EFFECT OF CREDIT RISK MANAGEMENT ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

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ABSTRACT

The overall goal of the research was to establish effect of credit risk management on financial performance of commercial banks in Mombasa County. Credit risk has always been a concern not only to bankers but also to the entire business world because of the dangers or risks business partners may be exposed as a result of a failure by trading partners to meet their obligations on due date. The study adopted a descriptive survey designs because it provided a clear outcome and the characteristics associated with it at a specific point in time. The target population was all the 38 commercial banks in Kenya that were operational. The study made use of secondary data, which was obtained from the financial statements of commercial banks in Kenya and from Central Bank of Kenya's bank supervision reports. The study made use of a data extraction tool to collect secondary data. In the analysis of data, the study used both inferential and descriptive statistics and all statistical analysis were carried out using STATA version 14. Descriptive statistics comprised of frequency distributions, percentages, mean, variances and standard deviation. On the other hand, inferential statistics was carried out using regression analysis, which was either fixed effect or random effects depending on the results from Hausman test. The study found that concentration risk management has a significant effect on the financial performance of commercial banks in Kenya. The study also found that liquidity risk management has a significant effect on financial performance of commercial banks in Kenya. The study revealed that default risk has a negative and significant effect on the financial performance of commercial banks in Kenya. The study further established that institutional risk management has a significant effect on financial performance of commercial banks in Kenya. The study concluded that the management of commercial banks in Kenya should focus on the reduction of the average collection period. In addition, commercial banks in Kenya should focus on the management of liquidity risk so as to improve the financial performance of commercial banks in Kenya. Liquidity risk can also be managed by improving risk reporting abilities, improving company cash flow management, improving balance sheet management and also by improving risk metrics and monitoring processes. Further, the management of commercial banks in Kenya should focus on reducing non-performing loans by improving credit appraisal process and by improving institutional credit policy. Also, the management of commercial banks in Kenya should focus on improving capital adequacy by developing strategies to increase income and reduce inventory and cost of service delivery.

Key Words: Concentration Risk, Institutional Risk, Liquidity Risk, Default Risk Management

INTRODUCTION

The significance of credit administration has attracted much attention making it an imperative subject for economists as well as policymakers employed on monetary as well as pecuniary expansion. The concern is motivated partially since financial institutions stands in lieu of most of buoyant companies in an economy and thus provides momentous portion of service, (Al Zaidanin & Al Zaidanin, 2021). Furthermore, the aviation industry is, by its very nature, a global industry (Ndyagyenda, 2020). The current consideration on credit management similarly emanates from insight amid academicians as well as representatives that financial institutions that doesn't have suitable credit management mechanisms risk making huge losses as put in by Ongore (2017), loan supervision momentously impact accomplishment or disappointment of any organization.

Mwangi (2018) found a significant relationship between financial performance (in terms of profitability) and credit risk management (in terms of loan performance and capital adequacy). Commercial banks with lower non-performing loans and capital adequacy ratios have higher return on equity hence good credit risk management strategies since non-performing loans and capital adequacy ratios are indicators of credit risk management. Mumbi and Omagwa (2017) established that credit risk management affect financial performance of commercial banks in Kenya. An effective credit risk management system reduces the level of nonperforming loan which leads to improved financial performance. Moreover, debt recovery process and credit policy has a significant effect on financial performance of commercial banks. Debt recovery processes such as managing daily and monthly loan portfolio at risk by calling the customers and issuance of demand letters and follow-ups of non-performing loans are essential in credit risk management. In addition, strict adherence to credit policies will salvage the bank from non-performing loans.

Mohamed and Onyiego (2018) observed that operational risk management was the key variable in determining performance of commercial banks in Kenya. Credit risk management significantly affects the financial performance of commercial banks because of failure of counterparties to fulfil their obligations. A decrease in nonperforming loans decreases credit risk which adversely affects financial performance. In addition, liquidity risk management significantly influences financial performance of commercial banks. This indicates that an increase in commercial banks liquidity provides adequate funds for lending which in turn increases interest income and profitability. Furthermore, risk identification and mitigation play the most significant role in influencing financial performance of commercial banks. Kibui and Moronge (2014) found that the Sacco used guarantors, Collaterization, shareholding and insurance as risk mitigation strategies in credit risk management. Credit risk management helps to improve the performance of Saccos to a great extent. Additionally, the SACCO had a customized computer based reporting system which allow for detection of overdue loans in the shortest possible time.

Statement of the Problem

Commercial banks in Kenya act as intermediaries in the transfer of financial resources among the participants in the financial system. The degree of efficiency of financial intermediaries influences economic growth and hence the performance of commercial banks is of paramount importance (Catherine, 2020). Credit risk management plays an important role in the liquidity and loan default rate of commercial banks in Kenya. To ensure consistent improvement in performance, commercial banks have adopted various credit risk management practices such as institutional risk management, liquidity risk management, default risk management and concentration risk management (Siddique, Khan & Khan, 2021). However, despite the adoption of these risk management practices, the financial

performance of commercial banks in Kenya still remains poor.

The profitability of commercial banks has also been decreasing. Further, the pre-tax profit of commercial banks in Kenya decreased by29.3 percent from Ksh.159.1 billion in 2019 to Ksh.112.1 billion in 2020 (Central Bank of Kenya, 2020). The return on assets (ROA) among commercial banks reduced from 3.5% in 2018 to 3.3% in 2019, which later decreased to 2.7% in 2020. In addition, the Return on Equity (ROE) among commercial banks reduced from 22.5% in 2018 to 21.8% in 2019 and then reduced to 13.9% in 2020 (Central Bank of Kenya, 2020). In addition, the bank supervision report by the CBK indicates that the ratio of gross NPLs to gross loans increased from 5.2 % in 2013 to 12.7 % in 2018 and then increased to 12.9% in 2019 and 14.5% in 2020. It is therefore important to examine how credit risk management influences the financial performance of commercial banks in Kenya.

