THE EFFECT OF CREDIT RISK MANAGEMENT ON THE PROFITABILITY OF COMMERCIAL BANKS IN KENYA

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DECLARATION

This research project is my unique work and has not been submitted for honor of degree in any other University

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DEDICATION

This project is dedicated to my family for the love, patience and faith they had in me throughout the study period and the entire course.

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LIST OF ABBREVIATIONS

APT	Arbitrage pricing Model
CAPM	Capital Asset Pricing Model
CAR	Capital Adequacy Ratio
CBK	Central Bank of Kenya
ERM	Enterprise Risk Management Theory
NPLR	Non Performing Loan Ratio
ROA	Return on Assets
ROE	Return on Equity

ABSTRACT

Most of the products and services provided by the banks are on credit which includes advancing loans and taking deposits from clients. Banks undertake these operations with the objective of accumulating profit, however, credit risk has increasingly risen over time because of financial crisis and advancement in financial institutions therefore causing loses in this sector. It is therefore prudent for Banks to ensure that they adopt comprehensive credit management policies that will enhance minimization of credit risk exposure for Banks the objective of profit maximization. The objective of this study was to determine the effect of credit risk management on the profitability of commercial banks in Kenya through the application of descriptive research design. The period of study was 5 years ranging 2012-2016 by the use of published financial statements. The analysis of data was conducted by use of descriptive statistic and regression model. The dependent variable was Return on Equity while the independent variables included Loan to Deposit ratio, Non-Performing Loan ratio, Capital Adequacy ratio and Management Efficiency. The relationship of non-performing loans and Return on Equity was negative as revealed by the study. This implies that that an increase in the levels of non-performing loans resulted to a decrease in Return on Equity. The study also revealed a negative relationship between Return on Equity and liquidity as measured by Loan to Deposit ratio. There was a strong positive correlation between capital adequacy and Return on Equity. This implies that an increase in capital adequacy lead to more returns to commercial banks in Kenya. There was a positive relation between Return on Equity and Management Efficiency. This implies that effective credit risk management results in management efficiency of banks hence rise in Return on Equity. The study therefore recommends that banks should adopt a good credit risk management system so as to minimize risk exposure for profits to be maximized.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Commercial Banks in its day to day operations are normally faced with different types of risks. These risks play a vital role to its activities and profitability in terms of financial performance. It is important for bank managers to assess the risks and cash flows so as to maximize the wealth of the shareholders as it is the main goal for any banking management. The major risk that banks face is credit risk because the major investment activity for any bank is to lend loans. Therefore, the major source of income for commercial banks is from credits, hence, risks that are related to credit has an impact on Banks' profitability (Li &Zou, 2014).

Many operations of a bank are based on credit terms depending on different activities of the stakeholders and mainly the borrowers. Because of the risk involved with lending, it is important for any bank to have a sound credit management system. Lack of proper credit management can lead to failure or financial crisis by banks. It is difficult for firms to operate smoothly when there is lack of proper credit management. According to Brigham & Houston (2003), approximately 60 percent of a financial manager's time is for dealing with issues relating to credit. To ensure that the operations of a bank run smoothly, required levels of liquidity must be maintained. The bank will also be in a position of meeting its obligations as they fall due (Eljelly, 2004).

For profitability of any commercial bank to improve, the level of non-performing loans should decrease .The decrease in the levels of non-performing loan have been evident in the previous years due to the enhancement in corporate governance as well as provisioning of the written off debts. Different tools for dealing with debts were put in place including credit bureaus which was enhanced by the Central bank annual report published in the year 2008. Among other things that were put in place to improve the profitability of banks was the implementation of policies and guidelines that govern the operations of all the registered banks in Kenya.

1.1.1 Credit Risk Management

Credit risk arises when there is a risk that the borrower fails to payback the principal, interest or any amount of debt. The lender is the party that faces the risk which is the bank for this research. Among the risk include cash flows disruption, lost interest and principal as well as increased operational costs due to increased operational costs. The losses brought about by this risk is arises at various circumstances and comprise of partial and complete lose. These loses are crucial therefore necessitating risk management framework which is important for commercial banks. It is difficult for banks to select only liable clients to lend credit so as to avoid clients from defaulting in repayment of credits. According to Auronen (2003), it is almost impossible to ascertain who good borrowers are and therefore may result to moral hazard problems because of adverse selection. The theory of asymmetric information shows that moral hazards and adverse selection problems have been the cause of loses of arising as a result of substantial accumulation of non-performing loans in most commercial banks (Bofondi&Gobbi 2003).

Most institutions face credit risk which is the oldest and the most important risk for most organizations according to Boston Consulting Group (2001). Despite the negative effects of credit risks, both credit risk and credit risk management has gained importance in the society because of aspects such as financial globalization and BIS risk-based capital requirements, company bankruptcies, volatile values of collateral, economic stagnation and crisis, growth of off-balance sheet derivatives and borrowing more easily by small firms. Greuning& Iqbal (2007) define credit risk as risks of loses that arise because of defaulting by the borrowers. When a borrower fails to meet his obligations, it affects the financial operations of an institution. The credit quality of a borrower declines when they start delaying their credit payments. Credit management is effected in both the portfolio and transaction levels. Most institutions do not manage and measure this credit risk on loan-by-loan basis but on portfolio basis.

