and thereafter propose a more comprehensive and representative model for financial sustainability and create an index to observe the financial performance of the microfinance sector. The financial data of microfinance institutions from India and Bangladesh suggests that the capital/ asset ratio, operating expenses/loan portfolio, and portfolio at risk > 30 days are the main factors that affect the sustainability of microfinance institutions.

2.2.5 Effects of liquidity on financial sustainability

Pierre Durand (2019) studied the impact of capital and liquidity ratios on financial stability. In response to the 2007-2008 global financial crisis, the G20 mandated the Basel Committee to put in place prudential regulations capable of ensuring financial stability: the Basel III agreements. This paper tackles this issue by investigating the impact of capital and liquidity ratios on financial stability for a sample of 1600 banks aggregated at the level of 23 countries over the 2005-2016 period. We pay particular attention to the nonlinear character of this potential effect through the estimation of a polynomial model with interaction terms and a panel smooth transition regression. Distinguishing between different types of banks depending on their level of system city, we find evidence of a nonlinear effect of prudential ratios on financial stability: a low level of capital and liquidity improves financial stability, but those effects tend to diminish for higher values.

Moosa (2018) investigated the effect of liquidity risk and credit risk on the financial stability banking industry in Iran using a multiple regression approach. The impact of different risks is of great importance in the banking industry on financial sustainability, given its functional entity. Given the lack of consensus on the relationship between financial risks in banks, in particular, in credit risk and liquidity in banks, this research investigates the relationship of these two types of risks and their impacts on financial sustainability in the banking industry in Iran during 2005-2014 with panel data method.

In this regard, to investigate the impact of liquidity and credit risks on financial sustainability, the Quintile regression method. The results indicate the negative and significant impact of these two types of risks on financial sustainability in most reviewed decimals. This means that with an increase in financial sustainability, the impact of these two types of risks is reduced. In other words, those banks placed in the higher decimals of sustainability distribution are affected less by credit and liquidity risks.

Hanna (2018) studied the financial sustainability of micro-finance Institutions in Sub-Saharan Africa. Microfinance institutions exist to provide small-scale loans to those who otherwise do not have access to financial resources as a means for poverty alleviation. Recently, the topic of financial sustainability in MFIs has become more important as an increasing number of institutions seek operational self-sufficiency. In the past, many MFIs have been mostly funded through subsidies, which is not a sustainable funding method for MFIs. This study aims to understand the factors that drive financial sustainability in microfinance institutions. To accomplish this, several indicators for operational self-sufficiency (OSS) were investigated through correlation and regression analysis. The results indicate that the drivers for operational self-sufficiency include return on assets, number of active borrowers, and profit margin. The analysis also showed that in terms of OSS and profitability, there is little difference between for-profit and non-profit organizations. To increase operational self-sufficiency institutions should increase return on assets, the number of active borrowers, and

their profit margin. The results support the profit-incentive theory and the financial systems approach. These results indicate that to achieve financial sustainability MFIs should focus on covering operating expenses through earned revenues. Therefore, the MFI structure should encourage cost-oriented management. Additionally, findings from this study revealed that there may not be a large tradeoff between inefficiency and outreach. Results showed that operationally self-sufficient MFIs have a larger outreach than non-self-sufficient organizations. Limitations for this study include that the regression only explains the variables affecting OSS with 26% certainty and other variables not tested may be factors.

Kimani E. M. (2018) study the effect of liquidity management strategies on the sustainability of table banking groups in Uasin Gishu County, Kenya. Financial management strategies are crucial determinants of the sustainability of table banking groups. It enables groups to set clear goals, efficient utilization of resources, proper decisions in the sourcing of finances, and dividends decision making. The main purpose of this study was to establish the relationship between liquidity management strategies and the sustainability of table banking groups in Uasin Gishu County, Kenya. The study was founded on liquidity preference theory and life cycle theory. The study adopted the descriptive survey research design. The target population was all table bank groups in Kenya. The accessible population was 538 registered table bank groups in Uasin Gishu County. A sample of 230 groups was involved in the study. A two-stage sampling technique was used to narrow down the sub-counties. The purposive sampling technique was used to select 3 sub-counties out of six sub-counties in Uasin Gishu County. A simple random sampling technique was used to select respondents for the actual study. Self-administered questionnaires were used to collect data. Both descriptive and inferential statistics were used for data analysis. Descriptive statistical tools included frequencies, percentages, mean, variance, and standard deviations. Inferential statistics included Pearson product-moment correlation and multiple regression analysis. Findings were presented in tables, charts, and graphs. The study established that liquidity management strategies positively and significantly influence the sustainability of table banking groups ($\beta=0.535$; $p < 0.05$). It was concluded that proper financial management strategies could enable table banking groups to enhance their sustainability. The study is expected to guide organizational policymakers and investors as well as financial advisors and consultants on financial management strategies. The study recommended that risk management strategies should be incorporated in financial management strategies. It was also recommended that theories anchored in this study should be applied to enhance sustainability.

2.2 Research gap

This chapter offering the appraisal of research literature already approved in the field under study. This shows the ideas from previous authors about factors affecting the performance of the financial sector through theoretical review, empirical studies, theoretical framework, and critical review and gap identification. According to the studies mentioned above, they all contribute so much to the current study, but no study among them displays actual factors affecting financial sector performance in the area of Rwanda using the conceptual model as shown in the current study. However, this study intends to cover the gap by clarifying the relationship between the CAMEL approach and financial sector sustainability especially in the Bank of Kigali (BK).

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2.3 Conceptual Framework

The conceptual framework remains the portion of the research linked to the CAMEL approach and financial sector sustainability. Hence, in directive to resolve the problem of this research, the investigator recognized the connection between the independent variable and dependent variable as figure 1 below displays.

