BANK CHARACTERISTICS AND NON PERFORMING LOANS OF COMMERCIAL BANKS LISTED AT THE NAIROBI SECURITIES EXCHANGE, KENYA

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D53/OL/CTY/32851/2016

A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF BUSINESS IN PARTIAL FULFILLMENT OF THE REQUIREMENTM FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION (FINANCE OPTION) OF KENYATTA UNIVERSITY

JUNE, 2021

DECLARATION

Declaration by the Student

I affirm that this project is my original work and has not been presented for an award of a degree in any other University for examination purposes.

Signature..... Date.....

CATHERINE MWENDWA BAITUTI

D53/OL/CTY/32851/2016

Declaration by the Supervisor

This project has been developed under my guidance as the University appointed supervisor.

Signature..... Date.....

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DEDICATION

With thankfulness and great regard, I dedicate this project to mum who have been inspiring me when am down and has been praying for my success in my life. I'm thankful to my wonderful dad who has been encouraging me to soar higher and taught me since I growing up that that "Do not love sleep, or you will become poor''. He implied that oversleeping in the morning is the root cause of poverty.

ACKNOWLEDGEMENT

My foremost appreciation is to God for granting me with the energy to do this project. I also appreciate my supervisor, Mr. Dominic Ngaba, for his support and patient as I undertook this project. The friendship of Silvia, Joseph, Silas and Winnie and my KU class mate cannot go unrecognised especially in their discussions and critical thinking that gave me capacity to sharpen project. I am especially beholden to Mr. George who is also my immediate boss, who has been considerably helpful in my career. Pen ultimately, I thank my parents, Mwonjia and Baituti whose affection and assistance have made me reach where i am. Lastly I appreciate the siblings alongside my loving and supportive husband Mbaabu, and my brilliant daughter Alvita Taraj who have provided unending inspiration.

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ABBREVIATIONS AND ACRONYMS

AQ	Asset Quality.
BS	Bank Size.
CBK	Central Bank of Kenya.
CRB	Credit Reference Bureaus.
NPL	Non Performing Loans.

OPERATIONAL DEFINITION OF TERMS

Asset Quality	Process of evaluating an asset with an aim of ascertaining the credit risk that is associated with it. This enquiry applied the ratio NPL to entire loans.
Bank Characteristics	These are internal factors that are within the control of managers and are influenced by management decisions.
Bank Size	The entire assets of bank; it is ascertained through usage of total assets.
Capital Adequacy	Amount of capital that banks need to help them bear uncertainties relating of banks operation for them to withstand possible losses.
Non-Performing Loan	These are loans that are close to being default or are already in default. This study considered those loans that have gone beyond their due date by ninety days.
Operational efficiency	This is an evaluation of a bank's capability to make income using its assets.
Earnings	This is the banks income as measured by Earnings before interest and tax

ABSTRACT

The main role played by commercial banks is financial intermediation, that is, the channeling of funds from extra to deficits units to facilitate production activities. However, the greatest risk faced by bank is loan default, also known as non performing loans. The upsurge in non-performing loans among banks in Kenya has been a source of worry to all stakeholders. This is because they lead to problems on banks' assets as well as bank's balance sheet, and have a negative consequence due to underlying loan losses provision. Majority of previous empirical works were in advanced nations and some on other developing nations apart from Kenya. Other studies similarly, did not considered diagnostics tests for purposes of ensuring that the research data is adequate and appropriate for inferential estimations. The study sought to find out on what effect bank characteristics has on none performing loans of banks, in the Nairobi Securities Exchange. Purposely it is going to establish the consequence of size of bank, adequacy of capital and earnings on non performing loans of listed banks in Nairobi Securities Exchange. Theory of optimal bank size, Buffer on capital adequacy and Efficiency Structure Theories are used. Causal design of research was relied upon. Research population comprises of the 11 (eleven) banks listed on the Nairobi Securities Exchange, Kenya where a census approach was relied on. The period that was considered in the study is from 2012 to 2017. Panel regression was used in analyzing the data. Data presentation is going to be done with the table, figure and charts. Ethical norm, standards and guidelines were followed in carrying out this research work. The study concluded that capital adequacy had insignificant effects on non performing loans of listed commercial banks in Kenya. The study concluded that bank size and earnings had insignificant effects on non performing loans of listed commercial banks in Kenya. The study is of the recommendation that banks should have in place measures that will scale down the long procedures in banks. The study further recommends that banks should diversify their investments. Other than the traditional activities of lending, banks can also explore other business lines so as to curb the consequence of over reliance on lending.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Banking in Kenya and the financial services in general has been identified as a vital pillar towards Vision 2030 of bringing Kenya to a middle income status by offering a facilitating macro-economic steadiness for development (CBK, 2017). Since banks are such critical entities in an economy the stability and success as going concerns is given a lot of attention by various stakeholders including the national government through the central Bank of Kenya by enacting regulations as mandated.

None performing loans (NPLs) do not accrue interest any longer and thus no installments are received from them for the reason that these loans stop making income for a bank. According to Edson, Michael, Manuere and Clifford (2012) NPLs are those kinds of loans whose due date is already beyond 90 days and for this reason, they are no longer considered for interest accruals. A loan is not performing if already it is defaulted or is near to being defaulted (Badar and Javid, 2013). When the NPL level is high it is an alarm bell for a bank on the potential failure and often misrepresents efficiency and cost structure (Cucinelli, 2015).

