

**THE RELATIONSHIP BETWEEN CREDIT RISK MANAGEMENT TECHNIQUES
AND LOAN DEFAULT RATES AMONG COMMERCIAL BANKS IN KENYA**

BY:

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE
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DECLARATION

I declare that this research project is my original work and has not been presented in another University.

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This research project has been submitted for examination with my approval as the university supervisor.

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ABSTRACT

This Study sought to investigate the relationship between credit risk management techniques and loan default rates among commercial banks in Kenya. It was necessitated by the high and increasing numbers of loan default rates among commercial banks in Kenya. It used quantitative methods in applying regression and correlation analysis on the secondary data of all commercial banks operating in Kenya. The result found out that there is a negative correlation between loan default and credit risk management techniques among commercial banks in Kenya. Hence commercial banks must efficiently manage their credit risks so as to lower the rates of default on loans. An efficient credit risk management also leads to low interest rates thereby further reducing default.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

For banks and other shareholder-owned financial services firms, risk management is consistent with their profit-maximizing objective and is evidenced by the focus of the commercial banks on providing tailored home and personal loan packages to profitable low-risk customers (Saunders and Lange, 2001). Well-functioning commercial banks accelerate economic growth, while poorly functioning commercial banks impede economic progress and exacerbate poverty (Barth, Caprio and Levine, 2004). Commercial banks (CBs) face various risks that can be categorized into three groups: financial risk, operational risk and strategic risk (Cornett and Saunders, 2002). These risks have different impact on the performance of commercial banks. The magnitude and the level of loss caused by credit risk (CR) compared to others is severe to cause bank failures (Chijoriga, 2000). Over the years, there have been an increased number of significant bank problems in both matured and emerging economies. Credit problems, especially weakness in credit risk management (CRM), have been identified to be a part of the major reasons behind banking difficulties (Grasing, 2002). Loans constitute a large proportion of CR as they normally account for 10-15 times the equity of a bank (Kitua, 2002).

According to Heffernan (2002), banks face the twin problems of moral hazard (monitoring problem) and adverse selection (risk assessment problem) when dealing with small firm lending propositions. It is possible to argue that these problems can lead to a credit glut, but there has been some work in the UK, which has revealed the expected mismatches between providers (the commercial banks) and clients suggested by the theoretical papers (Binks, Ennew and Reed, 2003). Fatemi and Glaum (2000) provided a comprehensive picture of the risk management practices of German firms, including interest rate risk management, foreign exchange risk management, the use of derivatives, risk management systems, and the behavioral aspects of risk management. CRM is very essential to optimizing the performance of Financial Institutions (FIs). Recognizing this importance, this paper focuses on understanding the CRM systems of commercial banks operating in Kenya, the economy with a less developed financial sector.

1.1.1 Credit Risk Management Techniques

The credit risk management techniques are measures employed by banks to avoid or minimize the adverse effect of credit risk. A sound credit risk management framework is crucial for banks so as to enhance profitability guarantee survival. According to Lindergren (1987), the key principles in credit risk management process are sequenced as follows; establishment of a clear structure, allocation of responsibility, processes have to be prioritized and disciplined, responsibilities should be clearly communicated and accountability assigned. The techniques for hedging credit risk include but not limited to; Credit derivatives, Credit Securitization, Compliance to Basel Accord, Adoption of a Sound Internal Lending policy and Credit Bureau

Credit Derivatives: This provides banks with an approach which does not require them to adjust their loan portfolio. Credit derivatives provide banks with a new source of fee income and offer banks the opportunity to reduce their regulatory capital (Shao and Yeager, 2007). The commonest type of credit derivative is credit default swap whereby a seller agrees to shift the credit risk of a loan to the protection buyer. Frank Partnoy and David Skeel in *Financial Times* of 17 July, 2006 said that “credit derivatives encourage banks to lend more than they would, at lower rates, to riskier borrowers”. Recent innovations in credit derivatives markets have improved lenders’ abilities to transfer credit risk to other institutions while maintaining relationship with borrowers (Marsh, 2008).

Credit Securitization: It is the transfer of credit risk to a factor or insurance firm and this relieves the bank from monitoring the borrower and fear of the hazardous effect of classified assets. This approach insures the lending activity of banks. The growing popularity of credit risk securitization can be put down to the fact that banks typically use the instrument of securitization to diversify concentrated credit risk exposures and to explore an alternative source of funding by realizing regulatory arbitrage and liquidity improvements when selling securitization transactions (Michalak and Uhde, 2009). A cash collateralized loan obligation is a form of securitization in which assets (bank loans) are removed from a bank’s balance sheet and packaged (tranching) into marketable securities that are sold on to investors via a special purpose vehicle (SPV) (Marsh, 2008).

Compliance to Basel Accord: The Basel Accord are international principles and regulations guiding the operations of banks to ensure soundness and stability. The Accord was introduced in 1988 in Switzerland. Compliance with the Accord means being able to identify, generate, track and report on risk-related data in an integrated manner, with full auditability and transparency and creates the opportunity to improve the risk management processes of banks. The New Basel Capital Accord places explicitly the onus on banks to adopt sound internal credit risk management practices to assess their capital adequacy requirements (Chen and Pan,2012).

