

**EFFECT OF CREDIT RISK MANAGEMENT ON FINANCIAL  
PERFORMANCE OF DEPOSIT TAKING SAVINGS AND CREDIT  
COOPERATIVE SOCIETIES IN KENYA**

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## **DECLARATION**

I, the undersigned, declare that this project is my original work and that it has not been presented in any other university or institution for academic purposes.

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

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

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## **DEDICATION**

I dedicate this project to my husband Chris for your moral support and encouragement throughout the entire project. To my boys Billy and Arnold, thank you for being patient and understanding while I was away working on the project. To my mom Maria, although you are no longer in this world, thank you for always being there for me. To my dad, thank you for your love and supporting me all the way since the beginning of my studies.

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God bless you all.

## ABSTRACT

Even though credit risk remains the largest risk facing most organizations, the practice of applying modern portfolio theory to credit risk has lagged (Margrabe, 2007). The study's objective was to determine the effect of credit risk management on financial performance of deposit taking Savings and Credit Co-operative Societies in Kenya. The researcher adopted a cross sectional survey research design in this study. The population for this study was therefore, all heads of credit risk management function in the 215 total number of deposit taking SACCOs that are under supervision by SASRA. The researcher utilized probability sampling using simple random sampling where every member of the population has an equal chance of being selected. The study's sample size (n) was thirty, which according to Mugenda & Mugenda (2003)  $n=30$  is sufficient for such a study. Primary and secondary data was used for the study. Data analysis method was based on Pearson correlation analysis and a multiple regression model whereby the dependent variable was the financial performance of the SACCOs which was measured using Return on Equity (ROE) whereas the independent variables were the CAMEL components of Capital adequacy, Asset quality, Management efficiency, Earnings and Liquidity. Research findings indicated that the model had accounted for 62.3% of the variance in Return on Equity (ROE) of Kenyan SACCOs over the study's period, that is, 2010 - 2012. This finding indicates that 37.7% of Kenyan SACCOs financial performance was accounted for by other factors (variables) not tested in the study's model. Such factors could be related to the external business environment that the SACCOs operate in, especially the socio-economic factors that highly impact on the SACCOs customers (members) ability to save and borrow. Findings also indicated that there was sufficient evidence that the model is useful in explaining the financial performance (ROE) of Kenyan SACCOs as it was significant at 95% confidence level ( $p=0.002$ ). Moreover, there was positive relationship between financial performance (ROE) and all the tested independent variables at 0.179, 0.063, 0.240, 0.003 and 0.160 for Capital Adequacy, Asset Quality, Management Efficiency and Earnings Liquidity respectively. In line with the findings and conclusions of the study the following were recommended that on the effect of credit risk management on the financial performance of SACCOs in Kenya, management should carefully consider the Capital Adequacy, Asset Quality, Management Efficiency, Earnings and Liquidity as they all positively correlate with the Return on Equity of the SACCOs. Moreover, management of SACCOs in Kenya should ensure that adoption and implementation of sound credit risk management practices, that there is appropriate credit risk policy in place, that there is appropriate risk-return tradeoff policy, that there exists favorable internal business environment and that appropriate credit risk limits are set as they impact on the financial performance of the SACCOs. The government and other stakeholders should ensure that there is favorable external business environment for SACCOs in Kenya. Finally, with regard to the obstacles facing credit risk management by Kenyan SACCOs, management should overcome inadequate knowledge among the implementing staff/managers by providing the necessary knowledge through training and promotion of further studies in Risk Management among their staff.

# TABLE OF CONTENTS

<b>DECLARATION.....</b>	<b>ii</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>iii</b>
<b>DEDICATION.....</b>	<b>iv</b>
<b>ABSTRACT.....</b>	<b>v</b>
<b>TABLE OF CONTENTS .....</b>	<b>vi</b>
<b>ABBREVIATIONS.....</b>	<b>ix</b>
<b>CHAPTER ONE: INTRODUCTION.....</b>	<b>1</b>
1.1 Background .....	1
1.1.1 Credit Risk Management .....	2
1.1.2 Financial Performance of SACCOs.....	3
1.1.3 Effect of Credit Risk Management on Financial Performance of SACCOs .....	5
1.1.4 SACCOs under Regulation of SASRA .....	7
1.2 Problem Statement .....	8
1.3 Research Objective.....	9
1.4 Value of Study.....	10
<b>CHAPTER TWO: LITERATURE REVIEW.....</b>	<b>11</b>
2.1 Introduction .....	11
2.2 Theoretical Review of Credit Risk Management.....	11
2.2.1 Modern Portfolio Theory.....	12
2.2.2 The Capital Asset Pricing Model Theory .....	13

2.2.3 Arbitrage Pricing Theory .....	15
2.3 Determinants of Financial Performance.....	16
2.4 Empirical Review of Credit Risk Management .....	18
2.5 Summary .....	20
<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>23</b>
3.1 Introduction .....	23
3.2 Research Design.....	23
3.3 Population.....	23
3.4 Sample Design.....	24
3.5 Data Collection.....	24
3.6 Data Analysis .....	25
<b>CHAPTER FOUR: DATA ANALYSIS AND FINDINGS.....</b>	<b>27</b>
4.1 Introduction .....	27
4.2 Descriptive Analysis .....	27
4.3 Regression Analysis .....	32
4.4 Summary of Findings and Interpretation .....	36
<b>CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>38</b>
5.1 Summary and Conclusions.....	38
5.2 Recommendations .....	39
5.3 Limitations of the study.....	40
5.4 Suggestions for Further Research .....	41

<b>REFERENCES.....</b>	<b>42</b>
<b>APPENDIX I: QUESTIONNAIRE.....</b>	<b>47</b>
<b>APPENDIX II: REGRESSION DATA.....</b>	<b>51</b>



## **ABBREVIATIONS**

ASCA	-	Accumulating Savings and Credit Associations
CAK	-	Co-operative Alliance of Kenya Limited
CAPM	-	Capital Assets Pricing Model
CAMEL	-	Capital Adequacy, Asset Quality, Management Efficiency, Earnings, Liquidity
CBK	-	Central Bank of Kenya
CIC	-	Co-operative Insurance Company Ltd
DT	-	Deposit Taking
FSD	-	Financial Sector Deepening
GDP	-	Gross Domestic Product
GoK	-	Government of Kenya
ICT	-	Information Communication and Technology
KUSCCO	-	Kenya Union of Savings and Credit Co-operatives Ltd
KES	-	Kenya Shillings
MFI	-	Micro Finance Institution
MoCDM	-	Ministry of Co-operative Development and Marketing
MPT	-	Modern Portfolio Theory

NACOs	-	National Co-operative Organizations
NDT	-	Non Deposit Taking
SACCO	-	Savings and Credit Co-operatives
SASRA	-	SACCO Societies Regulatory Authority
WOCCU	-	World Council of Credit Unions

# **CHAPTER ONE: INTRODUCTION**

## **1.1 Background**

The world council of credit unions (WOCCU) defines a credit union as a non-profit making cooperative institution. In real practice however legal provisions relating to these institutions vary by jurisdiction. For example in Canada credit unions are referred to those that are regulated as non-profit making institutions and view their mandate as earning a reasonable profit to enhance services to members to ensure stability just the same view as was shared in Kenya till the year 1997 whereby these institutions were liberalized by sessional paper No 6., to be run as commercially viable institutions that saw their financial accounts being prepared as the ones of the other commercial entities within the financial sector (Makori, Munene & Muturi, 2013).

The SACCO sub-sector is part of the larger cooperative movement in Kenya. There are two broad categories of co-operatives: Financial co-operatives (Savings & Credit Co-operative Societies- SACCOs) and Non-financial co-operatives (includes farm produce and other commodities marketing co-operatives, housing, transport and investment co-operatives). In the recent past Savings and Credit Co-operatives (SACCOs) have witnessed faster growth than other co-operatives. The establishment of SACCO Societies Act 2008 places the licensing, supervision and regulation of deposit taking under the armpit of the SACCO Societies Regulatory Authority (SASRA). Through this new legal framework, prudential regulations have been introduced to guide SACCO's growth and development (Barrales, 2012).

### **1.1.1 Credit Risk Management**

Credit risk is defined as the potential that a financial institutional borrower or counterparty will fail to meet its obligations in accordance with agreed terms. According to Chijoriga (2007) 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 institutional failure.

Risk management is a process of thinking systematically about all possible risks, problems or disasters before they happen and setting up procedures that will avoid the risk, or minimize its impact, or cope with its impact. It is basically setting up a process where you can identify the risk and set up a strategy to control or deal with it (Frosdick, 2007). Credit risk management therefore can be described setting up a process where you can identify the potential that a financial institutional borrower or counterparty will fail to meet its obligations in accordance with agreed terms, and set up a strategy to control or deal with it.

Credit risk management has become a major concern in many financial institutions including SACCOs and markets globally. Modern early warning models for financial institutions gained popularity when Sinkey (1975) utilized discriminant analysis for identifying and distinguishing problem banks from sound financial institutions and Altman (1977) examined the savings and loan industry. To anticipate institutional financial deterioration, procedures have been developed to identify financial institutions

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).