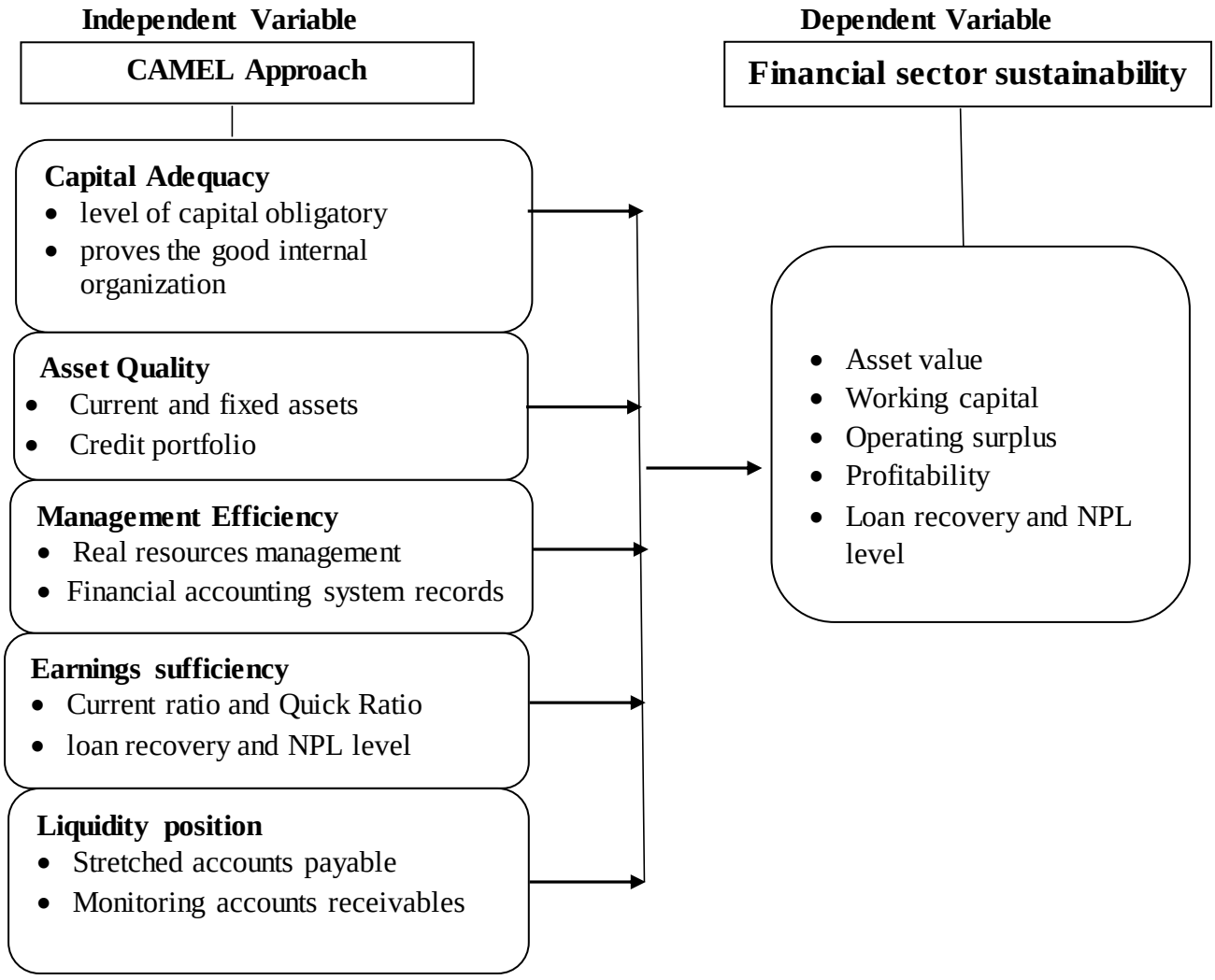

Figure 1: Conceptual Framework
Source: Researcher Conceptualization, (2021)

3. Materials and Methods

This study is non-experimental so that it used qualitative and quantitative approaches. It is a qualitative approach because the quality of data was collected from respondents of Bank of Kigali Rwanda using interviews was presented in the study to support primary data from the questionnaire. It was a quantitative approach where the study was describing frequencies, percentages, and cumulative percentages for data collected; and also a correlation of determination was used to show the relationship between the two variables by using SPSS IBM version 21.0. Target population of this research was 51 employees of BK headquarters from finance and accounting, HR, marketing, operational and compliance risks, management,

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and credit departments and they were used as the same time as the sample size by a census survey was an attempt to gather information about every member of the population, sampling gathers information only about a part, the sample, to represent the whole.

In this research, the questionnaire was distributed to 51 respondents from the Bank of Kigali Rwanda, and it was composed of close-end and open questions where the researcher expects a participation rate of 100% for responding to the questions. Five Likert scales were used to elicit the opinions and perceptions of respondents. The interview guide was addressed to the branch manager of BK headquarters. The documentary technique was used by the researcher to obtain secondary information about a phenomenon where wishes to study. The documents targeted were the available financial reports (secondary data) showing the data about the performance of BK. The researcher was guided by a University introduction letter which assists him to get formal permission in the field of research. The central secretaries of selected commercial banks (i.e., BK) helped the researcher to distribute questionnaires to different categories of respondents.

To maximize the amount of data collection, the researcher was also in contact with the branch manager to introduce him to the rest of the team to allow him to research conduct without any conditionality. Questionnaires were left to the concern categories that be filled and were taken within one week after. This part explains how the data was obtained from respondents in Bank of Kigali that were edited, coded, and make statistical tables using various methods. Methods were used to analyze the data of this research are descriptive statistic method describing the frequency, percentages, and cumulative percentages. The correlation coefficient was accepted to show the relationship between the CAMEL approach and financial sector sustainability of commercial banks in Rwanda. Linear regression analysis was used in this study, and the models are as shadows: **X=** independent variable = CAMEL Approach, which has five indicators, while, **Y=** dependent variable is financial sector sustainability (FSS); therefore $\gamma = \beta 0 + \beta 1x1 + \beta 2x2 + \beta 3x3 + \beta 4x4 + \beta 5x5 + \alpha$. Where **β0** = Constant, **β1- β5** are coefficients of determination, α is standard error.

4. Research Findings and discussion

4.1 Perception of the respondents on the effect of Capital adequacy of Bank of Kigali

Findings on the perceptions of respondents confirmed that capital adequacy of Bank of Kigali shows the level of capital obligatory, and Bank of Kigali management ensure that it can mitigate the risk; it proves good internal organization of financial institutions decrease damages in disaster time; high capital adequacy of BK present information on profitability; capital adequacy of BK is calculated by total capital to risk-weighted assets, and the Berger capital requirements of BK stretch inducements of a bank to notice risks of failure as detailed in Table 1.

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Table 1: Perception of the respondent on the effect of Capital adequacy of Bank of Kigali

	SA		A		N		D		SD		Mean	Std. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
Capital adequacy of Bank of Kigali shows the level of capital obligatory and Bank of Kigali management which ensure that they can mitigate the risk;	20	39.2	29	56.9	2	3.9	0	0.0	0	0.0	**1.647**	**.559**
BK Rwanda proves good internal organization of financial institution that decrease damages in disaster time;	32	62.7	12	23.5	5	9.8	2	3.9	0	0.0	**1.549**	**.832**
The high capital adequacy of BK presents information on profitability;	10	19.6	33	64.7	2	3.9	4	7.8	2	3.9	**2.117**	**.951**
Capital adequacy of BK is calculated by total capital to Risk-weighted assets;	4	7.8	43	84.3	1	2.0	3	5.9	0	0.0	**2.058**	**.580**
Berger capital requirements of BK stretch inducements of a bank to notice risks of failure.	5	9.8	39	76.5	1	2.0	4	7.8	2	3.9	**2.196**	**.872**
Overall mean and standard deviation											**1.913**	**0.758**

Source: *Primary Data, Field results (2021)*

Findings in Table 1 show the perception of the respondent on the effect of capital adequacy of Bank of Kigali where they confirmed that capital adequacy of Bank of Kigali shows a level of capital obligatory and Bank of Kigali management which ensure that they can mitigate the risk, stated by 96.1% of respondents strongly agreed and agreed. BK Rwanda proves good internal organization of financial institution that decrease damages in disaster time, agreed by 86.3% of respondents. The high capital adequacy of BK presents information on profitability confirmed by 84.3% of respondents. Capital adequacy of BK is calculated by taking total capital over risk-weighted assets, stated by 92.2% respondents; and Berger capital requirements of BK stretch inducements of the bank to notice risks of failure, stated by 86.3% respondents from BK, Rwanda.