When the NPL is high, the bank capital is tied up. It also results in a huge provision of loan leading to a shrink in capital resources that are on hand for lending, cut in bank profitability and an increase in the cost of funding, therefore making credit supply diminish (Shekhar, 2015). When banks are characterized by severe NPLs, the possibility of it focusing on the consolidation

internally alongside asset quality improvement will be higher as opposed to the provision of fresh credit (Farhan, Sattar, Chaudhry, & Khalil, 2012). The expeditious reduction of NPLs is hence fundamental in promoting credit increase (Ngungu & Abdul, 2020). Additionally, refining the bank channel of lending would result in improvement of the real economy through monetary policy (Shekhar, 2015).

1.1.1 Non Performing Loans

Non-performing Loans are regarded as those that for a somewhat lengthy time don't make income; i.e. the principal and interest has not been paid for more than 90 days (Badar & Javid, 2013). They could also happen in a scenario where the amortization schedules aren't discovered on when they are outstanding and this leads to over-bloated loan outstanding interest for payments. NPL results in lessening in liquidity of banks and credit raise and slow down of expansion ultimately bringing express consequences on the performance of banks.

In a situation where the NPL is high, commercial banks progressively tend to engage in consolidation internally with a sole aim of improving the quality of asset quality as opposed to credit distribution (Lu & Whidbee, 2013). This in turn is at the detriment of borrowers in an economy who pick up loans for investment purposes. Furthermore, the huge level of nonperforming loans prompts commercial banks to move up provision for loan loss which diminishes their revenue besides making funds unavailable for fresh lending. Table 1.1 displays the movement in NPLs in Kenya.

Table 1.1: Trends in Non-Performing Loans of Commercial Banks In Kenya

Year	2010	2011	2012	2013	2014	2015	2016
NPL (%)	6.29	4.43	4.59	5.05	5.46	5.99	11.66

Source: World Bank (2017)

Table 1.1 displays the inclinations in of banks' NPL in Kenya. They have been on an increasing trend.

1.1.2 Kenyan Commercial Banks.

The banking sector includes CBK, as the authority that regulates; 43 institutions of banking, 8 offices that represent banks that are foreign, 13 MFI Banks, 3 CRBs, 17 providers of money transmittal and 77 forex bureaus. Among the 43 institutions, 40 were owned privately but 3 are majorly owned by Government; and out of the 43 banking institutions 15 were foreign controlled while the remaining 28 (twenty eight) are locally owned (Banking Sector Reports, 2016).

There exists eleven Kenyan listed banks namely: CFC Stanbic Ltd, Barclays Bank Ltd, Diamond Trust Bank Kenya Limited, HF Group Limited, NIC Group, Standard Chartered Bank, National Bank of Kenya Ltd, KCB Group Ltd, I&M Holdings Limited, Equity Group Holdings as well as Co-operative Bank of Kenya according to CMA report. These banks have over the years been listed on the NSE, Kenya.

1.2 Statement of the Problem

The main function played by banks is financial intermediation, that is, the channeling of funds from surplus to deficits to promote production activities. However, the greatest risk faced by bank is loan default, also regarded as NPL (Cucinelli, 2015). The growing height of

nonperforming loans among banks in Kenya has been a source of worry to all stakeholders. Kumar and Tripathi (2012) reveal that this is because they lead to problems on the side of asset of the bank's balance sheet, and also inverse consequence on the statement of income mainly because of losses provision on loans. In bad scenarios, huge NPLs levels increases the possibility of a systemic risk, a deposit alarm, limits the intermediation, and consequently, expansion and investment, which can further exacerbate when mixed with shocks externally and bad macroeconomic cycle (Tiwari, 2011).

According to the World Bank report (2017), there has been on an increasing trend of Kenya's NPLs levels. The rising and continuous trends in NPLs which largely began in the year 2012 was documented at 4.59%. This represents an increase in comparison with that of 2011 of 4.43 percent. NPLs levels had be based on an increasing movement form the years 2012 up to 2015. It further significantly increased in 2016 to 11.66% (World Bank, 2017). This however depletes commercial banks liquidity and in the long run profitability of these banks. Thus, over the years, these have been great concerns to the various stakeholders in the financial sector of Kenya because NPLs serve as primary causes of failures in the banking sector and as well as banking crises.

The previous researches on bank characteristics and none performing loans frequently targeted foreign jurisdictions. The inquiry assessed the influence of bank characteristics on NPL of banks quoted on the NSE. It specifically established the influence of the sizes of banks, capital adequacy and banks' earnings on banks NPL for NSE, Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

To look at the effect of bank characteristics on Non Performing Loans of commercial banks recorded on the NSE, Kenya.

1.3.2 Specific Objectives

The precise objectives of the research are:

i) To determine the effect of capital adequacy on Non Performing Loans of banks recorded on the NSE, Kenya.

ii) To examine the effect of bank size on Non Performing Loans of banks recorded on the NSE, Kenya.

iii) To assess the effect of earnings on Non Performing Loans of banks recorded on the NSE, Kenya.

1.4 Research Hypotheses

The study tested the following hypotheses:

H_{01}: Capital adequacy has no significant effect on Non Performing Loans of Non Performing Loans of banks listed on the NSE, Kenya.

H_{02}: Bank size has no significant consequence on Non Performing Loans of banks listed on the NSE, Kenya.

H_{03}: Earnings has no significant consequence on Non Performing Loans of banks listed on the NSE, Kenya.

1.5 Significance of the Study

The inquiry is significant in a variety of aspects. Foremost, it is very important to the Kenyan Government on the dimension of aiding and guiding law makers in formulating of policies affecting financial institutions and commercial banks. Secondly, results of findings from the research will be highly appropriate for executives in banks by educating the management on ways that bank characteristics can impact NPL. Thirdly, the research educates and keeps the general public updated and informed regarding consequence of bank characteristics on NPL. Lastly, it provides a platform for researchers that may wish to engage on additional research on the same. Researchers through this study are provided with empirical model on the effect of bank characteristics and non-performing loans of commercial banks.