Adoption of a Sound Internal Lending Policy: The lending policy guides banks in disbursing loans to customers. Strict adherence to the lending policy is by far the cheapest and easiest method of credit risk management. The lending policy should be in line with the overall bank strategy and the factors considered in designing a lending policy should include; the existing credit policy, industry norms, general economic conditions of the country and the prevailing economic climate (Kithinji,2010).

Credit Bureau: This is an institution which compiles information and sells this information to banks as regards the lending profile of a borrower. The bureau awards credit score called statistical odd to the borrower which makes it easy for banks to make instantaneous lending decision. Example of a credit bureau is the Credit Risk Management System (CRMS) of the Central Bank of Nigeria (CBN).

1.1.2 Loan Default Rates in Commercial Banks

There is no single definition of a loan default. Country definitions differ, and it is recognized that it is possible that what is appropriate in one country may not be so in another. There is, however, some convergence of opinion on this issue for definition of such loans, summarized from paragraphs 4.84-4.85 of the IMF's *Compilation Guide on Financial Soundness Indicators 2004 (Guide)* is: A loan is nonperforming when payments of interest and/or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons⁵—such as a debtor filing for bankruptcy—to doubt that payments will be

made in full. After a loan is classified as nonperforming, it (and/or any replacement loans(s)) should remain classified as such until written off or payments of interest and/or principal are received on this or subsequent loans that replace the original. According to Basel Accord, Loan default is measured by arrears rate past due date which is calculated by amount past due divided by gross loan portfolio (Chen and Pan, 2012).

Many researchers on the cause of bank failures find that asset quality is a statistically significant predictor of insolvency (Dermirgüe-Kunt, (1997), and that failing banking Institutions always have high level of NPLs prior to failure. Berger et al. (2002) further observed that failing banks have often shown a level of bad loans and that such banks increase in non-performing loans tend to be followed by decrease in measured cost efficiency, suggesting that high levels of problem loans causes banks to increase spending on monitoring, working out, and/or selling of these loans. Therefore, the first step to building a stable and strong financial system is to minimize the non-performing loans (Crotty and Jobone, 2004).

1.1.3 Credit Risk Management and Loan Default Rates

Credit Risk Management (CRM) is pivotal in the banking sector. Haim and Thierry, (2005) indicated that due to the risky and diverse products offered by commercial banks, the basic cushion to any bank management is risk management. Banks assume credit risk when they act as intermediaries of funds and credit risk management lies at the heart of commercial banking. The business of banking is credit and credit is the primary basis on which a bank's quality and performance are adjusted. Credit risk is composed of default risk and credit mitigation risk. Default risk is the risk that the counterparty will default on its obligations to the investor. In this risk, the credit quality deteriorates (or default risk increases).

Credit risk is more difficult to measure because data on both default and recovery rates are not extensive, credit returns are highly skewed and fat tailed and longer term time horizon and higher confidence levels are used in measuring credit risks. These are problems in measuring credit risk that have inspired the development of several sophisticated models and commercial software products for measuring portfolio credit risk.

Credit risk is one of the key for the bank's failure to not properly manage it may lead to insolvency and bankruptcy of a Financial Institution (Basel, 2002).

Credit risk management has a big impact on the life of a bank and if the right policies are chosen and are wrongly implemented, then objective achievement becomes a default task. As said, the way that a bank manages its credits affect its financial performance.

Default rate can be measured in terms of bad-debt losses ratio-the proportion of uncollected receivables, (Panday, 2011). From the findings of the study conducted by Warue (2012) in Kenya, most cases of loan delinquency are caused by management's failure to efficiently manage specific factors which are considered to be within the direct control of the FIs' MFIs' and Self Help Groups' (SHGs') management. The external factors outside the direct control of the MFIs' and SHGs' management seem to contribute little to the levels of delinquent loans. Therefore, for effective management of delinquency, it is critical for MFIs to understand and focus more on the internal causes of delinquency which they have more control over and seek practical and achievable solutions to redress these problems.

To accomplish credit risk management duties and responsibilities the institution must understand its financial analysis, loan documentations, servicing, loan covenants and environmental analysis. It must also maintain sound records on the credit performance of its portfolios of risky assets because any change in underwriting; laws and regulations can significantly alter its loan loss experience (Kenneth and Thygerson, 1995).

1.1.4 Commercial Banks in Kenya

According to Cyton Report (2015), in Kenya there are a total of 43 commercial banks, 10 micro-finance banks and 1 mortgage finance institution. All banks are regulated by the Central Bank of Kenya. The Capital Markets Authority (CMA) has additional oversight over the listed banks. All banks are required to adhere to certain prudential regulations such as minimum liquidity ratios and cash reserve ratios with the Central Bank. Kenya has a high relative ratio of banks to the total population, with the 43 commercial banks serving a country of 44 million people, compared with Nigeria's 22 for 180 million inhabitants and South Africa's 19 for 55million.

Kenya has experienced banking problems since 1980's culminating in major bank failures (Kithinji and Waweru, 2007; Ngugi, 2001), this was due to under-capitalization, high levels of non-performing loans and weaknesses in corporate governance. Non-Bank financial institutions (NBFIs) were the most affected, but the number of failing commercial banks increased as well in the 1990s. Most of the larger local bank failures in Kenya, such as the Continental Bank, Trade Bank and Pan African Bank, involved extensive insider lending, often to politicians.