According to the findings from the perception of respondents in relation with the effect of capital adequacy of Bank of Kigali has presented an overall average of ($\bar{x}$ =1.913 and SD=0.758) as an indicator of influence for financial sustainability of Bank of Kigali; this means there is reasonably mean and evidence of the presence of the fact and heterogeneity of responses confirming Capital adequacy of Bank of Kigali showing the level of capital obligatory and Bank of Kigali management which ensure that they can mitigate the risk; proves good internal organization of financial institution that decreases damages in disaster time; high capital adequacy of BK present information on profitability and it is calculated by total capital to Risk-weighted assets that require BK give inducements/encouragements to notice risks of failure before affecting the financial sustainability of Bank of Kigali.

4.2 Perception of the respondents on the effect of Asset Quality of Bank of Kigali

Findings on perceptions of respondents about the effect of Asset Quality of Bank of Kigali show that effective asset of BK partakes current asset, credit portfolio, fixed asset, and other investments, the loan remains a major asset of BK that make income; the quality of loan portfolio of BK rules profit evolution to the bank; Non-performing credit shares in BK remain best substitutions for asset quality of bank and also there are little non-performing credits to total advances displays good health of a portfolio of the bank as detailed in table 2.

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Table 2: Perception of the respondents on the effect of Asset Quality of Bank of Kigali

	SA		A		N		D		SD		Mean	Std. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
The effective asset of BK partakes current asset, credit portfolio, fixed asset, and other investments;	4	7.8	39	76.5	3	5.9	4	7.8	1	2.0	**2.196**	**.775**
The loan remains a major asset of BK that make income;	25	49.0	22	43.1	1	2.0	3	5.9	0	0.0	**1.647**	**.795**
The quality of the loan portfolio of BK rules profit evolution to the bank;	11	21.6	23	45.1	6	11.8	7	13.7	4	7.8	**2.411**	**1.202**
Non-performing credit shares in BK remain the best substitutions for asset quality of bank;	18	35.3	30	58.8	1	2.0	2	3.9	0	0.0	**1.745**	**.688**
There are few non-performing credits to total advances displays good health of a portfolio of bank.	32	62.7	12	23.5	5	9.8	0	0.0	2	3.9	**1.588**	**.962**
Overall Average											**1.917**	**0.884**

Source: *Primary Data, Field results (2021)*

Findings in Table 2 indicated that the effect of Asset Quality of Bank of Kigali involving effective asset of BK participates current asset, credit portfolio, fixed asset, and other investments, stated by 84.3% of respondents; loan remains a major asset of BK that make income confirmed by 92.2% of the respondents; the quality of loan portfolio of BK rules profit evolution to the bank stated by 66.7% respondents; non-performing credit shares in BK remain best substitutions for asset quality of the bank, confirmed by 94.1% of respondents; and there are little non-performing credits to total advances displays good health of a portfolio of the bank as stated by 86.3% of respondents.

According to the findings from the perception of respondents towards the effect of Asset Quality of Bank of Kigali has presented an overall average of ($\bar{x}$ =1.917 and SD=0.884) influence financial sustainability of Bank of Kigali; this means that it is mean and the evidence of existing fact and heterogeneity of responses established by effective asset of BK that partakes current asset, credit portfolio, fixed asset, and other investments; loan remains a major asset of BK that make income; the quality of loan portfolio of BK guidelines the profit evolution to the bank; non-performing credit shares in BK that remain best substitutions for asset quality of bank and little non-performing credits to total advances that shows good health of a portfolio of Bank of Kigali, Rwanda.

4.3 Perception of the respondents on the effect of Management Efficiency of Bank of Kigali

During this study, the findings stated that directors of Bank of Kigali create decisions on real resource facilities that exploit the value of the Bank; in short term, the decisions engaged in BK are customer experience, high-quality services delivery, and KYC; financial accounting system records transactions of BK counting payment for the resources achieved; Bank of Kigali stakeholders rely heavily on financial reports to ensure that the directors achieve their objectives, and the expenses management to the financial institutions show how the management may increase the profitability of the bank as detailed in table 3.

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Table 3: Perception of the respondent on the effect of Management Efficiency of Bank of Kigali

	SA		A		N		D		SD		Mean	Std. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
a) Directors of Bank of Kigali create decisions on real resource facilities that exploit the value of Bank	5	9.8	43	84.3	1	2.0	1	2.0	1	2.0	2.019	.616
In short term, the decisions engaged in BK are customer experience, high-quality services delivery, and KYC	4	7.8	40	78.4	1	2.0	5	9.8	1	2.0	2.196	.800
b) Financial accounting system records transactions of BK counting payment for the resources achieved	25	49.0	22	43.1	2	3.9	1	2.0	1	2.0	1.647	.820
c) Bank of Kigali stakeholders rely heavily on financial reports to ensure that the directors achieve their objectives	32	62.7	4	7.8	6	11.8	2	3.9	7	13.7	1.980	1.476
The expenses management to the financial institutions show how the management increase the profitability of the bank	35	68.6	8	15.7	1	2.0	5	9.8	2	3.9	1.647	1.163
Overall Average											**1.897**	**0.975**

Source: *Primary Data, Field results (2021)*

Finding in table 3 show that directors of Bank of Kigali create decisions on real resource facility that exploit the value of the Bank, stated by 94.1% of respondents; in short term, the decisions engaged in BK are customer experience, high-quality services delivery, and KYC as confirmed by 86.3% respondents; financial accounting system records transactions of BK counting payment for the resources achieved stated by 92.2% respondents; Bank of Kigali stakeholders rely heavily on financial reports to ensure that the directors achieve their objectives stated by 70.6% of the respondents, and the expenses management to the financial institutions show how management increased the profitability of the bank agreed by 84.3% respondents.