1.6 Scope of the Study

The center of attention is on bank size, capital adequacy as well as banks' liquidity and NPL of banks listed. Consequently, the center is going to be all existing banks which are commercial within the period that was considered i.e. from 2012 to 2017. A yearly panel data is going to be employed on11 listed Kenyan banks that were operational in the six-year period.

1.7 Limitations of the study

The major challenge of a research where data (secondary sources) is adopted is authenticity of the data. Researcher tackled this challenge by getting an approval letter from Kenyatta University Graduate School to make application for research consent at NACOSTI. The research consent was useful in approaching the CBK concerning required data for the study.

1.8 Organization of the study

The research is arranged as outlined: background, objectives, importance, scope and limitations are presented in chapter one. The review of literature (theories) and past works is presented in chapter two. Lastly, the methodological issues of the study are covered in chapter three. The presentation of research findings and analyses are contained in the fourth chapter. The last chapter contains the conclusion, results summary and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter two provides of the literature review; the theoretical and literature review of the study are presented in this part.

2.2 Theoretical Review

This part encompasses the theories to be adopted in the research. They are theory of optimal bank size, buffer theory of capital adequacy and Efficiency Structure theory.

2.2.1 Theory of optimal bank size

The perspective on optimal bank size was propagated by Krasa and Villamil (1992). It is based on the concept that there is need to have an optimal size so that a bank can operate properly. The concept considers a verification model where there are many borrowers alongside lenders a situation which subjects production to; minimum scale requirements of a project, project risk that can arise from diversification and non diversifiable aggregate. Under this perspective, direct contracts involving the borrowers and the lenders can be written. The rationale behind this is that borrowers can engage in investments through contracting with banks which allows deposits from lenders and offer loans to the borrowers. The other logic for this is due to the fact that in an economy, there is no default risk that is trivial; therefore the lenders can monitor both the borrowers and bank

The theory relates to this study in that it explains how optimal bank size brings an implication for the banks' distribution in terms of the size. It is of importance as the investigation focuses its attention on how bank size can influence the NPLs of banks in Kenya

2.2.2 Buffer Theory of Capital Adequacy

According to this perspective, as bank goes towards the minimum requirements of capital, there is a tendency for them to avoid costs that can come with a violation of the established regulatory capital. A breach of the provisions stated in the regulations often leads to penalties consequently most banks have preference towards maintenance of capital levels that are higher than the regulatory levels the essence of which is to reduce the possibilities of coming below the limits (Calem and Rob, 1999). Banks which are sufficiently capitalized tend to have more investment in more risky portfolios with an expectancy of increased (higher) profits.

In examining the link between the adequacy of capital and none performing loans, this theory was pertinent as it gives light on the levels of capital that are fundamental in ensuring that the bank is shielded against the risk arising from the NPLs. The underlying association among capitals of banks and default rates is seemingly captured by Buffer theory of capital adequacy.

2.2.3 Efficiency Structure Theory

This concept was introduced in 1973 by, Demsetz. The perspective suggests that an enhanced scale of administrative efficiency leads to lower non performing loan level which translates to rise in profitability. This concept recognizes the positive relation with regard to industry performance and performance of a firm. Better profits are presumed to build up for the most efficient companies (Ayano, 2016).The efficiency structure perspective has two propositions: the

X and scale efficiency hypotheses. The former is premised on the idea that banks that has superior management and cost control practices costs stand a better chance of improving profit. The latter stands on the idea that through a superior scale of operation, certain banks can lower their costs (Kimande, 2017).

Efficient management of banks by managers results in lower level of nonperforming loans. Efficiency of banks can be assessed through NPL of an organization. Therefore, the higher the operational efficiency of banks' the less their NPL level while the lower the operational efficiency, the more the degree of NPL. The preposition of this perspective reinforces the operational efficiency which was applied in this investigation.

2.3 Empirical Review

The appraisal of literature relating to bank characteristics and NPL is presented in this section and the gaps identified thereafter.

2.3.1 Capital Adequacy and Non Performing Loans

Klein (2013) carried out a study on NPLs for South Eastern, Eastern as well as Central covering 1998 through 2011. The study utilized panel modelling procedure where yearly data was used. Its outcome indicate reveals that capita adequacy of banks has a inverse and considerable influence on None performing loans' level. Importantly, CESEE was the focus of the study. In bridging the background gap, the present study concentrated on listed Kenyan banks.

Hassana, Ilyas and Rehman (2015) carried out a research on explicit bank and social variables that have a consequence on Pakistan's non-performing loans. A survey questionnaire method

was employed. Using multiple regression, outcome disclose that sufficiency of capital has a inverse but noteworthy consequence on None Performing Loans. Nonetheless, the main focal point was the Pakistani banks. The in progress study is going to be concentrated on listed Kenyan banks. Similarly, it was reliant on multiple regression model and diagnostics tests weren't undertaken prior to inferential examination. In solving this gap, the present study utilized panel regression where the assumptions were before inferential analysis.

An examination by Hue (2015) on the factors predicting the degree of NPL for Vietnam commercial banks was done. It examined the years from 2009 to 2012. Multiple regression analysis was used in data analysis where the result disclosed that capital sufficiency had a inverse and momentous outcome on none performing loans. This was accredited to the fact the when the banks' capital adequacy is high, banks become cautious in giving out loans. Notably, the attention was banks in Vietnam. The current exploration covered Kenyan banks that are listed.