Karumba and Wafula (2012) in their article on alternatives for Kenyan banking industry identified that credit risk is one of the oldest and most challenging risk faced by banks, which results due to the probability that borrowers may default terms of their debt and hence putting an institutions capital into risky positions. Defaults rates lead to piling of non-performing loans in an institution's balance sheet. Musyoki and Kadubo (2011) in their paper on credit risk management on financial performance of banks concluded that default rate is the most important factor as it influences 54% in total credit risk influence on bank performance.

1.2 Statement of the Problem

Despite employing credit risk management strategies responsible for managing risks related to lending, banks are still experiencing a sharp rise in the level of loan default rates in their books. If the loan default rates are not brought into control, they have a potential for eroding the asset book and eventually affecting the profitability and general performance of the banks (Tetteh, 2012). There is therefore a need to investigate whether this investment in credit risk management techniques is viable to the banks. This study therefore seeks to investigate the impact of credit risk management on loan default rates among commercial banks in Kenya

Several studies have been done on the subject of credit risk management techniques. However, most of the studies have not linked credit management techniques to loan default rates. Tang and Jiang, (2003) did a research about the profitability of the banking sector, they found that both Bank specific as well as macro- economic factors are important determinants in performance of Banks. From a sample of four Banks in Hong Kong, Tang and Jiang highlights that macro-economic factors, real GDP growth, inflation and interest rate have a positive impact. Among

Bank specific variables the research identifies operational efficiency and business diversification as contributing to higher Return on Assets, after controlling differences in credit quality of loans. They enlist provision for bad debts and non interest expenditure as the major factors influencing banks' financial performance in Hong Kong. In conclusion the researcher argues that controlling bad debts through prudent Credit Risk Management leads to a more efficient Bank and thus higher profitability. However, this research did not focus on the loan default rates, hence the need for further research.

Studies from Nigeria indicate that The Nigerian banking industry has been strained by the deteriorating quality of its Credit Assets as a result of the significant dip in equity market indices, global oil prices and sudden depreciation of the naira against global currencies (Banking Report, 2010). The poor quality of the banks' loan assets hindered banks to extend more credit to the domestic economy, thereby adversely affecting economic performance. This prompted the Federal Government of Nigeria through the instrumentality of an Act of the National Assembly to establish the Asset Management Corporation of Nigeria (AMCON) in July, 2010 to provide a lasting solution to the recurring problems of non-performing loans that bedeviled Nigerian banks. This calls for further studies so as to link credit risk management techniques and loan default rates.

In Kenya, most of the research works on default risk management have delved on Microfinance Institutions (MFIs). For instance, Esselindi 2013 researched on The Effect of Credit Risk Management on Loans Portfolio among Saccos in Kenya. She focused on SACCOS. Maundu (2011) researched on The Relationship between Qualitative Credit Assessment and Default Rates in Credit Card Business in Kenya. He once again dwelt on one of the products in the loan products. Wambugu (2009) On Credit Management Practices In SACCOS offering Front Office Services found out that risk identification is an important stage in credit risk management and should be applied effectively to identify the current credit risks confronting the organization, provide the likelihood of these risks occurring and reveal the type and amount of loss these risks are meant to cause if they occur. However, can these studies on SACCOs be replicated to commercial banks?

A research by Kithinji (2010) has been conducted on credit risk management but the focus of the research has been on how it affects performance, profitability and survival of banks. Rarely have these researches focused on the specific credit risk management variables that affect quality of the loan portfolio and eventually the profit of the banks in Kenya. However these studies cannot be replicated to the link between credit risk management and loan default rates thereby necessitating the need for further research; Are the different credit risks management techniques used by the various banks determinants of loan defaults rates?

1.3 Objectives of the Study

1.3.1 General Objective

The General objective of the study was to establish the possible relationship between credit risk management techniques and loan default rates among Commercial Banks in Kenya.

1.4 Findings of the Study

The study is of great importance to Commercial banks. The analyzed relationship may be found invaluable to the credit departments. The comparison of the used procedures hind on the weights of the commonly used procedures and how they can be better used to improve on credit risk management. The study tried to find the effects of Credit Referencing among other measures on the rates of default rates over time.

Other researchers and Analysts will find the findings of this research usable now and for future comparatives. The study gaps which emanated from the study will present strong foundation for future studies. Researchers can use the findings from the study to find the viability of the present day credit risk management tools. The analyst may get deeper relationship between the variables for the betterment of the banking sector.

MFIs and other financial institutions will be a great beneficiary of the study. Like commercial banks they may use the finding to find on the possible loopholes in their credit risk management procedures so as to check their default rates.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter will review literature on the relationship between credit risk management techniques and loan default among commercial banks. This will be based on previous studies on related subject. It will also encompass empirical and theoretical evidence on the subject. There are some theories which attempt to light up credit default risk issue as a whole. These will also be reviewed in this chapter.

2.2 Review of Theories

The theoretical review seeks to establish some of the theories that are attributed by other researchers, authors and scholars and are relevant to credit risk management. The study was guided by the modern portfolio theory and the information asymmetry theory.

2.2.1 Portfolio Theory

Since the 1980s, banks have successfully applied modern portfolio theory to market risk. Many companies are now using value at risk models to manage their interest rate and market risk exposures. Unfortunately, however, even though credit risk remains the largest risk facing most banks, the practice of applying modern portfolio theory to credit risk has lagged (Margrabe, 2007). Companies recognize how credit concentrations can adversely affect financial performance. As a result, a number of institutions are actively pursuing quantitative approaches to credit risk measurement.