Various studies have been conducted on credit risk management on financial performance of commercial banks. For instance, Githaiga (2018) examined the relationship between credit risk management and the financial performance of commercial banks in Kenya. However, this study conceptualized credit risk management in terms of capital adequacy, management efficiency and liquidity management. In addition, Nguli (2019) examined the relationship between credit risk management and commercial banks' financial performance in Kenya. However, this study conceptualized credit risk management in terms of Capital adequacy, Interest sensitivity ratio and Management Capability and financial performance was measured in terms of return on equity only. This study therefore examined the effect of credit risk management on financial performance of commercial banks in Kenya

Objectives of the Study

The study sought to determine the effect of credit risk management on financial performance of commercial banks in Kenya. The specific objectives were;

- To determine the effect of concentration risk management on financial performance of commercial banks in Kenya.
- To establish the effect of institutional risk on financial performance of commercial banks in Kenya.
- To establish the effect of liquidity risk management on financial performance of commercial banks in Kenya.
- To determine the effect of default risk management on financial performance of commercial banks in Kenya.

The research tested the ensuing null hypothesis:

- H_{01}: Concentration risk management does not have a statistically significant effect on financial performance of banks in Mombasa.
- H_{02}: Institutional risk does not have a statistically significant effect on financial performance of banks in Mombasa.
- H_{03}: Liquidity risk management does not have a statistically significant effect on financial performance of banks in Mombasa.
- H_{04}: Default risk management does not have a statistically significant effect on financial performance of banks in Mombasa.

LITERATURE REVIEW

Theoretical Framework

Modern Portifolio Theory

The modern portfolio theory was developed by an economist known as Makowitz in 1950s. The theory is based on the importance of portfolios, risks and diversification and the relationships between them. Specifically, modern portfolio theory is a set of principles and equations that enable investors to get an understanding of how to create a diversified portfolio aimed at mitigating risk and volatility. Therefore, the theory is based on the argument that most investors are inherently risk averse (Elger, 2017). The theory indicates that if investors are willing to assume additional risk involvement in an investment, it will be because it is expected to lead

to an increased return. So as to develop risk-expected return profile effectively, two particular parameters should be established: portfolio volatility and expected returns in a portfolio. Risks experienced by investors can be either unsystematic or systematic risks. Systematic risks are the kind of risks that investors cannot hedge against and they encompass economic phenomenon such as depression. Unsystematic risk is that which investors can hedge against through diversification.

Financial Intermediation Theory

The financial intermediation theory was initiated from the exertion of Mendoza, Yelpo, Velso Ramos and Fuentealba (2020). Financial intermediation is a procedure that comprises additional units putting coffers with monetary institutions who then lend to shortfall units, (Bandyopadhyay, 2021). According to the theory, fiscal intermediaries materialize due to failure of having comprehensive info, high transactional costs as well as the regulation procedures.

The theory sights intermediaries as a way of plummeting informational asymmetries as well as transaction costs via assembling resources of clienteles which lead to scale frugalities (Simpasa & Pla, 2017). The utmost significant involvement of intermediaries is a stable movement of coffers from surplus to shortage components. This research espoused the monetary intermediation theory since it attempts to validate the details behind monetary establishments founding alternate banking networks. Formation of alternative banking networks i.e mobile banking is seen as means that may result to future development of the financial institution, maintenance of liquidity as well as sustainability of the bank.

Asymmetric Information Theory

Asymmetric Information Theory was established by Myers in 1984. Information asymmetry refers to a condition in which enterprise proprietors or administrators recognize more about the projections for, as well as risks facing their firms, than do moneylenders, (Alim, Ali & Metla, 2021).

The theory designates a state where parties involved in a task don't know pertinent info. In a debt market, info asymmetry rises when a debtor typically has info regarding probable risks as well as earnings correlated with investment ventures for which the coffers are reserved. The creditor alternatively does not have adequate info regarding the debtor, (Effiong & Enya, 2020).

Credit Scoring Theory

The credit scoring theory as well as reasonable pricing of default risk was developed by Satyajit in 2014. The first stride in restraining credit risk encompasses screening customers ensuring that they are prepared as well as having the capacity to repay a debt. Banks apply 5Cs model of loans to appraise a client as a possible debtor, (Zeitun, 2018). The 5Cs aid fiscal establishments to upsurge loan enactment, since they get to distinguish their clienteles. These 5Cs are: character, capacity, collateral, capital as well as condition. Character is defined as the honesty as well as truthfulness of the enterprises proprietors since it's a sign of the candidate's readiness to refund as well as capacity to manage the firm. Capacity measures whether money movement of the enterprise can settle its credit. Capital refers to the assets as well as obligations of the enterprise or household**.** Collateral refers to access to an asset that a borrower is eager to relinquish in a circumstance of failure to pay or an assurance by an appreciated individual to reimburse a credit in default. Finally, conditions refer to an enterprise strategy that reflects on the level of rivalry as well as the market in lieu of the product or services as well as legal and fiscal atmosphere. The 5Cs require to be encompassed in the credit scoring model.

Theory of Performance

It was developed by Elger (2017) recounts six initial notions to make an agenda that may be used towards elucidating enactment and recital enlargements: setting, level of acquaintance, assistances, uniqueness, peculiar aspects, as well as static aspects. A worker maybe a person or rather a collection of persons appealing in a collective

exertion. Emerging enactment involves expedition, as well as enactment level describing situation along the voyage (Chairani & Siregar, 2019).

Though other aspects impelling enhancing enactment remain to be unassailable, some aspects may be prejudiced by organization or through others (Santomil & Herrera, 2020). The aspects that differ are categorized to three axioms for effective enactment enhancements. It encompasses a worker's mindset, engagement in an inspiring atmosphere as well as appointment in an insightful exercise (Rakauskaite, 2017). A ToP enlightens establishments via the inkling of scrutinizing enactment level of the association, (González, Santomil & Herrera, 2020). This theory helped in understanding default risk management on financial performance in commercial banks. This study will use the theory of performance to describe the performance of commercial banks in Kenya measured in terms of return on assets.