2.3.2 Bank Size and Non Performing Loans

Klein (2013) examined on non performing loans (NPLs) in Eastern, Central as well as South-Eastern Europe within time scope 1998 - 2011. In the yearly data, the panel modeling method was employed and the outcome came to the conclusion that the NPLs level is accredited to the bank and micro economic conditions. The findings showed that bank size has a inverse a noteworthy consequence on NPL. Nonetheless, main emphasis was on NPLs in Eastern, Central, as well as South Eastern Europe. In bridging the background gap, the present investigation was based on listed Kenyan banks.

Similarly, Warue (2013) examined the connection between NPLs and bank explicit and macro economic factors, and institute the scale at which they lead to banks' NPL in Kenya. The bank explicit issues considered included; bank structures, techniques of managing credit risk alongside quality management. It covered the yearly performance on these aspects from 1995 through 2009 with the use of secondary and primary data. A census covering 44 Kenyan banks was done. A causal design of research premised on the structures of bank was employed. However no evidence was found to the effect that asset size was connected to NPLs covering all categories of banks (small, medium and big banks). Nonetheless, this investigation was based on NPL of all Kenyan banks. The current investigation concentrated on listed Kenyan commercial banks.

Hue (2015) focused on examining bank size and how it affects the extent of none performing loans of banks in Vietnam banking industry while focusing on period 2009-2012. In analyzing the association, an ordinary least square method was used. The result disclosed that bank size has an inverse and significant consequence on degree of NPL. Notably, the research's main emphasis was Vietnam banks. The study is based on listed Kenyan banks where panel regression analysis was employed.

An empirical scrutiny was conducted by Hassana, Ilyas and Rehman (2015) on the bank-explicit and social variables that influence Pakistan banks' NPL. A survey questionnaire method was relied upon in the examination. The outcomes displayed that size negatively and significantly affects None Performing Loans level of banks. Notably, the examination concentrated on Pakistani banks. The investigation was based on listed Kenyan banks. Similarly, the study relied upon primary data unlike the current study which relied on secondary-data.

2.3.3 Earnings and Non Performing Loans

Dinitrios, Angelos and Vasilios (2011) studied on what determines NPL in Greece. The study contained panel data for 9 biggest Greek banks. The data obtained covered the years 2003 up to 2009. Diverse categories of loan (consumer, business and mortgages) were independently analyzed. Earnings was found to have significant consequence on NPL of banks. Nonetheless, the survey's attention was banks in Greece, whereas the study at hand covered the Kenyan listed banks.

Hassana *et al*. (2015) turned its attention on operational efficiency and Pakistan banks' NPL. It sought to find out the consequence of operational efficiency on NPL level of Pakistan banks. The study utilized a questionnaire for data collection and scrutiny done within the structure of multiple regression. Research findings indicate a strong influence of earnings on the level of NPL of banks. The center of the examination was Pakistani banks unlike the present study whose concentration was listed Kenyan banks. Similarly, it used primary data unlike the current study which was reliant on secondary data.

Hue (2015) scrutinized on the core factors that influence the NPL for Vietnam's banks from 2009-2012. OLS for panel data was used when analyzing the link between the NPLs and some bank explicit factors. Results showed that banks' earnings significantly impact non performing Loans. However, it was based on Vietnam banks. The ongoing study concentrated on listed banks.

2.4 Summary of Literature Review and Research Gaps

The appraisal of preceding studies gives proof of gaps. Few examinations regarding bank characteristics and non performing loans have been done. Furthermore, they largely covered other countries. Similarly, the investigations were largely reliant on multiple regression, unlike the present study which was reliant on panel regression where underlying assumptions were met to ensure the research data is okay prior to coming up with inferences.

2.5 Conceptual Framework

The structure exhibits the diagram arrangement of the link among variiables being examined. Bank size, capital adequacy and banks liquidity are displayed as the predictor variables. The dependent variable is non performing loans of banks that are listed at NSE. The changes in bank characteristics are modeled to affect the NPL of listed kenyan banks.