This industry is also making significant progress toward developing tools that measure credit risk in a portfolio context. They are also using credit derivatives to transfer risk efficiently while preserving customer relationships. Portfolio quality ratios and productivity indicators have been adapted (Kairu, 2009). The combination of these developments has vastly accelerated progress in managing credit risk in a portfolio context.

While the asset-by-asset approach is a critical component to managing credit risk, it does not provide a complete view of portfolio credit risk, where the term risk refers to the possibility that actual losses exceed expected losses. Therefore, to gain greater insight into credit risk,

companies increasingly look to complement the asset-by-asset approach with a quantitative portfolio review using a credit model (Mason and Roger, 1998). Companies increasingly attempt to address the inability of the asset-by-asset approach to measure unexpected losses sufficiently by pursuing a portfolio approach. One weakness with the asset-by-asset approach is that it has difficulty identifying and measuring concentration. Concentration risk refers to additional portfolio risk resulting from increased exposure to credit extension, or to a group of correlated creditors (Richardson, 2002)

2.2.2 Modern Portfolio Theory

Modern Portfolio Theory (MPT) is a theory of investment which tries to maximize return and minimize risk by carefully choosing different assets (Markowitz, 1952). The Primary principle upon which Modern Portfolio Theory is based (MPT) is the random walk hypothesis which states that the movement of asset prices follows an Unpredictable path: the path as a trend that is based on the long-run nominal growth of corporate earnings per share, but fluctuations around the trend are random (Chandra & Shadel, 2007). Since the 1980s, banks have successfully applied modern portfolio theory (MPT) to market risk. Many financial institutions are now using value at risk (VAR) models to manage their interest rate and market risk exposures. Unfortunately, however, even though credit risk remains the largest risk facing most banks, the practical of MPT to credit risk has lagged (Margrabe, 2007).

Financial institutions recognize how credit concentrations can adversely impact financial performance. As a result, a number of sophisticated institutions are actively pursuing quantitative approaches to credit risk measurement, while data problems remain an obstacle. This industry is also making significant progress toward developing tools that measure credit risk in a portfolio context. They are also using credit derivatives to transfer risk efficiently while preserving customer relationships. The combination of these two developments has precipitated vastly accelerated progress in managing credit risk in a portfolio context over the past several years (Saunders & Cornett, 2007).

Traditionally, banks have taken an asset-by-asset approach to credit risk management. While each bank's method varies, in general this approach involves periodically evaluating the credit

quality of loans and other credit exposures, applying a credit risk rating, and aggregating the results of this analysis to identify a portfolio's expected losses. The foundation of the asset-by-asset approach is a sound loan review and internal credit risk rating system. A loan review and credit risk rating system enable management to identify changes in individual credits, or portfolio trends in a timely manner. Based on the results of its problem loan identification, loan review, and credit risk rating system management can make necessary modifications to portfolio strategies or increase the supervision of credits in a timely manner (Saunders & Cornett, 2007).

While the asset-by-asset approach is a critical component to managing credit risk, it does not provide a complete view of portfolio credit risk, where the term risk refers to the possibility that actual losses exceed expected losses. Therefore to gain greater insight into credit risk, banks increasingly look to complement the asset-by-asset approach with a quantitative portfolio review using a credit model. Financial institutions increasingly attempt to address the inability of the asset-by-asset approach to measure unexpected losses sufficiently by pursuing a portfolio approach. One weakness with the asset-by-asset approach is that it has difficulty identifying and measuring concentration. Concentration risk refers to additional portfolio risk resulting from increased exposure to a borrower, or to a group of correlated borrowers (Margrabe, 2007).

2.2.3 Information Asymmetry Theory

In a debt market, information asymmetry arise when a borrower who takes a loan usually has better information about the potential risks and returns associated with investment projects for which the funds are earmarked. The lender on the other hand does not possess adequate information pertaining the borrower (Edward and Turnbull, 2004), for Perceived information asymmetry brings about two problems for financial institutions, moral hazard and adverse selection. MFIs finds it difficult to overcome these problems as it is not economical to devote resources to appraisal and monitoring where lending is for small amounts as in the case of MFIs loans. This is because data is needed to screen applicants and monitor borrowers are not freely available as and when it is required by banking institutions before giving out loans to its clients. Hence MFIs face a situation of information asymmetry while assessing lending applications (Binks & Ennew, 2004).

Derban, Binner and Mullineux (2005) recommended that borrowers should be screened especially by banking institutions in form of credit assessment. Collection of reliable information from prospective borrowers becomes critical in accomplishing effective screening as indicated by asymmetric information theory. Qualitative and quantitative techniques can be used in assessing the borrowers although one major challenge of using qualitative models is their subjective nature. However according to Derban et al (2005), borrowers attributes are assessed through qualitative models can be assigned numbers with the sum of the values as compared to a threshold. This technique minimizes processing costs, reduces subjective judgments and possible biases. The rating systems will be important if it indicates changes in expected level of credit loan loss. Brown (2008) concluded that quantitative measures make it possible to numerically establish which factors are important in explaining default risk, evaluating the relative degree of importance of the factors, improving the pricing of default risk, screening out bad loan applicants and calculating any reserve needed to meet expected future loan losses.

2.3 Factors affecting loan default rates

A number of reasons have been cited as the causes of loan delinquency or default. These Include:

2.3.1 Lack of Willingness to Pay Loans

Most borrowers have the financial resources but lack willingness to pay loans. This contributes to a high percentage of loan default rates in commercial banks in Kenya.