According to the findings on perceptions of respondents related to the effect of Management efficiency of Bank of Kigali has presented an overall average of ($\bar{x}$ =1.897 and SD=0.975) influence effectively financial sustainability of Bank of Kigali; this means there is a sound mean and the proof of the existing fact and heterogeneity of reactions that stated directors of Bank of Kigali create decisions on real resource facility that exploit the value of Bank; the decisions engaged in BK are customer experience, high-quality services delivery; financial accounting system records transactions of BK counting payment for the resources achieved; Bank of Kigali stakeholders rely heavily on financial reports to ensure that the directors achieve their objectives and the expenses management to the financial institutions show how the management increase the profitability of the bank of Kigali, Rwanda.

4.4 Perception of the respondents on the earnings sufficiency affect the financial sustainability of Bank of Kigali

Findings show that earnings sufficiency affect the return on assets (ROA) of BK, Rwanda; earnings sufficiency influence Return on Equity (ROE) of BK; earnings sufficiency affect the net profit margin of BK; earnings sufficiency affect gross profit margin; earnings sufficiency affects current ratio and quick ratio, and earnings sufficiency affects loan recovery and NPL level as detailed in table 4.

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Table 4: Perception of the respondents on the Earnings sufficiency affect the financial sustainability of Bank of Kigali

	SA		A		N		D		SD		Mean	Std. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
Earnings sufficiency affect the return on Assets (ROA) of BK	20	39.2	29	56.9	2	3.9	0	0.0	0	0.0	1.647	.559
Earnings sufficiency influence the return on Equity (ROE) of BK	24	47.1	22	43.1	2	3.9	3	5.9	0	0.0	1.686	.812
Earnings sufficiency affect the net profit margin of BK	7	13.7	36	70.6	3	5.9	4	7.8	1	2.0	2.137	.825
Earnings sufficiency affect Gross profit margin	12	23.5	35	68.6	4	7.8	0	0.0	0	0.0	1.921	.744
Earnings sufficiency affects current ratio and quick Ratio	8	15.7	32	62.7	2	3.9	6	11.8	3	5.9	2.294	1.063
Earnings sufficiency affect loan recovery and NPL level	9	17.6	38	74.5	1	2.0	2	3.9	1	2.0	1.980	.734
Overall Average											**1.944**	**0.789**

Source: *Primary Data, Field results (2021)*

Findings in Table 4 show perception of the respondent on the earnings sufficiency affect the financial sustainability of Bank of Kigali where they confirmed that earnings sufficiency affect Return on assets (ROA) of BK, Rwanda stated by 96.1% of respondents; earnings sufficiency influence Return on Equity (ROE) of BK confirmed by 90.2% of respondents; earnings sufficiency affect the net profit margin of BK stated by 84.3% of respondents; earnings sufficiency affect gross profit margin stated by 92.2% of respondents; earnings sufficiency has an effect on current ratio and quick ratio stated by 78.4% of respondents; and earnings sufficiency affect loan recovery and NPL level confirmed by 92.2% of respondents BK, Rwanda.

Results in the perception of the respondent on the earnings sufficiency of Bank of Kigali has presented an overall average of ($\bar{x}$ =1.944 and SD=0.789) that indicate effectively financial sustainability of BK; this means it is mean and the indication of existence fact and heterogeneity of responses as confirmed by how earnings sufficiency affect the return on Assets (ROA) of BK; earnings sufficiency influence return on Equity (ROE) of BK; earnings sufficiency affect the net profit margin of BK; earnings sufficiency affect Gross profit margin; earnings sufficiency affects current ratio and quick Ratio; and earnings sufficiency affect loan recovery and NPL level in BK, Rwanda.

4.5 Perception of respondents on the liquidity affect the financial sustainability of Bank of Kigali

Findings of the study show the perception of respondents that redeploying cash affect the financial sustainability of Bank of Kigali; stretched accounts payable influence financial sustainability of Bank of Kigali; a speedy collection of loans enhance the financial sustainability of Bank of Kigali and monitoring accounts receivables maintain the financial sustainability of Bank of Kigali as detailed in table 5.

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Table 5: Perception of the respondent on the liquidity affects the financial sustainability of Bank of Kigali

	SA		A		N		D		SD		Mean	Std. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
Redeploying cash affect the financial sustainability of the Bank of Kigali	27	52.9	18	35.3	4	7.8	2	3.9	0	0.0	1.627	.799
Stretched accounts payable influence the financial sustainability of the Bank of Kigali	11	21.6	31	60.8	2	3.9	4	7.8	3	5.9	2.156	1.046
Speedy collection of loans enhance the financial sustainability of the Bank of Kigali	11	21.6	37	72.5	0	0.0	3	5.9	0	0.0	1.902	.670
Monitoring accounts receivables maintain the financial sustainability of the Bank of Kigali	30	58.8	16	31.4	4	7.8	0	0.0	1	2.0	1.549	.807
Overall Average											**1.808**	**0.830**

Source: *Primary Data, Field results (2021)*

Findings in Table 5 show that redeploying cash affect the financial sustainability of Bank of Kigali, stated by 88.2% of respondents; stretched accounts payable influence financial sustainability of Bank of Kigali confirmed by 82.4% of respondents; a speedy collection of loans enhance the financial sustainability of Bank of Kigali agreed by 94.1% of respondents, and monitoring accounts receivables maintain the financial sustainability of Bank of Kigali stated 90.2% of respondents.

According to the results on perception of the respondent on the liquidity affect the financial sustainability of Bank of Kigali has presented an overall average of ($\bar{x}$ =1.808 and SD=0.830) as an indicator of financial sustainability of Bank of Kigali that indicated that there is typical mean and the disposition of existing fact and heterogeneity of responses stated that redeploying cash affect the financial sustainability of Bank of Kigali; stretched accounts payable influence financial sustainability of Bank of Kigali; a speedy collection of loans enhance the financial sustainability of Bank of Kigali, and monitoring accounts receivables maintain the financial sustainability of Bank of Kigali.