BCBS (2006) hold that supervisors are required to put in place a good comprehensive risk management system for the risk management process to be successful. The process will include the evaluation, control, identification and monitoring of the prevalent material risk before assessing the overall capital adequacy on the risk profile. Al-Tamimi suggested eight steps of managing risk and includes; exposure identification which forms a basis of data gathering together with risk quantification; management objectives; products and various control guidelines; risk management and evaluation; Strategy development and implementation; post events including performance evaluation

1.1.2 Profitability

Lymon & Carles (1978) defined financial performance as the financial strength in relation to its profits and expenses as revealed by its Statement of Comprehensive Income Profitability is related to risk because it is an indicator of bank's ability to increase their capital base or manage their risk. It also measures the management quality of a bank as it represents the competitiveness of the operations of an institution. The relationship between credit risk management and profitability is the major objective of study in this research therefore making profitability a key concept in the study.

The bank's stakeholders can access the financial statements which keeps data regarding to profits made by the bank. The policies put in place that guide the source of funds and how they are used, expenses management and liquidity and capital management are among the internal determinants of profitability by banks. Ratios can be used to ascertain the levels of profits by financial institutions because they are not affected by external factors such as inflation. Since banks trade different products and services, ratios are preferably used in most instances so as to minimize problems relating to cross-
Subsidization between these varying services and products (Chirwa, 2003)

The measure of return on equity and return on assets can also ascertain the amounts of profits made. The measure of financial performance in terms of profitability is important for any financial institution because in plays a vital role in decision making for all the stakeholders. Profitability is an important factor for a bank although there are other factors that need to be achieved including social responsibility.

1.1.3 Credit Risk Management and Profitability

Pandey (1995) defined management of credit risk to involve key decisions by authorized persons in relation to various investment goals and resource utilization. He noted that such decisions are characterized by an element of uncertainty hence they should be carefully analyzed. The role played by banks in the economy has attracted interest from various scholars and academicians who have proceeded to conduct studies regarding to the relation of credit risk management and profitability. Zou & Li (2014) conducted a study on the impact of Credit Risk Management on Profitability of Commercial Banks in Europe. The findings indicated that there was a strong positive relationship between credit risk management and the profits made by the various banks studied. Wangi (2010) also conducted a similar study which revealed that there was a close positive relationship between financial performance and the independent variable which was credit risk management.

Van Horne (1995) noted that a firm's credit practices majorly determine the amount of debt in an organization by ensuring lock out of defaulters to minimize the risk of non-payment of debt which increases accounts receivables, ability of the firm to continue in operation, profitably and maximize on the value of its assets. Pandley (1995) pointed out that credit policy defines a firms" financial health. This could further be interpreted to mean that proper credit policy decisions are linked to high level of maximization of investor's returns and shareholders' value the end goal being financial stability, continuity of banks and the stability of the economy as an aggregate.

1.1.4 Commercial Banks in Kenya

Commercial banks in Kenya dominate Kenyan financial system as they account for the majority of all deposits from the public through branch banking systems. Commercial Banks and Mortgage Finance Institutions under the Kenya's Banking Act regulation link up with borrowers by accepting their savings and offer credit to them with the aim of generating revenue streams.

According to (CBK 2016) banks are constantly being monitored to ensure that they meet certain obligation and regulation to avoid bank failure and also ensure borrowers protection. For instance, the central bank of Kenya (CBK), the regulating body sets up regulations on minimum capital requirements and various interest rates charged on borrowers. According to CBK (2016) Kenya has42recognizedbanks and one mortgage finance institution.39of42banks and one mortgage finance institution are privately owned with Kenyan government owning and having a greater control over the other 3 banks.25 of 39 whose ownership is private and the mortgage finance institution are controlled and domiciled in Kenya with the rest being domiciled and controlled out of Kenya.

Failure by the banks to abide by the regulations put in place by the regulatory bodies lead to various consequences as stipulated in the governing laws. For instance, during the third quarter of 2015 Dubai Bank limited was put under receivership for one year and liquidated later because capital deficiencies breach of daily cash reserve ratio, inability to honor some major financial obligations and poor corporate governance. Central Bank took over Imperial Bank in October 2015 and handed its management over to the KDIC over unsafe or unsound business conditions. During the following year Chase Bank was placed in receivership for 12 months after experiencing liquidity difficulties(CBK 2015).Commercial banks dominate the financial sector hence it is very crucial to manage credit risks to avoid a crisis or bank failure.

1.2 Research Problem

There are various reasons as to why difficulties have been continuously experienced by financial institutions in Kenya. The difficulties being faced by the banks have been directly related to substandard portfolio risk management, slow reaction to changes in the state of economy, poor credit standards guiding the borrowers and many other situations that contribute to the deterioration of the credit standards of the bank's counterparties (Gil & Diaz, 1994). Credit risk rise because of inflation which make interest rates to be high hence making it difficult for borrowers to repay back their loan.

Because of the risks involved on the credits of the commercial banks in Kenya, it is necessary for any bank to put in place efficient policies and guidelines of managing their credit. The credit management policies put in place by banks greatly affects their profitability. Lack of credit management will adversely affect the levels of profits to be made by the banks. It has been a challenge for the management to decide on the structures to be adopted that will see the banks curb the issue of loan defaults and non-performing loans. Because of this challenge by most registered banks in Kenya, most scholars have tried to test the significance of credit management on profitability. There are various studies that have revealed that other determinants of profitability are more significant than credit management. According to Jones & Pérignon (2013), diversified derivatives such as futures, swaps and options are employed by major banks to hedge counterparty risk. This study will also answer the question; what are the indicators of credit risk management?

Among other factors that have been found to significantly affect the profitability of commercial banks in Kenya include; interest rates, operational efficiency, capital adequacy and the size of a firm. For instance, the larger the size of a bank, the less capital expense hence resulting to more profits as studied by Short (1979). However, not all the studies on this subject agree on the relationship of the two variables, Berger (1987) argued that the bigger the size of a bank, the more the cost involved due to less saving hence less profits. Kolapo, Ayeni & Oke (2012) could not ascertain the degree to which credit risk effected on bank's profitability because of the method of study that they employed. Therefore, among the gaps that will be addressed by this study is; what are the indicators of bank's profitability?