Conceptual Framework
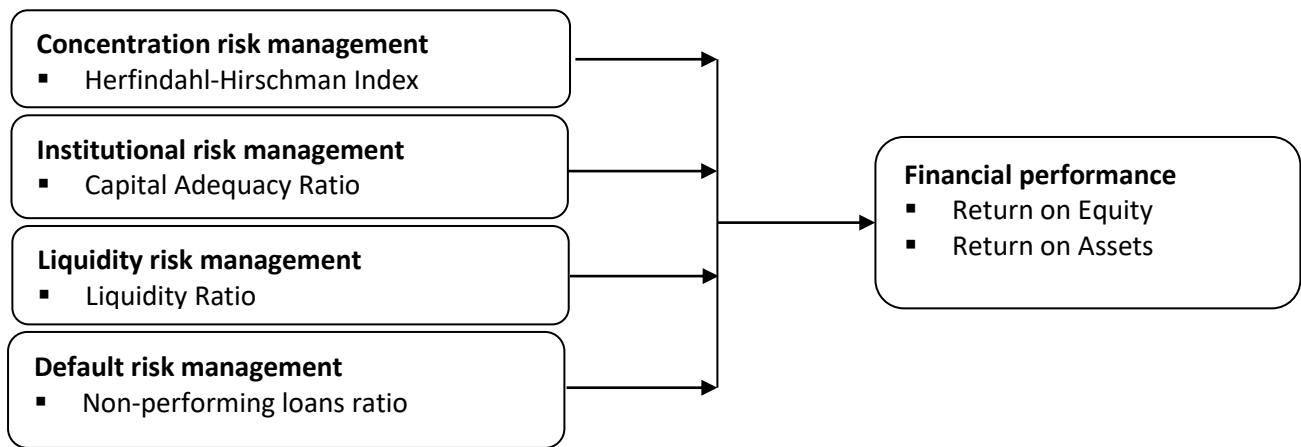
Independent Variables   Dependent Variable

Figure 1: Conceptual Framework

Empirical Literature Review

Concentration risk is the potential for a loss in value of an investment portfolio or a financial institution when an individual or group of exposures moves together in an unfavorable direction. The implication of concentration risk is that it generates such a significant loss that recovery is unlikely (Onyancha, 2019). Simpasa and Pla (2017) assessed the effect of credit concentration and risk in Zambia, using bank-level data. The study found that small banks have a less diversified credit portfolio than medium and large sized counterparts. In addition, banks' credit concentration is inversely related to risk. The study suggests that by concentrating lending to few sectors, banks are able to reduce costs of monitoring and hence risk, which in turn improves overall profitability. Simpasa and Pla (2017) measured concentration risk management in terms of Herfindahl-Hirschman Index. This study measured concentration risk management using Herfindahl-Hirschman Index.

Institutional risk management, also known as Enterprise Risk Management (ERM) is "a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across institution, designed to identify potential events (risks) that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives (Chairani and Siregar, 2019).

Odipo (2020) conducted a study with an aim of assessing the effect of institutional risk management on financial performance of insurance firms in Kenya. Secondary data used was from 54

IRA registered insurance companies. Data collection was done from published reports provided by IRA for a period of 10 years, from 2009 to 2019. The study established a negative correlation between liquidity risk management and financial performance, all other independent variables (credit risk management and firm size) were all positively correlated with the dependent variable (financial performance).

Liquidity risk is defined as the risk of incurring losses resulting from the inability to meet payment obligations in a timely manner when they become due or from being unable to do so at a sustainable cost (Effiong & Enya, 2020). Using descriptive study design, Mwangi (2019) carried out a study to determine the effect of liquidity risk management on the financial performance of Commercial Banks in Kenya. The population for this research was the 43 listed Commercial Banks in Kenya analyzed for a period from 2010-2013. The study found that liquidity risk management has a significant negative relationship with financial performance of commercial banks. Borrowings from banks by commercial banks to meet shorter liquidity needs do have the greatest impact on liquidity. Moreover, holding more liquid assets as compared to total assets will lead to lower returns to commercial banks in Kenya although the effect is not significant. In addition, holding more liquid assets as compared to total deposits will lead to lower returns to commercial banks in Kenya.

Default risk is the risk that a lender takes on in the chance that a borrower will be unable to make the required payments on their debt obligation. Lenders and investors are exposed to default risk in virtually all forms of credit extensions (Mushafiq, Sami, Sohail & Sindhu, 2022). Abaidoo (2018) carried out a study with the purpose of examining the determinants of loan default and its effects on financial performance of commercial banks in Ghana by using Fidelity Bank Limited as a case study. The study employed quantitative and qualitative research techniques as the research design. In achieving the research objectives primary

and secondary data was used. The primary data was collected through a well structured questionnaire. Simple random technique was used to select 120 loan clients and a purposive sampling was used to select a credit staff. The data was collected from four branches of Fidelity Bank in the Brong Ahafo Region of Ghana. The study realized that the delays in loan approval, poor management, poor credit appraisal and diversion of loans are the main determinants of loan default in Fidelity bank. The major cause of loan default according to the findings of this study was decrease in demand of goods and service sold by the loan clients. Again, it was realized that loan default has a negative impact on profitability.

METHODOLOGY

Descriptive study design was espoused in the research. The study focused on 38 commercial banks in Kenya that were operational. In data collection, the study made use of secondary panel data. This study covered a time period of 5 years and involved 38 commercial banks. In the analysis of data, the study used both inferential and descriptive statistics and all statistical analysis was carried out using STATA version 14. Descriptive statistics comprised of frequency distributions, percentages, mean, variances and standard deviation. On the other hand, inferential statistics were carried out using regression analysis. The results of the study were presented in tables. The regression model of this study was as specified below;

$$FP_{it} = \beta_0 + \beta_1 CRM_{1it} + \beta_2 IRM_{2it} + \beta_3 LRM_{3it} + \beta_4 DRM_{4it} + \varepsilon_{it} \dots\dots\dots\dots\dots (1)$$

FP is the dependent variable (financial performance), B_0 is the y intercept (Constant), β_1- β_4 are coefficients of determination, CRM is Concentration risk Management (independent variable), IRM is Institutional Risk Management (independent variable), LRM is Liquidity Risk Management, DRM is Default Risk Management (independent variable), ε is the error term, t

subscript represented time, and *i* subscript represented the number of commercial banks.

