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

BY

GRACE N. MWANGI

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DECLARATION

This project is my original work and has never been submitted to any university for academic credit.

GRACE N. MWANGI .... 9|11| 2012

                        SIGNATURE   DATE

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

MR. HERICK ONDIGO .... 9·11·2012

Lecturer   SIGNATURE   DATE

Department of Finance and Accounting

School of Business, University of Nairobi

DEDICATION

I dedicate this work to my family for their moral support, encouragement and understanding.

To the Almighty God for His unceasing blessings without which it is impossible to accomplish anything.

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ABSTRACT

Credit risk has always been a vicinity of concern not only to bankers but to the entire business world because the risks of a trading partner not fulfilling his obligations in full on due date can seriously jeopardize the affairs of the other partner. This study sought to review the effect of credit risk management on the financial performance of commercial banks. The research design used in this study was descriptive research design. The design was appropriate because the study involved an in depth study of credit risk management and the relationship between the two variables i.e. credit risk management and the financial performance of commercial banks was described extensively.

Secondary data collected from the commercial banks annual reports (2007-2011) was used. Of the 43 commercial banks in Kenya, full data was attained from 26 banks and thus the study concentrated on the 26 banks. The data collected from the annual reports of the banks was analyzed using multiple regression analysis. The regression output was obtained using Statistical Package for Social Sciences (SPSS version 18). In the model return on equity (ROE) was used as the profitability indicator while non performing loans ratio (NPLR) and capital adequacy ratio (CAR) as credit risk management indicators.

This study showed that there is a significant relationship between financial performance (in terms of profitability) and credit risk management (in terms of loan performance and capital adequacy). The results of the analysis states that both non performing loans ratio (NPLR) and capital adequacy ratio (CAR) have negative and relatively significant effect on return on equity

(ROE), with NPLR having higher significant effect on ROE in comparison to CAR. Hence, the regression as whole is significant; this means that NPLR and CAR reliably predict ROE.

Having established a relationship between credit risk management and the financial performance of commercial banks, the researcher suggests that all banks should adopt a credit risk grading system. The system should define the risk profile of borrower's to ensure that account management, structure and pricing are commensurate with the risk involved. Risk grading is a key measurement of a Bank's asset quality, and as such, it is essential that grading is a robust process. All facilities should be assigned a risk grade. Where deterioration in risk is noted, the Risk Grade assigned to a borrower and its facilities should be immediately changed. Borrower Risk Grades should be clearly stated on Credit Applications.

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LIST OF ABBREVIATIONS

BCBS	Basel Committee on Banking Supervision
BIS	Bank of International Settlement
CAR	Capital Adequacy Ratio
DD	Distance to default
EAR	Earnings at Risk
EDF	Expected Default Frequency
MPT	Modern Portfolio Theory
NI	Net Income
NPL	Non Performing Loans
NPLR	Non Performing Loans Ratio
RAROC	Risk-Adjusted Return on Capital
ROA	Return on Assets
ROE	Return on Equity
RWAs	Risk Weighted Assets
RWCAR	Risk Weighted Capital Adequacy Ratio
SPSS	Statistical Package for Social Sciences
TL	Total Loans
VAR	Value at Risk

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The concept of risk return trade-off advances that investors get rewarded through a risk premium for taking on some additional risk. Risk is defined as the possibility of something undesirable taking place. In the most basic sense, it is the chance or probability of financial loss. More formally, the term risk is used interchangeably with uncertainty to refer to the variability of returns associated with a given investment. According to Rose (2002), risk to a banker means the perceived uncertainty connected with some event.

The Central Bank of Kenya in their Prudential Guidelines (2006) classifies the commercial banks' risk factors into nine (9) categories namely: strategic risk, credit risk, liquidity risk, interest rate risk, price risk, foreign exchange rate risk, operational risk and regulatory risk. These are the major risk factors that the Central Bank identifies as the ones having grave impact on the bank operations in Kenya.

Credit risk is the risk of loss due to a debtor's non-payment of a loan or other line of credit (either the principal or interest (coupon) or both). According to Saunders and Cornett (2003) credit or default risk is the risk that the promised cash flows from loans and securities held by financial institutions may not be paid in full. Should a borrower default, both the principal loaned and the interest payments expected are at risk. He

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further notes that the potential loss a financial institution can experience suggests that financial institutions need to collect information about borrowers whose assets are in their portfolios and to monitor those borrowers overtime.

Sinkey, Jr (2002) defines credit risk as the uncertainty associated with borrowers' loan repayments. In general when borrowers' asset values exceed their indebtedness they repay loans; when borrowers' asset values are less than loan values, they do not repay. They exercise their option to default.Taking credit risk is part and parcel of financial intermediation. Yet, the effective management of credit risk by financial intermediaries is critical to institutional viability and sustained growth. Failure to control risks, especially credit risk, can lead to insolvency. However, too often, the mere perception of high credit risk can dissuade financial intermediaries from entering a particular market segment when a large contributing factor to that perception may be lack of adequate credit risk evaluation and management techniques.

1.1.1 Credit Risk Management

Credit risk management is defined as identification, measurement, monitoring and control of risk arising from the possibility of default in loan repayments (Early, 1996; Coyle, 2000). Credit extended to borrowers may be at the risk of default such that whereas banks extend credit on the understanding that borrowers will repay their loans, some borrowers usually default and as a result, banks income decrease due to the need to provision for the loans. Where commercial banks do not have an indication of what proportion of their borrowers will default, earnings will vary thus exposing the banks to an additional risk of

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variability of their profits. Every financial institution bears a degree of risk when the institution lends to business and consumers and hence experiences some loan losses when certain borrowers fail to repay their loans as agreed. Principally, the credit risk of a bank is the possibility of loss arising from non-repayment of interest and the principle, or both, or non-realization of securities on the loans.

Risks exposed to commercial banks threaten a crisis not only in the banks but to the financial market as a whole and credit risk is one of the threats to soundness of commercial banks. To minimize credit risk, banks are encouraged to use the "know your customer" principle as expounded by the Basel Committee on Banking Supervision (Kunt-Demirguc and Detragiache, 1997; Parry, 1999; Kane and Rice, 1998). Subjective decision-making by the management of banks may lead to extending credit to business enterprises they own or with which they are affiliated, to personal friends, to persons with a reputation for non-financial acumen or to meet a personal agenda, such as cultivating special relationship with celebrities or well connected individuals. A solution to this may be the use of tested lending techniques and especially quantitative ones, which filter out subjectivity (Griffith and Persuad, 2002).

The key principles in credit risk management are; firstly, establishment of a clear structure, allocation of responsibility and accountability, processes have to be prioritized and disciplined, responsibilities should be clearly communicated and accountability assigned thereto (Lindergren, 1987). According to Demirguc-Khunt and Huizinga (1999), the overwhelming concern on bank credit risk management is two-fold. First, the

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Newtonian reaction against bank losses, a realization that after the losses have occurred that the losses are unbearable. Secondly, recent development in the field of financing commercial paper, securitization, and other non-bank competition have pushed banks to find viable loan borrowers. This has seen large and stable companies shifting to open market sources of finance like bond market. Organizing and managing the lending function in a highly professional manner and doing so pro-actively can minimize whatever the degree of risk assumed losses. Banks can tap increasingly sophisticated measuring techniques in approaching risk management issues (Gill, 1989).

Cooper et al. (2003) found that changes in credit risks may reflect changes in the health of a bank's loan portfolio which may in turn affect the bank's performance. Duca and McLaughlin (1990) found that the variation in bank profitability are largely attributable to variations in credit risk, since increased exposure to credit risk is normally associated with decreased firm profitability. Further research by Miller and Noulas (1997) found that there is a negative relationship between the credit risk and bank profitability, meaning that the more the banks were exposed to high-risks loans, the higher the accumulation of non- performing loans and, therefore, the lower the profitability.

1.1.2 Financial Performance

Financial performance is a subjective measure of how well a bank can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in

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aggregation. Generally, the financial performance of banks and other financial institutions has been measured using a combination of financial ratios analysis, benchmarking, measuring performance against budget or a mix of these methodologies (Avkiran, 1995).

Banks, as the critical part of financial system, play an important role in contributing to a country's economic development. If the banking industry does not perform well, the effect to the economy could be huge and broad. From their empirical findings, Demirguc-Kunt and Detragiache (1999) suggested that bank profitability is an important predictor of financial crises. Therefore, the study of the determinants of the bank profitability becomes an important issue which could help banks understand the current conditions of the banking industry they are involved in and the critical factors they should consider in making decisions and creating new policies either for recovery or improvement. Studies on performance of banking institutions are plenty. Results of these studies strongly suggest that bank profitability determinants vary across countries and also among regions of the world (e.g. Doliente, 2003).

In accordance with the study of Waymond (2007), profitability ratios are often used in a high esteem as the indicators of credit analysis in banks, since profitability is associated with the results of management performance. ROE and ROA are the most commonly used ratios, and the quality level of ROE is between 15% and 30%, for ROA is at least 1%. ROE as an important indicator to measure the profitability of the banks has been discussed extensively in the prior studies. Foong (2008) indicated that the efficiency of

banks can be measured by using the ROE which illustrates to what extent banks use reinvested income to generate future profits. According to Riksbank's Financial Stability Report (2002), the measurement of connecting profit to shareholder's equity is normally used to define the profitability in the banks.