One of the major risk affecting most of the banks in Kenya is known to be credit risk hence credit risk management has been implemented. Credit risk and bank's profitability have an inverse relationship. When the loans issued by the banks are not paid back as required, it leads to losses hence lower returns for the banks. Because of the conflicting extent to which credit risk management has impacted on the profitability of commercial banks, it is significant to establish the impact credit risk management has on profitability. The various indicators of credit risk management which affect the levels of profits by commercial banks were explored by Poudel (2012. The existing studies have investigated specific indicator's effect on profitability. This research investigated the overall effect of credit risk management on profitability by answering the question; does the credit risk management effect on bank's profitability in Kenya?

1.3 Research Objective

To determine the effect of credit risk management on the profitability of commercial banks in Kenya

1.4 Value of the Study

The major purpose for this study will be to ascertain the extent to which credit risk management programs by commercial banks in Kenya influence its profitability. To analyze the relationship of the two variables, credit risk management and profits will be analyzed so as to establish whether the relationship exists or not. The indicators of credit risk management and profitability is the major issues which will also be analyzed in order to establish the relationship of the two variables. The findings on this analysis will be a source of knowledge for both the academicians and the commercial banks under study.

Since the central bank of Kenya is entrusted by the constitution to ensure that the registered commercial banks functions well, the findings on the relationship of the two variables will be significant in formulating the polices of commercial banks. The knowledge to be gained by the commercial banks regarding to the credit risk management will also improve the skills in the credit sector of the banks. Efficient credit management practices will minimize the levels of non-performing loans and loan defaults hence improving profits of banks.

The investors are also other stakeholders who will greatly benefit from this study. They will be conversant with the methods of credit management put in place by various commercial banks. This knowledge will also guide them to select the most viable methods hence will equip them with knowledge on how profitability is affected by credit management depending on the outcome of this research

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This part includes an overview of findings from other scholars in similar field and supporting theories. It is sub divided into: theoretical review, empirical review and summary of literature review.

2.2 Theoretical Review

The section covers three most applicable theories of credit risk management. Subsection one will introduce the Capital Asset Pricing Model. The other two subsections will cover Trade-off theory and Enterprise Risk Management theory.

2.2.1 Capital Asset Pricing Model

The initial rendition of CAPM spread by Sharpe (1964) and Lintner (1965) argued that investors evade risk and are majorly concerned with one period risk and return theory which implies that investors want to either maximize return on investment or to minimize the covariance derived by a given expected return on investment. Various assumptions need to be met in order to derive CAPM. First investors evade risks and choose investment option based on expected gain or loss and the variation of returns in a single holding period. Secondly capital markets are assumed to be ideal in the sense that assets are divisible, there exist zero transacting costs, restricted short-term selling, costless, availability of information and all participants are able to borrow and lend at risk free rate. Lastly investments opportunities assume a normal distribution and that no individual can alter the prices of securities. It is prudent for any bank to minimize their risk exposure. The products and services being offered by the banks can be diversified with the aim of minimizing risk exposure. This is because product diversification spreads risks which is the conventional view that such moves may lead to reduced exposure to activities that lead to risk. Among the activities that the banks engaged itself with a view of product diversification include: investments in activities that lead to accumulation of dividends; both fee and non-fee activities that generated extra commission for the bank; sale of assets at a profit margin; exchange brokerage among other investment activities

Banks have mostly emphasized on fee based activities such as issuance of guarantees, opening letters of credit and selling third party products among others as they are seen to be more stable all with the aim of maximizing shareholders wealth and investors return. According to Adekanye (1986) before an investor takes investment decision, he has to know the degree of security of his funds, the rate of return, the accessibility and liquidity of such fund/organization. Also, the political, economic and social environment must be considered before such investment is made because no investor invests their money where there are political, economic or social hostilities. This theory is applicable to banks in credit risk management as investors can be considered to be consumers of the assets because investors are mostly risk averse and would rather put their money where they expect a return. The investors will therefore need to know the banks with higher returns hence this theory will guide in addressing the gap under study which is to determine the indicators of profitability

2.2.2 Enterprise Risk Management Theory

According to the theory, an organization can either cope with risks by either tackling one risk separately, by dividing them into various sections and dispersing them from one sphere; or a summation of risks combined together within a synchronized and strategically set framework. The initial approach is known as “enterprise risk management”. The approach emphasizes that the most successful organizations are as such because of them having effective ERM which earns them a sustainable competitive edge over those that single out risks and tackle them singly. The main logic behind the approach is that, measurement and management of risks procedurally and structurally, and provision of key decision makers with the information and motivation to maximize return, reinforces the firm which enables it meet long-term strategic objectives. Effective implementation of ERM can boosts organizations competitive advantage and maximizes shareholders value.

The implementation of ERM is however not upfront even though its conceptualization is quite direct. Banking are mostly aware of the risks likely to face them hence their emphasis on proper controls and straight forward business processes to minimize the risks imposed on them that are likely to be transferred to their customers and other related parties. Banks are also keen on reducing the risk of absorbing third party risks to shield themselves against losses. It is advisable that they only deal with risks that are directly attributed to their lines of services while looking down upon other risks posed by the environment, government and other external factors.

