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

BY:

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NOVEMBER, 2011
DECLARATION

This research project report is my original work and has not been submitted for award of a degree in this or any other university.

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REG. NO: D61/7115/2006

SUPERVISOR:

Signed .................................................... Date ................................

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DEDICATION

To

My dearest fiancée Fenah

and

My lovely parents Mr. & Mrs. Oludhe
ACKNOWLEDGEMENT

First and foremost I want to thank the Almighty God for giving me the opportunity to advance my studies, provided the finances and gave me the strength to finish this research work. Special gratitude goes to both my supervisor Dr. Fredrick Ogilo and moderator Dr. Josiah Aduda for their guidance and constructive critiques throughout this process with utmost diligence, expertise and inspiration in the process of preparing this project.

I owe my deepest gratitude to my parents Mr. Ezekiel Oludhe and Mrs. Monica Oludhe for their encouragement, moral and material support throughout the course of my undertaking this project. I would also like to thank Mr. Anthony Njaramba for the expertise and assistance in using the data analysis software. Further, gratitude goes to all my professional colleagues who in one way or another offered constant encouragement and support whenever I approached them. May the Almighty God bless them all.
The objective of this study was to analyse the impact of credit risk management on the financial performance and to establish if there exists any relationship between the credit risk management determinants by use of CAMEL indicators and financial performance of commercial banks in Kenya. A causal research design was undertaken in this study and this was facilitated by the use of secondary data which was obtained from the CBK publications on banking sector survey. The study used multiple regression analysis in the analysis of data and the findings have been presented in the form of tables and regression equations. The study also found that there is a strong impact between the CAMEL components on the financial performance of commercial banks with the $R^2$ values being lowest at 0.594 in 2007 and highest at 0.943 in 2009 implying that in 2007 CAMEL components could explain 59.4 percent variations in financial performance and 94.3 percent variations in financial performance in 2009. The study also established that capital adequacy, asset quality, management efficiency and liquidity had weak relationship with financial performance (ROE) whereas earnings had a strong relationship with financial performance. This study concludes that CAMEL model can be used as a proxy for credit risk management. The study thus recommends that commercial banks should also try to keep their operational cost low as this negates their profits margin thus leading to low financial performance. This is depicted by the strong effect of earnings on financial performance.
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<tr>
<td>AFT:</td>
<td>Accelerated Failure Time</td>
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<td>BSV:</td>
<td>Bank Specific Variables</td>
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<td>CAMEL:</td>
<td>Capital Adequacy, Asset Quality, Management Quality, Earnings and Liquidity</td>
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<td>CAPM:</td>
<td>Capital Asset Pricing Model</td>
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<td>CBK:</td>
<td>Central Bank of Kenya</td>
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<td>CEO:</td>
<td>Chief Executive Officer</td>
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<td>CRO:</td>
<td>Credit Risk Officer</td>
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<td>GDP:</td>
<td>Gross Domestic Product</td>
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<td>GRL:</td>
<td>Loan Growth</td>
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<td>LOANQUAL:</td>
<td>Loan Loss Provision to Total Loans</td>
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<tr>
<td>LQD:</td>
<td>Liquidity Ratio</td>
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<td>MFI:</td>
<td>Microfinance Institutions</td>
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<tr>
<td>MGT:</td>
<td>Management Efficiency</td>
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<td>NPL:</td>
<td>Non-Performing Loans</td>
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<td>NPLR:</td>
<td>Non-Performing Loans to Total Loans</td>
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<tr>
<td>PLL:</td>
<td>Provision of Loan Losses</td>
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<tr>
<td>ROA:</td>
<td>Return on Assets</td>
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<td>RMG:</td>
<td>Risk Management Guidelines</td>
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<td>Risk Management Index</td>
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<td>Risk-Weighted Asset</td>
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<td>SACCO:</td>
<td>Savings and Credit Co-operative</td>
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<td>TC:</td>
<td>Total Capital</td>
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<td>Total Risk Weighted Assets</td>
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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Credit risk is defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. According to Chijoriga (1997) credit risk is the most expensive risk in financial institutions and its effect is more significant as compared to other risk as it directly threatens the solvency of financial institutions. The magnitude and level of loss caused by the credit risk as compared to other kind of risks is severe to cause high level of loan losses and even bank failure. While financial institutions have faced difficulties over the years for a multitude of reasons, the major cause of serious banking problems continues to be directly related to lax credit standards for borrowers and counterparties, poor portfolio risk management, or a lack of attention to changes in economic or other circumstances that can lead to a deterioration in the credit standing of a bank’s counterparties (Basel, 1999).

Loans are the largest source of credit risk to commercial banks. However, other sources of credit risk exist throughout the activities of a bank, including in the banking book and in the trading book, and both on and off the balance sheet. Banks are increasingly facing credit risk (or counterparty risk) in various financial instruments other than loans, including acceptances, interbank transactions, trade financing, foreign exchange transactions, financial futures, swaps, bonds, equities, options, and in the extension of commitments and guarantees, and the settlement of transactions. The goal of credit risk management is to maximise a bank’s risk adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Banks need to manage the credit risk inherent to the entire portfolio as well as the risk in individual credits as transactions (Sinkey, 1992).

Credit risk management should be at the centre of banks operations in order to maintain financial sustainability and reaching more clients. Despite these facts, over the years there has been increased number of significant bank problems in both, matured as well as emerging economies (Brownbridge and Harvey, 1998; Basel, 2004). Bank problems, mostly failures and financial distress have afflicted numerous banks, many of which have been closed down by the regulatory authorities (Brownbridge and Harvey, 1998). Among other factors, weakness in credit risk
management has all along been cited as the main cause for bank problems (Richard et al., 2008 and Chijoriga, 1997). Since exposure to credit risk continues to be the leading source of problems in banks world-wide, banks and their supervisors should be able to draw useful lessons from past experiences. Banks should now have a keen awareness of the need to identify, measure, monitor and control credit risk as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred (Basel, 1999).

Pazarbasioglu (1999) believes that the best warning signs of financial crises are proxies for the vulnerability of the banking and corporate sector. He adds that the most obvious indicators that can be used to predict banking crises are those that relate directly to the soundness of the banking system. In the 1980's and early 1990's, several countries in developed, developing and transition economies experienced several banking crises requiring a major overhaul of their banking systems (IMF, 1998). As the banking sector continues to embrace innovations, the intensity and variety of risks that the players are exposed also continue to increase in tandem. To ensure that the growth in the banking sector does not jeopardize its stability, risk management is crucial.

In view of this, the CBK carried out a risk management survey on the Kenyan banking sector in September 2004. The survey's objective was to determine the needs of the local banking sector with regard to risk management. The survey was necessitated by the drive to fully adopt Risk Based Supervision and to incorporate the international risk management best practices envisioned in the 25 Basel Core Principles for Effective Banking Supervision. The survey culminated in the issuance of the Risk Management Guidelines (RMGs) in 2005 and the adoption of the Risk Based Supervision approach of supervising financial institutions in 2005. In response to this, commercial banks embarked upon an upgrading of their risk management and control systems (CBK, 2005).

In order to assess the adequacy and impact of the Risk Management Guidelines, 2005 on Kenyan banking institutions, CBK issued risk management survey 2010. The goal of the CBK risk management survey 2010 was to determine whether the RMGs issued in 2005 have had any impact on the institutions and as to whether the RMGs are adequate, as well as establishing the
necessary amendments and/or additions that needed to be introduced to ensure that the RMGs remained relevant, current and reflective of circumstances in the operating environment. Their finding was that generally the institutions revealed that the Risk Management Guidelines issued in 2005 had, for the majority of them; enhanced risk-awareness and risk-management at the institutions, increased the efficiency and effectiveness of risk management, helped reduce financial losses, led to the establishment of effective and better-resourced risk management functions, and enhanced the overall decision making processes in their institutions (CBK, 2010).