Furthermore, the paper "Why Return on Equity is a Useful Criterion for Equity Selection" (Jensen Investment Management, 2008) mentioned that ROE provides a very useful gauge of profit generating efficiency because it measures how much earnings a company can get on the equity capital. ROE is defined as the company's annual net income after tax divided by shareholder's equity. NI is the amount of earnings after paying all expenses and taxes. Equity represents the capital invested in the company plus the retained earnings. Essentially, ROE indicates the amount of earnings generated from equity. The increased ROE may hint that the profit is growing without pouring new capital into the company. A steadily rising ROE also refers that the shareholders are given more each year for their investment. All in all, the higher ROE is better both for the company and the shareholders. (Jensen Investment Management, 2008). In addition, ROE takes the retained earnings from the previous periods into account and tells the investors how efficiently the capital is reinvested.

The study of Joetta (2007) presented the purpose of ROE as the measurement of the amount of profit generated by the equity in the firm. It is also mentioned that the ROE is an indicator of the efficiency to generate profit from equity. This capability is connected to how well the assets are utilized to produce the profits as well. The effectiveness of

assets utilization is significantly tied to the amount of assets that the company generates for each dollar of equity.

1.1.3 Effect of Credit Risk Management on Financial Performance

Lymon and Carles (1978) defined credit risk management as a process of decision making which involves minimizing losses from both bad debts and costs of debt operation while maximizing the value of credit sales. Also Pandey (1995) defines Credit Risk Management to involve the process of making decisions relating to the investment of funds. Such decisions should be carefully analyzed as they are characterized by an element of uncertainty. Bessis (1998) defines financial performance as a management initiative to upgrade the accuracy and timeliness of financial information to meet required standards while supporting day to day operations. Lymon and Carles (1978) also defined it as the operational strength of a firm in relation to its revenue and expenditure as revealed by its financial statements. In any organization especially commercial banks, financial performance is affected by credit risk.

The role of bank remains central in financing economic activity and its effectiveness could exert positive impact on overall economy as a sound and profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system (Athanasoglou et al, 2005). Therefore, the determinants of bank performance have attracted the interest of academic research as well as of bank management, financial markets and bank supervisors since the knowledge of the internal and external determinants of banks profits and margins is essential for various parties.

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Achou and Tenguh (2008) shows that there is a significant relationship between bank performance (in terms of return on asset) and credit risk management (in terms of loan performance). Better credit risk management results in better bank performance. Thus, it is of crucial importance that banks practice prudent credit risk management and safeguarding the assets of the banks and protect the investors' interests.

According to Van Horne (1995), the firm's credit policies are the chief influences on the level of debtors, measuring the manager's position to invest optimally in its debtors and be able to trade profitably with increased revenue. Pandley (1995) pointed out that credit policy defines a firms' performance, meaning that once a firm adopts an optimal credit policy, it will be able to maximize its investment revenue in debtors and this improves and promotes its financial standing and performance therefore a good credit policy decision is positively related to high financial performance.

1.1.4 Commercial Banks in Kenya

According to Rose (2002), a commercial bank is simply a business corporation organized for the purpose of maximizing the value of the shareholders' wealth invested in the firm at an acceptable level of risk. Even if the institution is member-owned or has a philanthropic motivation, the principle of earning a profit still applies. Obtaining a positive net income is imperative for permanency and sustainability. What may differ between a for-profit and a not-for-profit institution is the degree of profit accumulation and the use of those profits.

The Kenyan financial system is dominated by commercial banks as financial intermediaries that act as conduits between the surplus economic units and the deficit economic units. Commercial Banks and Mortgage Finance Institutions are licensed and regulated pursuant to the provisions of the Banking Act and the Regulations and Prudential Guidelines issued thereunder. They are the dominant players in the Kenyan Banking system and closer attention is paid to them while conducting off-site and on-site surveillance to ensure that they are in compliance with the laws and regulations. As at December 2011 there were 43 licensed commercial banks and 1 mortgage finance company. Out of the 44 institutions, 31 were locally owned and 13 were foreign owned. The locally owned financial institutions comprise 3 banks with significant shareholding by the Government and State Corporations, 27 commercial banks and 1 mortgage finance institution.

1.2 Research Problem

Commercial banks are predominant financial institutions and their changes in performance and structure have far reaching implications on the economy (Bohnstedt et al, 2000). The very nature of the banking business is so sensitive because more than 85% of their liability is deposits from depositors (Saunders and Cornett, 2005). Banks use these deposits to generate credit for their borrowers, which in fact is a revenue generating activity for most banks. This credit creation process exposes the banks to high default risk which might lead to financial distress including bankruptcy. In the world of volatile cash movements and increasing global lending and borrowing of funds , few banks if any

remain unaffected by borrower's late and nonpayment of loan obligations. This result from the bank's inability to collect anticipated interest earnings as well as loss of principal resulting from loan defaults.

Commercial banks carry out credit risk management as a measure of administering credit to bollowers. This is done by having a well developed credit mechanism and procedure, that is to say, credit appraisal, training of staff and setting credit standards and terms to offset the possibility for loss and improve on financial performance. Commercial banks thus develop strategies to either eliminate or reduce this credit risk. In the management of this risk, banks are concerned about their financial performance.However, despite the efforts made to address the poor credit risk management, commercial banks still have difficulties resulting from the credit risk management processes undertaken and changes in customer base leading to decreasing financial performance. Therefore, risk management as a discipline is being taken seriously nowadays.

Muasya (2009) analyzed the impact of non- performing loans on the performance of the banking sector in Kenya in the time of global financial crises. The findings confirmed that non- performing loans do affect commercial banks in Kenya. Wanjira (2010) studied the relationship between non- performing loans management practices and financial performance of commercial banks in Kenya. The study concluded that there is a need for commercial banks to adopt non-performing loans management practices. The study further concluded that there was a positive relationship between non- performing loans management practices and the financial performance of commercial banks in Kenya

which implies that the adoption of non- performing loans management practices leads to improved financial performance of commercial banks in Kenya.

Muthee (2010) conducted a research on the relationship between credit risk management and profitability in commercial banks in Kenya. The findings and analysis revealed that credit risk management has an effect on profitability in all the commercial banks analyzed. The study used regression analysis to establish the relationship between NPLR and ROE. A forecasting model was developed and tested for accuracy in obtaining predictions. The finding of the study indicated that the model was moderately significant. NPLR as an independent variable was linearly related with the dependent variable ROE thus simple linear regression was used.

Most of the local studies have leaned heavily towards the various tools and techniques of credit risk management, practices and strategies used by various institutions (Muasya, 2009; Wanjira, 2010; Simiyu, 2008). The studies did not establish a clear relationship between credit risk management and profitability. In addition, and to the best knowledge of the researcher, no research has used Capital Adequacy Ratio as an independent variable in the Kenyan market. Thus there exists a gap necessitating this study. This study attempted to address the following research question: Does credit risk management have an effect on the financial performance of commercial banks in Kenya?

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1.3 Research Objective

To establish the effect of credit risk management on the financial performance of commercial banks in Kenya.

1.4 Value of the Study

The question of credit risk and common exposures are clearly of enormous importance for regulators, industry participants and investors. The results of this research will have implications and importance to various stakeholders as follows:

To regulators and policy makers, the research will provide the basis for regulatory policy framework to mitigate the financial system from financial crises and to better appreciate and quantify those credit risk exposures.

To investors, this study will help them to understand the factors that influence the returns on their investments.

To commercial banks, this paper will provide an insight into the credit risk attributes which may need to be incorporated in their investment decision processes.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, past studies have been reviewed in regards to the relationship between credit risk management and the financial performance of commercial banks. Issues on the different theories of credit risk management have also been critically reviewed.

2.2 Theoretical Review

The theoretical framework of a research project relates to the philosophical basis on which the research takes place, and forms the link between the theoretical aspects and practical components of the investigation undertaken. The theoretical framework, therefore, "has implications for every decision made in the research process" (Mertens, 1998). The theoretical framework helps to make logical sense of the relationship of the variables and factors that have been deemed important to the problem. It provides definitions of relationships between all the variables so that the theorized relationship between them can be understood. The theoretical framework will therefore guide the research, determining what factors will be measured and what statistical relationship the research will look for.

2.2.1 Value at a Risk (VAR) Theory

This is a technique used to estimate the probability of portfolio losses based on the statistical analysis of historical price trends and volatilities. Value at risk is commonly used by banks, security firms and companies that are involved in trading energy and other

commodities. VAR is able to measure risk while it happens and is an important consideration when firms make trading or hedging decision (Manganelli and Engle, 2001). Value at risk (VAR or sometimes VaR) has been called the "new science of risk management", but you do not need to be a scientist to use VAR. Here, we look at the idea behind VAR and the three basic methods of calculating it. Basically, VAR is represented by;

Value at risk = Mean *HPR+ [Z-score*Std Dev*SQRT (HPR)]

Where mean is the average expected (or actual) rate of return, HPR is the holding period, Z-score is the probability, Std Dev is the standard deviation and SQRT is the square root (of time).

For financial institutions, risk is about the odds of losing money given out as loans, and VAR is based on that common-sense fact. By assuming financial institutions care about the odds of a really big loss on loans, VAR answers the question, "What is my worst case scenario?"

According to Jorion (2001), VaR measure the worst expected loss over a given horizon under normal market conditions at a given level of confidence. For instance, a bank might say that the daily VaR of its trading portfolio is $1 million at 99 percent confidence level. In other words, under normal market conditions, only one percent of time the daily loss will exceed $1 million (Jorion, 2001). More formally, VaR describes the quantile of the projected distribution of gains and losses over the target horizon .If c is selected confidence level, VaR corresponds to 1-c lower tail level.