FINDINGS AND DISCUSSIONS

Descriptive Statistics

The main aim of descriptive statistics is to provide summaries of a population as well as its measures. Further, descriptive statistics encompass, frequency distribution, percentage as a proportion of the population, measures of spread as well as measures of central tendency. Generally, the measures of spread comprise of minimum values, variance, standard deviation, maximum values, kurtosis and skweness. The measures of central tendency in a data set include median, mean and mode. In this study, descriptive statistics entailed calculation of standard deviation, mean, maximum and minimum of dependent variable (return on assets) and the independent variables (concentration risk management, institutional risk management, liquidity risk management and default risk management). This sub-section entailed presentation of standard deviation(s), minimum(s), mean (s) and maximum values of the variables. The results were as depicted in Table 1.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	190	1.010842	5.201387	-32.15	29.1
CRM	190	.4179474	.0660167	.2	.51
LRM	190	42.01443	8.048097	25.72	68.82
DRM	190	17.91963	15.23043	.09	71.58
IRM	190	20.49921	14.84714	-60.6	97.45

There were 190 observations from 38 commercial banks in Kenya covering duration of 5 years (2017 to 2021). From the findings, ROA among the 38 commercial banks in Kenya was 1.010842 per cent and the standard deviation was 5.201387. These findings agree with Onyancha (2019) observation that the average return on assets in commercial banks in Kenya for the period between 2016 and 2019 was 5.0 percent. The minimum ROA was -32.15 per cent and the maximum ROA was 29.1 per cent. The study also found that concentration risk management (Herfindahl-Hirschman Index) for the period between 2017 and 2021 in the 38 commercial banks was 0.4179474 and the standard deviation was 0.0660167. The minimum concentration risk management during the study period was 0.2 and the maximum was 0.51.

The institutional risk management (Capital Adequacy Ratio) for the period between 2017 and 2021 was 20.49921 and the standard deviation was 14.84714. In addition, the minimum proportion of institutional risk management was -60.6 and the maximum was 97.45. The results also indicated that the liquidity risk management in the 38 commercial banks in Kenya was 42.01443 and the standard deviation was 8.048097. The minimum liquidity risk management during the study period was 25.72 and the maximum liquidity risk management was 68.82. The study found that the default risk management in the 38 commercial banks in Kenya covering duration of 5 years (2017 to 2021) was 17.91963 and the standard deviation was 15.23043. The minimum default risk management was 0.09 and the maximum was 71.58.

Diagnostic Tests

Ordinary least squares (OLS) technique is generally the most common linear models' estimation method. Regression analysis can be used to analyse the effect of multiple or many predictors on the dependent variable, at the same time. Nonetheless,

in case a data set fails to satisfy the assumptions of OLS, the results of the regression analysis conducted could be biased or wrong. The satisfaction of OLS technique assumptions leads to unbiased estimates and hence the results are comparatively and fairly close to the truth. The researcher used diagnostic tests to measure the assumptions of ordinary least squares technique. Diagnostic tests focused on autocorrelation test, normality test, heteroscedasticity test, linear test, multicollinearity test, Hausman test and unit root tests.

Test for Normality

The Shapiro–Wilk test is a test of normality. The null-hypothesis of this test is that the population is normally distributed. Thus, if the p-value is less than the chosen alpha level, then the null hypothesis is rejected and there is evidence that the data tested are not from a normally distributed population; in other words, the data are not normal. On the contrary, if the p-value is greater than the chosen alpha level, then the null hypothesis that the data came from a normally distributed population cannot be rejected.

Table 2: Shapiro-Wilk Test

	Shapiro-Wilk		
	Statistic	df	Sig.
Return on Assets	.932	190	.111
Concentration risk management	.935	190	.114
Liquidity risk management	.980	190	.476
Default risk management	.968	190	.065
Institutional risk management	.928	190	.108

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

From the results, return on assets (0.932), concentration risk management (0.935), liquidity risk management (0.980), default risk management (0.968) and institutional risk management (0.928) were normally distributed. This implies that all the independent variables and the dependent variable were normally distributed.

Heteroscedasticity Test

Cook- Weisberg test was used to test heteroscedasticity. Heteroscedasticity is defined as population that has different variabilities (dependent and independent variables).

Homoscedasticity occurs due to variation in the size of error terms across values of independent variables. When there is an increase in heteroscedasticity, then the degrees of assumption that violates the influence of homoscedasticity. The null hypothesis is that there is constant variance while the alternative hypothesis is that there is heteroskedasticity. The impact of violating the assumption of homoscedasticity is a matter of degree, increasing as heteroscedasticity increases.

Table 3: Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of ROA


        chi2(1)      =      0.01
        Prob > chi2  =    0.9077
```

From the findings, as shown in Table 3, it was revealed that the p- value of 0.9077 was greater than the significance level (0.05) implying that there was constant variance in the dataset. This implies that there was homoscedasticity in the data set.

Multicollinearity Test

The variance inflation factor (VIF) quantifies the severity of multicollinearity in an ordinary least squares regression analysis. It provides an index that measures how much the variance (the square of the estimate's standard deviation) of an estimated regression coefficient is increased because of collinearity. A variable whose VIF value is greater than 10 may requires further investigation.

Table 4: Collinearity Statistics

Variable	VIF	1/VIF
DRM	1.26	0.792685
IRM	1.25	0.797379
CRM	1.12	0.896273
LRM	1.10	0.912609
Mean VIF	1.18	

From the findings, the VIFs for the variables, default risk management (1.26), institutional risk management (1.25), concentration risk management (1.12) and liability risk management (1.10) were less than 10. This implies that there was no severe multicollinearity. This implies that the results of the multiple regression equation are not misleading, since the independent variables in the multiple regression equation are not highly correlated among themselves.

Autocorrelation Test

The Lagrangian multiplier test helps decide between a random effects regression and a simple OLS regression. The null hypothesis in the LM test is that variances across entities are zero. This implies no significant difference across units (i.e. no panel effect). The results were as shown in Table 5.

Table 5: Breusch-Godfrey Langrage Multiplier test

```
Breusch and Pagan Lagrangian multiplier test for random effects

        ROA[Bank,t] = Xb + u[Bank] + e[Bank,t]

        Estimated results:
                             Var        sd = sqrt(Var)

                ROA        27.05443         5.201387
                  e         8.657648         2.942388
                  u        10.33352          3.21458