2.3.2 Diversion of funds by borrowers

Many borrowers also take money meant for projects and then divert them for personal use; this complicates the problem of loan default rates among commercial banks in Kenya.

2.2.3 Improper Appraisal by Credit Officers

Most credit officers do not appraise loan applications prudently due to lack of professionalism and vested interests. This also contributes to loan default rates.

2.3.4 Exchange Rate Depreciation

Loans taken in foreign currency by borrowers involved in international trade face currency exchange risks as a result of depreciation of exchange rates.

2.3.5 Delay in Time of Loan Delivery

Loans are approved and not disbursed in good time thereby delaying the takeoff of most business projects. This leads to delays in loan repayments.

2.3.6 High Interest Rate

Interest rate is the cost of borrowing. High interest rates mean a high cost on the side of the borrower. This puts a higher financial burden for the borrower thereby leading to high default rates. [Ahmad, (1997); Bal ogun and Alimi (1990); Akinwumi and Ajayi (1990); Olomola (2001); Vandel (1993) and Kwakwa, (2009)].

2.4 Empirical Review

Default risk is a serious threat to the performance of banks; therefore various researchers have examined the effect of credit risk management on banks in varying dimensions. Ahmed, Takeda and Shawn (1998) in their study found that loan loss provision has a significant positive influence on non-performing loans. Therefore, an increase in loan loss provision indicates an increase in credit risk and deterioration in the quality of loans consequently affecting bank performance adversely. Ahmad and Ariff (2007) examined the key determinants of credit risk of commercial banks on emerging economy banking systems compared with the developed economies. The study found that regulation is important for banking systems that offer multi-products and services; management quality is critical in the cases of loan-dominant banks in emerging economies. An increase in loan loss provision is also considered to be a significant determinant of potential credit risk. The study further highlighted that credit risk in emerging economy banks is higher than that in developed economies.

Ben-Naceur and Omran (2008) in attempt to examine the influence of bank regulations, concentration, financial and institutional development on commercial banks' margin and profitability in Middle East and North Africa (MENA) countries from 1989-2005 found that bank capitalization and credit risk have positive and significant impact on banks' net interest margin, cost efficiency and profitability.

In their study 'Credit Risk management and Profitability in Commercial Banks in Sweden' Juanjuann et al (2009) highlighted that credit risk management has effect on performance of the institution in order words on the profitability. The analysis further indicated that the impact of credit risk management on the financial performance is not the same on all (4) commercial banks sampled. Further the results of the study were limited to banks sampled and were not generalized for all the commercial banks in Sweden. The researchers used regression model to do the empirical analysis. The data was collected from the sample banks annual report (2000 - 2008).

Karangi (2011) evaluated the impact of credit risk on the profitability of Nigerian banks. Financial ratios as measures of bank performance and credit risk were collected from the annual reports and accounts of sampled banks from 2004-2008 and analyzed using descriptive, correlation and regression techniques. The findings revealed that credit risk management has a significant impact on the profitability of Nigerian banks. It concluded that banks' profitability is inversely influenced by the levels of loans and advances, non-performing loans and deposits thereby exposing them to great risk of illiquidity and distress. Epure and Lafuente (2012) examined bank performance in the presence of risk for Costa-Rican banking industry during 1998-2007. The results showed that performance improvements follow regulatory changes and that risk explains differences in banks and non-performing loans negatively affect efficiency and return on assets while the capital adequacy ratio has a positive impact on the net interest margin. Al-Khouri (2011) assessed the impact of bank's specific risk characteristics, and the overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. Using fixed effect regression analysis, results showed that credit risk, liquidity risk and capital risk are the major factors that affect bank performance when profitability is measured by return on assets while the only risk that affects profitability when measured by return on equity is liquidity risk.

Ngare (2008) conducted a survey of Credit Risk Management Practices by commercial banks in Kenya. The specific area of research were geared forward identifying the source of credit risk exposures in banks and strategies that the banks have adopted to monitor and mitigate against the credit risk exposures inherent in the operations of their business. To facilitate the attainment of the objectives of this study, questions were administered to credit risk managers and credit

managers. From the study it was found that most banks use qualitative loan assessment methods to make credit granting decisions while liquidity runs on the borrowers' credit concentration and adverse trading by the borrowers were the main sources of credit risk among the banks in Kenya. In addition, most banks were found to use loan diversification, banks guarantees and bank covenants to mitigate against credit risk. Felix and Claudine (2008) investigated the relationship between bank performance and credit risk management. It could be inferred from their findings that return on equity (ROE) and return on assets (ROA) both measuring profitability were inversely related to the ratio of non-performing loan to total loan of financial institutions thereby leading to a decline in profitability.

Kithinji (2010) assessed the effect of credit risk management on the profitability of commercial banks in Kenya. Data on the amount of credit, level of non-performing loans and profits were collected for the period 2004 to 2008. The findings revealed that the bulk of the profits of commercial banks are not influenced by the amount of credit and non-performing loans, therefore suggesting that other variables other than credit and non-performing loans impact on profits. Chen and Pan (2012) examined the credit risk efficiency of 34 Taiwanese commercial banks over the period 2005-2008. Their study used financial ratio to assess the credit risk and was analyzed using Data Envelopment Analysis (DEA). The credit risk parameters were credit risk technical efficiency (CR-TE), credit risk allocative efficiency (CR-AE), and credit risk cost efficiency (CR-CE). The results indicated that only one bank is efficient in all types of efficiencies over the evaluated periods. Overall, the DEA results show relatively low average efficiency levels in CR-TE, CR-AE and CR-CE in 2008.