1.1.1 Credit Risk Management Measurement

Operating and financial ratios have long been used as tools for determining the condition and the performance of a firm. Modern early warning models for financial institutions gained popularity when Sinkey (1975) utilized discriminant analysis for identifying and distinguishing problem banks from sound banks and Altman (1977) examined the savings and loan industry. To anticipate banks' financial deterioration, procedures have been developed to identify banks approaching financial distress. These procedures, though varying from country-to-country, are designed to generate financial soundness ratings and are commonly referred to as the CAMEL rating system (Gasbarro et al., 2002). In Kenya, the Central Bank also applies the CAMEL rating system to assess the soundness of financial institutions which is an acronym for Capital Adequacy, Asset Quality, Management Quality, Earnings and Liquidity (CBK, 2010). Numerous prior studies have examined the efficacy of CAMEL ratings and they generally conclude that publicly available data combined with regulatory CAMEL ratings can identify and/or predict problem or failed banks (Gasbarro et al., 2002). Internal factors have been identified as the most important causes of troubled banks, commencing with Sinkey (1979) and most recently Hanc (1998). In particular, Sinkey points out that the internal factors causing bank failures are decisions over which the managers and directors of the bank have direct control. The analytical framework of credit risk management in this study is based on the proxy variables of CAMEL rating system components:

Capital Adequacy: is a measurement of a bank to determine if solvency can be maintained due to risks that have been incurred as a course of business. Capital allows a financial institution to grow, establish and maintain both public and regulatory confidence, and provide a cushion
(reserves) to be able to absorb potential loan losses above and beyond identified problems. Capital adequacy ratio is defined as the ratio of total capital (TC) to total risk weighted assets (TRWA) will be used as a proxy for credit risk, as previously noted by Bhattacharya and Sinha Roy (2008). A sound capital base strengthens confidence of depositors.

Asset Quality: evaluates risk, controllability, adequacy of loan loss reserves, and acceptable earnings; and the affect of off-balance sheet earnings and loss. Asset quality is the ratio of non-performing loans to total loans (NPLR) and is an indicator of the quality of credit decisions made by bankers (Tandelilin et al., 2007). Higher NPLR is indicative of poor credit decision-making.

Management Quality: sound management is key to banks' performance but is difficult to measure because it is a qualitative factor applicable to individual institutions. There are several indicators that can serve as an indicator of management soundness. For this study, the non-interest expenditures (salaries and benefits) to total assets (MGT) will be used as an indicator of management quality since salaries and benefits are generally the largest non-interest expense element of bank overhead, are also controllable by management and reflects the management policy stance (Hays et al., 2009; Goyal, 2010).

Earnings: determines the ability of a bank to increase capital (through retained earnings), absorb loan losses, support the future growth of assets, and provide a return to investors. It can be measured by the return on asset ratio (ROA) which is a ratio of the net income to total assets (Wasankar, 2009; Goyal, 2010).

Liquidity: cash maintained by the banks and balances with central bank to total asset ratio (LQD) is an indicator of bank's liquidity. In general, banks with a larger volume of liquid assets are perceived safe, since these assets would allow banks to meet unexpected withdrawals (Wasankar, 2009; Goyal, 2010).
1.1.2 Financial Performance Measures

Brealey and Meyers (2003) argue that there are various important measures in determining profitability of an organisation. These include: Net Profit Margin and Return on Equity (ROE). In 1972 David Cole introduced a procedure for evaluating bank performance via ratio analysis (MacDonald & Koch, 2006). This procedure enables an analyst to evaluate the source and magnitude of banks profits relative to selected risks taken. David Cole employed Return on Equity model to analyse bank profitability and identified specific measures of credit risk, liquidity risk, interest rate risk, operational risk and capital risk (MacDonald & Koch, 2006). In accordance with the study by 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.

The study of Joetta (2007) presented the purpose of ROE as a measurement of the 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 utilised to produce the profits as well. The effectiveness of asset utilisation is significantly tied to the amount of assets that the company generates for each shilling of equity. The ratio of net income to equity is the accounting return on equity (ROE). It often serves as a target profitability measure at the overall bank level. Thus, the proxy for measurement of a firms’ financial performance will be Return on Equity (ROE).

1.2 Statement of the Problem

The main aim of every banking institution is to operate profitably in order to maintain stability and improve in growth and expansion. To ensure that the growth in the banking sector does not jeopardise its stability, risk management is crucial. A major objective of bank management is to increase shareholders’ return epitomising bank performance. This objective often comes at the cost of increasing risk. Issues of risk management in banking sector have greater impact not only on the bank but also on the economic growth. To ensure stability of the financial systems, the Basel Accord Committee has formulated three pillars which help to create an international standard that banking regulators can use when creating regulations about how much capital banks need to
put aside to guard against the types of financial and operational risks banks face (Basel, 2004). In Kenya, the Central Bank applies the CAMEL rating system to assess the soundness of financial institutions (CBK, 2010).

Past studies have covered extensively on risk and factors contributing to risks of financial institutions in the conventional banking system (Berger and DeYoung, 1997; Angbazo et al., 1998; Ahmad, 2003). In a study on banking regulation and its adequacy in preventing bank failures, Obiero (2002) found that out of the 39 banks which failed during the period of 1984-2002, 37.8% collapsed mainly due to poor quality of lending. This was attributable to recklessness in their lending activities and immense pressure especially in government controlled banks to lend to politically connected individuals and institutions. Ndungu (2003) in a study on determinants of profitability of quoted banks in Kenya found that sound asset and liability management had a significant influence on profitability. Other recent related studies have mainly focused on survey studies, especially in the areas of microfinance institutions and SACCOs. Mwirigi (2006) did an assessment of credit risk management techniques adopted by microfinance institutions in Kenya and found that a significant number of respondents have credit risk management policies as a basis for objective credit risk appraisal. Gisemba (2010) studied the relationship between credit risk management practices and financial performance of SACCOs in Kenya while Ndwiga (2010) and Chege (2010) both surveyed the relationship between credit risk management practices and the financial performance of microfinance institutions in Kenya. However, these studies did not look at the regulatory disclosure requirements on the financial industry and how credit risk management indicators from the regulatory disclosure impacts on the financial performance of commercial banks in Kenya. This study gap justifies new efforts to investigate on the impact of credit risk management on the financial performance of commercial banks in Kenya by use of the credit risk management indicators from the regulatory disclosure. Therefore, this research attempted to answer the question: What is the impact of credit risk management on the financial performance of commercial banks in Kenya?
1.3 Objective of the Study

This study attempted to achieve the following objectives:

i. To analyse the impact of credit risk management on the financial performance of commercial banks in Kenya.

ii. To establish if there was existence of any relationship between the credit risk management determinants and the performance of commercial banks in Kenya.

1.4 Value of the Study

The study will create a foundation in this important subject upon which related studies or in-depth analysis can be undertaken. This study will also help the government policy makers to pursue reforms that will influence growth of the banking sector and in this regard economic growth is likely to be stimulated.

The study will highlight the impact of credit risk management on financial performance of commercial banks in Kenya which the finance/bank managers can use for the early identification of the riskiness of their institutions and also help in formulating their risk management techniques. To other stakeholders in the economy, it will also highlight the key factors that industry players should analyse when assessing the riskiness of their institutions.
CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter discussed the theoretical review, empirical review and the summary of literature review. The theoretical review highlighted the theories related to this study while the empirical review looked at literature derived from various research works by other researchers on this topic. Lastly, this chapter offered a summary in regard to the literature review.