2.2.2 Portfolio Theory

Since the 1980s, banks have successfully applied modern portfolio theory (MPT) to market risk. Many banks are now using earnings at risk (EAR) and value at risk (VAR) models to manage their interest rate and market risk exposures. Unfortunately, however, even though default risk remains the largest risk facing most banks, the practical of MPT to default risk has lagged (Margrabe, 2007). Banks 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.

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. Banks 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.

2.2.3 Credit Risk Models

Over the last decade, a number of the world's largest banks have developed sophisticated systems in an attempt to model the credit risk arising from important aspects of their business lines. Such models are intended to aid banks in quantifying, aggregating and managing risk across geographical and product lines. The outputs of these models also play increasingly important roles in banks' risk management and performance measurement processes, including performance-based compensation, customer profitability analysis, risk-based pricing and, to a lesser (but growing) degree, active portfolio management and capital structure decisions. The Task Force recognizes that credit risk modelling may indeed prove to result in better internal risk management, and may have the potential to be used in the supervisory oversight of banking organizations.

However, before a portfolio modelling approach could be used in the formal process of setting regulatory capital requirements for credit risk, regulators would have to be confident not only that models are being used to actively manage risk, but also that they are conceptually sound, empirically validated, and produce capital requirements that are comparable across institutions. At this time, significant hurdles, principally concerning data availability and model validation, still need to be cleared before these objectives can

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be met, and the Committee sees difficulties in overcoming these hurdles in the timescale envisaged for amending the Capital Accord (BIS, credit risk modelling, 19th April 1999).

Credit scoring models use data on observed borrower characteristics either to calculate the probability of default or to borrowers into different default risk classes (Saunders and Cornett, 2007). Prominent amongst the credit scoring models is the **Altman's Z-Score.** The Z-score formula for predicting Bankruptcy of Altman (1968) is a multivariate formula for measurement of the financial health of a company and a powerful diagnostic tool that forecast the probability of a company entering bankruptcy within a two year period with a proven accuracy of 75-80%.

The Altman's credit scoring model takes the following form;

Z=1.2X1+ 1.4X2 + 3.3X3 + 0.6X4 +1.0X5

Where, X1 = Working capital/ Total assets ratio

X2 = Retained earnings/ Total assets ratio

X3 = Earnings before interest and taxes/ Total assets ratio

X4 = Market value of equity/ Book value of long-term debt ratio

X5 = Sales/ Total assets ratio.

The higher the value of Z, the lower the borrower's default risk classification. According to Altman's credit scoring model, any firm with a Z-Score less than 1.81 should be considered a high default risk, between 1.81-2.99 an indeterminate default risk, and greater than 2.99 a low default risk. Critics: Use of this model is criticized for discriminating only among three borrower behavior; high, indeterminate, and low default

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risk. Secondly, that there is no obvious economic reason to expect that the weights in the Z-Score model – or, more generally, the weights in any credit-scoring model- will be constant over any but very short periods. Thirdly the problem is that these models ignore important, hard to quantify factors (such as macroeconomic factors) that may play a crucial role in the default or no-default decision.

Outstanding also is the **KMV credit Monitor Model**. In recent years, following the pioneering work on options by Merton, Black, and Scholes, we now recognize that when a firm raises funds either by issuing bonds or by increasing bank loans, it holds a very valuable default or repayment option (Black and Scholes, 1973; Merton, 1974). The KMV Model is a credit monitor model that helps to solve the lending problems of banks and further look at the repayment incentive problem (Gilbert, 2004). To try resolving the problems, the KMV Model uses the structural relationship between the volatility of a firm's asset and the volatility of the firm's equity. The KMV Corporation (purchased by Moody's in 2002) has turned this relatively simple idea into a credit-monitoring model now used by most of the large US banks to determine the Expected Default Frequency (EDF) that is the probability of default of large corporations (KMV Corporation, 1994).

The expected default frequency that is calculated reflects the probability that the market value of the firm's assets will fall below the promised repayments on debt liabilities in one year. If the value of a firm's assets falls below its debt liabilities, it can be viewed as being economically insolvent. Simulations by the KMV have shown that this model outperforms both accounting-based models and S&P ratings (Saunders and Cornett,

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2007). The relevant net worth of a firm is therefore the market value of the firm's assets minus the firm's default point.

Net worth= (Market Value of Assets) - (Default Point)

A firm will default when its market net worth reaches zero.

Distance to default=   (Market value of assets) (Default point)

(Market value of assets) (asset volatility

(Source: Moody's KMV; Modeling Default Risk, 18th December 2003.)

The KMV's empirical EDF is an overall statistics that can be calculated for every possible distance to default (DD) using data either aggregated or segmented by industry or region. To find the EDF for any particular firm at any point in time, one must look at the firm's EDF as implied by its calculated DD. As a firm's DD fluctuates, so do its EDF. For firm's that are actively traded, it would be possible in theory to update the EDF every few minutes (Gilbert, 2004).

Critics: The KMV EDF Model has been criticized on the basis that they are not true probabilities of default. This is reflected in the poor results obtained using KMV empirical EDFs in order to replicate risky bond prices (Kao et al, 2000).

Another increasingly popular model used to evaluate the return on a loan to a large customer is the Risk-Adjusted Return on Capital (RAROC) Model. This model,

originally pioneered by Bankers Trust (acquired by Deutsche Bank in 1998) is now adopted by virtually all the large banks in Europe and the US, although with some differences among them (Saunders and Cornett, 2007). The essential idea behind RAROC is that rather than evaluating the actual promised annual cash flow on a loan as a percentage of the amount lent or (ROA), the lenders balance the loan's expected income against the loan's expected risk.

The RAROC Model is basically represented by,

RAROC = (one year net income on loan)/ (Risk adjusted assets)

For denominator of RAROC, duration approach can be used to estimate worst case loss in value of the loan:

$DLn = -DLn*Ln *(DR/ (1+R))$

Where, DR is an estimate of the worst change in credit risk premiums for the loan class over the past year.

Ln= Loan

DLn= Change in loan class

R=Interest Rate

According to Christopher (1996), the immediate purpose of the RAROC risk measurement systems is to provide bank managements with a more reliable way to determine the amount of capital necessary to support each of their major activities and, thus, to determine the overall leverage for the bank as a whole. This paper also stipulates that the RAROC system provide a uniform measure of performance and that management

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can, in turn use this measure to evaluate performance for capital budgeting and as an input to the compensation system used for senior managers.

2.3 Financial Performance Measures

Bessis (1998) defines financial performance as a management initiative to upgrade the accuracy and timeliness of financial information to meet required standards while supporting day to day operations. Lyman and Carles (1978) also defined it as the operational strength of a firm in relation to its revenue and expenditure as revealed by its financial statements. Financial performance is characterized of a bad debt policy, sales turnover, profitability level, client's dropout rate, growth, reduction in fixed assets, and physical visitation by commercial staff, debt age analysis, and public media.

Generally, the financial performance of banks and other financial institutions has been measured using a combination of financial ratios analysis, benchmarking, measuring performance against budget or a mix of these methodologies (Avkiran, 1995). Simply stated much of the current bank performance literature describes the objective of financial organizations as that of earning acceptable returns and minimizing the risks taken to earn this return (Hempel et al., 1996). Chien and Danw (2004) showed in their study that most previous studies concerning company performance evaluation focus merely on operational efficiency and operational effectiveness, which might directly influence the survival of a company. By using an innovative two-stage data envelopment analysis model in their study, the empirical result of this study is that a company with better efficiency does not always means that it has better effectiveness.

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Elizabeth and Ellot (2004) indicated that all financial performance measure as interest margin. return on assets, and capital adequacy are positively correlated with customer service quality. Scores Mazher (2003) discussed the development and performance of domestic and foreign banks in Arab gulf countries, and showed that local and foreign banks in these countries have performed well over the past several years. Moreover, he added that banks in these economies are well capitalized and the banking sector is well developed with intense competition among the banks. Generally, the concept of efficiency can be regarded as the relationship between outputs of a system and the corresponding inputs used in their production. Within the financial efficiency literature, efficiency is treated as a relative measure, which reflects the deviations from maximum attainable output for a given level of input (English and Yaisawarng, 1992).

Some other useful measures of financial performance are wound into what is referred to as CAMEL. The acronym "CAMEL" refers to the five components that are accessed: Capital adequacy, Asset quality, Management, Earning and Liquidity. Ratings are assigned for each component in addition to overall rating of banker's financial conditions (Jose, 1999)

2.3.1 Capital Adequacy

Capital adequacy is the determination of the minimum capital amount required to satisfy a specified economic capital constraint (Miccolis, 2002). Ultimately it determines how well financial institutions can cope with the shocks to their balance sheet. Thus it's useful

to track capital adequacy ratios that take financial risks, foreign exchange credit and interest rate risks, by assigning risks ratios established by the Bank of International Settlement (BIS). Capital adequacy is measured in commercial banks in relation to the relative risk weight assigned to the different category of assets held both on and off to control the incentive to take on excessive risk and to absorb a reasonable amount of losses.