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 financial institutions (Gasbarro et al., 2002). In this study deposit taking SACCO credit risk measurement was undertaken using CAMEL ratings whereby: Capital Adequacy will be measured using Capital to Assets Ratio ( $\text{Capital/Total performing assets}$ ); Asset Quality was measured using Reserve Ratio ( $\text{Loan loss reserve/Value of loans outstanding}$ ); Management Efficiency was measured using Number of Active Borrowers per Management Staff ( $\text{No. of active borrowers/No. of management personnel, excluding loan officers}$ ); Earnings were measured using Return on Average total assets ( $\text{Financial income/average total assets}$ ); and Liquidity was measured using Current Ratio ( $\text{6 months projected cash inflow/6 months projected cash outflow}$ ).

### **1.1.2 Financial Performance of SACCOs**

Operating and financial ratios have long been used as tools for determining the condition and the performance of a firm (Ogilo, 2012). A savings and credit society also known as a credit union is a cooperative financial institution that is owned and controlled by its members and operated for the purposes of promoting thrift, providing credit at low interest rates and providing other financial services to its members. World over, systems in these organizations vary from slightly to significantly in terms of total system assets,

average institutions' asset price and regulatory control. This ranges from volunteer operations with a few members' organizations to the institutions with several billion asset value. For instance, according to report by the World Council of Credit Unions, 2008, the average credit unions in the United States of America had USD 93million worth of assets in 2007 as against an average commercial bank average of USD 1.5 billion (Makori, Munene & Muturi, 2013).

Parast & Fini (2010) indicate that in the pursuit of better operational performance and profitability, organizations are looking for strategies to improve their operational performance and boost their profitability. As competition intensifies due to changes in the industry structure and the emergence of new technologies, organizations are determined to reduce their operational costs while enhance their profitability. Similarly, financial performance of SACCOs can also be viewed in light of their overall profitability and return on investment. According to Herrmann (2008) when analyzing a firm's profitability, we are concerned with evaluating a firm's earnings with respect to a given level of sales / assets / owners' investment or share value. In doing so, the common profitability measures include: Common-size income statements; Return on total assets (ROA); Return on equity (ROE); Earnings per share (EPS); Price/Earning (P/E) ratio. Under the common-size income statement, we express every item on the income statement as a % of sales, which is gross margin; operating margin; and profit margin, whereby: Gross margin - % of each sales dollar remaining after the firm has paid the direct cost of goods sold (COGS); Operating margin - % of each sales dollar remaining after the firm has paid all expenses (excluding financing expenses and taxes); Profit

margin - % of each sales dollar remaining after the firm has paid all expenses (including interest and taxes).

Return of total assets (ROA) takes into consideration the return on investment (ROI) and indicates the effectiveness in generating profits with its available assets, thus the higher the better. Return on equity (ROE) indicates the return on owners' equity, hence the higher the better. Earnings per share (EPS) indicate the dollar amount earned on behalf of each common share, thus the higher the better. Price/earnings (P/E) ratio is the amount investors are willing to pay for each dollar of earnings, that is indicates investors' confidence (Herrmann, 2008). In this study, financial performance of deposit taking SACCOs will be measured using Return on equity (ROE).

### **1.1.3 Effect of Credit Risk Management on Financial Performance of SACCOs**

Since capital allocation methods are used to estimate risk margins in the form of return on equity (ROE) measurements and targets, they can be viewed as equivalent alternatives to credit risk load methods. However, capital allocation views risk from a top-down perspective, while credit risk theory tends to view risk from a bottom-up perspective. At a macro level, financial theory views capital as the equity capital supplied by investors, while credit risk theory views it as protection against insolvency. While reconciliation between individual pricing risk loads and total portfolio risk is not an inherent feature of credit risk load methods, some form of reconciliation is intrinsic to capital allocation (Kulik, 2002).

Since the 1980s, companies have successfully applied modern portfolio theory to market risk. Many companies are now using value at risk models to manage their interest rate and market risk exposures. Unfortunately, however, even though credit risk remains the largest risk facing most companies, the practice of applying modern portfolio theory to credit risk has lagged (Margrabe, 2007).

Companies recognize how credit concentrations can adversely impact financial performance. As a result, a number of institutions are actively pursuing quantitative approaches to credit risk measurement within the savings and credit industry. SACCOs are also making significant progress toward developing tools that measure credit risk in a portfolio context. They are also using credit derivatives to transfer risk efficiently while preserving customer relationships. Portfolio quality ratios and productivity indicators have been adapted (Kairu 2009). The combination of these developments has vastly accelerated progress in managing credit risk in a portfolio context.

Traditionally, organizations have taken an asset-by-asset approach to credit risk management. The foundation of the asset-by-asset approach is a sound credit review and internal credit risk rating system. This system enables management to identify changes in individual credits, or portfolio trends in a timely manner. Based on the changes identified, credit identification, credit review, and credit risk rating system management can make necessary modifications to portfolio strategies or increase the supervision of credits in a timely manner (Kairu 2009).

Companies increasingly attempt to address the inability of the asset-by-asset approach to measure unexpected losses sufficiently by pursuing a portfolio approach. One weakness



with the asset-by-asset approach is that it has difficulty identifying and measuring concentration. Concentration risk refers to additional portfolio risk resulting from increased exposure to credit extension, or to a group of correlated creditors (Richardson, 2002). This study intended to add on to the practice of applying modern portfolio theory to credit risk and financial performance by viewing deposit taking SACCOs as asset portfolio's which should theoretically match high returns with high risk and vice versa.

#### **1.1.4 SACCOs under Regulation of SASRA**

The SACCO sub sector comprises both deposit taking and non-deposit taking SACCOs. Deposit taking SACCOs are licensed and regulated by SASRA while non-deposit taking SACCOs are supervised by the Commissioner for Co-operatives. SASRA licenses SACCOs that have been duly registered under the Cooperative Societies Act CAP 490 (SASRA, 2012).

As at 31st December 2012, the total number of deposit taking SACCOs was 215 of which 124 had been licensed. The remaining 91 SACCOs were at different levels of compliance with the provisions of the law. All deposit taking SACCOs were in operation prior to establishment of SASRA in 2009 and have applied to be considered for licensing as undertaking deposit taking SACCOs business. They are spread across the various counties in the country and are categorized as follows: Government based SACCOs (87); Farmers based SACCOs (74); Private institutions based SACCOs (24); and, Community based SACCOs (30), (SASRA, 2012).

## **1.2 Research Problem**

The Modern Portfolio Theory (MPT) is an improvement upon traditional investment models, is an important advance in the mathematical modeling of finance. The theory encourages asset diversification to hedge against market risk as well as risk that is unique to a specific organization (Omisore, Munirat & Nwifo, 2012). Essential to the portfolio theory are its quantification of the relationship between risk and return and the assumption that investors must be compensated for assuming risk. Portfolio theory departs from traditional security analysis in shifting emphasis from analyzing the characteristics of individual investments to determining the statistical relationships among the individual securities that comprise the overall portfolio (Edwin & Martins 1997).

Hoang (2004) indicated that the Post-Modern Portfolio Theory provided managers some leeway and flexibility in their decision making in asset classes without resorting to alternative investments. Companies recognize how credit concentrations can adversely impact financial performance. As a result, a number of institutions, including SACCOs, are actively pursuing quantitative approaches to credit risk measurement and are also using credit derivatives to transfer risk efficiently while preserving customer relationships. Consequently, portfolio quality ratios and productivity indicators have been adapted (Kairu 2009). To gain greater insight into credit risk, companies increasingly look to complement the asset-by-asset approach with a quantitative portfolio review using a credit model (Mason and Roger, 1998). Willis, (1999) explored the use of

Modern Portfolio Theory applied to a credit union's portfolio of assets in a study dubbed Portfolio Optimization for Multiple Group Credit Unions.

In Kenya, Langat (2012) undertook a study on factors influencing performance of Savings and Credit Co-operative Societies in Bomet County. The study was guided by modern portfolio theory which guides institutions and savings investors on how to construct their investment portfolios and how to mitigate risks through portfolio diversifications and thus increase returns to investors. Wambua (2011) looked into the effects of corporate governance on Savings and Credit Co-operative Societies financial performance in Kenya and concluded that financial monitoring by the board affected the performance of the SACCO.

Unfortunately, however, even though credit risk remains the largest risk facing most organizations, the practice of applying modern portfolio theory to credit risk has lagged (Margrabe, 2007). This study therefore aimed at filling this research gap by answering the following research question: what is the effect of credit risk management on financial performance of deposit taking Savings and Credit Co-operative Societies in Kenya?

### **1.3 Research Objective**

The study's objective was to determine the effect of credit risk management on financial performance of deposit taking Savings and Credit Co-operative Societies in Kenya.

## **1.4 Value of Study**

The study assists the management of SACCOs to appreciate credit risk management and its impact on financial performance. Management will also have opportunity to review credit risk management practices as well as their impact on financial performance. The study also assists government agencies in developing regulatory and legislative framework that will assist SACCOs in developing and adopting sound credit risk management practices in Kenya. In addition, the study is of importance to the academic community since it broadened the knowledge on credit risk management practices and the practice of applying modern portfolio theory to credit risk and financial performance of SACCOs in Kenya. This will provide a basis for future research.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter reviews theoretical literature on credit risk management including but not limited to: modern portfolio theory, the capital asset pricing model theory and arbitrage pricing theory. It also undertakes empirical review of credit risk management.