        Test:    Var(u) = 0
                          chibar2(01) =    77.90
                     Prob > chibar2 =    0.0000
```

As shown in Table 5, the p-value (0.000) is less than the significance level (0.05), we can conclude that variances across entities are not zero, which means that there is significant difference across units (there is panel effect).

Linearity Test

Scatterplots are useful for interpreting trends in statistical data. Each observation (or point) in a scatterplot has two coordinates; the first corresponds to the first piece of data in the pair (that's the X coordinate). The second coordinate corresponds to the second piece of data in the pair (that's the Y-coordinate). The point representing that observation is placed at the intersection of the two coordinates. The value (-1) is used to indicate a perfect negative correlation while the value of (+1) is used to indicate a perfect positive correlation hence when the value is (0) it indicates that the correlation is absolutely absent. When the value is close to -1 or +1, it indicates that the correlation stronger or the relationship between the variable is stronger. Weaker correlation is indicated when the number is very close to 0.
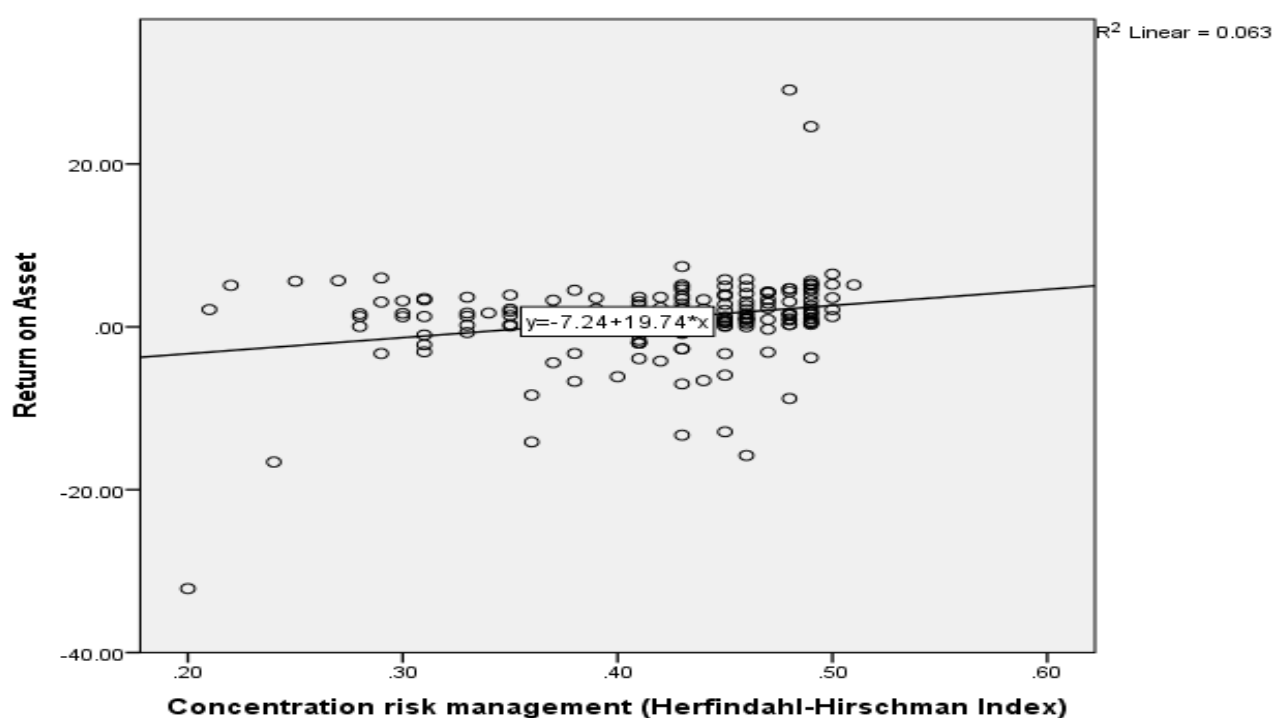

Figure 2: Concentration Risk Management and Return on Assets

Positive linear association between concentration risk management and return on assets is indicated by the use of scatter plot. In addition, concentration risk management (Herfindahl-Hirschman Index) can explain 6.3% (R^2) of the financial performance of commercial banks in Kenya measured in terms of return on assets. The findings agree with Alfaraj and Qasem (2021) observation concentration risk management positively affects financial performance of Jordanian commercial banks.
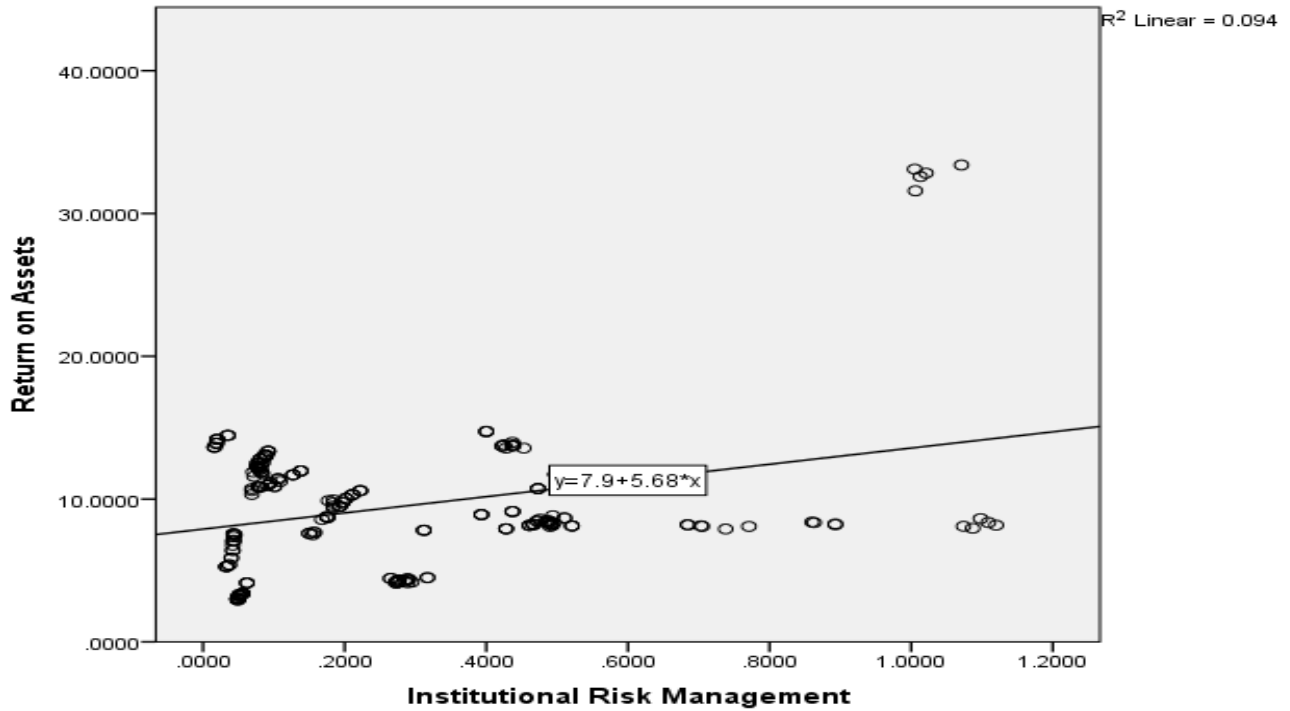
Figure 3: Institutional Risk Management and Return on Assets

In Figure 3, the scatter plot indicates a positive linear association between institutional risk management (Capital Adequacy Ratio) and financial performance. In addition, institutional risk management (Capital Adequacy Ratio) can explain 9.4% of the financial performance of commercial banks in Kenya measured in terms of return on assets. The findings concur with Olayinka, Emoarehi, Jonah and Ame (2017) observation that institutional risk management (ERM) has a positive and significant effect on financial performance.