2.5 Chapter summary

A review of empirical studies discussed in this study shows that there are mixed results on how credit risk management techniques adopted by commercial banks impact on non-performing loans. In some instances, some studies shows that credit risk management technique has a significant impact on the profitability of commercial banks while on the other hand, results show that credit risk management was found to have a negative impact on banks' profitability. There is therefore need for a study in the Kenyan context for comparison of results, especially for the relationship between credit risk techniques and loan default rates among commercial banks.

Moreover, though there is increased literature on credit risk management and financial performance of commercial banks in developing countries; the literature on the Kenyan context is scarce and does not talk of loan default rates among commercial banks in Kenya. There are few studies conducted on this context. The variables used in the other studies are also different.

It is based on these identified gaps that this study was necessary to establish the relationship between credit risk management techniques and loan default rates among commercial banks in Kenya.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter dealt with how the research was conducted in order to achieve the stated objectives and to present the research design and methodology that was used to carry out the research. It presents the research design, the population, and sample selection, sampling procedure, and research instruments, methods of data collection and data analysis

3.2 Research Design

Research design refers to the way the study was designed, that is the method used to carry out the research (Mugenda and Mugenda, 2003). The research design is the plan and structure of investigation so conceived so as to obtain answers of the research questions. The research design for this study was quantitative in nature so as to establish if there is any significant relationship between credit risk techniques and loan default rates among 40 commercial banks in Kenya.

3.3 Population and Sample

The population of interest in this study was 40 Commercial Banks registered by the Central bank of Kenya (CBK) as they fulfill all characteristics and legally accepted by the CBK. A census was applied as the method of systematically acquiring and recording information from the given population. The study focused on information available from secondary sources, mainly CBK

3.4 Data Collection

Data from the study was collected by the use of both primary and secondary sources. Primary data was collected from the credit departments of the commercial banks using questionnaires to establish the credit risk management technique applied by commercial banks in Kenya. Secondary data on nonperforming loans, average interest and exchange rates was collected from the annual results of the commercial banks from CBK, for the period between 2011 and 2015.

3.5 Data Analysis

The research used quantitative techniques in analyzing the data. After receiving questionnaires from the respondents, the responses were edited, classified, coded and tabulated to analyze quantitative data using statistical package for social science (SPSS). The collected data was thoroughly examined and checked for completeness and comprehensibility. The financial information was translated into form of percentages by using ratios approach. Tables and graphical demonstrations were used to more illustrate a clear financial image. Finally after the comparison from all findings the conclusions were made on The Relationship between Credit Risk Management Techniques and Loan Default Rates among Commercial Banks in Kenya. The following regression model was used in establishing the relationship:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where Y is Loan default rate

α is a constant- the value of loan default that is not influenced by credit risk management technique

X_1 interest rates

X_2 credit risk management technique

X_3 is exchange rates

e is the error term

The significance of the analytical model was tested by the use of ANOVA statistical model which is the Analysis of Variance performance. Both the SPSS software and Microsoft Excel were used to insure the accuracy of collected data about Credit Risk Management.

CHAPTER FOUR: DATA ANALYSIS

4.1 Introduction

The purpose of this study was to establish the effect of credit risk management techniques on loan default rates among commercial banks in Kenya. The study used both primary and secondary data. The primary data was obtained through questionnaires from a total of 40 commercial banks operating in Kenya out of the population of 43 commercial banks. This is an indication that the study was able to achieve a response rate of 93.02%. The study also made use of secondary data that was obtained from CBK publications and the respective bank's Credit Policy documents and financial statements. The data was finally subjected to data analysis and the findings were presented in the following sections:

4.2 Credit Risk Management Techniques:

Credit risk management technique		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Adoption of sound internal lending policy	79	37.6	39.5	39.5
	Credit reference	71	33.8	35.5	75.0
	Credit securitization	50	23.8	25.0	100.0
	Total	200	95.2	100.0	
Missing	System	10	4.8		
Total		210	100.0		

From the above table, it is evident that the most commonly used credit risk management technique is adoption of sound internal lending policy followed by credit reference and credit securitization.

This implies that banks have resorted more in developing internal credit lending policies as a means of managing credit risks as well as credit securitization to protect themselves from the risk of default. Credit reference also comes in if the borrower fails to repay the loan. The fact that a borrower can be listed shapes their character to ensure a reduction in loan default rates.

4.3 The Relationship between Credit Risk Management technique and Interest Rates:

Correlations		Credit risk management technique	Interest rate
Credit risk management technique	Pearson Correlation	1	.010
	Sig. (2-tailed)		.889
	N	200	200
Interest rate	Pearson Correlation	.010	1
	Sig. (2-tailed)	.889	
	N	200	200

The above result shows a positive correlation between credit risk management technique and interest rates among commercial banks in Kenya($r=0.010$). This implies that as interest rates increase, credit risk also increases among commercial banks in Kenya.

Although there is a positive correlation between credit risk management techniques and interest rates, a small variation in credit risk is explained by interest rates. The coefficient of determination is (R^2) is 0.01%. This means that 0.01% of variation in credit risk is accounted for by interest rates. The remaining percentage is explained by other factors. Hence reductions in interest rates reduce the credit risk by up to 0.01%.