2.2 Theoretical Review

2.2.1 Financial Intermediation Theory

Financial intermediation is a process which involves surplus units depositing funds with financial institutions who then lend to deficit units. In earlier theories of financial intermediation, such as Gurley and Shaw's (1960), the main activity of intermediaries was the transformation of securities issued by firms (shares and bonds) into securities demanded by investors (deposits). Financial intermediaries are valuable because they provide services of divisibility and risk transformation, which borrowers cannot obtain on their own under identical conditions due to transaction costs. Matthews and Thompson (2008) identify that financial intermediaries can be distinguished by four criteria: one is their main category of liabilities (deposits) are specified for a fixed sum which is not related to the performance of a portfolio; second is the deposits are typically short-term and of a much shorter term than their assets; third, is that a high proportion of their liabilities are chequeable (can be withdrawn on demand); the fourth criteria to distinguish financial intermediaries are their liabilities and assets that are largely not transferable. There are exceptions such as certificates of deposit and securitization.

It is important to distinguish between banks as financial intermediaries (who accept deposits and make loans directly to borrowers) and non-bank financial intermediaries who lend via the purchase of securities. The latter category includes insurance companies, pension funds and investment trusts who purchase securities, thus providing capital indirectly rather than making loans. These types of intermediary do not meet the four criteria shown above. This study is
devoted to banks only. The most important contribution of intermediaries is a steady flow of funds from surplus to deficit units. Financial institutions fulfill the following main functions:

The brokerage function: Financial intermediaries match transactors and provide transaction and other services. A broker brings together providers and users of capital without changing the nature of the claim being transacted. As a result, they reduce transaction costs and remove information costs.

The asset transformation function: Financial institutions issue claims that are far more attractive to savers (in terms of lower monitoring costs, lower liquidity costs and lower price risk) than the claims issued directly by corporations. Financial intermediaries hold the long-term, high-risk large-denomination claims issued by borrowers and finance this by issuing short-term, low-risk, small-denomination deposit claims, a process that is often described in the literature as qualitative asset transformation (Saunders, 2006). Qualitative asset transformation processes risk in altering the attributes of the claim.

Within the brokerage function, banks bring together providers and users of capital without changing the nature of the claim, whereas asset transformation process leads to the altering of the nature of the claim. The asset transformation function includes an asset diversification function and an asset evaluation function (Diamond, 1996). In the first case, a critical role of intermediation is the transformation of large-denomination financial assets into smaller units. Banks have the ability to exploit the sub-optimal portfolio choice of depositors and can offer the risk-return combination of financial assets that households demand. Banks are able to provide loans which fit in with customer demands, by providing divisibility services. Furthermore, because banks are able to break down assets into small units, they can reduce transaction costs and also employ diversification for the benefit of both their customers and equity holders. Secondly, banks act as evaluators of credit risk for the depositor. They function as a filter to evaluate signals in a financial environment with limited information. It is argued that as a result of these asymmetries of information individuals find it difficult to evaluate other agents' credit
risks. This gives rise to financial intermediaries who play an important role in the evaluation and purchase of financial assets (Saunders, 2006).

2.2.2 Modern Theories of Financial Intermediation

In modern theories of financial intermediation, the two most prominent explanations for the existence of intermediaries like depository institutions are the provision of liquidity and the provision of monitoring services (Ramakrishnan and Thakor, 1984; Millon and Thakor, 1985). Banks have always been the most important financial intermediaries in virtually all economies. This results from their role as providers of liquidity insurance and monitoring services and as producers of information. Banks are valuable as providers of liquidity services because they provide depositors with liquidity insurance (Bryant, 1980 and Diamond and Dybvig, 1983). By issuing demand deposits, banks can improve on a competitive market because these deposits allow for better risk-sharing among households that face idiosyncratic shocks to their consumption needs over time (Gorton and Pennacchi, 1990). The importance of banks in this framework arises from an information asymmetry: the shock that affects a household’s consumption needs is not publicly observable.

Banks are valuable as providers of monitoring services because they act as delegated monitors to investors and thus avoid the duplication of monitoring costs (Diamond, 1984). As with the liquidity insurance explanation, the key to the existence of banks in this setup is also an informational problem. Firms are assumed to have more information about their investment projects than investors do. Investors can learn this information but only after incurring a monitoring cost. They may choose, however, to delegate monitoring to a bank, through which they all provide funding to the firm. By acting as delegated monitors of investors, banks save on monitoring costs and make funding available to firms at a lower cost than direct lending. The provision of liquidity insurance explains the liability side of the bank’s balance sheet and the provision of monitoring services explains the asset side of the balance sheet. None of these approaches, however, puts forward an explanation as to why it is advantageous for an intermediary to offer both of these services, as happens with the existing depository institutions. Diamond and Rajan (1998) address this issue in a model where both investors and borrowers care about liquidity. The former are concerned with liquidity because they are uncertain about
the time at which they may want to reduce their holdings of a financial asset, while the latter are concerned with liquidity because they are uncertain about their ability to raise added funding in the future. An intermediary that accepts deposits and extends loans is valuable in that setting because it enables depositors to have better access to their funds than they would if they invested directly in firms, and it insures borrowers against the risk that funding will be cut off prematurely, which they would face had they borrowed from an investor (Calomiris and Kahn, 1991, Flannery, 1994 and Qi, 1998).

2.2.3 Arrow-Debreu Model

The basic workhorse of general equilibrium theory is the Arrow-Debreu model of a static, multi-good, multi-agent economy, initially developed in the 1950's by Kenneth Arrow and Gerard Debreu. In the traditional Arrow-Debreu model of resource allocation, firms and households interact through markets and financial intermediaries play no role. When markets are perfect and complete, the allocation of resources is Pareto efficient and there is no scope for intermediaries to improve welfare. In the neoclassical model of a perfect market, for example the perfect market for capital, or the Arrow-Debreu world, the following criteria usually must be met: no individual party on the market can influence prices; conditions for borrowing/lending are equal for all parties under equal circumstances; there are no discriminatory taxes; absence of scale and scope economies; all financial titles are homogeneous, divisible and tradable; there are no information costs, no transaction costs and no insolvency costs; and all market parties have ex ante and ex post immediate and full information on all factors and events relevant for the (future) value of the traded financial instruments.

The Arrow-Debreu world is based on the paradigm of complete markets. In the case of complete markets, present value prices of investment projects are well defined. Savers and investors find each other because they have perfect information on each other’s preferences at no cost in order to exchange savings against readily available financial instruments. These instruments are constructed and traded costlessly and they fully and simultaneously meet the needs of both savers and investors (Scholtens and van Wensveen, 2003).
Thus, each possible future state of the world is fully covered by a so-called Arrow-Debreu security (state contingent claim). Also important is that the supply of capital instruments is sufficiently diversified as to provide the possibility of full risk diversification and, thanks to complete information, market parties have homogenous expectations and act rationally. In so far as this does not occur naturally, intermediaries are useful to bring savers and investors together and to create instruments that meet their needs. They do so with reimbursement of costs, but costs are by definition an element – or, rather, characteristic – of market imperfection. Therefore, intermediaries are at best tolerated and would be eliminated in a move towards market perfection, with all intermediaries becoming redundant: the perfect state of disintermediation. This model is the starting point in the present theory of financial intermediation. All deviations from this model which exist in the real world and which cause intermediation by the specialized financial intermediaries are seen as market imperfections (Scholtens and van Wensveen, 2003).

2.2.4 Risk Reduction Techniques in Banks

Commercial banks are in the risk business. In the process of providing financial services, they assume various kinds of financial risks. Over the last decade our understanding of the place of commercial banks within the financial sector has improved substantially. Over this time, much has been written on the role of commercial banks in the financial sector, both in the academic literature (Allen & Santomero, 1997) and in the financial press (Economist, 1993). Suffice it to say that market participants seek the services of these financial institutions because of their ability to provide market knowledge, transaction efficiency and funding capability. In performing these roles they generally act as a principal in the transaction. As such, they use their own balance sheet to facilitate the transaction and to absorb the risks associated with it. The risks contained in the bank's principal activities, that is, those involving its own balance sheet and its basic business of lending and borrowing, are not all borne by the bank itself. In many instances the institution will eliminate or mitigate the financial risk associated with a transaction by proper business practices; in others, it will shift the risk to other parties through a combination of pricing and product design. The banking industry recognizes that an institution need not engage in business in a manner that unnecessarily imposes risk upon it; nor should it absorb risk that can be efficiently transferred to other participants. Rather, it should only manage risks at the firm level that are more efficiently managed there than by the market itself or by their owners in their
own portfolios. In short, it should accept only those risks that are uniquely a part of the bank's array of services.