4.6 Perception of respondents on financial Sector/BK sustainability in Rwanda

Findings show that there is the progressive return on Assets (ROA) at BK outstanding to capital adequacy; there is the enlightened return on Equity (ROE) due to earning quality; net profit margin remained highly increased in previous from 2016-2019 for BK; gross profit margin remained able to generate high net profit to the bank; BK has designed current ratio and quick ratio; loan recovery stayed very high rate in BK; and there remains a low level of NPLs in previous years (2017-2020) for BK, Rwanda as detailed in table 6

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Table 6: Perception of respondents on financial Sector/BK Sustainability in Rwanda

	SA		A		N		D		SD		Mean	Std. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
There is progressive Return on Assets (ROA) at BK outstanding to capital adequacy	15	29.4	24	47.1	2	3.9	5	9.8	5	9.8	2.235	1.258
There is enlightened Return on Equity (ROE) due to earning quality	27	52.9	18	35.3	0	0.0	3	5.9	3	5.9	1.764	1.124
Net profit margin remained highly increased in previous from 2016-2019 for BK	33	64.7	4	7.8	5	9.8	0	0.0	9	17.6	1.980	1.542
Gross profit margin remained able to generate high net profit to the bank	35	68.6	9	17.6	1	2.0	6	11.8	0	0.0	1.568	1.005
BK has designed current ratio and a quick ratio	6	11.8	21	41.2	9	17.6	8	15.7	7	13.7	2.784	1.254
Loan recovery stayed very high rate in BK	24	47.1	15	29.4	9	17.6	3	5.9	0	0.0	1.823	.931
There remains a low level of NPLs in previous years (2017-2020) for BK	4	7.8	39	76.5	1	2.0	4	7.8	3	5.9	2.274	.939
Overall Average											**2.061**	**1.1508**

Source: *Primary Data, Field results (2021)*

Findings in Table 6 show that there is the progressive return on Assets (ROA) at BK outstanding to capital adequacy stated by 76.5% of respondents; there is the enlightened return on Equity (ROE) due to earning quality confirmed by 88.2% of respondents; net profit margin remained highly increased in previous from 2016-2019 for BK stated by 72.5% of respondents; gross profit margin remained able to generate high net profit to the bank stated by 86.3% of respondents; BK has designed current ratio and quick ratio stated by 52.9% of respondents; loan recovery stayed very high rate in BK stated by 76.5% of respondents, and there remains a low level of NPLs in previous years (2017-2020) for BK confirmed by 84.3% of respondents.

According to the results from the perception of respondents on financial sector/BK Sustainability in Rwanda as it has presented an overall average of ($\bar{x}$ =2.061 and SD=1.1508) indicated that it is a highly representative mean and the suggestion of existence fact and homogeneity of responses stated that there is the progressive return on Assets (ROA) at BK outstanding to capital adequacy; there is the enlightened return on Equity (ROE) due to earning quality; net profit margin remained highly increased in previous from 2016-2019 for BK; gross profit margin remained able to generate high net profit to the bank; BK has designed current ratio and quick ratio; loan recovery stayed very high rate in BK; and there remains a low level of NPLs in previous years (2017-2020) for BK, Rwanda.

4.7 Perception of Respondents on the relationship between CAMEL approach and financial sector sustainability of commercial banks in Rwanda

Findings show that enough capital adequacy of BK upsurge productivity; effective asset quality supports in an increase of Net profit margin of BK; management efficiency leads to effective use of liquidity for BK; and CAMEL approach inspires the financial performance of BK, Rwanda as detailed in table 7.

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Table 7: Perception of Respondents on the r**elationship between CAMEL approach and financial sector sustainability of commercial banks in Rwanda**

	SA		A		N		D		SD		Mean	Std. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
Enough capital adequacy of BK upsurge productivity	26	51.0	22	43.1	2	3.9	1	2.0	0	0.0	1.568	.6709
Effective asset quality supports in an increase of Net profit margin of BK	14	27.5	34	66.7	1	2.0	1	2.0	1	2.0	1.843	.7313
Management efficiency lead to effective use of liquidity for BK	0	0.0	43	84.3	6	11.8	1	2.0	1	2.0	2.215	.5766
CAMEL approach inspire the financial performance of BK	4	7.8	43	84.3	1	2.0	2	3.9	1	2.0	2.078	.6585
Overall Average											**1.926**	**0.659**

Source: *Primary Data, Field results (2021)*

Findings in Table 7 show that enough capital adequacy of BK raises its productivity, stated by 94.1% of respondents; effective asset quality supports an increase of net profit margin of BK confirmed by 94.1% of respondents; management efficiency leads to effective use of liquidity for BK stated by 84.3% of respondents, and CAMEL approach inspires the financial performance of BK stated by 92.2% of respondents. According to the results on perception of respondents on the relationship between CAMEL approach and financial sector sustainability in Rwanda has presented an overall average of ($\bar{x}$ =1.926 and SD=0.659) as demonstrative mean and the proposition of existing fact and heterogeneity of responses that stated enough capital adequacy of BK upsurge productivity; effective asset quality supports in an increase of Net profit margin of BK; management efficiency leads to effective use of liquidity for BK and CAMEL approach inspire the financial performance of BK, Rwanda.

4.3 Correlation Coefficient Matrix test

A correlation matrix is used to summarize data, as input into a more advanced analysis, and as a diagnostic for advanced analyses. Table 8 illustrates the findings on the correlation matrix test of this study between variables of CAMEL approach as the independent variable and Financial Sector Sustainability as the dependent variable.

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Table 8: Correlation Matrix test

		Capital Adequacy	Asset Quality	Management Efficiency
Earnings sufficiency	Pearson Correlation	.553**	.636**	.483**
	Sig. (2-tailed)	.000	.000	.000
	N	51	51	51
Liquidity	Pearson Correlation	.530**	.744**	.565**
	Sig. (2-tailed)	.000	.000	.000
	N	51	51	51
CAMEL approach	Pearson Correlation	.901**	.959**	.874**
	Sig. (2-tailed)	.000	.000	.000
	N	51	51	51
Financial Sector Sustainability	Pearson Correlation	.784**	.799**	.891**
	Sig. (2-tailed)	.000	.000	.000
	N	51	51	51

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

From the correlation matrix Table 8, results show that there is a strong correlation between capital adequacy and financial sector sustainability as Pearson correlation is 0.784** with the p-value of 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered other factors affecting financial sector sustainability, only capital adequacy in the CAMEL approach has a significant effect of 78.4% on the financial sector sustainability of BK, Rwanda.

The results show that there is a strong correlation between asset quality and financial sector sustainability as the Pearson correlation is .799**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01, and this indicates that, out of the considered other factors of the CAMEL approach, only the asset quality has the significant relationship of 79.9% with the financial sector sustainability of BK, Rwanda.

The results show that there is a positive and very strong correlation between management efficiency and financial sector sustainability of BK as the Pearson correlation is .891**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered other factors that affect financial sector sustainability, only management efficiency has a significant relationship of 89.1% with financial sector sustainability of BK, Rwanda.

The results show that there is a strong correlation between earnings sufficiency and financial sector sustainability of BK as the Pearson correlation is .572**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered other factors that affect financial sector sustainability, only earnings sufficiency has a significant relationship of 57.2% on financial sector sustainability of BK Rwanda.
Findings show that there is a strong correlation between liquidity and financial sector sustainability of BK as Pearson correlation is was .616**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered other factors that affect financial sector sustainability, only liquidity has a significant relationship of 61.6% on financial sector sustainability of BK Rwanda.