4.4 Relationship between Credit risk Management Technique and Loan Default Rates

Correlations

		Credit risk management technique	Default rates
Credit risk management technique	Pearson Correlation	1	-.034
	Sig. (2-tailed)		.636
	N	200	200
Default rates	Pearson Correlation	-.034	1
	Sig. (2-tailed)	.636	
	N	200	200

The data above shows a negative correlation between credit risk management technique and loan default rates among commercial banks in Kenya ($r=-0.034$). ($R^2=0.001156$). This means that 0.1156% of variation in loan default rates is explained by credit risk management techniques. Hence improvements in credit risk management technique can reduce loan default rates among commercial Banks in Kenya by up to 0.1156%

4.5 Relationship between Default Rates and Interest Rates.

Correlations

		Default rates	Interest rate
Default rates	Pearson Correlation	1	-.047
	Sig. (2-tailed)		.508
	N	200	200
Interest rate	Pearson Correlation	-.047	1
	Sig. (2-tailed)	.508	
	N	200	200

The result shows a negative correlation between interest rates and default rates among commercial banks in Kenya ($r=-0.047$). Since the coefficient of determination (R^2) is 0.002209, 0.22% of variation in default rates is accounted for by interest rates. Hence reducing interest rates significantly reduce default rates.

4.6 Relationship between Default Rates and Exchange rates

Correlations

		Default rates	Exchange rate
Default rates	Pearson Correlation	1	.081
	Sig. (2-tailed)		.255
	N	200	200
Exchange rate	Pearson Correlation	.081	1
	Sig. (2-tailed)	.255	
	N	200	200

The above result shows a positive correlation between exchange rates and Loan default rates among commercial banks in Kenya ($r=0.081$). This implies that as the shilling depreciates against the dollar, Loan default rates increase among commercial banks in Kenya. Exchange rate depreciation accounts for up to 0.6561% of loan default. Hence, if the exchange rate can remain stable, then loan default rates can be reduced by up to 0.6561%.

4.7 Robustness of the Study Model

This entailed testing the ‘goodness of fit’ of the model to the actual data and the extent to which the independent variables explained the variation in the dependent variables. Table 4.7 shows that the adjusted R^2 , which is the coefficient of determination measuring the proportion of variation in non-performing loans in commercial banks in Kenya is -0.009, indicating that about 9% of variation in the dependent variable in the regression model is due to independent variables while 81 % are due to error term, chance or unexplained.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.081 ^a	.007	-.009	7.95560

a. Predictors: (Constant), exchange rate, Credit risk management technique, interest rate

4.8 ANOVA Model Analysis

Table 4.8 shows that the F-statistics is 0.436 and is significant at 0.0001. Thus the independent variables in the model jointly influence loan default rates in commercial banks in Kenya. The model was therefore considered robust or fitted well to the actual data of the variables.

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	82.770	3	27.590	.436	.728 ^b
	Residual	12405.150	196	63.292		
	Total	12487.920	199			

a. Dependent Variable: Default rates

b. Predictors: (Constant), exchange rate, Credit risk management technique, interest rate

4.9 Regression Model

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3.158	20.943		-.151	.880
	Interest rate	-.029	.434	-.006	-.066	.947
	Credit risk management technique	.066	.866	.007	.076	.939
	Exchange rate	.135	.167	.081	.808	.420

a. Dependent Variable: Default rates

The causes of non-performing loan in commercial banks in Kenya were investigated using multiple linear regressions. The results are presented in Table 4.9 above. The study established the economic model as follows:

$$Y = -3.158 - 0.029X_1 + 0.066X_2 + 0.135X_3$$

According to the regression equation established, taking all variables constant at zero, ratio of loan default rate will be 3.158 % at 5% level of significance and 95% level of confidence.

4.10 Summary of Discussions

Statistical Package for Social Sciences (SPSS) was used to analyse the data and different causes of loans defaults were ranked according to their mean score as follows:

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Interest rate	200	14.97	19.75	16.9200	1.59439
Valid N (listwise)	200				

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Credit risk management technique	200	1.00	3.00	1.8550	.79190
Valid N (listwise)	200				

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Exchange rate	200	84.53	98.18	89.1120	4.78035
Valid N (listwise)	200				

The results of the study identified that exchange rates was ranked 1st with the highest mean score of 89.1120, followed with interest rates with a mean score of 16.9200 and credit risk management technique ranked last getting a mean score of 1.8550. The above mean score also concur with the results of the regression coefficients which also give the same ranks. Hence exchange rate is a big cause of loan default rates according to the study.

Credit risk management technique

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Adoption of sound internal lending policy	79	37.6	39.5	39.5
	Credit reference	71	33.8	35.5	75.0
	Credit securitization	50	23.8	25.0	100.0
	Total	200	95.2	100.0	
Missing	System	10	4.8		
Total		210	100.0		

The main credit risk management technique used by commercial banks in Kenya is the adoption of sound internal lending policy followed by credit referencing. This means that if banks can continue to implement a sound credit policy consistent with best practices in the banking sector, then loan defaults would be reduced.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The objective of this study was to find out the effects of credit risk management techniques on loan default rates among commercial banks in Kenya. We conclude from the above discussion that credit risk management technique affects loan default rates in commercial banks in Kenya.