Elsewhere, Oldfield and Santomero (1997) have argued that risks facing all financial institutions can be segmented into three separable types, from a management perspective. These are: firstly, risks that can be eliminated or avoided by simple business practices, secondly, risks that can be transferred to other participants, and, finally, risks that must be actively managed at the firm level. In the first of these cases, the practice of risk avoidance involves actions to reduce the chances of idiosyncratic losses from standard banking activity by eliminating risks that are superfluous to the institution's business purpose. Common risk avoidance practices here include at least three types of actions. The standardization of process, contracts and procedures to prevent inefficient or incorrect financial decisions is the first of these. The construction of portfolios that benefit from diversification across borrowers and that reduce the effects of any one loss experience to another. Finally, the implementation of incentive-compatible contracts with the institution's management to require that employees be held accountable is the third. In each case, the goal is to rid the firm of risks that are not essential to the financial service provided, or to absorb only an optimal quantity of a particular kind of risk.

There are also some risks that can be eliminated, or at least substantially reduced through the technique of risk transfer. Markets exist for many of the risks borne by the banking firm. Interest rate risk can be transferred by interest rate products such as swaps or other derivatives. Borrowing terms can be altered to effect a change in their duration. Finally, the bank can buy or sell financial claims to diversify or concentrate the risks that result from servicing its client base. To the extent that the financial risks of the assets created by the firm are understood by the market, these assets can be sold at their fair value. Unless the institution has a comparative advantage in managing the attendant risk and/or a desire for the embedded risk they contain, there is no reason for the bank to absorb such risks, rather than transfer them (Oldfield and Santomero, 1997).
However, there are two classes of assets or activities where the risk inherent in the activity must and should be absorbed at the bank level. In these cases, good reasons exist for using firm resources to manage bank level risk. The first of these includes financial assets or activities where the nature of the embedded risk may be complex and difficult to communicate to third parties. This is the case when the bank holds complex and proprietary assets that have thin, if not non-existent, secondary markets. Communication in such cases may be more difficult or expensive than hedging the underlying risk (Berger and Udell, 1993). Moreover, revealing information about the customer may give competitors an undue advantage. The second case included proprietary positions that are accepted because of their risks, and their expected return. Here, risk positions that are central to the bank's business purpose are absorbed because they are the raison d'être (reason for existence) of the firm. Credit risk inherent in the lending activity is a clear case in point, as is market risk for the trading desk of banks active in certain markets. In all such circumstances, risk is absorbed and needs to be monitored and managed efficiently by the institution. Only then will the firm systematically achieve its financial performance goal.

2.2.5 Banks’ Disclosure Recommendations

The Basel Committee recommends that banks provide timely information that allows market participants to assess the credit risk profile of banking institutions. The Committee identified the following five broad areas in which banks should provide more detailed disclosures: Accounting policies and practices; Credit risk management; Credit exposures; Credit quality; and Earnings. While each bank's specific disclosures will vary in scope and content according to its level and type of activities, all banks should provide sufficient timely and detailed information so as to allow market participants to develop a full and accurate picture of the bank's credit risk profile. Further, a bank’s disclosures should be consistent with the information the bank generates and uses internally to measure, manage and monitor credit risk; accordingly, as management information systems and management reporting continue to evolve and improve, the timeliness and extent of disclosures should improve (Basel, 2004).

Banks should summarise their policies for identifying, measuring, and managing credit risk on both an individual counterparty and portfolio basis, including a description of the internal credit rating classification system (for example, what each rating means in terms of default probability,
degrees of risk being distinguished, performance over time and ex-post evaluation); and the mechanisms used to reduce and/or mitigate credit exposures, such as collateral, guarantees, covenants, bilateral and multilateral netting arrangements, and early termination agreements; securitisation activities; and the use of new or innovative instruments that transfer credit exposure, such as credit derivatives. A bank should discuss the techniques it uses to monitor and manage past due or impaired assets/credit relationships, including its procedures for credit quality classifications and its practices and procedures for evaluating the adequacy of credit loss provisions and credit loss allowances. In addition to methods currently used by banks to assess credit risk exposures, some banks are exploring new approaches to measuring exposure to credit risk, including various modelling techniques. A bank that uses credit scoring or portfolio credit risk measurement models to manage credit risk should provide qualitative and quantitative information about these approaches. (Basel, 2004).

2.3 Empirical Review

Since Bhattacharya and Thakor drew up their research agenda for contemporary banking theory in 1993, risk management and risk transformation in the intermediation process have become a common denominator in the research agenda and risk management has gained attention at both the firm-level and the macro economy (Hunter and Smith, 2002).

Ellul and Yerramilli (2010) investigated on whether a strong and independent risk management is significantly related to bank risk taking and performance during the credit crisis in a sample of 74 large U.S. bank holding companies. They constructed a Risk Management Index (RMI) which is based on five variables related to the strength of a bank’s risk management: a dummy variable whether the bank has a designated CRO who is a member of the executive board, a dummy variable whether the CRO is among the top five highly paid executives, the ratio of the CRO’s total compensation to the Chief Executive Officer’s (CEO) total compensation, a dummy variable whether at least one of the non-executive directors on the bank’s risk committee has banking experience, and a dummy variable whether the bank’s risk committee met more frequently in the respective year as compared to the average value across the other sample banks. Their findings indicate that banks with a high RMI value in 2006 had lower exposure to private-label mortgage-backed securities, were less active in trading off-balance sheet derivatives and
had a smaller fraction of non-performing loans, a lower downside risk and a higher Sharpe Ratio during the crisis years 2007-2008.

Juanjuan et al. (2009) in their study on credit risk management and profitability in commercial banks in Sweden highlighted that credit risk management has effects on profitability. The analysis further indicated that the impact of credit risk management on profitability for the 4 commercial banks sampled is not the same. The study was limited to identifying the relationship of credit risk management and profitability of four commercial banks in Sweden. The results of this study was limited to the banks sampled and was not generalized for all commercial banks in Sweden. Whereas Saunders et al. (1990) and Anderson and Fraser (2000) analyse the case of US, Konishi and Yasuda (2004) and Marco and Fernandez (2008) present comparable studies for the cases of Japan and Spanish, respectively. Their studies add value to an existing gap in the literature with respect to risk measurements. Whereas Konishi and Yasuda (2004) reveal that size and capital buffer are significantly related to the two-factor CAPM and insolvency risk exposures, Marco and Fernandez (2008) show that size, profitability, and business types are significantly related to insolvency risk exposure. Regarding cross-country research, Laeven and Levine (2009) and Angkinand and Wihlborg (2010) find that size, credit quality, capital buffer, liquidity ratio, Gross Domestic Product (GDP) growth, inflation, and interest rate are significantly related to credit and insolvency risk exposures.

Berger and DeYoung (1997) found lagged risk-weighted asset (RWA) is significantly and positively related to credit risk measured by non performing loans (NPL) to total loans. They rationalized that a relatively risky loan portfolio will result in higher NPLs. Ahmed (1998) finds that provision of loan losses (PLL) to be positive and significantly associated with NPL. Hence, a higher PLL indicates an increase in risk and deterioration in loan quality. Fisher, Gueyie and Ortiz (2000) found similar results where LOANQUAL (loan loss provision to total loans) is positively related to risk.