### **2.2 Theoretical Review of Credit Risk Management**

Credit risk management is a structured approach to managing uncertainties through risk assessment, developing strategies to manage it, and mitigation of risk using managerial resources. The strategies include transferring to another party, avoiding the risk, reducing the negative effects of the risk, and accepting some or all of the consequences of a particular risk. The process of risk management is a two-step process. The first is to identify the source of the risk, which is to identify the leading variables causing the risk. The second is to devise methods to quantify the risk using mathematical models, in order to understand the risk profile of the instrument. Once a general framework of risk identification and management is developed, the techniques can be applied to different situations, products, instruments and institutions. It is crucial for SACCOs to have comprehensive risk management framework as there is a growing realization that sustainable growth critically depends on the development of a comprehensive risk management framework (Greuning & Iqbal, 2007).

### **2.2.1 Modern Portfolio Theory**

In investment, modern portfolio theory management is a critical theory. It tries to look for the most efficient combinations of assets to maximize portfolio expected returns for given level of risk. Alternatively, minimize risk for a given level of expected return. Portfolio theory is presented in a mathematical formulation and clearly gives the idea of diversifying the assets investment combination with a purpose of selecting those assets that will collectively lower the risk than any single asset. In the theory, it clearly identifies this combination is made possible when the individual assets return and movement is opposite direction. An investor therefore needs to study the value movement of the intended asset investment and find out which assets have an opposite movement. However, risk diversification lowers the level of risk even if the assets' returns are not negatively or positively correlated (Omisore et al., 2012).

Risk is defined as the standard deviation of return, i.e., to what extent is the actual return deviating from the expected return. Therefore, portfolio being a combination of assets, the model becomes a weighted combination of these assets' returns. When different assets are combined and whose returns are not perfectly positively correlated, then portfolio theory leads to reduction of the total variance of such asset combination returns over a given period of investment. The return is calculated by getting the change in value of the assets plus any distribution received during a given period over which the assets are held and expressed as a fraction of the initial outlay. From this theory, it is evident that the level of risk in a portfolio depends on risk of each asset, proportion of resources allocated on each asset and the interrelationship between the assets making up the

portfolio. The major assumptions in portfolio theory in managing risk are that the investors are rational and the market is efficient and perfect (Chijoriga, 2007).

### **2.2.2 The Capital Asset Pricing Model Theory**

The development of CAPM has been a milestone in financial decision making especially in assets pricing and makes it more possible in quantification and pricing. The CAPM model is an equilibrium pricing model, which views the equilibrium rates of return on all risky assets as a function of their covariance with the market portfolio. It explains how the required rate of return of an asset depends on the risk that cannot be eliminated through diversification. Extended by Harry Markowitz's portfolio theory, the notions of systematic and specific risks are decomposed. Systematic risk is the risk of holding the market portfolio. When the market moves, the individual asset is more or less affected to the extent that any asset participates in the general market moves, that asset entails systematic risk. On the other hand, specific is that risk which is unique to an individual asset. It represents that component of an asset's return which is uncorrelated with the general market movement (Glen, 2005).

The specific risk is that risk to an asset which may arise due to the internal factors such as change of operating systems, strategy taken, and change of management or business reengineering process. These specific changes within the organization may lead to positive or negative impacts which may lower or increase the overall risk in the institution. The unsystematic risks can therefore be diversified and it will always depend on the institution's approach. Different organizations have different specific risks

depending on how they approach them i.e., the asset, ideas, policies, personnel, etc., whose total output may differ (French, 2003).

Un-diversifiable or systematic risk is that which cannot be eliminated through diversification. They are mostly the variation of assets values due to unpredictable macro factor movements in the financial environment caused. Systematic risks are a must adopt by investors as they are necessary. It doesn't matter whether or not an institution has employed the best human resource, the most efficient system or not, hence factoring them in decision making becomes of essence. For example, an institutions' performance is influenced by economic trends. In CAPM, the risk associated with an asset is measured in relationship to the risk of the market as a whole (French, 2003).

In view of this case, with assumptions that investors are homogenous and risk averse, they have to be motivated to invest, they need a rate of return that will compensate them for taking on the risk at the end of period of holding given asset(s). Since it is impossible to eliminate risk in totality, CAPM helps investors to calculate the possibilities of various expected returns on investments and make more informed decisions. This model has major assumptions, that there exists a risk free asset such that investors may save or lend unlimited amounts at the risk free rate, efficient market with fixed quantities, perfectly divisible assets, no transaction cost and taxes (Glen, 2005).



### **2.2.3 Arbitrage Pricing Theory**

The first empirical study of APT was done by Brennan (1971) in which he concluded that two risk factors must represent return as opposed to single factor of CAPM. However, the first published work on APT was made by Gehr (1975) in which he carried out similar version of factor analysis approach. There were no further studies until Ross and Roll (1980) carried out their own empirical investigation of APT. The APT is based on the assumptions and insights developed in ICAPM3 and Efficient Market Hypothesis (EMH) and like CAPM it is a linear model though of multiple betas rather than single beta as in CAPM (Chen et al. 1986). Ross' (1976) criticism of earlier studies is that they are mainly tests of hypothesis that stock-index is mean-variance efficient, hence empirical tests of asset pricing models would hold only if true market portfolio (which is unattainable) can be calculated. However, some studies such as that of Shanken (1987) and Kandel and Stambaugh (1987) show less rigorous measures under which CAPM can be tested. Unlike Mean-variance portfolio where firm-specific risks can be diversified away the APT states that there are systematic risks in the economy that subject all the available stocks to same degree. The APT suggests that prices of risky assets abide by the law of no arbitrage.

The need to develop a model with fewer assumptions unlike CAPM arose and this is how (Arbitrage Pricing Model) APT became. The major assumptions in APT are that the capital markets are perfectly competitive, preference of more wealth to less wealth with certainty by investors and the stochastic process generating asset returns can be expressed as a linear function of a set of the number of factors or indexes. APT brought a clear

presentation on how to estimate risk. It uses the risky asset's expected return and the risk premium of a number of macroeconomic factors. The basis of APT is the idea that the price of a security is driven by a number of factors which can be classified into two categories: macro and company specific factors. The linear relationship is therefore necessary condition for equilibrium in a market where market players maximize certain types of utility. A linear relation between the expected returns and the betas is critical in identification of the stochastic discount factor (SDF). Like the CAPM, APT asserts a linear relation between assets' expected returns and their covariance with other random variables. Apt relates the price of security to the fundamental factors driving it and do not rely on measuring the performance of the market (French, 2003).

### **2.3 Determinants of Financial Performance**

Analysis of the determinants of financial performance is essential for all the stakeholders, but especially for investors. The value of shareholders, defined as market value of a company is dependent on several factors: the current profitability of the company, its risks, its economic growth essential for future company earnings. All of these are major factors influencing the market value of a company (Chijoriga, 2007).

Other studies (Brief & Lawson, 1992; and Peasnell, 19963) argue the opposite, that financial indicators based on accounting information are sufficient in order to determine the value for shareholders. A company's financial performance is directly influenced by its market position. Profitability can be decomposed into its main components: net turnover and net profit margin.

Ross et al. (1996) argues that both can influence the profitability of a company one time. If a high turnover means better use of assets owned by the company and therefore better efficiency, a higher profit margin means that the entity has substantial market power. Risk and growth are two other important factors influencing a firm's financial performance. Since market value is conditioned by the company's results, the level of risk exposure can cause changes in its market value. Economic growth is another component that helps to achieve a better position on the financial markets, because market value also takes into consideration expected future profits.

The size of the company can have a positive effect on financial performance because larger firms can use this advantage to get some financial benefits in business relations. Large companies have easier access to the most important factors of production, including human resources. Also, large organizations often get cheaper funding (Chijoriga, 2007).

In the classical theory, capital structure is irrelevant for measuring company performance, considering that in a perfectly competitive world performance is influenced only by real factors. Recent studies contradict this theory, arguing that capital structure play an important role in determining corporate performance (Chijoriga, 2007).

Barton & Gordon (1988) suggest that entities with higher profit rates will remain low leveraged because of their ability to finance their own sources. On the other hand, a high degree of leverage increases the risk of bankruptcy of companies. Total assets is considered to positively influence the company's financial performance, assets greater meaning less risk.

A large volume of sales (turnover) is not necessarily correlated with improved performance. Studies that have examined the relationship between turnover and corporate performance were inconclusive. The main objective of the company has evolved over time. The need for short term profit is replaced by the need for long-term growth of the company (sustainable growth). Therefore, a sustainable higher growth rate would have a positive impact on performance. For the companies listed at the stock exchange, its ability to distribute dividends is a proof of stability. However, until now there was no proof of a link between this factor and profitability, since profits can be used for purposes other than to distribute dividends (Chijoriga, 2007).