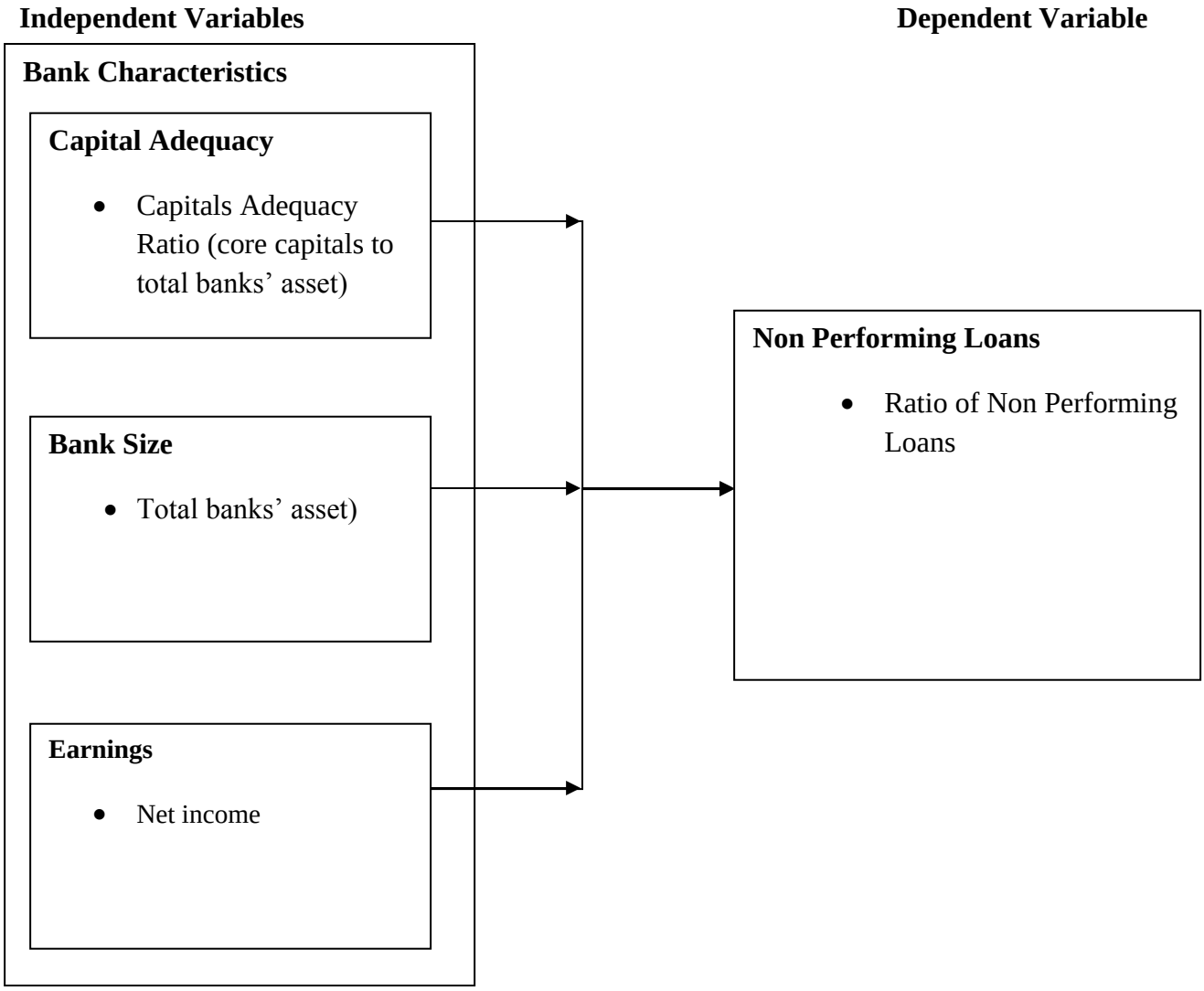

Figure 2.1: Conceptual Framework

Source: Researcher, 2021

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This segment brings out clearly the methodology that was relied on. It brings out the design, population, and instruments to be used in collection of data, design of sampling and the analysis of data.

3.2 Research Design

As pointed by Cooper and Schindler (2009), a design explains framework that would guide the assembling, measuring and data analyzing. It brings out a blue print that will be adopted so as to answer the questions in a research (Mugenda & Mugenda, 2013). For that reason, a causal research design was relied on. Causal researches seek to examine a cause-effect associations existing with variables (Cooper & Schindler, 2009).

3.3 Target Population

It explains the entire elements of attention in a research (Cooper & Schindler, 2009). The population comprises 11 listed Kenyan banks from 2012-2017. Therefore, the unit of analysis comprise of 11 banks while the financial reports of these banks constitute the unit of examination.

3.4 Empirical Model

A panel regression model would be relied upon. Panel regression takes into account heterogeneity, obtains definite estimates besides allowing for individual explicit variables. For

this reason, the non-performing loan of listed banks is going to be analysed as function of bank characteristics (capitals adequacy, banks sizes, and banks liquidity).

$Y_{it} = \beta 0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \epsilon_{it}$

Y_{it}– Non Performing Loan

β0–Constant.

X_{1it} – Capital Adequacy

X_{2it}– Bank Size.

X_{3it} – Banks' Earnings

β1 to β3=Regression coefficients.

ϵ_{it}= Error-term.

3.5 Operationalization and Measurement of variables

Table 3.1: Operationalisation and Measurement of Variables

Variable	Type	Operationalization	Measurement	Hypothesized Direction
Non Performing Loans	Criterion	NPLs Ratios	NPL/ Total Loans	Positive or Negative
Capital Adequacy	Independent	Capital sufficiency ratio	Core Capitals to total Asset	Positive or Negative
Banks Sizes	Independent	Total Volume of Asset	Log of Total Volume of Asset	Positive or Negative
Earnings	Independent	Net income	Earnings after tax	Positive or Negative

Source: Researcher (2021)

3.6 Sampling Design

The core coverage is going to be listed Kenyan banks from 2012 – 2017 where a census was employed in conformity to Mugenda and Mugenda (2013) who proposes a census sampling for a small population. Therefore, there are 11 Kenyan banks listed.

3.7 Data Collection

The investigation depended of data from secondary sources, and where assembled from financials of Kenyan banks. This data was for a 6 year time spanning from, 2012 – 2017. A data collection guided was used which enhanced the process.

3.8 Data Analysis

This process is executed on research data to change it into a form that is usable so as to deduct findings, make conclusions and policy recommendations which is mostly the essence of research. It involves converting raw data into useable form so as to have conclusions and derive implications for policy making. This process was executed through descriptive and inferential investigation. Descriptive brings out the broad description of the variables. Inferential was done using the technique of panel regression. Panel regression presented statistics that can be relied on in making inferences concerning a population. The null hypothesis was tested based on 95 percent confidence level.

3.9 Ethical Considerations

These considerations on ethics provide guidelines that are to be adhered to when conducting a research. Every research is guided by some principles. Adherence to ethical norms is essential because it reinforces the ultimate purpose of research. In doing this research, Kenyatta university guide lines alongside the Kenyan ethical guidelines were duly adhered to the latter. A permit was first obtained through NACOSTI to provide a mandate for approaching the appropriate institutions for data collection.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

The analysis of collected research data and its subsequent interpretation is presented in this chapter. This section further contains the descriptive analysis comprising of means standard deviations and regression analysis which was applied in the research hypotheses testing in line with the various specific objectives of the study.