Bercoff et al. (2002) using risk accelerated failure time (AFT) model in their study of Argentina’s financial sector weakness measured by the ratio of non-performing loans to total
loans found that both financial institutions specific indicators such as asset growth, the ratio of net worth to net assets, exposure to peso loans and institutional characteristics relating to private banks and foreign banks and macroeconomic variables including credit growth, foreign interest rate, reserve adequacy and monetary expansion, besides the tequila effect were reasons behind the banking fragility. Their empirical results suggested that the bank size measured by assets had a positive effect but asset growth had a negative effect on non-performing loans (NPLs). The variables such as operating cost, exposure to peso loans, credit growth and foreign interest rate had negative effect on NPLs. The macroeconomic variables such as money multiplier, reserve adequacy, institutional characteristics and tequila effect had a positive influence on NPLs.

Kroszner (2002) finds that non-performing loans are closely associated with banking crises. Sultana (2002) also links the Japanese financial crisis to non-performing loans and finds that Japanese banks still suffer under the weight of thousands of billions of yen of bad loans resulting from the collapse in asset prices a decade ago in the country’s financial system. According to Mikiko (2002) during the past several years, major Japanese banks have struggled in the red, with business profits swallowed by the disposal of NPLs. This has seriously dented public confidence in the deposit system.


Ahmad (2003) and Angbazo et al. (1998) find that management efficiency (MGT) is negatively related to credit risk of conventional banks and positive to Islamic banks. The positive sign of the coefficient in Islamic banking suggests that a higher proportion of earning assets to total assets, if not properly managed, would result in higher credit risk. For the conventional banks, the
negative sign denotes that a lower efficiency in managing its earning assets would lead to a higher credit risk. A possible answer for the opposite signs probably lies in the nature of the earning assets where they are all interest based in conventional banking and loan default is immediately recognized after 3 months of arrears in interests. In Islamic banking, the earning assets are largely on murabahah and mudarabah mode of financing, where the credit risk is transferred to its investment depositors and the loan defaults are not recognized immediately.

Al-Tamimi (2002) investigated the degree to which UAE commercial banks use risk management techniques in dealing with different types or risks. The study found that the UAE commercial banks were mainly facing credit risk. The study also found that the inspection by branch managers and financial statement analysis were the main methods of risk identification. The main techniques used in risk management according to this study were establishing standards, credit score, credit worthiness analysis, risk taking and collateral. The study also highlighted the willingness of the UAE commercial banks to use the most sophisticated risk management techniques and recommended the adoption of conservative credit policy.

External shocks such as economic recession and contagion effect from another economics contribute in reduction of the assets' quality of banks. Das and Ghosh (2007) found a significant and positive relationship between one lag non performing loans and credit risk. During expansionary period, firms’ earning and assets price tend to increase. Pursuant to these conditions, aggregate demand increase leads to increase in banks' lending. Banks may underestimate their risk exposure and reduce credit requirements and provision of future losses. During the next economic downtown, profitability and credit creditworthiness of borrowers decrease, fall in assets price affect borrowers' wealth and depressed the value of collateral, and thus non performing loans reveals (Quagliariello, 2007). The provision of loan losses levels are a useful summary of a bank's asset quality, the value of loan loss provisions reflects the rate of arrears and default on loans and the size of loss net of recovery of any collateral (Kearns, 2004).

Eng and Nabar (2007) found that the loan loss provisions are positively and significantly related with beginning loan outstanding and change in non-performing loans. This suggests that banks
increase their provisions in response to an increase in credit risk. On another hand, Das and Ghosh (2007) found a strongly significant and positive relationship between credit growth and problem loan with a lag of one year. Accordingly, an increase in credit currently will have a negative impact on problem loan after one year.

The bank’s capital and risk are related to each other, when a borrower fails to pay its obligation, the defaulted amount results in losses that can eventually reduce bank’s capital (Bessis, 2002; Saunders and Cornet, (2008). Bichsel and Blum (2004) found a positive and highly significant correlation between change in capital and risk. This indicates that the banks with strong capital base could engage in risky activities that increase their risk exposure. In contrast, Godlewski (2005) found a significant and negative correlation between capital ratio and credit risk measured by non-performing to total assets ratio.

Al-Smadi (2009) on their study on factors affecting banks’ credit risk in Jordan found that the capital (CAP) is negatively but not significantly related with credit risk. This result is consistent with the principle of Basle Accord for the capital adequacy ratio and empirical results of previous studies, which suggest that banks must maintain strong capital in order to absorb financial shocks. This result does not agree with those of Ahmad (2003) and Altunbas et al. (2007) who found a significant and positive relationship between capital and banks’ risk in Malaysian and European banks respectively.

Al-Smadi (2009) in their study also found that the coefficient estimate of the provision of loan losses (PLL) is positively correlated with the credit risk as expected, but not significant. An increase of PLL level is an indicator of a deterioration of loan quality and potentially increases in credit risk. This result is similar to the finding of Cannata and Quagliariello, (2007) and Eng and Nabar, (2007). As expected, non-performing loans (NPL) is very significant. The positive sign of the coefficient suggests that the non-performing loan of one period is closely related to that of the previous period. When non-performing loans are not immediately written down, it is carried forward to the next year. Loan growth (GRL) is found significant and negative related to credit risk. The result explains that an increase of loan growth results in a decrease in credit risk. A
possible reason for GRL to be negatively related to credit risk is that when banks increase their lending pursuant to high demand of credit, they tighten their credit standards and keep loans under control, which reduce banks' credit risk exposure. In contrast, when banks have a large proportion of funds available for lending, they relax their credit standards. As a result, the probability of adverse selection and moral hazard activities increase which contributes to an increase in problem loans (Keeton, 2003). This result does not agree with those of Das and Ghosh (2007) and Salas and Saurina (2002).

Locally, most of the studies in the area of credit risk management have been survey studies especially to microfinance institutions (MFIs) and banks. Mwirigi (2006) in his survey study approach examined the credit risk management techniques adopted by MFIs in Kenya. The study revealed that a significant number, that is, 92% of the respondents used credit management policies as a basis of objective credit appraisal. He identified credit risk as the most important risk with 80% of the respondents ranking it as the most important amongst other risks faced by the institutions.

Kioko (2008) did a study on credit risk management techniques of unsecured loans of commercial banks in Kenya and revealed that banks used a combination of credit risk management methods for unsecured loans. This result was similar to the findings of Ngare (2008) who did a survey study of the credit risk management practices by commercial banks in Kenya and also Chege (2010) who surveyed the credit risk management practices and financial performance of MFIs in Kenya.

2.4 Summary of Literature Review

Commercial banks are in the risk business and credit risk is the most important type of risk faced by banks in their operations. Banks according to the Basel Committee recommendations need provide timely information that allows market participants to assess the credit risk profile of banking institutions. Understanding the credit risk and its impact on the performance of a bank will help in the proper risk management of banks. A bank should have a proper credit risk
management function and implementing better risk management techniques leads to better performance of banks.
CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter sets out the various stages and phases that were followed in completing this study. The procedures and techniques that were used in the collection, processing and analysis of data are highlighted.

3.2 Research Design

This research problem was studied through the use of causal research design. Causal research deals with cause-effect relationship. In causal research design, the emphasis is on specific objectives about the effects of changes of one variable on another variable and it involves an experiment where an independent variable is changed or manipulated to see how it affects a dependent variable (Mugenda, 2003). Causal research design was useful in this study since it enabled the researcher to examine the impact on the dependent variable from variations in the independent variables.

3.3 Target Population

The target population for this study constituted 42 commercial banks registered and operational as at 31st December, 2010 licensed to carry out banking business in Kenya under the Banking Act Cap. 488. A population census was applied in this study. However, commercial bank(s) which were not in operation for the entire 5 year period or under receivership were dropped due to incompleteness of the records or missing data.