## **2.4 Empirical Review of Credit Risk Management**

Credit risk management is a common vocabulary among the financial institutions, regulators and whole financial market players. Commercial banks are not in any way exception as they play a major role. Many studies both locally and internationally have been done on how credit risk can be managed.

Drzik (1995) reported that a Risk Management Survey showed that large banks and credit unions in the US had made a substantial progress in their development and implementation of risk measures. The measures are used not only for risk control purposes, but also for performance measurements and pricing.

Mwisho (2001) on lending conditions and procedures indicated that credit risk management starts with good selection of products, and this can only be attained only if all staff in an organization is aware of the risk in developing these financial products. These measures however, focus on risk and return trade off. That is, measuring the risk

inherent in each activity or product and charge it accordingly for capital required to support it. This however, does not resolve the issue of recovering loan able amounts. Repayments pose a thorn in flesh due to the information asymmetry on the borrowers.

Al-Tamimi (2002) found that the UAE commercial banks and credit unions were mainly facing credit risk. The study also found that inspection by branch managers and financial statement analysis are the main methods used in risk identification. The main techniques used in risk management are establishing standards, credit score, credit worthiness analysis, risk rating and collateral.

Mudiri (2003) sought to determine credit management techniques applied by commercial banks in Kenya and reported that effective risk management requires a reporting and review structure to ensure that risks are effectively identified and assessed and that appropriate controls and responses are in place.

Maina (2003) conducted a survey on risk based capital standards and the riskiness of bank portfolio in Kenya and indicated that there is a clear indication there must be a cost on credit portfolio management and if not well controlled at inception, then a crisis must be anticipated. He recommended that training staff and getting the certified in the credit risk management could be healthy in management of credit portfolio.

Cuevas & Fisher (2006) undertook a study on risk factors affecting growth of Cooperative Financial Institutions (CFIs) in developed economies and identified a set of key issues on which, they argue, an agreement is necessary, because its absence has constrained the development of the Cooperative Financial Institutions (CFIs) and the

realization of their full potential to serve low-income clients. These issues include the strengths and weaknesses of CFIs, the benefits of networks, and the role of legal frameworks to encourage this potential; whether legal framework should be uniform for all CFI or whether it should be tiered; and the effects of different supervisory arrangements on the performance of CFIs.

Al-Tamimi & Al-Mazrooei (2007) conducted a study on banks' risk management of UAE national and foreign banks. Their findings reveal that the three most important types of risks encountered by UAE commercial banks are foreign exchange risk, followed by credit risk, then operating risk.

Viiru (2008) looked at credit management practices at Kenya Power and Lighting Company Ltd and found out that the institution was most affected by credit risk due to liquidity exposures.

Ondieki (2011) looked into the effects of external financing on the performance of SACCOs in Kisii District and observed that major challenges inherent in the cooperative movement in Kenya included: poor governance, limited transparency in management of cooperatives, weak capital base and infrastructure weakness including ICT.

## **2.5 Summary of Literature Review**

Credit risk management is a structured approach to managing uncertainties through risk assessment, developing strategies to manage it, and mitigation of risk using managerial resources. The strategies include transferring to another party, avoiding the risk, reducing the negative effects of the risk, and accepting some or all of the consequences of a

particular risk. Financial risk in SACCOs is possibility that the outcome of an action or event could bring up adverse impacts. Such outcomes could either result in a direct loss of earnings / capital or may result in imposition of constraints on the SACCOs ability to meet its business objectives.

Qualitative and quantitative techniques can be used in assessing the borrowers although one major challenge of using qualitative models is their subjective nature. However, SACCOs can be viewed as asset portfolios with appropriate risk-return tradeoff, while borrowers attributes assessed through qualitative models can be assigned numbers with the sum of the values compared to a threshold. This technique minimizes processing costs, reduces subjective judgments and possible biases. The rating systems will be important if it indicates changes in expected level of credit loan loss.

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). According to SASRA (2012) during the year, the Authority adopted a standardized methodology for evaluating and assessing safety and soundness of SACCO's business through the CAEL rating framework. The evaluation tool targets all areas that expose significant risk for the SACCO's from a "going-concern" perspective, particularly: inadequate capital funds to face any potential or unexpected losses arising from problem loans or investments in risky capital; deterioration of the loan portfolio as the main income-generating asset; inability of the SACCO to generate adequate revenues to cover the expenses; and,

continued un-availability of liquid funds to finance portfolio growth and to respond to depositor's and creditor's needs.

However, literature review reveals that even though credit risk remains the largest risk facing most organizations, the practice of applying modern portfolio theory to credit risk has lagged (Margrabe, 2007). Mwisho (2001) concluded that in practice credit risk measures focus on risk and return trade off. That is, measuring the risk inherent in each activity or product and charge it accordingly for capital required to support it. This however, does not resolve the issue of loan losses which significantly pose challenges in SACCO management.



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

In this chapter the research methodology used in the study is described. The study design and the population are described. In addition, the sampling design, the instrument used to collect the data, and data analysis are also described.

### **3.2 Research Design**

The researcher adopted a cross sectional survey research design in this study. This design was appropriate because of the investigations of organizations at the same point in time and it describes and undertakes comparative analysis of an event, situation, and a group of people, community or a population over a particular period of time (Chandran, 2004). In this case, data was gathered relating to credit risk management practices and financial performance SACCOs in Kenya over a three year period beginning 1<sup>st</sup> January 2010 and ending 31<sup>st</sup> December 2012.

### **3.3 Population**

Mugenda & Mugenda (2003) define population as an entire group of individuals, events or objects having a common observable characteristic. The population for this study was therefore, all heads of credit risk management function in the 215 total number of deposit taking SACCOs that are under supervision by SASRA.

### **3.4 Sample Design**

A sample is a way of selecting a portion of the population which adequately represents the entire population (Chandran, 2004). The researcher utilized probability sampling using simple random sampling where every member of the population has an equal chance of being selected. The study's sample size (n) was thirty, which according to Mugenda & Mugenda (2003) n=30 is sufficient for such a study.

### **3.5 Data Collection**

Primary and secondary data was used for the study. Primary data collection technique involved the use of a semi-structured questionnaire containing both open and closed ended questions. The questionnaire was divided into two sections, A and B. Section A focused on the profile (demographics) of the responding SACCO while section B contained questions aimed at determining the effects of credit risk management on financial performance of Savings and Credit Co-operative Societies in Kenya. The respondents were heads of credit risk management function in the SACCOs. The questionnaires were dropped and picked later from the respondents.

The questionnaire was the preferred data collection instrument. According to Robson (2002) large amounts of data at relatively low costs in a short period may be collected using questionnaires alongside a big allowance of anonymity which encourages frankness from the respondents especially in sensitive issues like governance. Secondary data was gathered from SASRA's annual reports which contain relevant information relating to SACCOs credit risk management and financial performance indicators in Kenya.

### 3.6 Data Analysis

Data analysis method was based on Pearson correlation analysis and a multiple regression model which will take the form of:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \epsilon$$

Where: Y = Return on Equity (ROE)

X1 = Capital adequacy

X2 = Asset quality

X3 = Management efficiency

X4 = Earnings

X5 = Liquidity

$\beta_0$  = Constant

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  = Regression coefficients or change included in Y by each X value

$\epsilon$  = error term

The dependent variable was the financial performance of the SACCOs which was measured using Return on Equity (ROE) whereas the independent variables were the CAMEL components of Capital adequacy, Asset quality, Management efficiency, Earnings and Liquidity. Specifically, the variables were operationalized as illustrated in Table 3.1.

Adjusted R Square value and Analysis of Variance (ANOVA) was used to test the significance of the model. In addition, data was also analyzed using three major descriptive statistics for each single variable namely: distribution; central tendency; and dispersion. Frequency distribution tables were used to present distribution; Mean was used to estimate central tendency; while standard deviation was used as a more accurate and detailed estimate of dispersion. The researcher then presented the findings using appropriate pie-charts, graphs and tables.

**Table 3.1: Variable Operationalization**

<b>Variable</b>	<b>Measurement</b>	<b>Formula</b>	<b>Purpose</b>
Financial Performance	Return on Equity	Net Income/Share Capital	Indicates the amount of net income returned as a percentage of shareholders equity.
Capital Adequacy	Capital to Assets Ratio	Capital/Total performing assets	Shows overall capital sufficiency.
Asset Quality	Reserve Ratio	Loan loss reserve/Value of loans outstanding	Indicates adequacy of reserves in relation to portfolio.
Management Efficiency	Number of Active Borrowers per Management Staff	No. of active borrowers/No. of management personnel (excluding loan officers)	Indicates performance of manager and efficiency of methodology.
Earnings	Return on Average total assets	Financial income/average total assets	Parallels the Return on Performing Assets, yet includes non performing assets.
Liquidity	Current Ratio	Current Assets/Current Liabilities	Shows ability of institution to meet projected near term obligations.

## CHAPTER FOUR: DATA ANALYSIS RESULTS AND DISCUSSION

### 4.1 Introduction

This chapter outlines the analysis and findings of collected data relating to the effect of credit risk management on financial performance of deposit taking Savings and Credit Co-operative Societies in Kenya over a three year period beginning 1st January 2010 and ending 31st December 2012.