2.3.2 Asset Quality

The solvency of financial institutions is typically at risk when their assets become impaired, so it is important to monitor indicators of the quality of their assets in terms of overexposure to specific risks trends in non-performing loans and the health and profitability of bank borrowers. Credit risk is inherent in lending which is the major banking business. It arises when a borrower defaults on the loan payment agreement. A financial institution whose borrower defaults on their payment may face cash flow problems, which eventually affects its liquidity position. Ultimately, this negatively impacts on the profitability and capital through extra specific provisions for bad debts (BOU, 2002)

2.3.3 Management

Management quality (approximated by cost efficiency scores) has been associated with bank failures in a number of recent studies, e.g., Barr and Siems (1994), Wheelock and Wilson (2000), and Kick and Koetter (2007). Cost efficiency is approximated by a simple ratio of Operating Expenses to Total Revenues, denoted as *Efficiency Ratio*, which

measures management flexibility to adjust costs to changes in the business development signalled by revenues. The higher is the Efficiency Ratio, the higher is the default risk.

2.3.4 Earning

The continued viability of a bank depends on its ability to earn an adequate return on its assets and capital. The evaluation of earnings performance relies heavily upon comparison on the key profitability measures (such as return on assets and return on equity) to industry bench mark and peer group norms (Federal Reserve Bank, 2002). Most bank studies emphasis is placed on profitability in terms of ROE and ROA. Profitability as a measure of performance is widely accepted by bankers, financial institutions, management, company owners and other creditors as they are interested in knowing whether or not the firm earns substantially more than it pays by way of interest (Sadakkadulla & Subbaiah, 2002). The return on investment ratio is used to determine profitability of a bank.

2.3.5 Liquidity

Initially solvent financial institutions may be driven towards closure by management of short term liquidity. Indicators should cover funding sources and capture large maturity mismatches. Liquidity is the degree to which debts obligations coming due in the next 12 months can be paid in cash or assets that will be turned into cash .The mismatching and controlled mismatching of the maturities and interest rate of assets and liabilities is fundamental to the management of commercial banks. It is unusual for microfinance to be completely matched since business transacted is often of uncertain term and of

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different types. An unmatched position potential enhance profitability but also increase the risk of losses (The Uganda Banker, June 2001)

2.4 Relationship between Credit Risk Management and Financial Performance

Pandley (1995) defines credit risk management to involve the process, of making decisions relating to the investment of funds. Such decisions should be carefully analyzed as they are characterized by an element of uncertainty. Bessis (1998) defines financial performance as a management initiative to upgrade the accuracy and timeliness of financial information to meet required standards while supporting day to day operations. Lymon and Carles (1978) also defined it as the operational strength of a firm in relation to its revenue and expenditure as revealed by its financial statements In any organization commercial banks in particular, financial performance is affected by credit risk.

The role of bank remains central in financing economic activity and its effectiveness could exert positive impact on overall economy as a sound and profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system (Athanasoglou et al, 2005). Therefore, the determinants of bank performance have attracted the interest of academic research as well as of bank management, financial markets and bank supervisors since the knowledge of the internal and external determinants of banks profits and margins is essential for various parties.

Achou and Tenguh (2008) shows that there is a significant relationship between bank performance (in terms of return on asset) and credit risk management (in terms of loan

performance). Better credit risk management results in better bank performance. Thus, it is of crucial importance that banks practice prudent credit risk management and safeguarding the assets of the banks and protect the investors' interests. Banking institutions are some of the predominant financial institutions whose changes in performance and structure have far reaching implications on the whole economy (Bohnstedt et al. 2000). Banking institutions are engaged in a wide range of activities like investment, trading and banking which exposes them to risk. Therefore the instability in financial performance especially in banking industry emanates from the poor credit risk management.

According to Van Home (1995), the firm's credit policies are the chief influences on the level of debtors, measuring the manager's position to invest optimally in its debtors and be able to trade profitably with increased revenue. Pandey (1995) pointed out that credit policy defines a firms' performance, meaning that once a firm adopts an optimal credit policy, it will be able to maximize its investment revenue in debtors and this improves and promotes its financial standing and performance therefore a good credit policy decision is positively related to high financial performance

Bertrand (2000) observed that capital requirement can reduce the less moral hazard incentives by forcing shareholders to absorb a larger part of the losses, thereby reducing the value of deposit insurance put in option. Benink (2001) argues this to develop new way to evade the intended consequences because supervision alone cannot prevent microfinance institutions from gaining and manipulation of risk weights based on internal

ratings. Therefore, as these institutions operate with a poor credit risk management their financial performance and position are affected.

Banks may also use credit committee in the approval of loans. Credit committee is the body of persons charged with making decision as regards loans; this committee is essential control in reducing credit risk and improving on loan recovery. Decision granting loan will have been arrived at after an analysis has been carried out by the committee of more than one person thus reducing the risk of one person abusing the authority granted to him by granting loans to friends and relatives easily as this would result to poor loan recovery and hence poor financial performance (Kagaba, 2005)

2.5 Empirical Review

Muasya (2009) analyzed the impact of non- performing loans on the performance of the banking sector in Kenya in the time of global financial crises. The findings confirmed that non- performing loans do affect commercial banks in Kenya. Further analysis of individual banks with more than ksh. 25 billion worth of asset indicated that while the impacts are negative, the magnitude of non- performing loans to both interest income and profitability are not adverse for 7 of the 13 analyzed banks and that asset quality of the whole banking sector has been improving to settle at 7.17%.

Wanjira (2010) studied the relationship between non- performing loans management practices and financial performance of commercial banks in Kenya. The study concluded that there is a need for commercial banks to adopt non-performing loans management

practices. Such practices include ensuring sufficient collaterals, limiting lending to various kinds of businesses, loan securitization, ensuring clear assessment framework of lending facilities and use of procedures in solving on problematic loans among others. The study further concluded that there was a positive relationship between non-performing loans management practices and the financial performance of commercial banks in Kenya which implies that the adoption of non- performing loans management practices leads to improved financial performance of commercial banks in Kenya.

Ochola (2009) conducted a study of the relationship between credit risk management and non- performing loans. The objective of the study was to establish the degree of effect of employing different credit management techniques on the level of non- performing loans. In assessing this, the study sought to establish the relationship between credit risk and management and non- performing loans by pursuing a survey in the Kenyan banking sector. The research found that in Kenyan setup, a combination of intensive credit risk management by the banks coupled with close supervision by Central Bank has greatly enhanced the decline of non- performing loans ratio in the banking sector. Analyzing the asset quality of the financial sector for 2003 to 2008, the ratio of gross non- performing loans to gross loans declined from a high 35% in 2003 to a low of 9.23% in 2008. The decline of this ratio confirms a close relationship between non- performing loans and credit risk management.

Githinji (2010) in a study of the relationship between credit scoring practices by commercial banks and access to credit by small and medium enterprises in Kenya

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concludes that there is a relationship between credit scoring by Kenyan banks and access to credit by SMEs. She noted that the benefits gained from the use of credit scoring include accuracy in decision making process. The study thus recommended that banks need to use various credit assessment methods before availing loans to SMEs. In addition, the banks need to regularly review their credit policies. Gaitho (2010) conducted a survey of credit risk practices by SACCOs in Nairobi. The findings revealed that majority of the SACCOs use credit risk management practices to mitigate risks as a basis for objective credit risk appraisal. Majority (28) out of the 31 respondents agreed that credit risk management practices have impacted positively to their organizations by ensuring efficiency in carrying out its obligations and in meeting its objectives.

Ngare (2008) conducted a survey of credit risk management practices by commercial banks in Kenya. The specific areas of research were geared towards identifying the sources of credit risk exposures in banks and strategies that the banks in Kenya have adopted to monitor and mitigate against the credit risk exposures inherent in the operations of their business. From their study, it was found that 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, bank guarantees and bank covenants to mitigate against credit risk.

Mwirigi (2006) in his study survey approach examined credit risk management techniques adopted by micro- finance institutions in Kenya. The study reveals that a significant number i.e. 92% of the respondents used credit management policies as a basis of objective credit risk appraisal. In conclusion he identifies credit risk as the most important risk with 80% of the respondents ranking it as the most important risk among other risks faced by their institutions. Simiyu (2008) while analyzing techniques of credit risk management observed that micro- finance institutions use 6c's techniques of credit risk management. The study further established that majority of the institutions used credit matrix to measure the credit migration and default risk.

Muthee (2010) conducted a research on the relationship between credit risk management and profitability in commercial banks in Kenya. The findings and analysis revealed that credit risk management has an effect on profitability in all the commercial banks analyzed. The study used regression analysis to establish the relationship between NPLR and ROE. A forecasting model was developed and tested for accuracy in obtaining predictions. The finding of the study indicated that the model was moderately significant. NPLR as an independent variable was linearly related with the dependent variable ROE thus simple linear regression was used.

Abdifatah (2010) in his study, a comparative analysis of credit risk management practices of Islamic and conventional banks in Kenya found that Islamic banks do not have well established credit risk management practices as compared to conventional banks. This was observed by the disparities in monitoring of the credit risk levels, the duration taken

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by the institution to know that the customer has defaulted and how the institutions deal with difficult to pay on time clients. He concluded that both the conventional and Islamic banks take risks equally important with an exception of interest rates risk in Islamic banks as their loans do not accrue interest thus have no risk with interest rates.

Mathara (2007) in a study of the response of National Bank of Kenya to the challenge of non- performing loans in the bank notes that lack of adequate credit policy guidelines, poor credit risk management practices, use of quantitative methods of loan assessment and poor monitoring and evaluation systems were sources of non- performing loans in the bank. The study indicates that the absence of regularly updated credit policy and inadequate monitoring of loans to have led to a rising portfolio of non- performing loans and the failure by the bank to notice the increasing default rate of the borrowers.