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Findings revealed that the p-value is 0.000 which is less than both standard significance levels of 0.05 and 0.01 as it is an indicator of the existence of a significant relationship between CAMEL approach and financial sector sustainability of BK since, as Pearson correlation value was .854** which is a positive and very strong correlation between two variables (CAMEL approach and financial sector sustainability of BK).

4.4 Multiple Linear Regression Analysis

Regression analysis test is a form of inferential statistics, and the p-values help to determine whether the relationships have observed in the sample existed in the larger population. This study section helps to verify and test research hypotheses.

Table 9: Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	.906[a]	.821	.801	2.19114

a. Predictors: (Constant), Liquidity, Capital Adequacy, Earnings sufficiency, Management Efficiency, Asset Quality

Findings in Table 9 present value of R. equals .934[a] while R-square of this study is .821 that means the percentage of influences on financial sector sustainability of BK, Rwanda (as dependent variable) are explained by independent variable indicated by CAMEL approach represented by x1= Capital Adequacy (CA); x2= Asset Quality (AQ); x3= Management Efficiency (ME); x4=Earnings sufficiency (ES); x5= Liquidity (L) on the rate of 82.1%. This indicates that the model is positive and very strong, as the independent variable very highly explained the dependent variable (financial sector sustainability of BK, Rwanda). The adjusted R-square is used to compensate for additional variables in the model. In this case, the adjusted R-square is also 80.1%.

Table 10: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	992.461	5	198.492	41.343	.000[b]
	Residual	216.048	45	4.801		
	Total	1208.510	50			

a. Dependent Variable: Financial Sector Sustainability
b. Predictors: (Constant), Liquidity, Capital Adequacy, Earnings sufficiency, Management Efficiency, Asset Quality

Findings in ANOVA Table 10 show a level of the fit mode of 41.343 with a p-value of 0.000[b] which is less than 0.01, set as the standard significance level. This means that null hypotheses included by Ho1 stated that There are no significant effects of capital adequacy on the financial sustainability of Bank of Kigali; Ho2 stated that There are no significant effects of asset quality on the financial sustainability of Bank of Kigali; Ho3 stated that There are no significant effects of management efficiency on the financial sustainability of Bank of Kigali; Ho4 stated that There are no significant effects of earnings sufficiency on the financial sustainability of Bank of Kigali; Ho5 stated that There are no significant effects of liquidity on the financial sustainability of Bank of Kigali" are all rejected and accepted alternative hypotheses confirmed that that independent variable indicated by CAMEL represented by liquidity, capital adequacy, earnings sufficiency, management Efficiency, asset quality impact positively and significantly the financial sustainability of Bank of Kigali, Rwanda.

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Table 11: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.836	1.538		.544	.002
Capital Adequacy	.098	.384	.057	.257	.000
Asset Quality	.029	.388	.019	.075	.001
Management Efficiency	1.137	.185	.754	6.141	.000
Earnings sufficiency	.227	.182	.134	1.247	.003
Liquidity	.162	.337	.072	.479	.000

a. Dependent Variable: *Financial Sector Sustainability*

The models were X which is an independent variable indicated by the CAMEL approach had five indicators including x1= Capital Adequacy (CA); x2= Asset Quality (AQ); x3= Management Efficiency (ME); x4=Earnings sufficiency (ES); x5= Liquidity (L) with Y which is dependent variable indicated by financial sector sustainability of BK had five indicators include Return on Assets (ROA); Return on Equity (ROE); net profit margin; gross profit margin; current ratio and quick ratio; loan recovery and NPL level. Based on these variables, the functions have been set as

$Y= f(X)$, $Y= \beta_0+\beta_1x1+\beta_2x2+\beta_3x3+\beta4x4+\beta5x5+\varepsilon$.

Y= .836+.098x1+.029x2+1.137x3+.227x4+.162x5+1.538

The linear regression equation shows that the financial sector sustainability of BK will always depend on a constant factor of 0.836 regardless of the presence of other factors. The other variables explain that; every unit change in x1= Capital Adequacy; x2= Asset Quality; x3= Management Efficiency; x4=Earnings sufficiency; x5= Liquidity will significantly change financial sector sustainability of BK by 0.098; 0.029; 1.137; 0.227 and 0.162 with a standard error of 1.538 in the model.

4.5 Financial Analysis Ratios

Financial performance of Bank of Kigali; total interest income rose by 21.6% y-o-y to Frw 34.5 billion supported by higher income from loans & advances, which grew by 14.7% from 1Q 2019 and 1.4% year-to-date to Frw 735.8 billion; while investments in government securities increased by 38.4% YTD to Frw 172.7 billion. Total interest expenses increased by 38.2% to Frw 6.9 billion in line with a 21.8% growth y-o-y in customer deposits to Frw 685.1 billion. Overall, net interest income growth was at 18.0% to FRw 27.6 billion; with Net Interest margin reaching 11.5% (annualized) from 11.0% in FY19. Non-interest income of Frw 6.4 billion; decreased y-o-y by 0.8% impacted by low trade volume. Total operating income rose by 14.3% to Frw 34.0 billion.

Due to uncertainties around the current COVID-19 pandemic, loan loss provisions rose by 75.2% y-o-y to Frw 12.8 billion, while non-performing loans increased to Frw 47.4 billion from Frw 45.6 billion in December 2019.

Excluding provisions, operating expenses rose slightly by 1.0% y-o-y to Frw 12.1 billion, with an improved cost to income ratio of 35.5% from 42.2% at year-end 2019. Profit after tax (PAT) declined by 16.6% y-o-y and 49.4% q-o-q to Frw 6.2 billion for the period. As of 31st March 2020, the Group's Total Assets stood at Frw 1,090.7 billion; up 20.1% y-o-y and 7.0%

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YTD. Net Loans increased by 12.5% y-o-y to Frw 678.6 billion, reducing net loans/total assets ratio to 62.2% from 66.5% in December 2019.

Client balances and deposits recorded a strong increase y-o-y of 21.8% to Frw 685.1 billion across all business segments. The total dividend payable balance was Frw 15.5 billion, which includes the approved dividend for 2019 payable post-COVID-19 impact on liquidity. Shareholders' Equity equaled Frw 224.9 billion, up 13.0% y-o-y. Liquid Assets divided by Total Deposits increased to 48.1% from 40.8% at year-end 2019. The annualized ROAA and ROAE dropped to 2.4% and 11.2% due to the current COVID-19 provisioning.