3.4 Data Collection Techniques

This research used secondary data which was collected from the CBK publications on banking sector survey and the respective banks' financial statements for the period of analysis 2006-2010. Secondary data can be defined as data collected by others, not specifically for the research question at hand (Stewart, 1984; Frankfort-Nachmias and Nachmias, 1992).
3.5 Data Analysis Techniques

The data analysis method used was based on Pearson correlation analysis and a multiple regression model. A multiple regression model was used since it enables the prediction one variable on the basis of several other variables. The multiple regression model took the form of:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon \]

Where:
- \( Y \) = Dependent variable
- \( X_{1-n} \) = Independent variables
- \( \beta_0 \) = Constant
- \( \beta_{1-n} \) = Regression coefficients or change included in \( Y \) by each \( X \)
- \( \epsilon \) = error term

The dependent variable was the financial performance of the banks which was measured by the return on equity (ROE) whereas the independent variables were the CAMEL components of Capital adequacy which was measured by by the ratio of Total Capital (TC) to total risk weighted assets (TRWA), Asset quality was measured by non-performing loans to total loans (NPLR), Management Efficiency was measured by the non-interest expense to total assets, Earnings was measured by the return on assets (ROA) and Liquidity was proxied by the cash deposits with other banks and CBK to total assets.
CHAPTER FOUR: DATA ANALYSIS

4.1 Introduction

This chapter presents analysis and findings of the research. From the study population target of 42 commercial banks in Kenya, 40 commercial banks had consistently traded from 2006 to 2010 and these were the only ones analysed. The data was collected from the CBK publications on banking sector survey and the respective banks’ financial statements and consisted of financial performance (return on equity (ROE)) and CAMEL Model (Capital adequacy, Asset quality, Management efficiency, Earnings and Liquidity). Capital adequacy was proxied by the ratio of Total Capital (TC) to total risk weighted assets (TRWA), asset quality (Non-performing loans to total loans (NPLR)), management efficiency (Non-Interest Expense to Total Assets), earnings quality (return on assets (ROA)) and liquidity (cash deposits with other banks and CBK to total assets). The study used both descriptive and inferential statistics to analyze the data found.

4.2 Correlation Coefficient

As a key assumption of regression model, the study sought to establish whether there was linearity between independent and dependent variables. The average values of the datasets were used for the five year period (2006 – 2010). The results are presented on table 4.1 below.

Table 4.1: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>ROE</th>
<th>C</th>
<th>A</th>
<th>M</th>
<th>E</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average ROE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Capital</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-.250*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.035</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Adequacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-.324*</td>
<td>.398</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.041</td>
<td>.109</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Asset Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-.512**</td>
<td>.108</td>
<td>.158</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.001</td>
<td>.507</td>
<td>.331</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.891**</td>
<td>.155</td>
<td>-.115</td>
<td>-.415</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.341</td>
<td>.480</td>
<td>.408</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Earnings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.362*</td>
<td>-.250</td>
<td>-.276</td>
<td>-.566</td>
<td>.251</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.022</td>
<td>.119</td>
<td>.085</td>
<td>.540</td>
<td>.118</td>
<td></td>
</tr>
</tbody>
</table>

N=40

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Research data
Pearson correlation is used to analyse the correlations between the variables and financial performance. Table 4.1 shows the correlation matrix of the CAMEL indicators to financial performance. From table 4.1, capital adequacy has values of $R=-0.250$ at $p=0.035$. This implies that capital adequacy has a weak relationship with financial performance of commercial banks in Kenya. Asset quality had values of $R=-0.324$ at $p=0.041$ revealing that there also exists a weak relationship between asset quality and financial performance of commercial banks in Kenya. Management efficiency ($R=-0.512$, $p=0.001$) had an average relationship with financial performance. Earnings quality on the other hand, as per table 4.1, had a strong relationship with financial performance with the values being $R=0.891$ at $p=0.045$. Liquidity had a weak relationship with financial performance ($R=0.362$; $p=0.022$).

### 4.3 Goodness of Fit Statistics

**Table 4.2: Regression Model Goodness of Fit**

<table>
<thead>
<tr>
<th>Year</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>.912a</td>
<td>0.832</td>
<td>0.807</td>
<td>4.171811</td>
<td>2.077</td>
</tr>
<tr>
<td>2007</td>
<td>.771a</td>
<td>0.594</td>
<td>0.534</td>
<td>6.601744</td>
<td>2.044</td>
</tr>
<tr>
<td>2008</td>
<td>.949a</td>
<td>0.901</td>
<td>0.887</td>
<td>4.06234</td>
<td>1.756</td>
</tr>
<tr>
<td>2009</td>
<td>.971a</td>
<td>0.943</td>
<td>0.935</td>
<td>3.173106</td>
<td>1.902</td>
</tr>
<tr>
<td>2010</td>
<td>.929a</td>
<td>0.862</td>
<td>0.842</td>
<td>4.148072</td>
<td>1.763</td>
</tr>
</tbody>
</table>

**Source:** Research data

a. Predictors: (Constant), Liquidity, Management Quality, Earnings Quality (ROA), Capital Adequacy, Asset Quality
b. Dependent Variable: ROE

Table 4.2 illustrates that the strength of the relationship between financial performance and independent variables (liquidity, management quality, earnings quality (ROA), capital adequacy and asset quality). The correlations results depicted a linear relationship between the dependent and the independent variables aggregates with $R$ having lowest values of 0.771 in 2007 and highest values of 0.971 in 2009. The determination coefficients, denoted by $R^2$ had higher values of 0.912, 0.949, 0.971 and 0.929 in the years 2006, 2008, 2009 and 2010 respectively.
The study also used Durbin Watson (DW) test to check that the residuals of the models were not auto correlated since independence of the residuals is one of the basic hypotheses of regression analysis. Being that the DW statistics were close to the prescribed value of 2.0 for residual independence, it can be noted that there was no autocorrelation.

4.4 Multicollinearity Test

The study conducted formal detection-tolerance or the variance inflation factor (VIF) for multicollinearity. For tolerance, value less than 0.1 suggest multicollinearity while values of VIF that exceed 10 are often regarded as indicating multicollinearity. The average data for the 5 year period was used.

Table 4.3: Multicollinearity Test

<table>
<thead>
<tr>
<th></th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Adequacy</td>
<td>.768</td>
<td>1.567</td>
</tr>
<tr>
<td>Asset Quality</td>
<td>.752</td>
<td>1.678</td>
</tr>
<tr>
<td>Management Quality</td>
<td>.675</td>
<td>1.559</td>
</tr>
<tr>
<td>Earnings</td>
<td>.987</td>
<td>1.672</td>
</tr>
<tr>
<td>Liquidity</td>
<td>.876</td>
<td>1.457</td>
</tr>
</tbody>
</table>

Source: Research data

Table 4.3 shows that the values of tolerance were greater than 0.1 and those of VIF were less than 10. This shows lack of multicollinearity among independent variables. It, therefore, omitting variables with insignificant regression coefficients, would be in appropriate.
4.5 Regression Analysis - 2006

Table 4.4: Regression Coefficients - 2006

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>(Constant)</td>
<td>8.790</td>
<td>4.438</td>
<td>.980</td>
</tr>
<tr>
<td>Capital Adequacy</td>
<td>-.102</td>
<td>.079</td>
<td>-.099</td>
</tr>
<tr>
<td>Asset Quality</td>
<td>-.282</td>
<td>.068</td>
<td>-.300</td>
</tr>
<tr>
<td>Management Efficiency</td>
<td>-28.709</td>
<td>56.970</td>
<td>-.042</td>
</tr>
<tr>
<td>Earning Quality</td>
<td>4.326</td>
<td>.461</td>
<td>.738</td>
</tr>
<tr>
<td>Liquidity</td>
<td>8.403</td>
<td>15.186</td>
<td>.043</td>
</tr>
</tbody>
</table>

Source: Research data

The established regression equation for year 2006:

\[
\text{ROE} = 8.790 - 0.102\times \text{Capital Adequacy} - 0.282\times \text{Asset Quality} - 28.709\times \text{Management Quality} + 4.326\times \text{Earnings} + 8.403\times \text{Liquidity}.
\]