2.6 Conclusion

In as much as a lot of researches have been done on the impact of credit risk management and financial performance of commercial banks, most of the local studies have leaned heavily towards the various tools and techniques of credit risk management, practices and strategies used by various institutions (Wanjira,2010; Ochola,2009; Ngare,2008;Mwirigi, 2006; Simiyu,2008). The studies did not establish a clear relationship between credit risk management and financial performance. In addition, and to the best knowledge of the researcher, no other research has used Capital Adequacy Ratio as an independent variable. Thus there exists a gap necessitating this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology tells the researcher how to attain accuracy in the description, explanation and prediction. The chapter comprises research approach, sampling, data collection, data analyzing instruments and the description of applied model.

3.2 Research Design

According to Kerlinger (1986) research design is the plan and structure of investigation so conceived so as to obtain answers to research questions. According to Mugenda and Mugenda (1999) research design is the outline plan or scheme that is used to generate answers to the research problems. It is basically the structure and plan of investigation. The research design used in this study was descriptive research design. Descriptive research seeks to establish factors associated with certain occurrences, outcomes, conditions or types of behaviour. The design was appropriate because the study involved an in depth study of credit risk management and the relationship between the two variables i.e. credit risk management and the financial performance of commercial banks was described extensively.

3.3 Population

Target population is that population to which a researcher wants to generalize the results of the study (Mugenda and Mugenda, 2003). The population of interest for the study was all licensed commercial banks in Kenya. As at December 2011, there were 43 licensed

commercial banks. This study thus constituted a census of the 43 licensed commercial banks (Appendix 1) in the period 2007 to 2011.

3.4 Data Collection

Secondary data was used for the purpose of this study and this data was derived from the financial statements of the banks. This included the statement of comprehensive income and statement of financial position of the commercial banks. The variables used were Return on Equity (ROE) calculated as annual net income after tax divided by shareholder's equity as a measure of financial performance. Pandley (1996) asserts that return on the shareholder's equity is calculated to see the profitability of owner's investment. It indicates how well the firm has used the resources of its owners. The ratio reveals the relative performance and strength of the company in attracting future investment.ROE is an all embracing ratio that relates net income to the level of investment. It is generally easily understood by all levels of management (Foulk, 2002).

The measure for credit risk management was Non- Performing Loans Ratio (NPLR) calculated as Non-performing Loans/Total Loans and Capital Adequacy Ratio (CAR) calculated as (Tier I + Tier II)/Risk Weighted Assets]. Capital adequacy is the determination of the minimum capital amount required to satisfy a specified economic capital constraint (Miccolis, 2002). Ultimately it determines how well financial institutions can cope with the shocks to their balance sheet. Thus it's useful to track capital adequacy ratios that take financial risks, foreign exchange credit and interest rate risks, by assigning risks ratios established by the Bank of International Settlement (BIS).

Capital adequacy is measured in commercial banks in relation to the relative risk weight assigned to the different category of assets held both on and off to control the incentive to take on excessive risk and to absorb a reasonable amount of losses.

3.5 Data Analysis

The data collected from the annual reports of the banks was analyzed using multiple regression analysis: the relation of one dependant variable to multiple independent variables. The regression output was obtained using Statistical Package for Social Sciences (SPSS version 18).

3.5.1 Model

In this study, multiple regression model with two independent variables was used. The measure for financial performance was ROE (Net Income/Total Shareholders' Equity) and for credit risk management are NPLR (Non-performing Loans/Total Loans) and CAR [(Tier I + Tier II)/Risk Weighted Assets] respectively.

Dependent Variable

In this study, ROE was used as the indicator of the profitability in the regression analysis because ROE along with ROA has been widely used in earlier research (e.g.Muthee, 2010; Muasya, 2009). In this case, the required information was available in the annual reports of the banks under key figures section.

Independent Variables

In this study, two independent variables namely NPLR and CAR were used because these two are the indicators of credit risk management which affect the profitability of banks. NPLR, in particular, indicates how banks manage their credit risk because it defines the proportion of NPL amount in relation to TL amount. NPLR is defined as NPLs divided by TLs. CAR is regulatory capital requirement (Tier 1 + Tier 2) as the percentage of RWAs.

The multivariate regression model employed is presented below:

$$Y = \alpha + \beta 1 X1 + \beta 2 X2 + \varepsilon$$

Where:

Standard   **This application**

Y – the value of dependent variable;   Y: ROE- profitability indicator

α – the constant term;

β – the coefficient of the function;

X – the value of independent variables: X1: NPLR –credit risk management
indicator

                                                       X2: CAR –credit risk management

indicator

ε – the disturbance or error term.

Thus the regression equation becomes:

$$ROE = \alpha + \beta 1 NPLR + \beta 2 CAR + \varepsilon$$

It is the regression function which determines the relation of X (NPLR and CAR) to Y (ROE). α is the constant term and β is the coefficient of the function (β represents the independent contributions of each independent variable to the prediction of the dependent variable), it is the value for the regression equation to predict the variances in dependent variable from the independent variables. This means that if β coefficient of NPLR and CAR is negative, the two variables affect ROE negatively: one unit increase in NPLR or CAR will decrease the ROE by the coefficient amount. In the same way, if the β coefficient of NPLR and CAR is positive, ROE increases by the coefficient amount. α is the constant value which ROE is predicted to have when both NPLR and CAR equal to zero (if NPLR, CAR=0 then α=ROE). Finally, ε is the disturbance or error term, which expresses the effect of all other variables (variables that are not included in the function but could have effect on ROE) except for the independent variables on the dependent variable that we use in the function.

The significance of the credit risk management in financial management was analysed using the regression analysis SPSS output. Test of significance include coefficient of correlation (R), coefficient of determination (R-squared), t-test and ANOVA.

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CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis of data collected and discusses the findings of the effects of credit risk management on the financial performance of commercial banks in Kenya.

Of the 43 commercial banks in Kenya, full data was attained from 26 banks and thus the study concentrated on the 26 banks. In this chapter, the results of the regression model are presented. The results are analyzed and the impact of credit risk management on profitability is described.

4.2 The Relationship between Credit Risk Management and Financial Performance in 2007

4.2.1 Descriptive Relationship of variables with NPLR and CAR as independent variables in 2007

Table 4.1: Descriptive Statistics table for 2007

	Mean	Std. Deviation	N
RETURN ON EQUITY	16.6823	9.03686	26
NON PERFORMING LOANS TO TOTAL LOANS	7.1361	8.29698	26
CAPITAL RATIO	26.2212	15.79061	26

Source: Research Findings

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From the table above, the return on equity is analyzed verses the non performing loans and capital adequacy ratio.

ROE presented above for 26 banks for the year 2007, has a mean of 16.68 with standard deviation of 9.03,non performing loans to total loans with mean of 7.13 while the capital ratio has mean of 26.22 and standard deviation of 15.79.

4.2.2 Regression results with NPLR and CAR as independent variables in 2007

Table 4.2: Coefficient Summary Table Year 2007

Correlations

		RETURN ON EQUITY	NON PERFORMING LOANS TO TOTAL LOANS	CAPITAL RATIO
Pearson Correlation	RETURN ON EQUITY	1.000	-.312	-.073
	NON PERFORMING LOANS TO TOTAL LOANS	-.312	1.000	.045
	CAPITAL RATIO	-.073	.045	1.000
Sig. (1-tailed)	RETURN ON EQUITY	.	.060	.361
	NON PERFORMING LOANS TO TOTAL LOANS	.060	.	.413
	CAPITAL RATIO	.361	.413	.
N	RETURN ON EQUITY	26	26	26
	NON PERFORMING LOANS TO TOTAL LOANS	26	26	26
	CAPITAL RATIO	26	26	26

Source: Research Findings

From the above, table 4.2 present regression results for the profitability for the year 2007 where ROE is the dependent variable. The table shows that NPLR affects ROE negatively. NPLR β coefficient is -0.312 which means that one unit increase in NPLR decreases ROE by 0.312 units while CAR is held constant. The statistical significance of NPLR on ROE is 0.06. This means that NPLR predicts effect on ROE with 94% probability. At the same time, CAR also has a negative β coefficient of –0.073. This indicates that one unit increase in CAR will decrease ROE by 0.073 units, holding NPLR constant. The statistical significance of CAR is 0.361 which is a sign of relatively low significance. It implies that CAR predicts ROE with 63.9% probability. Thus, the results of the analysis states that both NPLR and CAR have negative and relatively significant effect on ROE, with NPLR having higher significant effect on ROE in comparison to CAR.

4.2.3 Linearity of the Variables in 2007

Table 4.3: Model Summary table year 2007

Model					Change Statistics				
			Adjusted R	Std. Error of	R Square				Sig. F
	R	R Square	Square	the Estimate	Change	F Change	df1	df2	Change
1	.318ª	.101	.023	8.93401	.101	1.289	2	23	.295

a Predictors: (Constant). CAPITAL RATIO, NON PERFORMING LOANS TO TOTAL LOANS

Source: Research Findings

From table 4.3 the correlation coefficient of 0.318(R=.318) indicates that the linearity of the variable investigated in this case i.e. ROE, NPLR and CAR is a weak one. This

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implies that the points of these variables along the line of best fit are not close along the straight line. The adjusted R, also indicates the results after the error has been reduced.