All financial institutions including banks face legal risks and foreign exchange risks. Credit risks, operational risks, and counterparty risks liquidity risks among others to some extent. Banks operate in an economic environment which is volatile. Crabb (2003) encourages most organizations to implement corporate risk management. Banks' ability to address all risks in their finer details including credit risks is a sure way of gaining competitive advantage which will help them meet their goal of maximizing shareholders and investor's returns. This theory will therefore provide a comprehensive framework for this study for specification and measurement of investment risk by banks hence enable the development of relationships between risk management and profitability

2.2.3 Trade-off Theory

The costs and debts of a firm have to be balanced with the benefits for an optimal capital structure to be achieved as argued by the bankruptcy cost trade-off models (DeAngelo & Masulis, 1980). These benefits need to be balanced with the debt costs which include tax shields while the costs comprise of the costs associated with financial distress. The models such as agency theoretical models Jensen & Meckling (1976), Myers (1977) and Jensen (1986) suggest that costs are offset by minimizing the conflicts arising between the management and the shareholders. Cash flow problems are also minimized to offset costs which are associated with asset substitution which result to underinvestment.

This theory suggests that an optimal capital structure is attained when the marginal cost and marginal benefit are at par. The trade-off models therefore imply that the targeted leverage by firms are adjusted over time. For instance, the Capital Market Theory suggest that if one anticipates more return, then more risk should be embraced. These trade-offs will however be realized on the risks that are not theoretically avoided through diversification. The banks that are more diversified yield more returns than those that are less diversified.

In the Diamond (1984) model-monitoring costs and monitoring quality were found to be consistent across all studied banks. Thus, the argument by Diamond that diversification reduces this monitoring costs and therefore prudent for banks to have as diversified portfolios as possible. What is the trade- off between the risk that the loan will enter default and result in a loss, and the return that the institution will receive in fees and interest income? The answer to this question, through analysis of the risk- return trade-off, is the crux of all investment decisions; the yield on risky assets must incorporate expected credit losses (Thygerson, 1995). If the risk of default is high, then the return should be commensurately high. Inevitably, investors expect to lose on loans and investments expecting those relatively risk- free vehicles. As with any portfolio of assets, the management challenge is to ensure that the experienced losses are less than or equal to those expected when the firm acquired and priced the assets; and management can achieve this stability through careful origination and servicing of individual assets and strategic portfolio diversification and management (Johnson, 2000).

This theory has tempted to explain the importance of trade-off between risk and return, however it has not addressed a number of important factors such as; the level of loan portfolio that will be ideal for maximization of return and minimizing of risk, how to determine the optimal level of loans? It has not given tools to be used in determining the optimal loan levels and also the criteria to be used in diversification. This therefore creates a study gap between the theory and credit risk management and profitability in banks. This theory will therefore contribute to the findings of this study in analyzing the marginal benefit credit risk management has in influencing the profits of a bank

2.3 Determinants of Bank Profitability

The determinants of commercial banks' profitability are classified into two categories namely; internal and external factors. The internal factors comprise of those factors that can be controlled by the management and those that the management is not in the means of controlling them are external factors

2.3.1Micro-determinants

The internal determinants are include the policies and decisions made by the management and affect the profit levels of a bank. These types of profitability factors can also be extracted and examined through the published books of accounts such as financial statements of the banks. The internal factors will be greatly analyzed in this research because the aim of this research study will be to ascertain the impact that credit risk management has profitability of banks to be studied.

ROE and ROA are mostly used by researchers in measurement of profitability. Some of the Studies on micro-specific factors have employed variables like risk, capital adequacy, size and operational efficiency and testing relationship with ROE or ROA. For instance, Felix and Claudine (2008) in their study found out that profitability in ROA and ROE show negative association with non-performing loan to total loan ratio.

The size of a bank also influences the profitability of a bank as Short (1979) argue that the size of a bank and capital adequacy have close relationship because large banks raise cheaper capital hence more profits. Berger (1979) however had contrary findings the the larger the size of a bank, the more the expenses hence less profits as attributed by the agency cost theory

Operational efficiency is also a determinant of bank's profitability. For instance, efficiency in loan distribution and collection minimizes wastage hence more profits (Molyneux& Thornton 1992). Athansaglou (2008) however found a negative relationship between the two variables.

Credit risk has been considered as the major risk affecting bank profit, according to Bourke (1989), credit risk and profitability have negative relationship because banks register lower returns due to these loan losses (Miller &Noulas, 1997).

2.3.2 Macro-determinants

Macro-determinants comprise of the external factors which are also firm specific ones. The external factors such as the government regulations also affect the operations of a bank. Therefore, this research will also focus on these external factors so as to incorporate its contribution to the findings of the study.

Among the macro-determinants are interest rates, government regulations, size of the industry and the ownership status. Currency value is one of the risk of asset value relating to systematic failure. This type of risk is may not be diversified but can be hedged out since it impacts on the profitability of a bank

2.4 Empirical Review

Several scholars have studied the various variables that affect profit levels of banks. Through these studies, the significance of an effective system of credit risk management has been evaluated and therefore ascertaining the extent to which it reduces the possibility of banks to fail by increasing the certainty of achieving required levels of profits. Among the studies that have been conducted, a significant number has concluded that a positive relationship exist between a bank's profitability and credit risk management. However, there are studies that have found a negative relationship between these two variables, profitability and risk management.

The study conducted by Kithinji (2010), indicated that apart from the positive contribution of credit management towards profitability, the larger part of the banks' profits is found to be influenced several other variables. These other variables influencing profitability include both the internal and external factors such as inflation and government regulations

Aruwa & Musa (2012) conducted a study that not only investigated credit risk but also analyzed the impact of other risks that faced the operations of banks. They comprehensively investigated the impact that risk had on the financial performance of a bank. They found that a great relationship existed between all the risk components facing a bank and the financial performance

Boahene, Dasah & Agyei (2012) conducted a study to ascertain the relationship that existed between credit risk management and the profitability of firms. Their findings were that a positive relationship existed between these two variables.