4.2 Descriptive Analysis

Descriptive analysis of the study variables was done. These provided statistics such as standard deviation, averages, maximum and minimum values and as well as number of observations.

Table 4.1: Descriptive Analysis Results

Variable	Obs	Mean	Std. Dev.	Min	Max
LNPL	55	3.888	0.339	3.024	4.534
CapitalAdeq	55	0.132	0.024	0.032	0.168
LBanksize	55	5.285	0.243	4.670	5.745
Earnings	55	3.675	0.576	0.986	4.310

Source: Research Data (2021)

Table 4.1 depicts the outcome of the descriptive analysis of the study. The descriptive statistics indicate that all the variables used had a total number of observations of 55. Non-performing loans had a mean of 3.888 and standard deviation of 0.339 which means the levels of NPLS had been on a fluctuating trend over the years. Capital adequacy reportedly had an average of 0.132 and standard deviation of 0.024. Mean and standard deviation of 5.285 and 0.0243 were reported for bank size respectively. Earnings of commercial banks had been generally fluctuating as

revealed by a mean and standard deviation of 3.675 and 0.576 respectively. Minimum and maximum values of 0.986 and 4.310 were further reported for earnings of commercial banks listed at the NSE, Kenya.

4.3 Diagnostic Tests

Several diagnostic tests were conducted to ensure that the study variables are in adequate form for inferential analysis.

4.3.1 Multicolliearity Test

Correlation analysis was conducted in this research in assessing the levels of collinearity among the independent variables. The findings are depicted in Table 4.2 below.

Table 4.2: Correlation Test Results

	Capital Adequacy	**Bank Size**	**Earnings**
Capital Adequacy	1.0000		
Bank Size	0.4385	1.0000	
Earnings	0.6448	0.7541	1.0000

Source: Research Data (2021)

The outcome of the correlation analysis in Table 4.2 shows the level of association among the study variables. This was also used to assess whether the level of collinearity among variables is severe or moderate. Wooldridge (2012) put forward a threshold of r 0.8 or -0.8 (or R2 of 64) in testing for multicollinearity. Based on the findings, the coefficients for all the research variables are below 0.8

4.3.2 Heteroskedasticity Test

For purposes of assessing if the error terms across period are correlated, the heteroscedasticity test was conducted. The output from the test is presented in Table 4.3.

Table 4.3: Heteroskedasticity Test Results

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

         chi2(1)      =     3.41
         Prob > chi2  =   0.0647
```

Source: Research Data (2021)

Table 4.3 contains the outcome of the test for heteroskedasticity. The threshold for the Breusch-pagan test is 0.05. A null hypothesis stating that the residuals are homoscedastic was used. In view of the result obtained which was a p-value of 0.0647, it was concluded that there was no hetereskedasticity problem.

4.3.3 Normality Test

The test for normality is carried out in a study to ascertain whether the data set has a normal distribution. The test for normality was carried out using the Shapiro Wilk Test where the threshold is based on the 5% significant level. The test for normality is presented in Table 4.4

Table 4. 4: Normality Test Result

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
LNPL	55	0.97775	1.129	0.259	0.39767
CapitalAde~y	55	0.84082	8.073	4.479	0.00000
LBankSize	55	0.97528	1.253	0.484	0.31409
LEarnings	54	0.77478	11.256	5.186	0.00000

Source: Research Data (2021)

Under this test, the null hypothesis is that the data is not normally distributed while the null hypothesis is that the data is normally distributed. A p value of < 0.05 implies that the null hypothesis is not to be rejected hence the data is not normally distributed. If p value is > 0.05 the

data is normally distributed. From the table above, capital adequacy and earnings were not normally distributed which were however ignored.

4.3.4 Hausman Specification Test

The text for random or fixed effect model is performed in a study based on panel regression analysis so as to identify the most appropriate model for the regression analysis. A hausman test was undertaken establish the best model to be utilized in performing the panel regression analysis. The hausman test is based on a null hypothesis of the random effect model being the preferred model and the alternative hypothesis of the fixed effect model being the preferred model. The test is guided by a 5 (0.05) percent level of significance. Therefore, a p value lower than 0.05 implies that the null hypothesis is to be rejected meaning that the preferred model to be utilized is the fixed effect model. Conversely, a p value above 0.05 means that the random effect model is the best model and as such the null hypothesis is not rejected..

Table 4. 5: Hausman Test

	Coefficients			
	(b) Fixed	(B) Random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
CapitalAde~y	.3620954	-1.044493	1.406588	.
LBankSize	2.567054	1.894376	.6726783	.1710128
LEarnings	-.3113644	-.4161558	.1047913	.0177388

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(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 15.23
Prob>chi2 = 0.0016
(V_b-V_B is not positive definite)

Source: Research Data (2021)

The results from the hausman test in Table 4.5 show a p-value (0.0016). Based on the decision criteria, the null hypothesis was therefore rejected 0.05 significance and subsequently the fixed effect model was estimated in the study.

4.5 Regression Analysis

The study performed panel regression analysis so as to establish the statistical significance of the research variables. The regression analysis output was used in testing the null hypotheses of the study at a threshold of 0.05 significance level. The results of the analysis are contained in Table 4.6.

Table 4.6: Regression Analysis Results

```
Fixed-effects (within) regression               Number of obs      =        54
Group variable: BANK                            Number of groups   =        11

R-sq:                                           Obs per group:
     within  = 0.6905                                         min =         4
     between = 0.3304                                         avg =       4.9
     overall = 0.3799                                         max =         5