### 4.2 Descriptive Analysis

This section outlines the descriptive analysis of the study's findings. Figure 4.1 illustrates the number of years the deposit taking SACCO has been in operation. According to the figure, 62.5% had been in operation for over 20 years, 25% for between 11 and 15 years and 12.5% for between 16 and 20 years. This finding indicates that majority of the SACCOs under study had an adequate history of over 20 years.

**Figure 4.1: Number of years the deposit taking SACCO has been in operation**

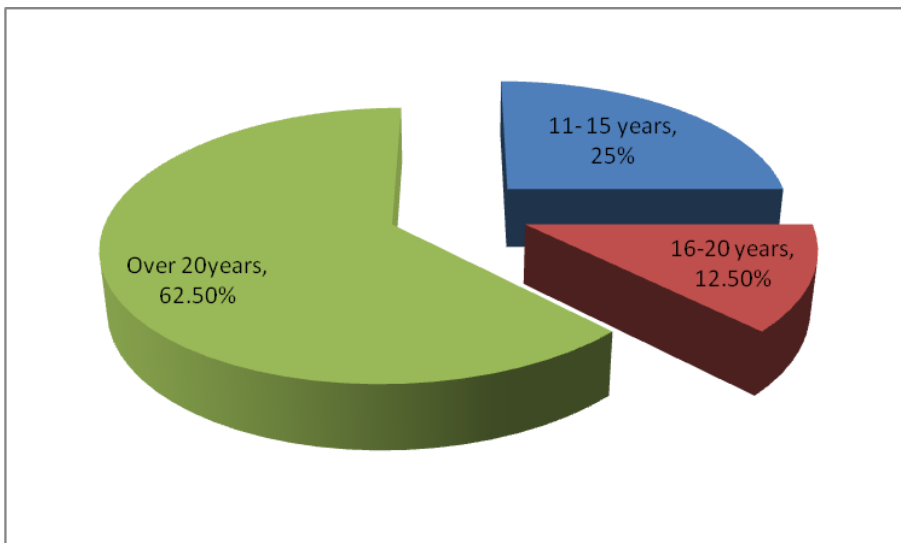


Figure 4.2 illustrates the number of staff in the deposit taking SACCO. According to the figure, 37.5% had between 1 to 20 staff, 25% had between 21 and 40 staff, and another 25% had 100 and above number of staff. 12.5% had between 81 and 100 staff. This finding indicates that majority of the SACCOs under study had between 1 and 20 staff making them small sized organizations.

**Figure 4.2: Number of staff in the deposit taking SACCO**

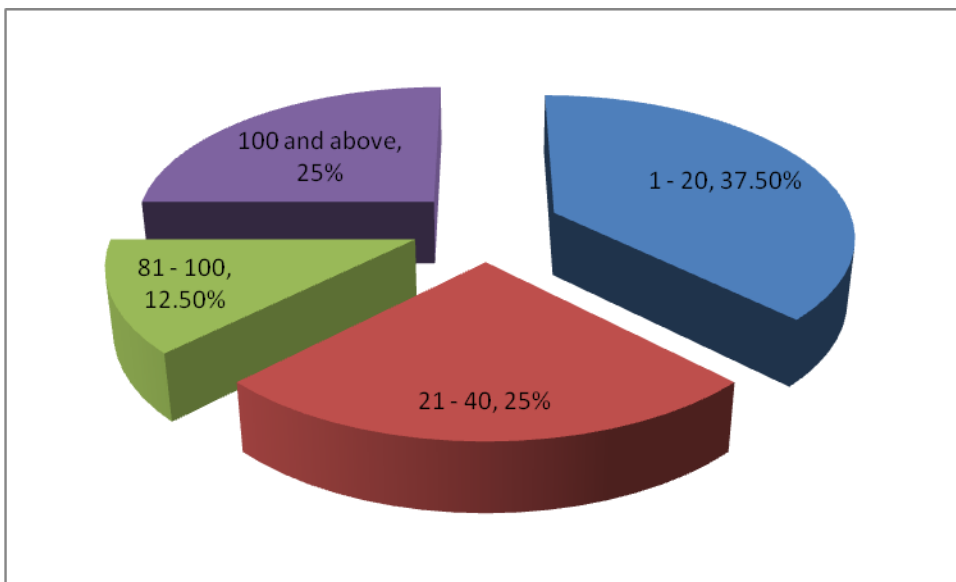


Figure 4.3 illustrates the number of members in the deposit taking SACCO. According to the figure, 87.5% had over 500 members while 12.5% had between 1 and 100 members. This finding indicates that majority of the SACCOs under study had over 500 members making it necessary for management to have adequate and effective risk management strategies in place in order to ensure that they profit from services offered to their members.

**Figure 4.3: Number of members in the deposit taking SACCO**

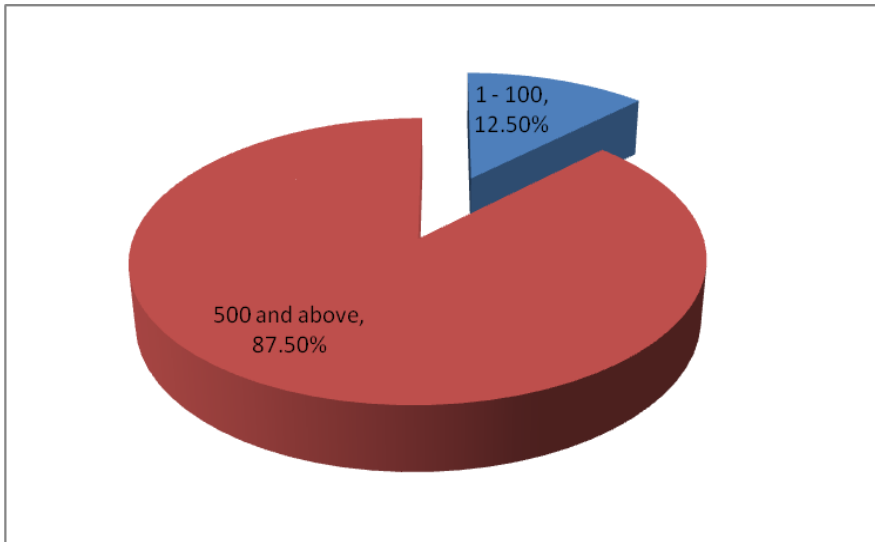


Figure 4.4 illustrates the presence of credit risk department in the deposit taking SACCO. According to the figure, 87.5% had a credit risk department while 12.5% did not have. This finding indicates that majority of the SACCOs under study had a credit risk department hence it can be inferred that they were practicing risk management.

**Figure 4.4: Presence of credit risk department in the deposit taking SACCO**

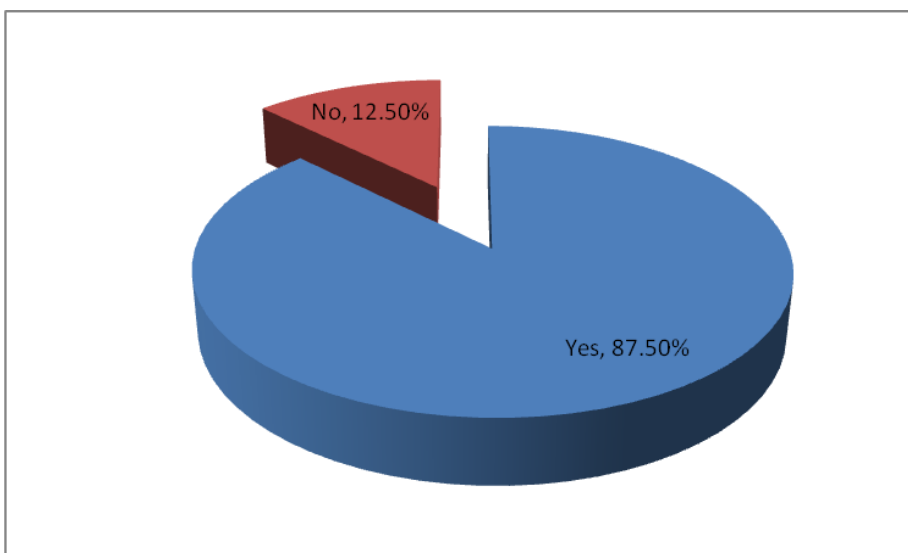


Table 4.1 illustrates the impact of various factors on the financial performance of the SACCO. To measure the impact of the factors, the researcher coded the respondents considerations where “Strongly agree” was given the value five (1.0), “Agree” was given the value four (2.0), “Indifferent” was given the value three (3.0), “Disagree” was given the value two (4.0) and “Strongly disagree” was given the value one (5.0). According to the table, the respondents strongly agreed that adoption and implementation of sound credit risk management practices, favorable external business environment, appropriate credit risk policy, and setting of credit risk limits impact on the financial performance of the SACCO as their means drew closer to one (1.0) at 1.25, 1.38, 1.0, and 1.29 respectively. The respondents agreed that appropriate risk-return tradeoff policy and favorable internal business environment had an impact on the financial performance of the SACCO as their means drew closer to two (2.0) at 1.88 and 1.63 respectively. This finding indicates that appropriate credit risk policy was regarded as having the greatest impact on the financial performance of SACCOs in Kenya.