The performance of unsecured loans was researched on by Gakure, Ngugi, Ndwiga & Waithaka (2012). They investigated the effects of credit risk management policies and techniques on the banks' performance strictly on unsecured loans. Their conclusion was that the operations of a bank could be constrained by the difficulties of issues brought about by financial risk. They concluded that it was necessary for banks to manage the risk facing them because its existence could result to failure which causes the bank not to meet its objectives.

According to Kolapo, Ayeni&Oke (2012), there is a cross-sectional invariant effect of credit risk management practices on profitability and in general the financial performance of banks. Their method of analysis was ROA which was a limit to the study. This is because the method used to measure the banks performance did not analyze the degree to which the credit risk impacted on the performance of individual banks.

A study that was conducted by Poudel (2012) comprehensively explored the various indicators of credit risk management that could have an impact on the financial performance of banks. Among the indicators of credit risk management was default rate which was also found to be the indicator that adversely affected the financial performance of banks.

Various parameters that were pertinent on the issue of credit risk management and affected the financial performance of banks were explored by a study conducted by

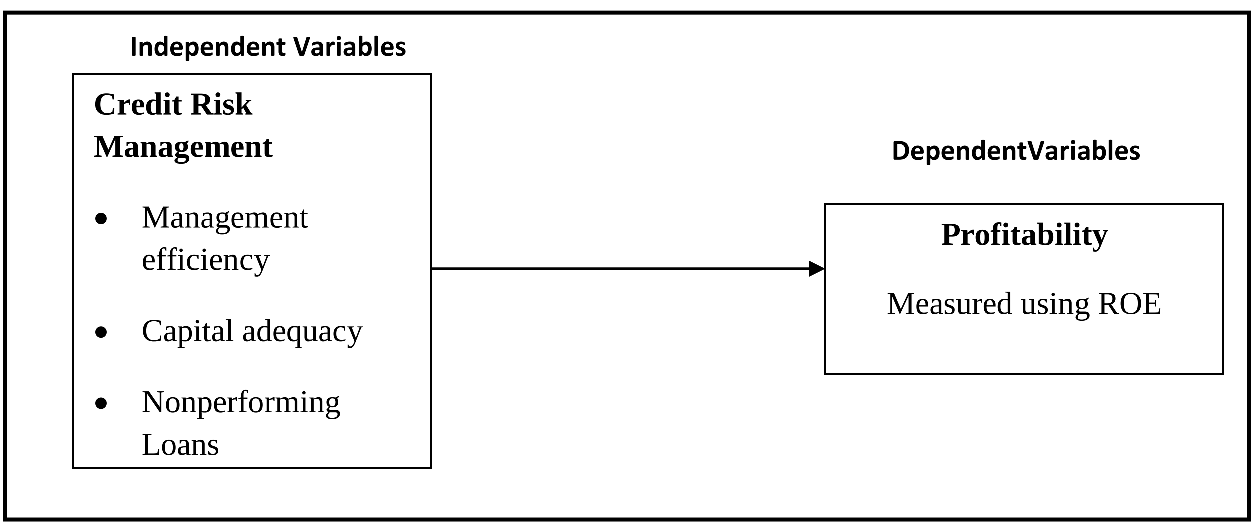
Musyoki & Kadubo (2012). Their findings were that in all the parameters studied, they proved to have an inverse effect on the financial performance of banks. Several indicators of credit risk were also analyzed and default rate was found to be the most appropriate tool to predict the bank's financial performance.

This research will therefore seek to improve on some of the related existing studies. The study will analyze the subtotal and overall impact of credit risk management together with its indicators on the profitability of commercial banks in Kenya by use of individual indicators of profitability.

2.5 Conceptual Framework

The conceptual framework illustrated in Figure 2.1 indicates the relationship that exists between independent and dependent variables as used in this study. In this case, the independent variable is management efficiency, risk analysis, on performing loans and loan advances. On the other hand, profitability is the dependent variable.

Figure 2.1 Conceptual Framework



Source: Researcher (2017)

2.6 Summary of Literature Review

Generally, from almost all surveys reviewed in the literature, it is evident that for any bank to achieve its objective of attaining the maximum profits possible, it is necessary for them to employ credit risk management strategies to prevent loss arising from default. T realize an effective credit management system, improvement should continuously be made by the banks because credit management is a process and not an even. It includes identification of gaps, analyzing the credit situation and continuously monitoring the management process so as to implement adequate controls over the prevailing risk

According to the existing literature, organizations are faced with various risk and therefore recommends that banks should employ a sound credit management system which main aim is to control risks which make up the most of the risks exposed to them. Although the scholar's findings recognize the risk facing the banks, the major risk has been found to be the default risk hence necessitating the adaptation of standard risk management procedures

Several financial institutions have view risk exposure to be emanating from poor credit decisions among other decisions. In respect to the theories and the empirical evidence, there was need to adopt the best Credit risk management practices that minimize the losses arising from loans. This needed to be an active process which enables the bank's processes to be proactively managed so as to minimize provisions, lost interest income and loan write-offs. Financial institutions shall enhance growth through adoption of better credit risk management practices which involve methods, procedures, processes and rules used in minimizing loan losses facing institutions in their lending endeavors. There are various variables both in the internal and external environment that impacts on profitability; therefore this study aims at factoring these variables in assessing the impact it has on credit risk management and profitability.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter will include the research methodology and design which will form the basis of the study. This includes sampling procedure, research design, the sample size, population, data collection and methods of analyzing the data collected.