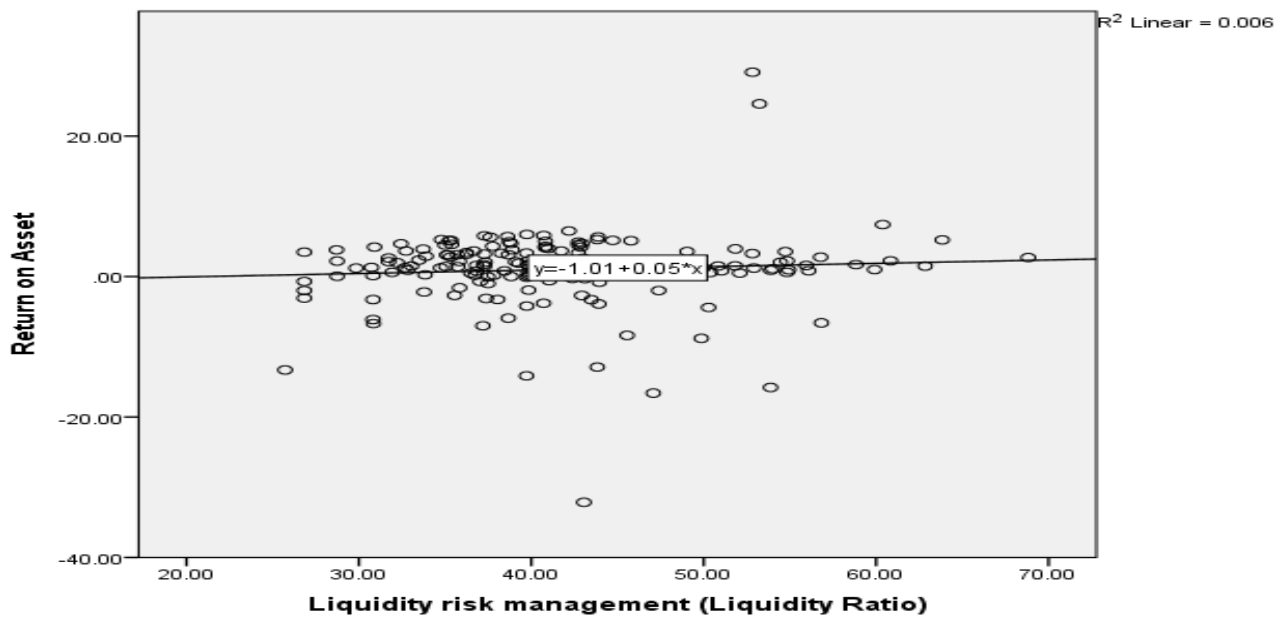

Figure 4: Liquidity Risk Management and Return on Assets

In Figure 4, the scatter plot indicates a positive linear association between liquidity risk management (Liquidity Ratio) and financial performance. Further, liquidity risk management

(Liquidity Ratio) can explain 0.6% of the financial performance of commercial banks in Kenya measured in terms of return on assets. These findings are in line with Alim, Ali and Metla (2021)

argument that liquidity risk management had a positive effect on financial performance of Commercial Banks in Pakistan.
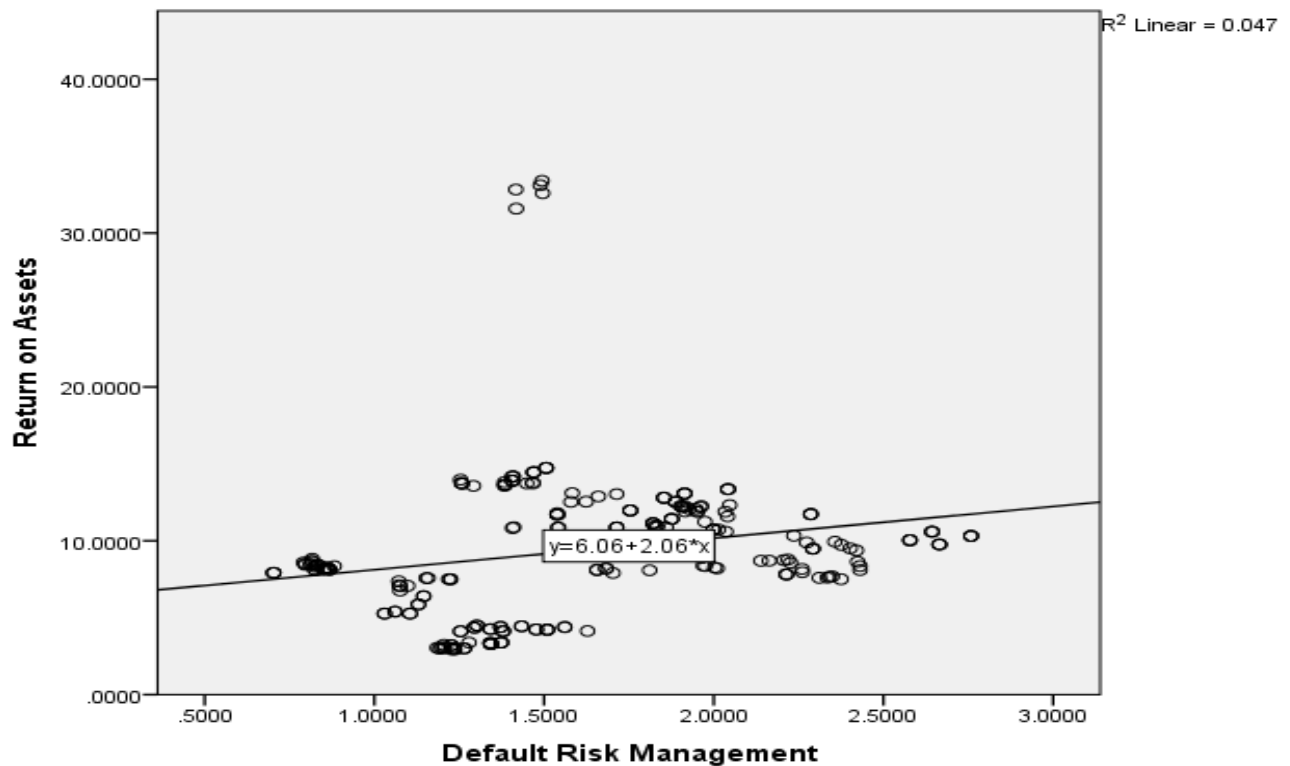

Figure 5: Default Risk Management and Return on Assets

In Figure 5, the scatter plot indicates a positive linear association between default risk management (Non-performing loans ratio) and financial performance. Further, default risk management (Non-performing loans ratio) explains 4.7% of the financial performance of commercial banks in Kenya measured in terms of return on assets. The findings concur with Mutua (2017) argument that default risk management positive influences financial performance of Savings and Credit Co-Operative Societies in Kitui County.

Unit Root Test

Im, Pesarian and Shin denoted IPS proposes a test for the presence of unit roots in panels that combines information from the time series dimension with that from the cross section dimension. Since the IPS test is a superior test to analyze panel data, it was adopted in this study. Under the null hypothesis, there is a unit root, while under the alternative hypothesis there is partial unit root or some panels are stationary.

Table 6: Im-Pesaran-Shin Unit-Root Test

Variable	t-statistic	p-value	Fixed-N exact critical values		
			1%	5%	10%
Concentration risk management	-1.9886	0.000	-2.200	-1.950	-1.850
Liquidity risk management	-1.5700	0.000	-2.200	-1.950	-1.850
Default risk management	-1.4421	0.000	-2.200	-1.950	-1.850
Institutional risk management	-1.7444	0.000	-2.200	-1.950	-1.850
Return on Assets	-2.2410	0.000	-2.200	-1.950	-1.850

The null hypothesis indicated that concentration risk management in all panels (38 commercial banks) contains unit roots and the alternative hypothesis was that some panels are stationary. Since the p-value (0.000) was less than the significance level (0.05), we can fail to accept the null hypothesis. This implies that concentration risk management has partial unit root (some panels are stationary).