Table 12: Capital Adequacy Ratio of BK

Frw	2019	2018	2017
Core Capital/Risk-Weighted Assets	30.3%	32.1%	18.9%
Total Qualifying Capital/Risk-Weighted Assets	30.6%	32.0%	19.5%
Off-Balance Sheet Items/Total Qualifying Capital	38.5%	41.2%	80.7%
Large Exposures/Core Capital	139.5%	124.2%	208.7%
NPLs fewer Provisions/Core Capital	(1.2%)	0.2%	8.1%

Source: *Secondary data, BK Annual Financial reports, (2021)*

Capital Adequacy Ratio of BK detailed as follows, The Core Capital to Risk-Weighted Assets ratio in 2017 was at 18.9%, in 2018 was at 32.1% and decrease up 30.3% in 2019. The total Qualifying Capital to Risk-Weighted Assets ratio in 2017 was at 19.5%, in 2018 was at 32.0% and decrease by 30.6% in 2019. The Off-Balance Sheet Items to Total Qualifying Capital ratio in 2017 was at 80.7%, in 2018 was at 41.20%, and decreased up 38.5% in 2019. The large Exposures to Core Capital ratio in 2017 was at 208.7%, in 2017 was at 124.2%, and increased up to 139.5% in 2019. The NPLs' fewer Provisions to Core Capital ratio in 2017 was at 8.1%, in 2018 was at 0.2% and decrease up to negative 1.2% in 2019.

Two types of capital are measured tier-1 capital, which can absorb losses without a bank being required to cease trading, and tier-2 capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors. Risk-weighted assets-Fund Based: Risk-weighted assets mean fund-based assets such as cash, loans, investments, and other assets. Degrees of credit risk expressed as percentage weights have been assigned by the national regulator to each such asset.

Asset Quality

As asset quality goes up, benefits include more liquidity, greater risk capacity, and a lower cost of funds. An asset quality rating is a review or evaluation assessing the credit risk associated with a particular asset. These assets usually require interest payments such as loans and investment portfolios. How effective management is in controlling and monitoring credit risk can also have an effect on what kind of credit rating can be achieved. Asset quality is an important determinant of risk, as such; analysts go to great lengths to accurately estimate asset quality and its impact on the overall condition of a business, bank, or portfolio.

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Table 13: Variation of Assets quality of BK

Frw	2019	2018	2017
NPLs /Total Loans	5.7%	4.9%	5.6%
NPL Coverage Ratio	105.2%	98.8%	72.9%
NPL Coverage Ratio (Net Exposure)	132.8%	99.9%	199.6%
Loan Loss reserve/Gross Loans	6.6%	5.4%	4.8%
Average Loan Loss reserve/ Average Gross Loans	6.1%	5.2%	4.0%
Large Exposures/Gross Loans	38.3%	36.8%	46.2%
Cost of Risk/Total Loans, Annualized	2.7%	2.1%	3.7%

Source: *Secondary data, BK Annual Financial reports, (2021)*

Assets quality of BK ratios detailed as follows, the NPLs to Total Loans ratio in 2017 was at 5.6%, in 2018 was at 4.9%, and increased up to 5.7% in 2019. The NPL Coverage Ratio in 2017 was at 72.9%, in 2018 was at 98.8%, and increased up 105.2% in 2019. NPL Coverage Ratio (Net Exposure) in 2017 was at 199.6%, in 2018 was at 99.9%, and increased up to 132.8% in 2019.
The loan loss reserve to gross loans ratio in 2017 was at 4.8%, in 2018 was at 5.4%, and increased up to 6.6% in 2019. The average loan loss reserve to average gross loans ratio in 2017 was at 4.0%, in 2018 was at 5.2%, and increased up to 6.1% in 2019.
The large exposures to gross loans ratio in 2017 was at 46.2%, in 2018 was at 36.8%, and increased up to 38.3% in 2019. The cost of risk, annualized in 2017 was at 3.7%, in 2018 was at 2.1% and slightly increased up to 2.7% in 2019.

Management quality
Management Quality is an organizational concept, which describes the organization's capacity to meet high-quality objectives in its management functions. This leads to better customer satisfaction and financial and other performance. Many enterprises and organizations have programs for total quality management.

Table 14: Variation of Efficiency in BK

Frw	2019	2018	2017
Cost/Income Ratio	42.2%	48.1%	45.2%
Costs/Average Assets	5.4%	6.2%	6.1%
Personnel Costs/Total Recurring Operating Costs	48.3%	45.6%	50.5%
Personnel Costs/Average Total Assets, Annualized	2.6%	2.8%	3.1%
Personnel Costs/Total Operating Income	20.4%	21.9%	22.9%
Net Income/Total Operating Income	30.8%	26.3%	25.3%
Total Operating Income/Average Assets	12.8%	13.0%	13.5%

Source: *Secondary data, BK Annual Financial reports, (2021)*

The efficiency in BK ratios is detailed as follows, the Cost to Income Ratio in 2017 was at 45.2%, in 2018 was at 48.1%, and decreased up to 42.2% in 2019. The Costs to Average Assets ratio in 2017 was at 6.1%, in 2018 was at 6.2%, and decreased up to 5.4% in 2019. The Personnel Costs to Total Recurring Operating Costs in 2017 was at 50.5%, in 2018 was at 45.6%, and increased up to 48.3% in 2019.

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The personnel costs to Average Total Assets, Annualized in 2017 was at 3.1%, in 2018 was at 2.8%, and decreased up to 2.6% in 2019. The Personnel Costs to Total Operating Income in 2017 was at 22.9%, in 2018 was at 21.9%, and decreased up to 20.4% in 2019. The Net Income to Total Operating Income in 2017 was at 25.3%, in 2018 was at 26.3%, and increased up to 30.8% in 2019. The total Operating Income to Average Assets ratio in 2017 was at 13.5%, in 2018 was at 13.0%, and decreased up to 12.8% in 2019.

Earning capacity

Earning capacity means a person's capability or power to acquire money by contributing a person's talent, skills, training, and experience. It is also called earning power. Earning capacity is considered in the following situations: when measuring the damages recoverable in a personal- injury lawsuit; and when awarding child support, spousal maintenance, or alimony, and in dividing property between spouses upon divorce in family lawsuits.

Table 15: Earning capacity variation in BK

Frw	2019	2018	2017
Return on Average Assets	3.9%	3.4%	3.4%
Return on Average Equity	18.0%	17.2%	20.2%
Net Interest Margin	11.0%	10.4%	10.4%
Loan Yield	16.2%	15.3%	16.2%
Interest Expense/Interest Income	19.4%	19.4%	22.3%
Cost of Funds	3.1%	3.0%	3.2%

Source: *Secondary data, BK Annual Financial reports, (2021)*

The Earning capacity ratios in BK are detailed as follows, the Return on Average Assets ratio in 2017 was at 3.4%, same as in 2018, and increased up to 3.9% in 2019.

The return on average equity ratio in 2017 was at 20.2%, in 2018 was at 17.2%, and increased up 18.0% in 2019. The Net Interest Margin ratio in 2017 was at 10.4% same as in 2018 and increased up to 11.0% in 2019. The Loan Yield ratio in 2017 was at 16.2%, in 2018 was at 15.3, and increased up to 16.2% in 2019.