3.2 Research Design

Kerlinger (1986) describe research design as a structured examination conducted to get a solution to a research problem. This study will apply descriptive research which can be described as an exploration whereby data is analyzed to identify certain trends and interrelatedness between factors at a certain time (Mugenda & Mugenda, 2003).The design will be applied because of its ability to allow researcher to hypothesize findings to a large population.

3.3 Population

Target population is a complete set of objects or individuals with similar observable characteristics of a particular nature distinct from others (Mugenda & Mugenda 2003). A survey study of all the 42 registered banks in Kenya as at 31st December 2016 will be used in this study. (Appendix 1)

3.4 Data Collection

Lescroel (2015) defined data collection as the process of gathering and measuring information on the targeted variables hence enabling the researcher to answer questions and analyze the findings. In this study, the researcher will use secondary data through the use of published financial statements of commercial banks.

3.5 Data Analysis

Data analysis is the process of systematically organizing and breaking data into manageable units. The data is thereafter synthesized and data searched with the aim of discovering what is important and what is to be learned. A model of regression analysis will be used as follows,

3.5.1 Analytical Model

The following model is a representation of the effect of credit risk management on profitability of commercial banks

$$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \mathcal{E}$$

Where;

Y= the commercial bank's profitability measured by Return on equity (ROE)

X1 = Credit risk management, measured as a ratio of non-performing loans to total loans

X2 = Capital adequacy, measured as the ratio of the core capital to risk weighted assets

X3 = Management efficiency, measured as a ratio of non-interest expense to total assets

X4 = Liquidity, measured by the Loan-To-Deposit ratio

α - Is a constant; the concept explaining the firms profitability given and it's the Y value when all the predictor values (X1, X2, X3, X4) are zero

$\beta1$, $\beta2$, $\beta3$, $\beta4$ – Are constants regression coefficients representing the condition of the independent variables to the dependent variables.

Ɛ - (Extraneous) Error term explaining the variability of Profitability as a result of other factors not accounted for.

e - Stochastic disturbance (error) term

3.5.2 Test of significance

The test of significance included coefficient of correlation (R), coefficient of determination (R-squared) and ANOVA. The significant level of the test will be 5%

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The findings and data analysis of the study will be included in this section. The source of the data is the annual report for the last 5 years from 2012-2016 having used the regression model to analyze data

4.2 Descriptive Statistics

The study sought to establish the effect of nonperforming loan ratio, capital adequacy, loan-to-deposit ratio of banks and management efficiency on net return of equities.

The results of descriptive statistics is analyzed and summarized in this section. Consequently descriptive statistics of the collected data was analyzed using excel analysis tool pack and the summary results presented in table 4.2 below.

Table 4.1 Descriptive statistics

	Nonperforming loans ratio of banks	Capital Adequacy Ratio of Banks	Loan-to-deposit ratio of banks	Management efficiency
Mean	0.070262	0.2101033	0.891036	0.290011
Standard Error	0.019858	0.09749	0.09749	0.09878
Median	0.0575	0.2079	0.76535	0.7968
Mode	0.0388	0.0948	0.75792	0.86202
Standard Deviation	0.06785	0.128696	0.631807	0.640167
Sample Variance	0.00491	0.018478	0.410095	0.415553
Kurtosis	6.16153	2.752388	18.06894	19.73663
Skewness	1.987019	0.073366	3.891186	4.09774
Range	0.3316	0.6052	3.72188	3.89776
Minimum	0.003	-0.1014	0.18044	0.19218
Maximum	0.3346	0.5038	3.90232	4.08994
Sum	3.1941	8.834	37.4235	37.80462
Count	5	5	5	5

Source: Research Findings

According to the findings in table 4.2 above the mean of the nonperforming loans ratio of banks for the five years (2012-2016) was 7.26% with standard deviation of 0.068.The capital adequacy ratio of banks for the five years period(2012-2016) was 21.01% with a standard deviation of 0.129.Loan to deposit ratio of banks for the five year period had a mean of 89.1% with a standard deviation of 0.632 and the mean of management efficiency was 9% with a standard deviation of 0.640 in the five year period (2012-2016).

4.2.1 Profitability Trend Analysis

The variables affecting the profitability of commercial banks were analyzed to determine its extent of growth for the period of years studied. These variables whose growth rate trend were evaluated include management efficiency, Return on Equity, capital adequacy, liquidity and Non-performing loans.

Table 4.2 Profitability trend Analysis

PERFORMANCE CHANGES	Year2-1	Year3-2	Year4-3	Year5-4	Average ratio
Nonperforming loans	0.9%	14.7%	14.1%	-55.7%	-6.5%
Loan-to- deposit ratio of banks	12.6%	2.6%	7.4%	-1.5%	5.3%
Capital Adequacy Ratio of banks	-12.1%	-40.6%	51.4%	-13.6%	-3.7%
Management Efficiency	12.9%	1.8%	12.9%	-9.2%	4.6%
Net profit	25.6%	-14.8%	-22.2%	71.5%	15.0%

The findings indicate that on average nonperforming loans ratio for the five year period (2012-2016) decreased by6.5% per annum. This is explained by drastic increase in nonperforming loans ratio recorded in the year 2015.It is also noted loan to deposit ratio increased by 5.3% per annum over the five year period (2012-2016).This was due to the increasing trend of loan to deposit ratio over the years. On average capital adequacy ratio decreased by3.7% per annum over the five years period. The management efficiency increased by 4.6% per annum for the five year period. This is an indication of increased layoffs in the sector. The findings also show that the net profit over the five years period increased on average 15% per annum. This is explained majorly by increased management efficiency ratio and loan to loan deposit ratio.