5.2 Conclusions

The finding of this study provides greater understanding into the many causes of loan defaults in Commercial banks in Kenya. Majority of these causes were internal problems associated with the Banks' mode of operations which when properly addressed, commercial banks in Kenya will have a good loan portfolio, fulfill their primary role of poverty alleviation and remain sustainable. This research provides very enriching recommendations to help commercial banks tackle loan default headlong. The study was limited to the three likely causes of loan default in commercial banks; Credit risk management techniques, interest rates and exchange rates all of which were found to be linked to loan default. The correlations were very low hence we recommend further research on the assessment of other probable causes of loan default among commercial banks in Kenya.

5.3 Recommendations

Based on the findings of the current research the following recommendations are made for policy adoption to decrease the ratio of loan defaults.

Commercial banks should work hand in hand with the central bank to ensure that exchange rates remain stable. This will effectively reduce loan default rates.

Commercial banks must professionally manage their credit risks so as to reduce the risk of default. This is because a lower risk profile will result in low interests thereby further reducing the likelihood of default.

An effective mechanism for the borrower's screening must be ensured, because information asymmetry always remains a major cause for loans default.

The banks must get information about the previous repayment behavior of borrowers before sanctioning of loans.

The banks should give loans on the basis of entrepreneurial skills and credit worthiness of borrowers rather than fixing debt to equity ratio.

The banks should arrange continuous training programs for credit officers in order to enhance their credit skills like preparation of excellent project appraisal reports, monitoring of loan activities and overcoming the delayed loan approval problems.

Besides this, another important way to reduce loans default, the banks should provide business advisory services to their customers, because most of the loan defaults occur due to lack of business management knowledge of borrowers. Due to lack of business management knowledge, borrowers make losses hence cannot repay the borrowed funds.

Most of the borrowers are concerned for high interest rate charged by the banks, therefore banks should reduce interest rates in order to reduce loan defaults.

5.4 Limitations of the Study

This study was limited to three variables as the causes of loan default rates in Commercial banks in Kenya. This list of variable is by no means exhaustive. In particular, other variables such as size of the bank, GDP and inflation rate were excluded. The interpretation of these results as concerns to the causes of non-performing loans should be restricted to variables under study.

The second limitation relates to the period of study. Five year was chosen due to availability of data on the CBK website. However such a period could be insufficient for drawing inferences in the long run.

The third limitation relates to study population. The study covered Commercial Banks in Kenya and did not consider other financial institutions across all sectors so as to provide a more broad based analysis.

The study was limited to establishing the causes of Non-Performing Loans in Commercial Bank in Kenya. Few studies have been done on causes and management of Non-performing Loans in Kenya.

Lastly, this descriptive and correlation study relied on secondary data which had already been compiled by the CBK and KNBS. Data was used as it was obtained and the researcher had no means of verifying the validity of the data which was assumed to be accurate for the purpose of this study. The study results are therefore subject to the validity of the data.

5.5 Suggestions for Further Study

The study investigated the causes of loan default in Commercial Bank in Kenya. The financial Industry in Kenya however is comprised of various other financial institutions which differ in their way of management and have different setting. This warrants the need for further study to generalize the findings of all the financial institutions in Kenya. The Study therefore recommends further study be done with an aim to investigate the causes of Non-Performing Loans of Financial Institutions in Kenya.

The study also applied only three independent variables in determining the results, a further study can be carried out by including more independent variables to the regression model.

The study further recommends that a study to be carried out to determine the causes and management of Non-Performing on Performance of Commercial Banks in Kenya.

Lastly, five year of study was chosen. The study therefore recommends that a study be carried with the aim of increasing the period under study.

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Appendices:

Questionnaire

I am undertaking a research to establish whether there exist a relationship between credit risk management techniques and loan default rates among commercial banks in Kenya.

Kindly assist in providing the below information:

Part A:

The bank you work for.....

Department.....

Designation.....

Part B:

What credit risk management techniques do you use?

Tick the ones that apply:

- ☐ Credit derivatives
- ☐ Credit securitization
- ☐ Compliance to Basel accord
- ☐ Adoption of a sound internal lending policy
- ☐ Credit reference bureau

Other (specify).....

What are some of the factors in your opinion that contribute to loan default?

.....

.....

.....

.....

.....

LIST OF COMMERCIAL BANKS

1. Kenya Commercial Bank Ltd
2. Equity Bank Ltd.
3. Co-operative bank of Kenya
4. Barclays Bank of Kenya
5. Diamond Trust Bank
6. Standard Chartered Bank
7. NIC Bank
8. Commercial bank of Africa
9. I and M
10. CFC Stanbic
11. National bank of Kenya
12. Family bank
13. Housing finance
14. Prime bank
15. Bank pf Africa
16. Bank of Baroda
17. Ecobank Kenya
18. City bank NA Kenya
19. Bank of India
20. Gulf African bank
21. African Banking corporation
22. Sidian bank
23. Victoria commercial bank
24. GT Bank
25. First community bank
26. Jamii Bora bank
27. Equatorial commercial bank
28. Consolidated bank

29. Fidelity commercial bank
30. Guardian bank
31. Giro commercial bank
32. Development bank of Kenya
33. Credit bank
34. Transnational bank
35. Paramount Universal bank
36. Oriental commercial bank
37. Habib bank Ag Zurich
38. Habib bank of Kenya
39. Middle east Bank
40. UBA