The table also presents the figures for the whole equation. R square represents the prediction level of variance in ROE by NPLR and CAR, which is 0.101. This means that 10.1% of ROE can be predicted from both NPLR and CAR. Between two independent variables NPLR more reliably predicts ROE.

In Table 4.3, the statistic value of F is 1.289. Furthermore, the P-value (significance) is 0.295, which also indicates that ROE is predicted with 99.71% probability by NPLR and CAR together and shows a statistically significant relationship among them. Therefore the F-value, associated with P-value proves that there is a significant relationship between the profitability measured as ROE and credit risk management measured as NPLR and CAR.

Table 4.4: ANOVA table year 2007

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	205.840	2	102.920	1.289	.295[a]
	Residual	1835.781	23	79.817		
	Total	2041.621	25			

a. Predictors: (Constant), CAPITAL RATIO, NON PERFORMING LOANS TO TOTAL LOANS

b. Dependent Variable: RETURN ON EQUITY

Source: Research Findings

From the above table 4.4. the sum of squares due to regression is 205.84 with two degrees of freedom while the sum of squares residual due to 23 degrees of freedom is 1835.78.The means square gives a more accurate level of relationship and influence with the two variables i.e. NPLR and CAR having better results than the remaining 23 due to residual effect.

4.3 The Relationship between Credit Risk Management and Financial Performance in 2008 to 2011

4.3.1 Measurement of Correlation between Variables

Table 4.5: Coefficient Summary Table Year 2008-2011 for 26 banks

Correlations

		ROE	NPLR	CAR
Pearson Correlation	ROE	1.000	-.469	-.045
	NPLR	-.469	1.000	.086
	CAR	-.045	.086	1.000
Sig. (1-tailed)	ROE	.	.000	.325
	NPLR	.000		.194
	CAR	.325	.194	
N	ROE	104	104	104
	NPLR	104	104	104
	CAR	104	104	104

Source: Research Findings

From the table above there is negative relationship between return on equity and the non performing loans ratio as indicated by the coefficient summary table. Pearson coefficient

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of -0.469 means the two are moving in opposite direction while the Pearson coefficient of -.045 between ROE and CAR shows almost a no relationship between the two because is near zero or zero. However there exists a positive relationship between non performing loans (NPLR) and capital adequacy ratio (CAR) with a Pearson coefficient of 0.86 and 0.194 for the case of 1 tail.

4.3.2 Linearity of the Variables in 2008 to 2011

Table 4.6: Model Summary table 2008 to 2011

Model					Change Statistics				
	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.469ᵃ	.220	.204	9.29088	.220	14.219	2	101	.000

a. Predictors: (Constant), CAR, NPLR

Source: Research Findings

From the table above the coefficient of correlation of 0.469 indicates that points lie moderately close to the line of best fit in the scatter diagram with variables been investigated on. The data considered a period of four years for 26 banks from 2008 to 2011 with a strong relationship being observed as opposed to the period of 2007 when the larger of banking sector was affected a lot by the post election violence.

The table presents the figures for the whole equation. R square represents the prediction level of variance in ROE by NPLR and CAR, which is 0.220. This means that 22% of ROE can be predicted from both NPLR and CAR. Between two independent variables NPLR more reliably predicts ROE.

Table 4.7: ANOVA table 2008 to 2011

$ANOVA^b$

Model		Sum of Squares	df	Mean Square	F	Sig.
ANO VA^h 1	Regression	2454.865	2	1227.433	14.219	.000^a
	Residual	8718.370	101	86.320		
	Total	11173.235	103			

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

Source: Research Findings

In Table 4.7, the statistic value of F is 14.219. Hence, the regression as whole is significant; this means that NPLR and CAR reliably predict ROE. Therefore the F-value, associated with P-value proves that there is a significant relationship between the profitability measured as ROE and credit risk management measured as NPLR and CAR.

4.3.3 Regression results with NPLR and CAR as independent variables in 2008 to 2011

Table 4.8: Summary of regression results year 2008 to 2011

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations		
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	18.543	1.985		9.342	.000	14.605	22.480			
	NPLR	-.490	.092	-.468	-5.308	.000	-.673	-.307	-.469	-.467	-.467
	CAR	-.004	.068	-.005	-.055	.956	-.140	.132	-.045	-.005	-.005

a. Dependent Variable: ROE

Source: Research Findings

Table 4.8 present regression results for the profitability for the 26 commercial banks studied in the years 2008 to 2011 where return on equity is the dependent variable. The results show that non performing loans ratio (NPLR) affects return on equity (ROE) negatively. NPLR β coefficient is -0.490 which means that one unit increase in NPLR decreases ROE by 0.490 units while capital adequacy ratio (CAR) is held constant. CAR also has a negative β coefficient of -0.04. This indicates that one unit increase in CAR will decrease ROE by 0.04 units, holding NPLR constant. The statistical significance of CAR is 0.956 which is a sign of relatively low significance. It implies that CAR predicts ROE with 4.4% probability. Thus, the results of the analysis states that both NPLR and

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CAR have negative effect on ROE. with NPLR having higher significant effect on ROE in comparison to CAR.

4.4 Relationship between ROE and NPLR

Figure 4.1: Scatter diagram for ROE vs. NPLR
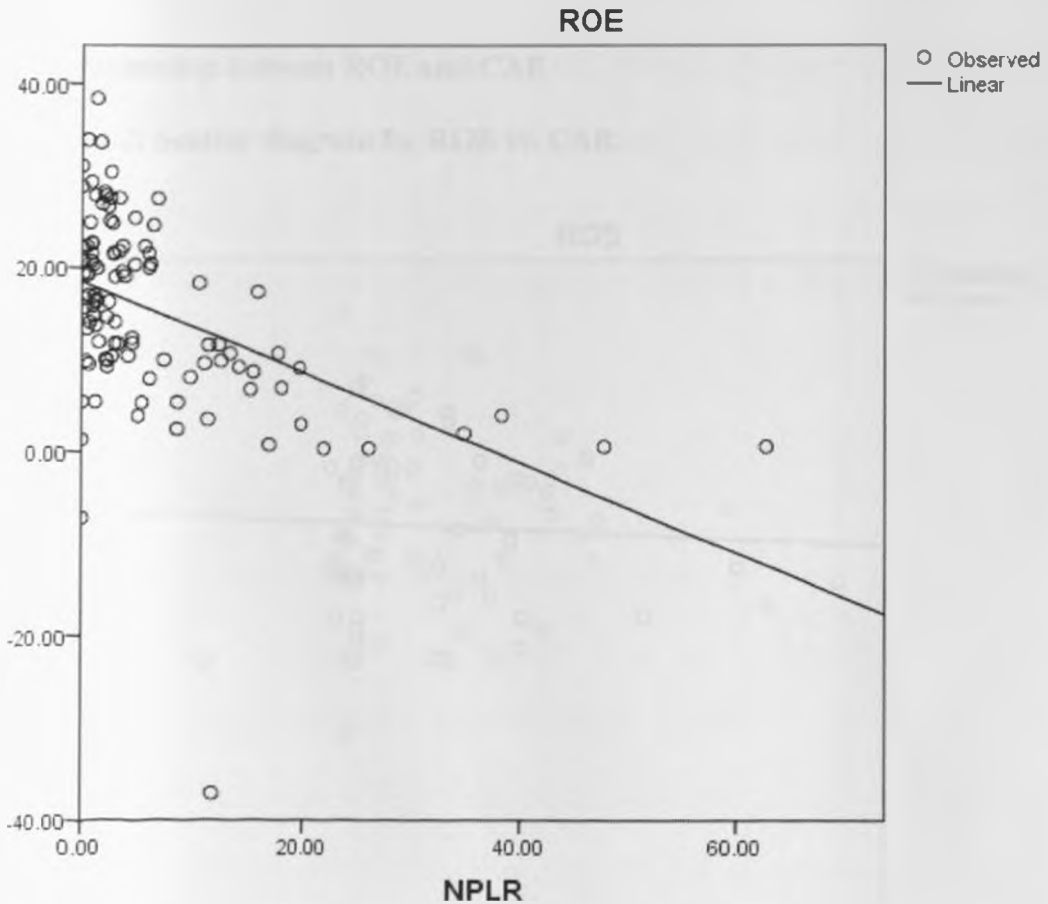
Source: Research Findings

The scatter diagram above shows the negative relationship between the two variables hence a negative gradient. This confirms the coefficient of the NPLR of the variable in the regression equation and hence non performing loans is poor indicator of return on equity from the above results.

The points are closely clustered at one point. This may indicate the nature of performance of the bank and the level of shareholding and if the institution is public listed or private companies. The nature of relationship does not give a positive relationship to the whole banking sector in this research analysis.