                                                F(3,40)            =     29.74
corr(u_i, Xb)  = -0.7913                        Prob > F           =    0.0000
```

LNPL	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
CapitalAde~y	.3620954	1.588548	0.23	0.821	-2.848479	3.57267
LBankSize	2.567054	.2856933	8.99	0.000	1.989647	3.144462
LEarnings	-.3113644	.088447	-3.52	0.001	-.4901224	-.1326064
_cons	-8.595235	1.549934	-5.55	0.000	-11.72777	-5.462701
sigma_u	.3919598					
sigma_e	.16110443					
rho	.85547607	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(10, 40) = 6.94                     Prob > F = 0.0000
```

Source: Research Data (2021)

4.6 Firm Characteristics and Non Performing Loans

The study sought to ascertain the effect of firm characteristics on non performing loans of listed commercial banks at the NSE, Kenya. The specific objectives were to assess the effect of bank size, capital adequacy and earnings on non performing loans of listed commercial banks at the NSE, Kenya. The study results contained in the above Table 4.6 shows 0.6905 as R squared with a corresponding 0.0000 as p-value which is significant at 0.05. This means that 69.05% of the movements in the non performing loans of commercial banks listed at the NSE, Kenya can be traced to firm characteristics (bank size, earnings and capital adequacy).

4.6.1 Capital Adequacy and Non Performing Loans

The study sought to examine the effect of capital adequacy on non performing loans of commercial banks listed at the NSE, Kenya. In response to this objective, a null hypothesis which stated that capital adequacy has no significant effect on non performing loans of commercial banks listed at the NSE, Kenya was formulated and tested at 0.05 level of significance. The criterion was to rejection of the null hypothesis when $p<0.05$ and otherwise when $p>0.05$, failure to reject the null hypothesis.

The results contained in Table 4.6 show a coefficient and p-value of 0.3620 and 0.821 for the effect of capital adequacy on non performing loans of commercial banks listed at the NSE, Kenya. Klein (2013) carried out a study on NPLs for South Eastern, Eastern as well as Central covering 1998 through 2011. The study utilized panel modelling procedure where yearly data was used. Its outcome indicate reveals that capita adequacy of banks has an insignificant effect on NPLs level.

Hassana, Ilyas and Rehman (2015) carried out a research on explicit bank and social variables that have a consequence on Pakistan's none performing loans. A survey questionnaire method was employed. Using multiple regression, outcome disclose that sufficiency of capital has a inverse but noteworthy consequence on None Performing Loans. An examination by Hue (2015) on the factors predicting the degree of NPL for Vietnam commercial banks. It examined the years from 2009 to 2012. Multiple regression analysis was used in data analysis where the result disclosed that capital sufficiency had inverse and momentous outcome on none performing loans. This was accredited to the fact the when the banks' capital adequacy is high, banks become cautious in giving out loans.

4.6.2 Bank Size and Non Performing Loans

The study sought to investigate the effect of size on non performing loans of commercial banks listed at the NSE, Kenya. Correspondingly, a null hypothesis was formulated and tested which stated that bank size has no significant effect on non performing loans of commercial banks listed at the NSE, Kenya. The test was based on a 0.05 threshold where the criterion was rejection of the null hypothesis when $p<0.05$ and when $p>0.05$, failure to reject the null hypothesis.

The output in Table 4.6 shows a coefficient of 2.5670 and p-value of 0.000 for the effect of bank size on non performing loans of commercial banks listed at the NSE, Kenya which is significant at 0.05 level of significance. Klein (2013) examined on non performing loans (NPLs) in Eastern, Central as well as South- Eastern Europe within time scope 1998 - 2011. In the yearly data, the panel modeling method was employed and the outcome came to the conclusion that the NPLs

level is accredited to the bank and micro economic conditions. The findings showed that bank size has strong consequence on NPL.

Warue (2013) examined the connection between NPLs and bank explicit and macro economic factors, and institute the scale at which they lead to banks' NPL in Kenya. The bank explicit issues considered included; bank structures, techniques of managing credit risk alongside quality management. It covered the yearly performance on these aspects from 1995 through 2009 with the use of secondary and primary data. A census covering 44 Kenyan banks was done. A causal design of research premised on the structures of bank was employed. However no evidence was found to the effect that asset size was connected to NPLs covering all categories of banks (small, medium and big banks).

Hue (2015) focused on examining bank size and how it affects the extent of none performing loans of banks in Vietnam banking industry while focusing on period 2009-2012. In analyzing the association, an ordinary least square method was used. The result disclosed that bank size has a significant consequence on degree of NPL. Hassana *et al*. (2015) studied factors that influence Pakistan banks' NPL. A survey questionnaire method was relied upon in the examination. The outcomes display that size negatively and significantly affect None Performing Loans level of banks.

4.6.3 Earnings and Non Performing Loans

The study sought to evaluate the effect of earnings on non performing loans of commercial banks listed at the NSE, Kenya. In view of this objective, a null hypothesis stating that earnings has no significant effect on non performing loans of commercial banks listed at the NSE, Kenya was formulated and tested at 0.05 level of significance. A threshold of 0.05 was applied in the test for

hypothesis. A $p<0.05$ and $p>0.05$ implies the rejection and failure to reject the null hypothesis respectively.

Table 4.6 provided the output of the regression analysis where the effect of earnings on non performing loans of commercial banks listed at the NSE, Kenya had a coefficient and p-value of -0.3113 and 0.001 respectively. The findings concur with empirical works Dinitrios, Angelos and Vasilios (2011) studied on what determines NPL in Greece. The study contained panel data for 9 biggest Greek banks. The data obtained covered the years 2003 up to 2009. Diverse categories of loan (consumer, business and mortgages) were independently analyzed. Earnings was found to have significant consequence on NPL of banks.