In relation to liquidity risk management, the null hypothesis is that liquidity risk management in all panels (38 commercial banks) contains unit roots and the alternative hypothesis was that some panels are stationary. Since the p-value (0.000) was less than the significance level (0.05), we can fail to accept the null hypothesis and hence liquidity risk management has partial unit root (some panels are stationary).

In relation to default risk management, the null hypothesis is that default risk management in all panels (38 commercial banks) contains unit root. Since the p-value (0.000) was less than the significance level (0.05), we can fail to accept the null hypothesis and hence default risk management has partial unit root (some panels are stationary).

Regarding institutional risk management, the null hypothesis is that institutional risk management in all panels (38 commercial banks) contains unit root. Since the p-value (0.000) was less than the significance level (0.05), we can fail to accept the null hypothesis and hence institutional risk management has partial unit root (some panels are stationary).

Regarding the dependent variable, return on assets, the null hypothesis is that return on assets in all panels (38 commercial banks) contains unit root. Since the p-value (0.000) was less than the significance level (0.05), we can fail to accept the null hypothesis and hence return on assets has partial unit root (some panels are stationary).

Hausman Test

Hausman Test was used to detect the presence of endogenous repressors in a particular regression model (Kothari, 2017). The presence of endogenous repressor leads to failure of OLS estimator. Hence, it is assumed that there is absence of correlation between error terms and predator variables. The null hypothesis in this study was that random influence was the most preferable model while fixed influence model was alternative hypothesis.

Table 7: Hausman Test

	─── Coefficients ───			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
CRM	20.32298	21.37148	−1.048499	3.835849
LRM	.2053081	.1334526	.0718555	.0369381
DRM	.0081175	−.058211	.0663285	.016672
IRM	−.1847041	−.1677979	−.0169062	.0100973