Table 4.4 reveals the regression coefficients for the year 2006 and it depicts that holding capital adequacy, asset quality, management efficiency, earnings and liquidity constant financial performance will be 8.790. Table 4.4 also shows that a unit increase in capital adequacy will lead to a decrease in financial performance by 0.102, a unit increase in asset quality will lead to a decrease in financial performance by a factor of 0.282 and a unit increase in management quality will further lead to a 28.709 decrease in financial performance. However, a unit increase in earnings quality of the company will cause a 4.326 increase in financial performance. While a unit increase in liquidity will cause an 8.403 increase in financial performance.
4.6 Regression Analysis - 2007

Table 4.5: Regression Coefficients – 2007

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>(Constant)</td>
<td>12.414</td>
<td>3.767</td>
<td>3.295</td>
</tr>
<tr>
<td>Capital Adequacy</td>
<td>-.009</td>
<td>.049</td>
<td>-.028</td>
</tr>
<tr>
<td>Asset Quality</td>
<td>-.261</td>
<td>.093</td>
<td>-.385</td>
</tr>
<tr>
<td>Management Efficiency</td>
<td>20.600</td>
<td>98.166</td>
<td>.029</td>
</tr>
<tr>
<td>Earning Quality</td>
<td>2.764</td>
<td>.581</td>
<td>.719</td>
</tr>
<tr>
<td>Liquidity</td>
<td>.796</td>
<td>22.593</td>
<td>.005</td>
</tr>
</tbody>
</table>

Source: Research data

The established regression equation for year 2007:

\[ \text{ROE} = 12.414 - 0.009 \times \text{Capital Adequacy} - 0.261 \times \text{Asset Quality} + 20.6 \times \text{Management Quality} + 2.764 \times \text{Earnings} + 0.796 \times \text{Liquidity}. \]

Table 4.5 shows the regression coefficients for the year 2007 and it reveals that holding independent variables constant (capital adequacy, asset quality, management efficiency, earnings and liquidity), financial performance will be 12.414. Table 4.5 also depicts that a unit increase in capital adequacy will cause a 0.009 decrease in financial performance and a unit increase in asset quality will lead to a 0.261 decrease in financial performance. A unit increase in management quality will lead to an increase in financial performance by a factor of 20.6 and a unit increase in earnings quality would cause a 2.764 increase in financial performance. Likewise a unit increase in liquidity would cause a 0.796 decrease in financial performance.
4.7 Regression Analysis - 2008

Table 4.6: Regression Coefficients – 2008

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>(Constant)</td>
<td>13.214</td>
<td>4.502</td>
<td>2.935</td>
</tr>
<tr>
<td>Capital Adequacy</td>
<td>-21.850</td>
<td>5.955</td>
<td>-2.27</td>
</tr>
<tr>
<td>Asset Quality</td>
<td>-0.119</td>
<td>0.611</td>
<td>-1.963</td>
</tr>
<tr>
<td>Management Efficiency</td>
<td>-88.597</td>
<td>53.635</td>
<td>-1.15</td>
</tr>
<tr>
<td>Earning Quality</td>
<td>5.473</td>
<td>0.388</td>
<td>14.094</td>
</tr>
<tr>
<td>Liquidity</td>
<td>-0.684</td>
<td>4.281</td>
<td>-0.160</td>
</tr>
</tbody>
</table>

Source: Research data

The established regression equation for year 2008:

\[
\text{ROE} = 13.214 - 21.85\times \text{Capital Adequacy} - 0.119\times \text{Asset Quality} - 88.597\times \text{Management Quality} \\
+ 5.473\times \text{Earnings} - 0.684\times \text{Liquidity}.
\]

Table 4.6 depicts the regression coefficients for the year 2008 and it illustrates that financial performance will be 13.214 if the independent variables of capital adequacy, asset quality, management efficiency, earnings and liquidity are all held constant. Table 4.6 also reveals that a unit increase in capital adequacy would cause a 21.85 decrease in financial performance, asset quality causes a 0.119 decrease in financial performance and a unit increase in management quality will lead to a decrease in financial performance by 88.597. An increase in earnings quality would lead to a 5.473 increase in financial performance and a negative increase of 0.684 in financial performance is obtained with unitary increase in liquidity.
4.8 Regression Analysis - 2009

Table 4.7: Regression Coefficients - 2009

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>(Constant)</td>
<td>6.129</td>
<td>1.799</td>
<td>3.407</td>
</tr>
<tr>
<td>Capital Adequacy</td>
<td>-0.149</td>
<td>0.041</td>
<td>-0.163</td>
</tr>
<tr>
<td>Asset Quality</td>
<td>-0.054</td>
<td>0.073</td>
<td>-0.038</td>
</tr>
<tr>
<td>Management Efficiency</td>
<td>-46.856</td>
<td>36.700</td>
<td>-0.061</td>
</tr>
<tr>
<td>Earning Quality</td>
<td>6.316</td>
<td>0.360</td>
<td>0.941</td>
</tr>
<tr>
<td>Liquidity</td>
<td>4.983</td>
<td>18.167</td>
<td>0.012</td>
</tr>
</tbody>
</table>

Source: Research data

The established regression equation for year 2009:

\[
\text{ROE} = 6.129 - 0.149 \times \text{Capital Adequacy} - 0.054 \times \text{Asset Quality} - 46.856 \times \text{Management Quality} + 6.316 \times \text{Earnings} + 4.983 \times \text{Liquidity}.
\]

Table 4.7 depicts the regression coefficients for the year 2009 and it also shows that holding capital adequacy, asset quality, management efficiency, earnings and liquidity constant financial performance will be 6.129. Table 4.7 depicts that a unit increase in capital adequacy will cause a 0.149 decrease in financial performance and a unit increase in asset quality will lead to a 0.054 decrease in financial performance. A unit increase in management quality will lead to a 46.856 decrease in financial performance and a unit increase in earnings quality will lead to a 6.316 increase in financial performance. Likewise a unit change in liquidity would cause a 4.983 positive change in financial performance.
## 4.9 Regression Analysis - 2010

### Table 4.8: Regression Coefficients - 2010

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>(Constant)</td>
<td>8.416</td>
<td>2.759</td>
<td>3.050</td>
</tr>
<tr>
<td>Capital Adequacy</td>
<td>-16.913</td>
<td>5.616</td>
<td>-.214</td>
</tr>
<tr>
<td>Asset Quality</td>
<td>-.079</td>
<td>.103</td>
<td>-.060</td>
</tr>
<tr>
<td>Management Efficiency</td>
<td>-97.887</td>
<td>57.032</td>
<td>-.123</td>
</tr>
<tr>
<td>Earning Quality</td>
<td>5.737</td>
<td>.477</td>
<td>.894</td>
</tr>
<tr>
<td>Liquidity</td>
<td>18.387</td>
<td>32.493</td>
<td>.040</td>
</tr>
</tbody>
</table>

**Source: Research data**

The established regression equation:

\[
\text{ROE} = 8.416 - 16.913\times\text{Capital Adequacy} - 0.079\times\text{Asset Quality} - 97.887\times\text{Management Quality} + 5.737\times\text{Earnings Quality} + 18.387\times\text{Liquidity}. \\
P<0.001
\]

Table 4.8 depicts the regression coefficients for the year 2010 and it also reveals that holding capital adequacy, asset quality, management efficiency, earnings and liquidity constant financial performance will be 8.416. The coefficient for capital adequacy is -16.913 so for every unit increase in capital adequacy, a 16.913 decrease in financial performance is predicted. Holding all other variables constant, the coefficient of asset quality is predicted at 0.079 implying that a unit change in asset quality leads to a 0.079 decrease in financial performance. Likewise, a unit change in management quality will result to a 97.887 decrease in financial performance; a unit change in earnings quality will result to a 5.737 increase in financial performance. The study also found that a unit change in liquidity would lead to an increase in financial performance by 18.387.
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents discussions of the key findings presented in chapter four, conclusions drawn based on such findings and recommendations there-to. This chapter is, thus, structured into summary, conclusions, recommendations, limitations of the study and suggestions for further research.