Hassana *et al*. (2015) turned its attention on operational efficiency and Pakistan banks' NPL. It sought to find out the consequence of operational efficiency on NPL level of Pakistan banks. The study utilized a questionnaire for data collection and scrutiny done within the structure of multiple regression. Research findings indicate a strong influence of earnings on the level of npl of banks. Hue (2015) scrutinized on the core factors that influence the NPL for Vietnam's banks from 2009-2012. OLS for panel data was used when analyzing the link between the NPLs and some bank explicit factors. Results showed that banks' earnings significantly impact non performing Loans.

4.7 Summary of Hypotheses Testing

This section contains the hypotheses tests summary which is based on specific objectives guided by a threshold of 0.05.

Table 4.7: Summary of Hypotheses

No	Objective	Hypotheses	Rule	P-value	Comment
1	To assess the effect of capital adequacy on non performing loans of commercial banks listed at the NSE, Kenya.	**H_{01}:** Capital adequacy has no significant effect on non performing loans of commercial banks listed at the NSE, Kenya	When p-value <0.05, Reject **H_{01}**	P>0.05	Capital adequacy has no significant effect on non performing loans of commercial banks listed at the NSE, Kenya
2	To ascertain bank size effect on non performing loans of commercial banks listed at the NSE, Kenya.	**H_{02}:** Bank size has no significant effect on non performing loans of commercial banks listed at the NSE, Kenya	Where p-value <0.05, Reject **H_{02}**	P<0.05	Bank size has significant effect on non performing loans of commercial banks listed at the NSE, Kenya
3	To investigate the effect of earnings on non performing loans of commercial banks listed at the NSE, Kenya.	**H_{03}:** Earnings has no significant effect on non performing loans of commercial banks listed at the NSE, Kenya	If p-value <0.05, Reject **H_{03}**	P<0.05	Earnings has significant effect on non performing loans of commercial banks listed at the NSE, Kenya

Source: Study Findings (2021)

CHAPTER FIVE

SUMMARY, RECOMMENDATION AND CONCLUSION

5.1 Introduction

This conclusion, summary and recommendations are contained in this section which is documented in line with the results obtained.

5.2 Summary of the Study

Kenya banking sector is considered as a key pillar in the realization of Vision 2030 of bringing Kenya to a middle income status by offering a facilitating macro-economic steadiness for development. Since banks are such critical entities in an economy the stability and success as going concerns is given a lot of attention by various stakeholders including the national government through the central Bank of Kenya by enacting regulations as mandated. In a situation where the NPL is high, commercial banks progressively tend to engage in consolidation internally with a sole aim of improving the quality of asset quality as opposed to credit distribution. This in turn is at the detriment of borrowers in an economy who pick up loans for investment purposes.

Furthermore, the huge level of nonperforming loans prompts commercial banks to move up provision for loan loss which diminishes their revenue besides making funds unavailable for fresh lending. The study sought to find out on what effect bank characteristics has on none performing loans of banks, in the Nairobi Securities Exchange. Purposely it is going to establish the consequence of size of bank, adequacy of capital and earnings on non-performing loans of listed banks in Nairobi Securities Exchange. Theory of optimal bank size, Buffer on capital

adequacy and Efficiency Structure Theories were adopted. Causal design of research was relied upon.

Research population comprised of the eleven banks listed on the Nairobi Securities Exchange, Kenya where a census approach was relied on. The period that was considered in the study is from 2012 to 2017. The study established that capital adequacy had insignificant effects on non-performing loans of listed commercial banks in Kenya. Also, bank size as assessed using the natural log form had significant effects on non-performing loans of listed commercial banks in Kenya. Additionally, the study findings documented that earnings of banks had significant influences on non-performing loans of listed commercial banks in Kenya.

5.3 Conclusion

The respective findings of the study as regards the specific objectives form the conclusion of the research. The study concluded that capital adequacy had insignificant effects on non-performing loans of listed commercial banks in Kenya. Increases in the capitals of banks therefore do not have strong influences on non-performing loans of listed Kenyan commercial banks.

Bank size was found to have significant effects on non-performing loans of listed commercial banks in Kenya. The study therefore concluded that the size of banks has strong predictive powers its loan default rates. Earnings of commercial banks were established to have strong predictive powers on their non-performing loans. The study is of the conclusion that earnings of banks are a key determinant of non-performing loans of listed commercial banks in Kenya.

5.4 Policy Recommendations

The study findings have implications for policy and practice. Bank size as proxied by the natural total assets log was found to be a major predictor of non-performing loans of listed commercial

banks in Kenya. Banks due to large sizes can be characterized by bureaucracies. The study puts the recommendation that banks should have in place measures that will scale down the long procedures in banks. Banks should put in place effective and efficient monitoring system in line with their growing assets.

The study documented that earnings of banks is a key decreasing the levels of non-performing loans. The study therefore puts the recommendation that banks should diversify their investments. Other than the traditional activities of lending, banks can also explore other business lines so as to curb the consequence of over reliance on lending.

5.5 Contribution to Knowledge

The contribution of the research to knowledge is in different forms. The study has successfully presented theories that highlight the association among bank characteristics and non-performing loans. The study has further provided various empirical works on the linkages between bank characteristics and non-performing loans. A conceptual framework has also been provided with contains the visual underlying linkages of non-performing loans and bank characteristics.

The study also successfully tested the statistical significance of the underlying association between bank characteristics and non-performing loans in the context of Kenya. The study had also provided comparison of the findings obtained and those of previous works which in turn will enhance decision and policy making by banks and policy makers.

5.6 Suggestions for Further Research

The investigation focused on ascertaining the effect of bank characteristics on non-performing loans of listed commercial banks in Kenya. Bank competition and how it affects its moderates the linkages between bank specific and non-performing loans should be explored in further researches.

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