**Table 4.1: Impact of factors on the financial performance of the SACCO**

	Mean	Std. Deviation
Adoption and implementation of sound credit risk management practices	1.2500	0.4629
Appropriate risk-return tradeoff policy	1.8750	0.6409
Favorable internal business environment	1.6250	0.5175
Favorable external business environment	1.3750	0.7440
Appropriate credit risk policy	1.0000	0.0000
Setting of credit risk limits	1.2857	0.7559



Figure 4.5 illustrates the frequency the SACCO assess the effect and efficiency of existing credit risk management system in various departments. According to the figure, 71.4% of the respondents indicated that the SACCO assesses the effect and efficiency of existing credit risk management system in their departments every month. 28.6% indicated that similar assessment happens in their departments every six months. This finding indicates that majority of the SACCOs assess the effect and efficiency of existing credit risk management system in various departments every month.

**Figure 4.5: Frequency the SACCO assess the effect and efficiency of existing credit risk management system in various departments**

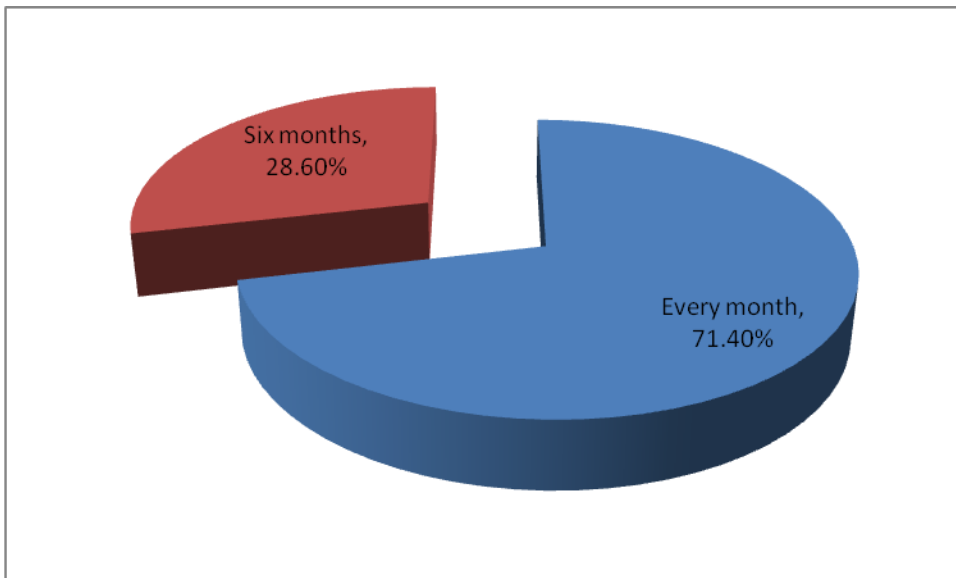
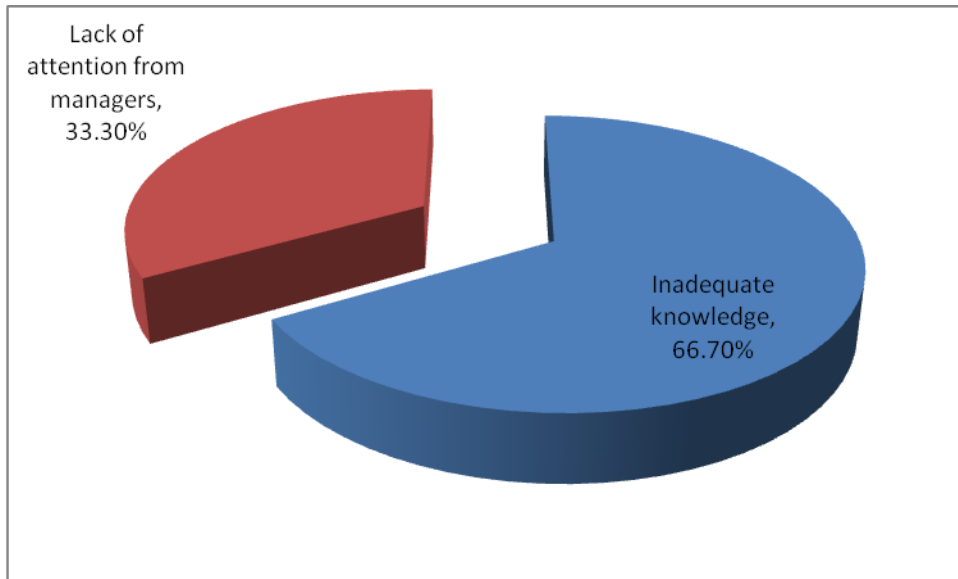


Figure 4.6 illustrates the obstacles affecting achievement of organization credit risk management goals and objectives. According to the figure, 66.7% of the respondents indicated that inadequate knowledge was an obstacle while 33.3% indicated that lack of attention from managers was an obstacle affecting achievement of organization credit risk management goals and objectives. This finding indicates that majority of the

SACCOs credit risk management is obstructed by inadequate knowledge among the implementing staff/managers.

**Figure 4.6: Obstacles affecting achievement of organization credit risk management goals and objectives**



### 4.3 Regression Analysis

Data analysis was based on Pearson correlation analysis and a multiple regression model, whereby the dependent variable was the financial performance of the SACCOs which was measured using Return on Equity (ROE) whereas the independent variables were the CAMEL components of Capital adequacy, Asset quality, Management efficiency, Earnings and Liquidity. Table 4.2 illustrates the average regression data for the study's period, that is, 2010-2012.

**Table 4.2: Average Regression Data (2010-2012)**

	Financial Performance	Capital Adequacy	Asset Quality	Management Efficiency	Earnings	Liquidity
SACCO	ROE	CAR	RR	ME	ROATA	CR
AFYA	0.543216732	0.011279044	0	0.001065	0.101733097	0.482191944
AIRPORTS	0.653469413	0.027640577	0.003011112	0.015511	0.102301304	0.137364947
ASILI COOPERATIVE	0.412943271	0.067595254	0.015630056	0.03433	0.117598878	0.927660754
BANDARI	2.179964339	0.05317811	0.030002976	0.003969	0.152654686	0.896693374
BARAKA	0.159119668	0.222627858	0.01342701	0.033387	0.111207919	9.083159966
BARINGO FARMERS (SKYLINE)	0.466383961	0.088738263	0.006666664	0.016565	0.095832385	8.027162276
BIASHARA	0.399165305	0.109121954	0.015559245	0.0172	0.170587734	0.659031267
BINGWA	0.610682952	0.062403231	0.002233143	0.016376	0.139834585	5.906268183
BORABU FARMERS	0.558534321	0.056428125	0.053907466	0.086301	0.148075415	6.786670376
BORESHA SACCO	0.231742155	0.126120553	0.010358775	0.020632	0.182165247	0.486771272
BUNGOMA TEACHERS	0.477901492	0.022562757	0.003477335	0.016574	0.103835819	0.366863471
BURETI TEA GROWERS	0.390615603	0.10432366	0.050973534	0.008629	0.123506306	3.376515975
BUSIA TESO TEACHERS	0.008179545	0.055254486	0.018613312	0.019489	0.12789613	2.19725894
CENTENARY	0.122969649	0.093006039	0.001655029	0.007911	0.107133929	0.358041087
CHAI	0.544966975	0.023561119	0.009183982	0.007904	0.131501515	0.692425491
CHEMELIL	1.246380701	0.073776729	0.008564161	0.03059	0.138038483	4.015572815
CHEPSOL SACCO	0.31749797	0.060114676	0.015248191	0.010046	0.116431453	5.96992306
CHUNA	0.370104696	0.01073429	0.008432585	0.008734	0.098934969	0.176656151
COMOCO	0.375768806	0.058371562	0.038142269	0.006255	0.157879195	1.483626288
COSMOPOLITAN	0.140061526	0.07438589	0.017974726	0.008795	0.195610522	3.274185546
COUNTY	0.399995767	0.108629819	0.01199253	0.043476	0.167040758	0.504246048
DAIMA	0.177209401	0.061138584	0.027328809	0.004201	0.105221105	1.600431645
DHABITI	0.67822342	0.083973512	0.00939943	0.008889	0.132057469	0.375832992
DIMKES	0.325822202	0.090851035	0.000290463	0.006839	0.086547368	1.302820281
EGERTON UNIVERSITY	2.420338419	0.02361155	0.005734349	0.001781	0.107692581	0.388110173
EMBU TEACHERS	1.342972459	0.037435395	0.024031541	0.012954	0.154511224	0.774978995
FARIJI	0.010738908	0.105683638	0.001249337	0.013407	0.180794793	1.526159154
FORTUNE	0.236177853	0.120183267	0.18116983	0.024924	0.107523467	0.9937183
FUNDILIMA	0.108847143	0.025018518	0.019621016	0.010672	0.126523456	0.465038204
GITHUNGURI DAIRY	0.347825756	0.08558651	0.069268192	0.004194	0.316992256	0.485944167

Source: SASRA (2012)

In this study, the “simultaneous” method (which SPSS calls the Enter method) was used whereby the researcher specified the set of predictor variables that made up the model. The success of this model in predicting the criterion variable was then assessed. Table 4.3 indicates that all the requested variables were entered.