4.5 Relationship between ROE and CAR

Figure 4.2: Scatter diagram for ROE vs. CAR
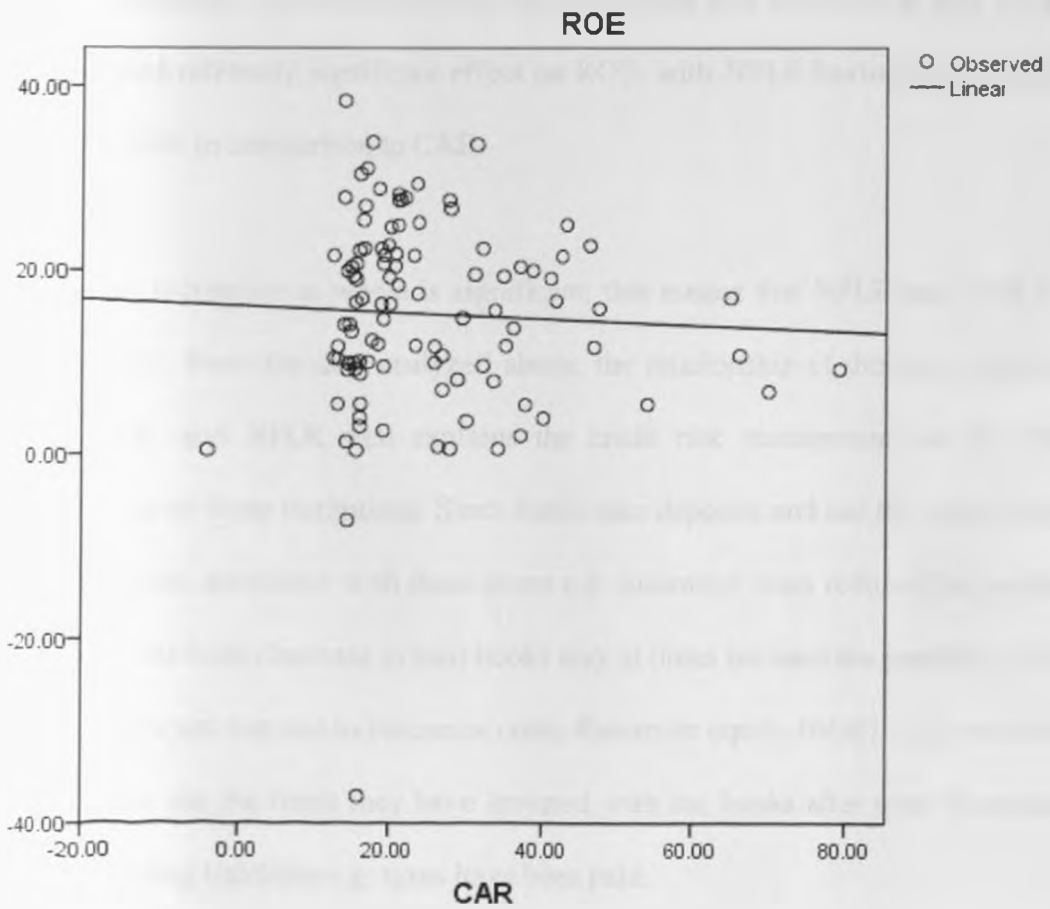
Source: Research Findings

From the scatter diagram above the points along the line of the best fit are observed to have a big dispersion in regard to the line. The negative points make line more horizontal reducing the gradient/slope between the two variables.

4.6 Interpretation of Findings

This study showed that there is a significant relationship between financial performance (in terms of profitability) and credit risk management (in terms of loan performance and capital adequacy). The results of the analysis states that both NPLR and CAR have negative and relatively significant effect on ROE, with NPLR having higher significant effect on ROE in comparison to CAR.

Hence, the regression as whole is significant; this means that NPLR and CAR reliably predict ROE. From the data analyzed above, the relationship of the three variables i.e. ROE, CAR, and NPLR well explains the credit risk management on the financial performance of these institutions. Since banks take deposits and use the same to advance loans the costs associated with these loans e.g. insurance costs reduces the profitability margins of the bank. Increase in loan books may at times increase the portfolio at risk and hence an upward increase in insurance costs. Return on equity (ROE) is the reward to the shareholders for the funds they have invested with the banks after other financiers and costs, including liabilities e.g. taxes have been paid.

Therefore increased portfolio at risk will reduce the revenue aspect and increase the cost associated as indicated by the analysis of non performing loans. The correlation between

non performing loans and return on equity cannot be ignored. From table 4.2, under one tail significance, there exists a correlation of 0.413 between non performing loans to total loans and capital ratio. The relationship between return on equity and capital ratio is 0.361(R-squared). The period between 2007 and 2008 highly affected the whole data analysis as it was the period the country experienced the post election violence and the non performing loans increased and a decrease in return on equity. Many businesses in affected areas closed as well as the bank branches in some of these areas. The last two years analysis indicates increased ROE and a decrease in non performing loans in banking sector caused by improved environment in banking sector and investor confidence in these institutions.

As can be observed in table 4.4 on ANOVA, the sum of squares due to regression explained by two variables is greater than the sum of the squares due to the residues. This means that the degree of freedom of the variables is more accurate to explain the relationship and the influence of the credit risk management in regard to the financial performance. Table 4.6 of the model summary from 2008 to 2011 gives a correlation coefficient of 0.469 (R= 0.469) of the sampled 104 observations. This association between the variables indicates a stronger relationship between the variables of the data observed as opposed to the period of 2007 when the larger banking sector was affected by the political environment. Table 4.7 of ANOVA 2008 to 2011 shows an improved regression equation as a whole being significant as explained by the two independent variables, NPLR and CAR and therefore reliably predicting ROE which is the indicator

of profitability performance. The scatter diagram figure 4.2, between return on equity and capital adequacy ratio the plotted points are moderately close along the straight line.

In conclusion, from the data analysed non performing loans and capital adequacy ratio have shown that there exists a relationship between credit risk management as measured by non performing loans and capital adequacy ratio and the overall financial performance of these banks. An increase in NPLR increases the credit risk and hence the capital adequacy ratio eventually increasing costs associated with management and a poor financial performance.

CHAPTER FIVE

SUMMARY, FINDINGS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary and description of findings derived from the study. The chapter also provides findings, conclusions and recommendations for policy as well as recommendations for further research.

5.2 Summary

The objective of the study was to establish the effect of credit risk management on the financial performance of commercial banks in Kenya. In general the study was able to deduce the effect of credit risk management on financial performance. Using regression outputs of all the banks show that NPLR has negative and significant effect on ROE compared to CAR. It indicates that profitability is fairly affected by credit risk management in the banking sector. Since banks have different characteristics and risk management policies, credit risk management affect profitability on different levels in each bank.

In 2007, NPLR affects ROE negatively. NPLR β coefficient is -0.312 which means that one unit increase in NPLR decreases ROE by 0.312 units while CAR is held constant. At the same time, CAR also has a negative β coefficient of -0.073. This indicates that one unit increase in CAR will decrease ROE by 0.073 units, holding NPLR constant. Thus, the results of the analysis states that both NPLR and CAR have negative and relatively

significant effect on ROE, with NPLR having higher significant effect on ROE in comparison to CAR.

In the year 2008-2011, there is negative relationship between return on equity and the non performing loans ratio. Pearson coefficient of -0.469 means the two are moving in opposite direction while the Pearson coefficient of -.045 between ROE and CAR shows almost a no relationship between the two because is near zero or zero. However there exists a positive relationship between non performing loans (NPLR) and capital adequacy ratio (CAR) with a Pearson coefficient of 0.86 and 0.194 for the case of 1 tail.

5.3 Conclusion

Credit risk management in the commercial banks is improving and evolving, but much still needs to be done. This study sought to analyze the effect credit risk management has on the financial performance of commercial banks in Kenya. The commercial banks surveyed showed that there exists a relationship between financial performance (in terms of profitability) and credit risk management (in terms of non performing loans and capital adequacy ratio).

The results obtained from the regression model show that there is an effect of credit risk management on profitability on reasonable level with 22% possibility of NPLR and CAR in predicting the variance in ROE. This means that 22% of ROE can be predicted from both NPLR and CAR. Between the two independent variables NPLR more reliably

predicts ROE. Therefore, the credit risk management strategy defines profitability level to an important extent.

This thus led the researcher to conclude that commercial banks with lower non performing loans and capital adequacy ratios have higher return on equity hence good credit risk management strategies since non performing loans and capital adequacy ratios are indicators of credit risk management.

5.4. Recommendations for Policy

All banks should have established Credit Policies ("Lending Guidelines") that clearly outline the senior management's view of business development priorities and the terms and conditions that should be adhered to in order for loans to be approved. The Lending Guidelines should be updated at least annually to reflect changes in the economic out look and the evolution of the bank's loan portfolio, and be distributed to all lending/marketing officers. The Lending Guidelines should be approved by the Managing Director/CEO & Board of Directors of the bank based on the endorsement of the bank's Head of Credit Risk Management and the Head of Corporate/Commercial Banking.

A thorough credit and risk assessment should be conducted prior to the granting of loans, and at least annually thereafter for all facilities. The results of this assessment should be presented in a Credit Application that originates from the relationship manager/account officer ("RM"), and is approved by Credit Risk Management (CRM). The RM should be the owner of the customer relationship, and must be held responsible to ensure the

accuracy of the entire credit application submitted for approval. RMs must be familiar with the bank's Lending Guidelines and should conduct due diligence on new borrowers, principals, and guarantors. It is essential that RMs know their customers and conduct due diligence on new borrowers, principals, and guarantors to ensure such parties are in fact who they represent themselves to be. All banks should have established Know Your Customer (KYC) and Money Laundering guidelines.

All banks should adopt a credit risk grading system. The system should define the risk profile of borrower's to ensure that account management, structure and pricing are commensurate with the risk involved. Risk grading is a key measurement of a Bank's asset quality, and as such, it is essential that grading is a robust process. All facilities should be assigned a risk grade. Where deterioration in risk is noted, the Risk Grade assigned to a borrower and its facilities should be immediately changed. Borrower Risk Grades should be clearly stated on Credit Applications.