```
                    b = consistent under Ho and Ha; obtained from xtreg
          B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

          chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                  =        3.56
          Prob>chi2 =     0.4681
          (V_b-V_B is not positive definite)
```

As illustrated in Table 7, Hausman specification test p value (0.4681) was more than the alpha value of 0.05 (at 95% confidence interval). This implied that the null hypothesis failed to be rejected implying that the study needs to use random effects model.

Regression Analysis

Regression analysis was used to measure the weight of the association between the independent variables and the dependent variable. The basic model was specified as follows:

The regression model will be expressed as follows;

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon_{it}$$

Y_{it} is the dependent variable (financial performance), B_0 is the y intercept (Constant), β_1- β_5 and coefficients of determination, X_{1it} is the concentration risk management, X_{2it} is the institutional risk management, X_{3it} is liquidity risk management and X_{4it} is default risk management. While i represent the number of observations, t is the number of observations for a particular bank (time series data) and ε_{it} is an error term.

Table 8: Regression Results

```
Random-effects GLS regression              Number of obs        =          190
Group variable: Bank                       Number of groups     =           38

R-sq:  within  =  0.4653                    Obs per group: min =            5
       between =  0.2052                                  avg =          5.0
       overall =  0.5412                                  max =            5

                                           Wald chi2(4)         =       106.79
corr(u_i, X)   =  0 (assumed)               Prob > chi2         =       0.0000
```

ROA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
CRM	.37148123	.9869911	3.57	0.000	9.637191	33.10577
LRM	.1334526	.0525062	2.54	0.011	.0305423	.2363629
DRM	.0582113	.0283184	2.06	0.040	.113714	.0027079
IRM	.1677979	.0262478	6.39	0.000	.2192427	.1163531
_cons	-9.0454	2.633084	-3.44	0.001	-14.20615	-3.884651
sigma_u	3.2145797					
sigma_e	2.9423882					
rho	.54412247	(fraction of variance due to u_i)				

In the results, the R-squared shows the variation in the dependent variable that can be explained by the independent variables. From the findings the r-squared for the relationship between credit risk management and financial performance (return on assets) of commercial banks in Kenya was 0.5412 This implies that the independent variables (concentration risk management, institutional risk management, liquidity risk management and default risk management) explain 54.12% of the dependent variable (financial performance). In this study, the p-value for the F-test was 0.000, which is less than the significance level (0.05). This means that the model is a good fit for the data.

Interpretation of the coefficients includes both the within-entity and between-entity effects. In this study data represents the average effect of X over Y when X changes across time and between companies by one unit. In addition, two-tail p-values test the hypothesis that each coefficient is different from 0. To reject this, the p-value has to be lower than 0.05, if this is the case, then the variable has a significant influence on the dependent variable (Y).

From to the findings, concentration risk management has a significant effect on the financial performance of commercial banks in Kenya as shown by a beta coefficient of 0.37148123. This implies that a unit increase in concentration risk

management across time and commercial banks companies would lead to a 0.37148123 increase in the financial performance. The association was significant as the p-value (0.000) was less than the significance level (0.05). These findings agree with Simpasa and Pla (2017) findings that by concentrating lending to few sectors, banks are able to reduce costs of monitoring and hence risk, which in turn improves overall profitability in Zambia.

The study found that liability risk management has a significant effect on financial performance of commercial banks as shown by a regression coefficient of 0.1334526. This shows that a unit increase in liability risk management across time and commercial banks would lead to a 0.1334526 increase in financial performance. The association was significant as the p-value (0.011) was less than the significance level (0.05). These findings agree with Mwangi (2019) findings that liquidity risk management has a significant relationship with financial performance of commercial banks in Kenya.

In addition, default risk management measured in terms of non-performing loans has a positive and significant effect on the financial performance of commercial banks as shown by a regression coefficient of 0.0582113. This shows that a unit increase in default risk management across time and commercial banks would lead to a 0.0582113 increase in financial performance. The association was significant as the p-value (0.040) was less than the significance level (0.05). This implies that default risk management leads to an increase in return on assets. The findings are in line with Mutava and Ali (2017) argument that there is a correlation between default risk management with performance of the banks.

The findings revealed that institutional risk management has a positive and significant effect on financial performance of commercial banks as shown by a beta coefficient of 0.1677979. The association was significant as the p-value (0.000) was less than the significance level (0.05). The findings conform to Chairani and Siregar (2019)

findings that institutional risk management has a positive significant effect on financial performance and firm value in Indonesia, Malaysia, Philippines, Singapore and Thailand.

CONCLUSION AND RECOMMENDATIONS

The study concluded that concentration risk management (Herfindahl-Hirschman Index) has a significant effect on the financial performance of commercial banks in Kenya. This implies that an increase in concentration risk management leads to an improvement in the financial performance. The study also concludes that liquidity risk management (liquidity ration) has a significant effect on financial performance of commercial banks in Kenya. This implies that liquidity risk management positively and significantly influences financial performance.

The study concluded that default risk (non-performing loans) has a negative and significant effect on the financial performance of commercial banks in Kenya. This implies that an increase in risk management leads to an increase in the financial performance of commercial banks in Kenya. The study further concludes that institutional risk management (capital adequacy ratio) has a significant effect on financial performance of commercial banks in Kenya. This implies an increase in institutional risk management leads an improvement in the financial performance of commercial banks.

The study found that concentration risk management has an effect on the financial performance of commercial banks in Kenya. The study recommends that the management of commercial banks in Kenya should focus on the reduction of the average collection period. The concentration risk can also be managed through the use of diversification across and within varying asset classes and investment sectors. Apart from offering financial services, commercial banks can also offer insurance services and investment options.

The study established that liquidity risk management has a significant effect on financial

performance of commercial banks in Kenya. The study therefore recommends that commercial banks in Kenya should focus on the management of liquidity risk so as to improve the financial performance of commercial banks in Kenya. Liquidity risk can also be managed by improving risk reporting abilities, improving company cash flow management, improving balance sheet management and also by improving risk metrics and monitoring processes.

The study found that default risk management (non-performing loans) has a negative and significant effect on the financial performance of commercial banks in Kenya. The study recommends that the management of commercial banks in Kenya should focus on reducing non-performing loans by improving credit appraisal process and by improving institutional credit policy. On strategies for managing nonperforming loans, constant monitoring should increases the chance that the company will respond to a bank's concern and provide information more willingly.

The study revealed that institutional risk management (capital adequacy ratio) has a significant effect on financial performance of commercial banks in Kenya. The study therefore recommends that the management of commercial

banks in Kenya should focus on improving capital adequacy by developing strategies to increase income and reduce inventory and cost of service delivery. The cost of service delivery can be reduced by increasing the use of information technology in service delivery through the adoption of mobile banking, agency banking, electronic banking among other platforms.

Suggestions for Further Studies

This study was conducted on the effect of credit risk management on financial performance of commercial banks in Kenya. However, the study was limited to commercial banks in Kenya and hence the findings cannot be generalized to other financial institutions like microfinance institutions and SACCOs. Therefore, comparative studies should be conducted on the on the effect of credit risk management on financial performance among other financial institutions in Kenya. The study found that concentration risk management, institutional risk management, liquidity risk management and default risk management explain 54.12% of the financial performance of commercial banks. This study therefore suggests further studies should be conducted on other factors affecting the financial performance of commercial banks in Kenya.

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