The interest expense to interest income ratio in 2017 was at 22.3%, in 2018 was 19.4% and remain stable in 2019 compared to the previous year. The Cost of Funds in 2017 was at 3.2%, in 2018 was at 3.0% and slightly increased up to 3.1% in 2019.

Liquidity

Liquidity describes the degree to which an asset or security can be quickly bought or sold in the market without affecting the asset's price. Several ratios measure accounting liquidity, which differs in how strictly they define liquid assets.

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Table 16: Variation of Liquidity

Frw	2019	2018	2017
Net Loans/Total Assets	66.5%	64.7%	64.9%
Liquid Assets/Total Assets	28.0%	30.1%	28.8%
Liquid Assets/Total Deposits	40.9%	44.5%	42.1%
Liquid Assets/Total Liabilities	35.7%	38.6%	34.7%
Total Deposits/Total Assets	68.4%	67.6%	68.5%
Total Deposits/Total Liabilities	87.3%	86.9%	82.4%
Interbank Borrowings/Total Deposits	7.8%	10.3%	8.6%
Gross Loans/Total Assets	71.2%	68.4%	68.2%
Gross Loans/Total Deposits	104.2%	101.2%	99.5%
Interest-Earning Assets/Total Assets	91.1%	91.1%	91.0%
Leverage (Total Liabilities/Equity)	3.6	3.5	4.9

Source: *Secondary data, BK Annual Financial reports, (2021)*

Liquidity ratios are detailed as follows, the net loans to total assets were at 64.9% in 2017, 64.7 in 2018, and 66.5% in 2019 with an increasing trend. The liquidity assets to total assets in 2017 was at 28.8%, in 2018 was at 30.1% and slightly decrease up to 28.0% in 2019. The liquidity assets to total deposits in 2017 were 42.1%, 2018 was 44.5%, and decreased up 40.9% in 2019. The liquidity assets to total liabilities in 2017 were 34.7%, in 2018 was 38.6% and decrease up to 35.7% in 2019. The total deposits to total assets in 2017 was 68.5%, in 2018 was 67.6%, and increased up 68.4% in 2019. The total deposits to total liabilities in 2017 were 82.4%, in 2018 was 86.9%, and increased up to 87.3% in 2019.

The interbank borrowing to total deposits in 2017 was 8.6%, in 2018 was 10.3%, and decreased by 7.8% in 2019. The gross loans to total assets in 2017 were at 68.2%, in 2018 was at 68.4%, and increased up 71.2% in 2019. The gross loans to total deposit in 2018 were at 99.5%, 101.2% was at 101.2%, and increased up to 104.2% in 2019. The interest-earning assets to total assets in 2017 was at 91.0%, in 2018 was at 91.1% and remain stable at 91.1% in 2019. The leverage (total liabilities/equity) in 2017 was at 4.9%, in 2018 was at 3.5%, and increased up to 3.6% in 2019. Findings show that liquidity of BK describes the degree to which an asset or security is quickly bought or sold in the market without affecting the asset's price in previous years from 2017 to 2019. BK presents effective net loans/total assets; liquid assets/total assets; liquid assets/total deposits; liquid assets/total liabilities; total deposits/total assets; total deposits/total liabilities; interbank borrowings/total deposits; gross loans/total assets; gross loans/total deposits; interest-earning assets/total assets; and leverage (total liabilities/equity).

5.1 Conclusion

In conclusion, findings from the correlation matrix Table 4.12, indicated that there is a strong correlation between capital adequacy and financial sector sustainability as Pearson correlation is 0.784** with the p-value of 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered other factors affecting financial sector sustainability, only capital adequacy in the CAMEL approach has a significant effect of 78.4% on the financial sector sustainability of BK, Rwanda. The results show that there is a strong correlation between asset quality and financial sector sustainability as Pearson

correlation is .799**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01, and this indicates that, out of the considered other factors of the CAMEL approach, only the asset quality has a significant relationship of 79.9% with financial sector sustainability of BK, Rwanda. The results show that there is a positive and very strong correlation between management efficiency and financial sector sustainability of BK as the Pearson correlation is .891**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered other factors that affect financial sector sustainability, only management efficiency has a significant relationship of 89.1% with financial sector sustainability of BK, Rwanda.

The results show that there is a strong correlation between earnings sufficiency and financial sector sustainability of BK as the Pearson correlation is .572**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered other factors that affect financial sector sustainability, only earnings sufficiency has a significant relationship of 57.2% on financial sector sustainability of BK Rwanda. Findings show that there is a strong correlation between liquidity and financial sector sustainability of BK as Pearson correlation is was .616**. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered other factors that affect financial sector sustainability, only liquidity has a significant relationship of 61.6% on financial sector sustainability of BK Rwanda. Findings revealed that the p-value is 0.000 which is less than both standard significance levels of 0.05 and 0.01 as it is an indicator of the existence of a significant relationship between CAMEL approach and financial sector sustainability of BK since, as Pearson correlation value was .854** which is a positive and very strong correlation between two variables (CAMEL approach and financial sector sustainability of BK). Based on the findings obtained above, the research problem was solved, research objectives were achieved, and research questions were answered. It is therefore the study confirmed that there is a significant and positive relationship between the CAMEL approach and the financial sector sustainability of BK, Rwanda.

5.2 Recommendations

Findings in ANOVA Table 4.14 show a level of the fit mode of 41.343 with a p-value of 0.000b which is less than 0.01, set as the standard significance level. This means that null hypotheses included by Ho1 stated that There are no significant effects of capital adequacy on the financial sustainability of Bank of Kigali; Ho2 stated that There are no significant effects of asset quality on the financial sustainability of Bank of Kigali; Ho3 stated that There are no significant effects of management efficiency on the financial sustainability of Bank of Kigali; Ho4 stated that There are no significant effects of earnings sufficiency on the financial sustainability of Bank of Kigali; Ho5 stated that there are no significant effects of liquidity on the financial sustainability of Bank of Kigali" are all rejected and accepted alternative hypotheses confirmed that that independent variable indicated by CAMEL represented by liquidity, capital adequacy, earnings sufficiency, management efficiency, asset quality impact positively and significantly the financial sustainability of Bank of Kigali, Rwanda. According to the findings indicated above, Bank management should improve on the management of bank assets and liabilities, especially on the quality of assets portfolio and deposit liabilities to improve on the achievement of corporate objectives. The corporate governance process is enhanced, adopting national best practices. The regulatory framework is enhanced to be more dynamic and effective as this will impact positively bank management which enhances the financial performance of commercial banks in Rwanda. The

combined effect is that a stable macro-economic environment will enhance bank performance. Thus, the government should strive at achieving a stable macro-economic environment that is conducive for economic activities.

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