5.2 Summary of Findings

5.2.1 Impact of Credit Risk Management Determinants on the Financial Performance

The study found that there is a significant impact between the CAMEL components on the financial performance of commercial banks as depicted on Table 4.2 which shows the regression model of goodness fit for the respective years under study. From Table 4.2, the value for $R^2$ is 0.832 in the year 2006, which means that CAMEL components explains 83.2 percent variations in the financial performance of banks. 2007 has the lowest value of $R^2$ at 0.594 which means that CAMEL components explain 59.4 percent variations of the financial performance of banks. Similarly years 2008, 2009 and 2010 have R2 values of 0.901, 0.943 and 0.862 implying that CAMEL components explain 90.1 percent, 94.3 percent and 86.2 percent variations of financial performance of banks respectively. The CAMEL rating system can thus be used as a credit risk management indicator in the determination of financial performance of commercial banks.

From table 4.4 to 4.8 shows the regression coefficients for the years 2006 to 2010 and they established that the intercept value was positive ranging from the lowest value of 6.129 in 2009 to 13.214 in 2008. Table 4.4 depicts that a unit increase in capital adequacy will lead to a decrease in financial performance by 0.102, a unit increase in asset quality will lead to a decrease in financial performance by a factor of 0.282 and a unit increase in management efficiency will further lead to a 28.709 decrease in financial performance. Table 4.4 also implies that a unit increase in earnings quality of the company will cause a 4.326 increase in financial performance whereas a unit increase in liquidity will cause an 8.403 increase in financial performance.
Table 4.5 depicts that a unit increase in capital adequacy will cause a 0.009 decrease in financial performance and a unit increase in asset quality will lead to a 0.261 decrease in financial performance. Table 4.5 also reveals that a unit increase in management efficiency will lead to an increase in financial performance by a factor of 20.6 and a unit increase in earnings quality would cause a 2.764 increase in financial performance. Likewise a unit increase in liquidity would cause a 0.796 increase in financial performance.

Table 4.6 shows that a unit increase in capital adequacy would cause a 21.85 decrease in financial performance, asset quality causes a 0.119 decrease in financial performance and a unit increase in management quality will lead to a decrease in financial performance by 88.597. An increase in earnings quality would lead to a 5.473 increase in financial performance and a negative increase of 0.684 in financial performance is obtained with unitary increase in liquidity.

Table 4.7 reveals that a unit increase in capital adequacy will cause a 0.149 decrease in financial performance and a unit increase in asset quality will lead to a 0.054 decrease in financial performance. A unit increase in management efficiency will lead to a 46.856 decrease in financial performance and a unit increase in earnings quality will lead to a 6.316 increase in financial performance. Likewise a unit change in liquidity would cause a 4.983 positive change in financial performance.

Table 4.8 depicts that a unit increase in capital adequacy will lead to a decrease in financial performance by 16.913, a unit increase in asset quality will lead to a decrease in financial performance by a factor of 0.079 and a unit increase in management efficiency will further lead to a 97.887 decrease in financial performance. Table 4.8 also implies that a unit increase in earnings quality of the company will cause a 5.737 increase in financial performance. While a unit increase in liquidity will cause an 18.387 increase in financial performance.
5.2.2 Relationship between Credit Risk Management Determinants and Financial Performance

Table 4.1 shows the correlation matrix of the CAMEL indicators to financial performance. From table 4.1, capital adequacy has values of $R=-0.250$ at $p=0.035$. This implies that capital adequacy has a weak relationship with financial performance of commercial banks in Kenya. Asset quality had values of $R=-0.324$ at $p=0.041$ revealing that there also exists a weak relationship between asset quality and financial performance of commercial banks in Kenya. Management efficiency ($R=-0.512$, $p=0.001$) had an average relationship with financial performance.

Earnings quality on the other hand, as per table 4.1, had a strong relationship with financial performance with the values being $R=0.891$ at $p=0.045$. Liquidity on the other hand had a weak relationship with financial performance ($R=0.362$; $p=0.022$).

5.3 Conclusions

The study established that credit risk management by use of CAMEL indicators has a strong impact on the financial performance of commercial banks in Kenya. This study therefore concludes that CAMEL model can be used as a proxy for credit risk management. The CAMEL indicators in this study had strong impact on the financial performance with the CAMEL components being able to explain variations of up to 94.3 percent in 2009 on financial performance of commercial banks.

The study also established the relationship between credit risk management proxied by CAMEL indicators and financial performance of commercial banks in Kenya. The study concludes that capital adequacy, asset quality, management efficiency and liquidity have weak relationship with financial performance of banks in Kenya. Earnings have a strong relationship with financial performance. This is because earnings as proxied by return on assets determine the ability of a bank to increase capital (through retained earnings), absorb loan losses, support the future growth of assets, and provide a return to investors. Thus, as each shilling invested in assets increases its revenues generation, the financial performance of banks increase.
5.4 Recommendations

The study recommends that commercial banks should also try to keep their operational cost low as this negates their profit margin thus leading to low financial performance. This is depicted by the strong effect of earnings on financial performance. Commercial banks should also check their credit policy and practices. By this they would reduce loss on non-performing loans which raises their expenses and consequent reduction in financial performance.

5.5 Limitations of the Study

The number of commercial banks operational in Kenya is low as compared to those of developed countries. A more comprehensive study can be undertaken with a bigger population which will enhance the findings of the study.

5.6 Suggestions for Further Studies

The study suggests that a further study can be done on the impact of credit risk management by use of CAMEL indicators on the financial performance of other financial institutions like the micro finance institutions (MFIs) and SACCOs. This is to ascertain if the CAMEL model can be applied as a proxy for credit risk management on the other financial institutions in the Kenyan market.

Further studies can also be undertaken on risk management practices followed by commercial banks in Kenya whereby the study will aim to investigate on the awareness about risk management practices within the banking sector. The study can comprise of data collected through both, primary as well as secondary sources with the purpose of using primary source data being to check the extent to which different risk management practices have been followed by the commercial banks through the use of a questionnaires whereas, the objective to use secondary data will be to link the risk weighted Capital Adequacy Ratio (CAR) to the different financial indicators of the commercial banks that are used to measure the banks' financial soundness.
REFERENCES


APPENDICES

Appendix I: List of Commercial Banks

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. Chase Bank (K) Ltd.
8. Citibank N.A Kenya
9. Commercial Bank of Africa Ltd.
10. Consolidated Bank of Kenya Ltd.
12. Credit Bank Ltd.
14. Diamond Trust Bank (K) Ltd.
15. Dubai Bank Kenya Ltd.
16. Ecobank Kenya Ltd
17. Equatorial Commercial Bank Ltd.
18. Equity Bank Ltd.
19. Family Bank Ltd
20. Fidelity Commercial Bank Ltd
21. Fina Bank Ltd
22. First community Bank Limited
23. Giro Commercial Bank Ltd.
24. Guardian Bank Ltd
25. Gulf African Bank Limited
26. Habib Bank A.G Zurich
27. Habib Bank Ltd.
28. I & M Bank Ltd
29. Imperial Bank Ltd.
30. Jamii Bora Bank Ltd.
31. Kenya Commercial Bank Ltd
32. K-Rep Bank Ltd
33. Middle East Bank (K) Ltd
34. National Bank of Kenya Ltd
35. NIC Bank Ltd
36. Oriental Commercial Bank Ltd
37. Paramount Universal Bank Ltd
38. Prime Bank Ltd
39. Standard Chartered Bank (K) Ltd
40. Trans-National Bank Ltd
41. Victoria Commercial Bank Ltd
42. UBA Kenya Bank Ltd.