**Table 4.3: Variables Entered/Removed**

Model	Variables Entered	Variables Removed	Method
1	Capital Adequacy, Asset Quality, Management Efficiency, Earnings, Liquidity	.	Enter

a. All requested variables entered.

b. Dependent Variable: Return on Equity

Table 4.4 illustrates the model summary used in this study and indicates the adjusted R Square value which gives the most useful measure of the success of the model, hence from the table it is evident that the model had accounted for 62.3% of the variance in Return on Equity (ROE) of Kenyan SACCOs over the study’s period, that is, 2010 - 2012.

**Table 4.4: Model Summary**

	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
Model				R Square Change	F Change	df1	df2	Sig. F Change	
	.898	.806	.623	2.950E-02	.806	1.383	3	1	.002

a. Predictors: (Constant), Capital Adequacy, Asset Quality, Management Efficiency, Earnings, Liquidity

Table 4.5 illustrates the Analysis of Variance (ANOVA) which assesses the overall significance of the model. According to the table  $p < 0.05$ , (0.002), indicating that there was sufficient evidence that the model is useful in explaining the financial performance (ROE) of Kenyan SACCOs.

**Table 4.5: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	3.610E-03	3	1.203E-03	1.383	.002
	Residual	8.702E-04	1	8.702E-04		
	Total	4.480E-03	4			

a. Predictors: (Constant), Capital Adequacy, Asset Quality, Management Efficiency, Earnings Liquidity

b. Dependent Variable: Return on Equity

Table 4.6 illustrates the Pearson's correlation between the predictor variables. According to the table, there was positive relationship between financial performance (ROE) and all the tested independent variables at 0.179, 0.063, 0.240, 0.003 and 0.160 for Capital Adequacy, Asset Quality, Management Efficiency and Earnings Liquidity respectively.

**Table 4.6: Pearson’s Correlation**

	Financial Performance	Capital Adequacy	Asset Quality	Management Efficiency	Earnings	Liquidity
Financial Performance	1.000	.179	.063	.240	.003	.160
Capital Adequacy	.179	1.000	.582	.324	.048	.369
Asset Quality	.063	.582	1.000	.072	-.028	.078
Management Efficiency	.240	.324	.072	1.000	.359	.709
Earnings	.003	.048	-.028	.359	1.000	.553
Liquidity	.160	.369	.078	.709	.553	1.000

#### **4.4 Summary of Findings and Interpretation**

Research findings indicated that the model had accounted for 62.3% of the variance in Return on Equity (ROE) of Kenyan SACCOs over the study’s period, that is, 2010 - 2012. This finding indicates that 37.7% of Kenyan SACCOs financial performance was accounted for by other factors (variables) not tested in the study’s model. Such factors could be related to the external business environment that the SACCOs operate in, especially the socio-economic factors that highly impact on the SACCOs customers (members) ability to save and borrow.

Findings also indicated that there was sufficient evidence that the model is useful in explaining the financial performance (ROE) of Kenyan SACCOs as it was significant at 95% confidence level ( $p=0.002$ ). Moreover, there was positive relationship between

financial performance (ROE) and all the tested independent variables at 0.179, 0.063, 0.240, 0.003 and 0.160 for Capital Adequacy, Asset Quality, Management Efficiency and Earnings Liquidity respectively.

From reviewed literature, the return is calculated by getting the change in value of the assets plus any distribution received during a given period over which the assets are held and expressed as a fraction of the initial outlay. From this theory, it is evident that the level of risk in a portfolio depends on risk of each asset, proportion of resources allocated on each asset and the interrelationship between the assets making up the portfolio. The major assumptions in portfolio theory in managing risk are that the investors are rational and the market is efficient and perfect (Chijoriga, 2007). Consequently, research findings do support this theory as there is a positive relationship between financial performance (return) and credit risk management as operationalized by the study's independent variables. Therefore, increased credit risk management results in increased financial performance of the Kenyan SACCOs.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Summary and Conclusions**

The study's research findings indicated that majority of the SACCOs under study had an adequate history of over 20 years and that majority of the SACCOs under study had between 1 and 20 staff making them small sized organizations. Findings further indicated that majority of the SACCOs under study had over 500 members making it necessary for management to have adequate and effective risk management strategies in place in order to ensure that they profit from services offered to their members. In addition, findings indicated that majority of the SACCOs under study had a credit risk department and that majority of the respondents were of the opinion that credit risk management impacts on financial performance of the SACCO between 41 and 80 percent.

With regard to the importance of the study's independent variables with regards to credit risk management in the SACCO, findings indicated that Liquidity as measured by Current Ratio was very important with regards to credit risk management in the SACCOs. This finding was further supported by a positive correlation of 0.16 between the SACCOs financial performance (ROE) and Liquidity.

Capital Adequacy as measured by Capital to Assets Ratio, Asset Quality as measured by Reserve Ratio, Management Efficiency as measured by Number of Active Borrowers per Management Staff, and Earnings as measured by Return on Average total assets were considered as important with regards to credit risk management in the SACCOs. This



finding was further supported by positive correlation of .179, 0.063, 0.240 and 0.003 between the SACCOs financial performance (ROE) and Capital Adequacy, Asset Quality, Management Efficiency and Earnings respectively.

Findings further indicated that respondents strongly agreed that adoption and implementation of sound credit risk management practices, favorable external business environment, appropriate credit risk policy, and setting of credit risk limits impact on the financial performance of the SACCOs. The respondents agreed that appropriate risk-return tradeoff policy and favorable internal business environment had an impact on the financial performance of the SACCOs. This finding indicates that appropriate credit risk policy was regarded as having the greatest impact on the financial performance of SACCOs in Kenya.

Moreover, findings indicated that majority of the SACCOs assess the effect and efficiency of existing credit risk management system in various departments every month. Finding also indicated that majority of the SACCOs credit risk management is obstructed by inadequate knowledge among the implementing staff/managers.

## **5.2 Recommendations**

In line with the findings and conclusions of the study the following were recommended that on the effect of credit risk management on the financial performance of SACCOs in Kenya, management should carefully consider the Capital Adequacy, Asset Quality, Management Efficiency, Earnings and Liquidity as they all positively correlate with the Return on Equity of the SACCOs. Management should also bear in mind that credit risk management accounts for 62.3% of the SACCOs financial performance and hence should

put in place adequate and effective credit risk management strategies.

Moreover, management of SACCOs in Kenya should ensure that adoption and implementation of sound credit risk management practices, that there is appropriate credit risk policy in place, that there is appropriate risk-return tradeoff policy, that there exists favorable internal business environment and that appropriate credit risk limits are set as they impact on the financial performance of the SACCOs. The government and other stakeholders should ensure that there is favorable external business environment for SACCOs in Kenya. Finally, with regard to the obstacles facing credit risk management by Kenyan SACCOs, management should overcome inadequate knowledge among the implementing staff/managers by providing the necessary knowledge through training and promotion of further studies in Risk Management among their staff.

### **5.3 Limitations of the study**

The major limitations of this study related to time constraints, limited financial resources and geographic distance between the deposit taking SACCOs in Kenya. Time and geographical constraints were overcome by selecting a relatively small sample size as compared to the entire population size that did not compromise the validity and reliability of the research findings, while the limited financial resources available were spent on research activities that could not be undertaken solely by the researcher.

In addition, the researcher did not overlook the major limitation of cross-sectional survey research studies which is that their design makes it difficult to explain phenomena that occur over time, hence the study's findings are only applicable to the study's time frame, that is, 2010 - 2012.

## **5.4 Suggestions for Further Research**

The researcher suggests that further study should be undertaken in order to investigate the determinants of credit risk in SACCOS in Kenya. Findings from such a study will provide more insight on the relationship between the said determinants, which could be useful in informing risk management strategies and policy in Kenyan SACCOs.

Further research should also consider utilizing both qualitative and quantitative techniques that can be used in assessing the borrowers. Consequently, in line with reviewed literature SACCOs can be viewed as asset portfolios with appropriate risk-return tradeoff, while borrowers attributes assessed through qualitative models can be assigned numbers with the sum of the values compared to a threshold.

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## APPENDIX I: QUESTIONNAIRE

Please tick (✓) your answer and give your comments (where necessary):

### PART I: Demographic survey

1. Name of deposit taking SACCO (optional)

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2. What number of years has the deposit taking SACCO been in operation?