5.5. Limitations of the Study

Key limitations of the study include;

Due to unavailability of information, the study didn't include all 43 commercial banks but rather concentrated on 26 banks. The Researcher also faced financial constraints and thus the limited resources also contributed to the researcher narrowing the research to 26 commercial banks. The study was limited to the banking sector only having in mind the bigger banking and financial institutions industry in the country and the challenges facing

the service industry. The data used was only from those organizations whose information is available in public domain and from their website.

5.6 Recommendations for Further Research

This study could be further developed by including more independent variables to the regression model and increasing the sample size. The variables would help improve the results of the study since it would include all the other factors that affect the profitability of the banks. The increased sample size would give a better representation of the banking sector.

Also, the study could be further enhanced by examining Basel II effect on profitability after Basel II has been fully implemented in the Kenyan commercial banks. Moreover, if this study is supplemented with qualitative study of credit risk management, the findings would be more objective and informative.

The development of credit reference bureau in Kenya will go hand in hand in reducing the credit risk posed by lending and hence a study is needed to investigate the cut in insurance costs associated with loans and cutbacks in profitability of these firms. Lastly, profitability indicator could be developed by adding other relevant dependent variable to grasp the whole variations in profitability.

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Appendix 1

List of Licensed Commercial Banks in Kenya as at 31st December 2011

1. African Banking Corporation Ltd.

2. Bank of Africa Kenya Ltd.

3. Bank of Baroda (K) Ltd.

4. Bank of India

5. Barclays Bank of Kenya Ltd.

6. CFC Stanbic Bank Ltd.

7. Charterhouse Bank Ltd

8. Chase Bank (K) Ltd.

9. Citibank N.A Kenya

10. Commercial Bank of Africa Ltd.

11. Consolidated Bank of Kenya Ltd.

12. Co-operative Bank of Kenya Ltd.

13. Credit Bank Ltd.

14. Development Bank of Kenya Ltd.

15. Diamond Trust Bank (K) Ltd.

16. Dubai Bank Kenya Ltd.

17. Ecobank Kenya Ltd

18. Equatorial Commercial Bank Ltd.

19. Equity Bank Ltd.

20. Family Bank Ltd

21. Fidelity Commercial Bank Ltd

22. Fina Bank Ltd

23. First community Bank Limited

24. Giro Commercial Bank Ltd.

25. Guardian Bank Ltd

26. Gulf African Bank Limited

27. Habib Bank A.G Zurich

28. Habib Bank Ltd.

29. Imperial Bank Ltd

30. I & M Bank Ltd

31. Jamii Bora Bank Ltd.

32. Kenya Commercial Bank Ltd

33. K-Rep Bank Ltd

34. Middle East Bank (K) Ltd

35. National Bank of Kenya Ltd

36. NIC Bank Ltd

37. Oriental Commercial Bank Ltd

38. Paramount Universal Bank Ltd

39. Prime Bank Ltd

40. Standard Chartered Bank (K) Ltd

41. Trans-National Bank Ltd

42. Victoria Commercial Bank Ltd

43. UBA Kenya Bank Ltd.

Source: CBK Website

UNIVERSITY OF NAIROBI

SCHOOL OF BUSINESS

MBA PROGRAMME

DATE: 21/09/2012

TO WHOM IT MAY CONCERN

The bearer of this letter   GRACE   NJERI   NJUANGI

Registration No .   D61/61953/2010

is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.

IMMACULATE OMANO
MBA ADMINISTRATOR
MBA OFFICE, AMBANK HOUSE

Appendix 3

Data Collection Form

BANK	YEAR	ROE	NPLR	CAR
Bank of Africa Kenya Ltd.	2007	9.17	1.44	14.41
	2008	10.35	2.7	13.19
	2009	10.05	2.16	15.9
	2010	9.90	2.24	15.2
	2011	9.26	2.26	15.4
AVERAGE VALUES				
Bank of Baroda (K) Ltd.	2007	22.60	5.05	18.9
	2008	22.69	0.92	19.7
	2009	20.43	6.19	20.6
	2010	29.37	0.87	23.6
	2011	27.63	3.39	21.4
Bank of India	2007	24.93	0.74	43.2
	2008	22.36	3.68	32
	2009	19.34	0.14	34.7
	2010	24.93	0.74	43.2
	2011	22.67	0.89	46.4
Barclays Bank of Kenya Ltd.	2007	27.95	2.7	14
	2008	27.0	1.81	16.6
	2009	25.16	2.52	23.8
	2010	33.68	1.67	31.2
	2011	27.62	2.6	27.8
CFC Stanbic Bank Ltd.	2007	24.66	0.43	14.03
	2008	14.09	2.99	14.65
	2009	5.42	1.23	16.04

	2010	16.91	1.14	16.2
	2011	9.51	0.62	19.04
Consolidated Bank of Kenya Ltd.	2007	2.0	24.1	17
	2008	3.0	19.8	16
	2009	8.73	15.28	16
	2010	11.68	12.12	13.18
	2011	10.44	4.14	12.65
Co-operative Bank of Kenya Ltd.	2007	23.76	23.92	14.5
	2008	17.41	15.69	23.72
	2009	18.37	10.44	21
	2010	22.36	5.66	16.5
	2011	25.45	4.75	16.4
Credit Bank Ltd.	2007	16.20	13.15	30
	2008	8.11	9.67	28.9
	2009	7.94	6.12	33.4
	2010	3.55	11.21	30
	2011	5.35	5.38	37.6
Development Bank of Kenya Ltd.	2007	9.61	7.31	40
	2008	9.62	10.89	32
	2009	9.93	12.3	26
	2010	10.71	13.11	27
	2011	6.97	17.88	27
Diamond Trust Bank (K) Ltd.	2007	14.80	0.34	19.1
	2008	19.21	0.54	19.8

	2009	20.69	0.84	19
	2010	28.85	0.002	18.4
	2011	31.09	0.002	16.8
Dubai Bank Kenya Ltd.	2007	1.47	29.6	30.5
	2008	0.79	16.73	26.5
	2009	0.58	62.66	28
	2010	0.56	47.92	34
	2011	1.99	34.86	37
Ecobank Kenya Ltd	2007	2.5	8.55	16
	2008	3.94	38.26	16
	2009	(37.07)	11.65	16
	2010	2.50	8.53	19
	2011	11.71	3.25	26
Equatorial Commercial Bank Ltd.	2007	1.25	13.15	15.6
	2008	0.38	22	15.6
	2009	0.38	26.08	-4.1
	2010	(7.21)	0.02	14.46
	2011	1.31	0.009	14.27
Equity Bank Ltd.	2007	12.67	3.59	59
	2008	19.09	3.86	41
	2009	19.55	3.65	31
	2010	26.69	2.39	28
	2011	27.89	2.15	22

Family Bank Ltd	2007	13.04	1.99	22.23
	2008	21.62	2.8	19.12
	2009	11.92	1.51	18.31
	2010	11.78	2.94	23.41
	2011	12.36	4.49	17.5
Fidelity Commercial Bank Ltd	2007	22.53	4.73	13.63
	2008	13.33	0.48	14.91
	2009	9.84	0.4	14.55
	2010	33.92	0.54	17.49
	2011	19.38	0.54	15.17
Fina Bank Ltd	2007	10.77	11.24	14.56
	2008	5.39	8.58	13.16
	2009	9.13	19.66	14.43
	2010	9.99	7.4	17
	2011	14.65	2.24	19
Habib Bank Ltd.	2007	14.43	1.35	46.25
	2008	15.84	1.01	47.65
	2009	17.0	0.58	64.78
	2010	16.67	0.27	41.72
	2011	15.63	0.2	33.58
Imperial Bank Ltd	2007	23.80	3.42	19
	2008	24.67	6.47	20
	2009	27.60	6.86	21
	2010	24.86	2.77	21
	2011	28.26	2.05	21

I & M Bank Ltd	2007	22.83	1.28	14.44
	2008	21.57	6.04	12.62
	2009	16.29	2.43	18.71
	2010	16.31	1.23	19.92
	2011	22.33	0.45	18.72
Kenya Commercial Bank Ltd	2007	21.07	3.60	13.6
	2008	19.0	2.99	15.5
	2009	20.33	4.74	14.9
	2010	21.57	0.90	23.2
	2011	21.78	3.36	20.7
National Bank of Kenya Ltd	2007	22.54	11.79	38.8
	2008	19.98	6.06	38.6
	2009	21.50	2.89	42.6
	2010	20.36	1.08	36.9
	2011	14.79	1.07	29.5
NIC Bank Ltd	2007	15.75	2.19	16.73
	2008	19.90	1.37	14.43
	2009	16.51	1.33	15.48
	2010	20.69	0.16	15.51
	2011	22.15	0.13	15.89
Oriental Commercial Bank Ltd	2007	18.08	0.12	59.6
	2008	5.14	0.06	54
	2009	3.89	5.03	40
	2010	13.69	1.25	36
	2011	11.78	4.50	35

Standard Chartered Bank (K) Ltd	2007	38	5.1	16
	2008	30.47	2.62	16
	2009	38.42	1.33	14
	2010	27.89	1.21	14
	2011	14.05	0.70	14
Trans-National Bank Ltd	2007	17.27	17.82	60
	2008	10.72	17.55	65.9
	2009	6.80	15.02	69.7
	2010	9.24	13.93	79.2
	2011	11.62	11.24	47