4.3 Effect of credit risk management on profitability

The test of degree of association among the variables was ascertained by use of correlation analysis. Credit risk management among other variables was correlated against profitability and the results presented in summarized table below

Table 4.3 Correlation Analysis

		Capital adequacy Ratio of banks	Loan-to-Deposit ratio of banks	Management Efficiency	Nonperforming loans ratio of banks
Capital adequacy Ratio of banks	Pearson Correlation	1	-.616	-.468	.744
	Sig. (2-tailed)		.268	.427	.150
	N	5	5	5	5
Loan-to-Deposit ratio of banks	Pearson Correlation	-.616	1	.943*	.024
	Sig. (2-tailed)	.268		.016	.970
	N	5	5	5	5
Management Efficiency	Pearson Correlation	-.468	.943*	1	.242
	Sig. (2-tailed)	.427	.016		.695
	N	5	5	5	5
Nonperforming loans ratio of banks	Pearson Correlation	.744	.024	.242	1
	Sig. (2-tailed)	.150	.970	.695	
	N	5	5	5	5

Source: Research Findings

Findings in the table above shows that there is a strong negative correlation between the capital adequacy ratio and loan to loan deposit ratio. This implies that an increase in capital adequacy ratio leads to a proportional decrease on loan to loan deposit ratio. Management efficiency and capital adequacy ratio have a weak negative correlation. This means that an increase in management efficiency results to a proportionate decrease in capital adequacy ratio. Nonperforming loans ratio and capital adequacy ratio have a strong positive correlation meaning that an increase in nonperforming loans ratio leads to a proportionate increase in capital adequacy ratio. Findings also shows that there is a significant strong positive correlation between management efficiency and loan to deposit ratio implying an increase in management ratio leads to a proportionate increase in loan to deposit ratio. Multi co- linearity are of two forms namely, imperfect and perfect where imperfect multi co linearity causes errors and variations of the variables to rise sharply. The correlation coefficient is not supposed to exceed 0.80 as it relates to the problems of multi co-linearity

4.3.1 Chi Square-Test

The significance between credit risk management and profitability of commercial banks in Kenya was also established by use of chi-square. The indicators of changes in credit risk management that were used included management efficiency, return on equity, capital adequacy and return on equity

Table 4.4 Chi Square-Tests

	Non-performing Loans Ratio	Capital Adequacy Ratio of banks	Loan-to-deposit Ratio	Management Efficiency	Net Profit
Chi-Square	.000[a]	.000[a]	.000[a]	.000[a]	.000[a]
Df	4	4	4	4	4
Asymp. Sig.	.0001	.0001	.0001	.0001	.0001

Source: Research Findings

According to the findings above table the significance figure was 0.0001 which shows that there was statistically significant the effect of risk credit management on financial performance of commercial banks in Kenya

4.4 Regression Analysis

The relationship between the variables (both the dependent and independent) was established by applying regression analysis. The model was applied to determine the relationship between (independent variables) capital adequacy ratio, loan to deposit ratio, nonperforming loans ratio, management efficiency ratio and the net profit ratio(dependent variable).The analytic model used to analyze the relationship between the dependent and independent variables is:

$Y=\alpha+\beta X_{1+}\beta_2 X_2+\beta_3 X_3+\varepsilon$

Where: Y=Dependent variable (return on equity ratio)

X_1, X2, X_3 and X_4=independent variables

X_1= Nonperforming loans ratio

X_2=Management efficiency

X_3=Loan to deposit ratio

X_4=Capital adequacy ratio

α =constant

β_1, β_2, β_3, β_4=regression coefficients or change included in Y by each X value

ε=error term.

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (net profit ratio) that is explained by all the four independent variables. The analysis used the Social Science Statistical Package (SPSS V21.0) to code enter and compute the measurements of the multiple regressions.

The results are outlined in the regression model summery in the table below and outline the magnitude at which the independent variable impact on the dependent variable.

Table 4.5 Summary Regression Output

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.942[a]	.887	.548	.02424855	2.244

Source: Research Findings

The results are outlined in the regression model summery in the table below and outline the magnitude at which the independent variable impact on the dependent variable.The R-square is usually utilized measurement to assess show fit.R-square is 1 less the proportion of lingering changeability. The adjusted R-square is the percent of the change in the ward clarified particularly or mutually by the free factors. 54.8% of the net profit ratio of commercial banks could be ascribed to the consolidated impact of the indicator factors that is the loan to deposit ratio, capital adequacy ratio, non-performing loans ratio and management efficiency.

Table 4.6 Summary of One-Way ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.005	3	.002	4.618	.0420[b]
	Residual	.001	1	.001		
	Total	.005	4			

The significance value is 0.042 which is below 5% level of significance thus indicating a statistically significant relationship between the credit risks and the net profit. The F calculated at 5% level of significance was 3.87 since F is greater than the F critical this shows that the overall model was significant.

Table 4.7 Regression Coefficients results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.046	.151		.304	.812
	Loan-to-Deposit ratio of banks	1.582	.626	3.272	2.527	.240
	Management Efficiency	-1.446	.576	-3.353	-2.513	.241
	Nonperforming loans ratio of banks	.345	.457	.337	.755	.588

Source: Research Findings

The established regression equation was:

Y=0.046+3.272X1-3.353X2+0.337X3+ε

The regression equation above has established that holding all other factors constant net profit ratio would be 0.046. It is also shown that taking all other independent variables at zero, a unit increase in loan to deposit ratio would lead to an increase in return on equity by 3.272.A unit increase in management efficiency would lead to an increase in return on equity by 3.353.This therefore implies that there is an inverse correlation between risk and financial performance.

4.5 Interpretation of the Findings

The objective of the study was to determine the effect of credit risk management on the profitability of commercial banks in Kenya. A regression model was applied in conducting the study. The independent variables that were studied explain substantial 54.8% of the financial performance as represented by adjusted R-square (0.548).This therefore means that the independent variables contribute 54% of the financial performance while other factors and random variations not studied in this research contributes 46% of the financial performance.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The summary of the findings, recommendations, conclusions and the suggestions for further research are outlined in this chapter

5.2 Summary

The objective of the study was to demonstrate the effect of credit risk management on the profitability of commercial banks in Kenya. Specifically the study established that effects of credit risk management and financial performance of 42 commercial banks in Kenya. The study used both correlation and regression analysis to establish the relationship between the variable under study. On regression analysis the model had an average adjusted coefficient of determination (R-square) of 0.548 indication that there was variation of 54.8% on financial performance due to changes in credit risk management at 95% confidence interval. The study further established that the model had a significance level of 0.042 which is an indication that the data was ideal for making a conclusion on the population parameters as the value of significance (p-value) was less than 5%.The calculated value was greater than the critical value (4.618>3.87) an indication credit risk management had significant effects on financial performance of commercial banks in Kenya.

5.3 Conclusions

Based on the findings it can be concluded that management efficiency, loan to deposit ratio, capital adequacy ratio and nonperforming loans all have significant effects in return on equity of commercial banks in Kenya. However management efficiency had the highest influence in return on equity ratio in banks followed by loan to deposit ratio and nonperforming loans ratio. The findings indicate financial performance and management efficiency are positively correlated

The findings indicate also improvement of in management efficiency results improved organizational performance.

5.4 Recommendations for policy and Practice

It is evident from the study that other variables other than credit risk management has high impact on profitability hence need for studies to be conducted on these other factors. For banks to increase their profit levels, they need to adopt comprehensive credit management policies which minimizes their level of credit risk exposure

5.5 Limitations of the study

The objective of this study was achieved through a study of the period 2012-2016 therefore, a trend over a longer period of time was not observed. An assumption was also made that the reports published in the financial statements of the various banks gave a true and fair view despite the possibility that it might have been prone to misstatements and errors. There are many factors which affect the profitability of commercial banks although this study was only limited to credit risk management as a factor affecting profitability of commercial banks

5.6 Recommended areas of further research

More variables affecting profitability of commercial banks should be engaged in further studies to be done. These variables other than credit risk management will further inform the study as it will explore all the possible factors affecting profitability. This study also studied a period of 5 years since 2012-2016 hence did not observe the changes trend for the previous study. Further research should therefore be conducted covering longer period so as to analyze the changes over a longer period of time. A study on the effect of interest rate capping on the profitability of commercial banks in Kenya for instance will inform this study as it will show its impact on the volume of non-performing loans which is a variable in this study

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APPENDIX: LIST OF COMMERCIAL BANKS IN KENYA AS AT 31ST DECEMBER, 2016

No	Commercial Banks	Date licensed
1	African Banking Corporation Limited	8th December, 1994
2	Bank of Africa Kenya Limited	30th April, 2004
3	Bank of Baroda (K) Limited	1st July, 1953
4	Bank of India	5th June, 1953
5	Barclays Bank of Kenya Limited	1956
6	CfCStanbic Bank Limited	1st June, 2008
7	Charterhouse Bank Limited under – statutory management	1st August, 1998
8	Chase Bank (K) Limited in receivership	1st April,1996
9	Citibank N.A Kenya	1st July, 1974
10	Commercial Bank of Africa Limited	1st January, 1967
11	Consolidated Bank of Kenya Limited	18th December, 1989
12	Co-operative Bank of Kenya Limited	1st July, 1968
13	Credit Bank limited	3oth November
14	Development Bank of Kenya limited	20th September
15	Diamond Trust Bank Kenya Limited	15th November, 1994
16	Ecobank Kenya Limited	16th June, 2008
17	Equity Bank Kenya Limited	28th December, 2004
18	Family Bank Limited	1st May 2007
19	Fidelity Commercial Bank Limited	1st April 1996
20	First Community Bank Limited	29th April,2008
21	Guaranty Trust Bank (K) Ltd	13th January, 1995
22	Giro Commercial Bank Limited	17th December, 1992
23	Guardian Bank Limited	20th December, 1995

24	Gulf African Bank Limited	1st November 2007
25	Habib Bank A.G Zurich	1st July, 1978
26	Habib Bank Limited	2nd March, 1956
27	Imperial Bank Limited in receivership	8th January, 1996
28	I & M Bank Limited	27th March, 1996
29	Jamii Bora Bank Limited	2nd March, 2010
30	KCB Bank Kenya Limited	1st January 1896
31	Middle East Bank (K) Limited	28th November, 1980
32	National Bank of Kenya Limited	1st January, 1968
33	NIC Bank Limited	28th September, 1995
34	M-Oriental Bank Limited	8th February, 1991
35	Paramount Bank Limited	5th July, 1995
36	Prime Bank Limited	3rd September, 1992
37	Sidian Bank Limited	23rd March, 1999
38	Standard Chartered Bank Kenya Limited	1910
39	Spire Bank Limited	23rd June, 1995
40	Trans-National Bank Limited	8th January, 1985
41	UBA Kenya Bank Limited	25th September, 2009
42	Victoria Commercial Bank Limited	11th January, 1996

Source: Central Bank of Kenya Website (www.centralbank.go.ke/)