- Below 5yrs       6 – 10 years       11– 15 years  
 16-20 years       Over 20years

3. What is the number of staff in the deposit taking SACCO?

- 1 – 20       21 – 40       41 – 60  
 61 – 80       81 – 100       100 and above

4. What is the number of members in the deposit taking SACCO?

- 1 – 100       101 – 200       201 – 300  
 301 – 400       401 – 500       500 and above

5. Do you have a credit risk department in the deposit taking SACCO?

- Yes       No

**PART II: Effects of credit risk management on financial performance of deposit taking Savings and Credit Co-operative Societies in Kenya**

6. Please rate the extent to which credit risk management impacts on financial performance of your SACCO?

- 0% - 20%     21% - 40%     41% - 60%     61% - 80%     81% - 100%

7. Please rate the importance of the variables with regards to credit risk management in your SACCO: (*Rating Scale: 1- Very Important; 2 – Important; 3 – Indifferent; 4 – Unimportant; 5 – Very unimportant*)

	1	2	3	4	5
Capital Adequacy as measured by Capital to Assets Ratio (Capital/Total performing assets)					
Asset Quality as measured by Reserve Ratio (Loan loss reserve/Value of loans outstanding)					
Management Efficiency as measured by Number of Active Borrowers per Management Staff (No. of active borrowers/No. of management personnel, excluding loan officers)					
Earnings as measured by Return on Average total assets (Financial income/average total assets)					
Liquidity as measured by Current Ratio (6 months projected cash inflow/6 months projected cash outflow)					

8. Please rate the following statements with regards to their impact on the financial performance of your SACCO: (*Rating Scale: 1- Strongly agree; 2 – Agree; 3 – Indifferent; 4 – Disagree; 5 – Strongly disagree*)

	1	2	3	4	5
Adoption and implementation of sound credit risk management practices					
Appropriate risk-return tradeoff policy					
Favorable internal business environment					
Favorable external business environment					
Appropriate credit risk policy					
Setting of credit risk limits					

9. How often does the company assess the effect and efficiency of existing credit risk management system in your respective department?

- Every month
- Two months
- Six months
- One year
- After completion of project

10. What obstacles affect achievement of organization credit risk management goals and objectives most?

- Inadequate knowledge
- Rejection from employees
- Lack of attention from managers

Please comment on the challenges faced in credit risk management and their impact on the financial performance of your SACCO.

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*Thank you.*

## APPENDIX II: REGRESSION DATA

	<b>2010</b>	Financial Performance	Capital Adequacy	Asset Quality	Management Efficiency	Earnings	Liquidity
		ROE	CAR	RR	ME	ROATA	CR
1	AFYA	1.032837571	0.004842852	0	0.001065	0.099821215	0.382413935
2	AIRPORTS	0.106851831	0.029658436	0	0.015511	0.075100053	0.249382903
3	ASILI COOPERATIVE	0.354969309	0.091402378	0	0.03433	0.101970671	1.489244556
4	BANDARI	3.076529525	0.006914508	0.012826257	0.003969	0.16296898	0.307838971
5	BARAKA	0.154097786	0.309198342	0.011237389	0.033387	0.092678604	15.98376404
6	BARINGO FARMERS (SKYLINE)	0.942574904	0.027873463	0.019999992	0.016565	0.14594729	18.57917532
7	BIASHARA	0.527659114	0.09348303	0	0.0172	0.112570897	0.771627226
8	BINGWA	1.127950456	0.055114588	0	0.016376	0.156644103	9.198632023
9	BORABU FARMERS	1.295575066	0.041474305	0	0.086301	0.07912542	12.24258505
10	BORESHA SACCO	0.342276378	0.096793845	0	0.020632	0.108402817	0.667647422
11	BUNGOMA TEACHERS	1.257368859	0.013051014	0.003627045	0.016574	0.088028601	0.199479346
12	BURETI TEA GROWERS	0.227800759	0.200797819	0.017358399	0.008629	0.046814343	0.177401614
13	BUSIA TESO TEACHERS	-0.904214291	0.036579704	0.003052565	0.019489	0.095482749	0.28886695
14	CENTENARY	0.302710114	0.128982308	0	0.007911	0.097441525	0.474723187
15	CHAI	1.109303909	0.026978061	0.007725927	0.007904	0.106479752	1.013257895
16	CHEMELIL	2.482944345	0.014449205	0.019999808	0.03059	0.102514992	6.556328867
17	CHEPSOL SACCO	0.132247337	0.084039093	0.035144358	0.010046	0.065213429	6.489653228
18	CHUNA	0.475619979	0.005562816	0	0.008734	0.076333072	0.203193026
19	COMOCO	0.32342504	0.012601212	0.004273543	0.006255	0.089999824	0.481121361
20	COSMOPOLITAN	0.249335975	0.010753865	0	0.008795	0.115904486	0.723746164

	<b>2010</b>	Financial Performance	Capital Adequacy	Asset Quality	Management Efficiency	Earnings	Liquidity
		ROE	CAR	RR	ME	ROATA	CR
21	COUNTY	1.648371287	0.033247101	0.008587236	0.043476	0.069010018	0.477746319
22	DAIMA	0.034626306	0.070495072	0.035758146	0.004201	0.063937736	3.394478441
23	DHABITI	0.130125112	0.078830661	0.02578685	0.008889	0.051533553	0.201314222
24	DIMKES	0.008146722	0.113584055	0	0.006839	0.063256344	2.45829914
25	EGERTON UNIVERSITY	1.316109796	0.006187592	0	0.001781	0.075562104	0.277921211
26	EMBU TEACHERS	3.400677603	0.02249016	0.019649028	0.012954	0.107774705	1.351783855
27	FARIJI	-0.028308691	0.111636708	-0.015213496	0.013407	0.157360253	1.598747528
28	FORTUNE	0.060554203	0.122596982	0	0.024924	0.071291456	2.792173285
29	FUNDILIMA	0.073680073	0.017550608	0.05	0.010672	0.109104275	0.386911624
30	GITHUNGURI DAIRY	-1.608465358	0.077574695	0	0.004194	0.147822992	1.161813948
	<b>2011</b>	Financial Performance	Capital Adequacy	Asset Quality	Management Efficiency	Earnings	Liquidity
		ROE	CAR	RR	ME	ROATA	CR
1	AFYA	0.494812916	0.005140564	0	0.001065	0.077729762	0.426365333
2	AIRPORTS	0.117617244	0.045929297	0	0.015511	0.093775254	0.133635901
3	ASILI COOPERATIVE	0.00147213	0.074070446	0	0.03433	0.095657817	0.927262378
4	BANDARI	3.39053264	0.005439519	0.023587247	0.003969	0.155084857	0.104331576
5	BARAKA	0.06236904	0.314485469	0.007953361	0.033387	0.149022638	10.99628348
6	BARINGO FARMERS (SKYLINE)	0.023431264	0.211046934	0	0.016565	0.062013862	4.497057537
7	BIASHARA	0.543916759	0.079142383	0	0.0172	0.206988125	0.52973973
8	BINGWA	0.575609508	0.116083197	0	0.016376	0.185274669	7.816311007
9	BORABU FARMERS	1.329320082	0.048346379	0.04660542	0.086301	0.227607125	7.45987797
10	BORESHA SACCO	0.158560976	0.084588496	0.011218226	0.020632	0.137079718	0.703997575

	<b>2011</b>	Financial Performance	Capital Adequacy	Asset Quality	Management Efficiency	Earnings	Liquidity
		ROE	CAR	RR	ME	ROATA	CR
11	BUNGOMA TEACHERS	0.103872794	0.035624443	0.003789308	0.016574	0.139223985	0
12	BURETI TEA GROWERS	0.481119579	0.033912521	0.069872084	0.008629	0.152844065	0.377675041
13	BUSIA TESO TEACHERS	0.155148899	0.030164611	0.028598686	0.019489	0.099747294	0.286173707
14	CENTENARY	0.01806297	0.104041406	0.004965087	0.007911	0.121567962	0.435646665
15	CHAI	0.18924545	0.02760768	0.012120336	0.007904	0.11823411	0.854066937
16	CHEMELIL	1.202119631	0.012275916	0	0.03059	0.144798101	3.002131593
17	CHEPSOL SACCO	0.157676399	0.083269562	0	0.010046	0.155122233	9.198609932
18	CHUNA	0.418273519	0.006193634	0.00780248	0.008734	0.101123108	0
19	COMOCO	0.556291847	0.012500168	0	0.006255	0.164738757	0.085057239
20	COSMOPOLITAN	0.110185577	0.032108018	0	0.008795	0.126562885	8.803274809
21	COUNTY	0.098608759	0.105464184	0	0.043476	0.237249632	0
22	DAIMA	0.06831496	0.093668221	0.039289868	0.004201	0.167597473	1.564859499
23	DHABITI	0.009583121	0.15230915	0	0.008889	0.181226234	0.436506273
24	DIMKES	0.040195731	0.134561072	0	0.006839	0.071098224	0.748627097
25	EGERTON UNIVERSITY	5.835989299	0.005770031	0	0.001781	0.155659763	0.097077583
26	EMBU TEACHERS	0.507405284	0.020539634	0.027356625	0.012954	0.186436755	0.760093394
27	FARIJI	-0.399337908	0.177795855	0	0.013407	0.23345015	1.507192057
28	FORTUNE	0.431267956	0.196021096	0.535635212	0.024924	0.217886913	0
29	FUNDILIMA	0.06844025	0.017582926	0	0.010672	0.059618584	0.794744471
30	GITHUNGURI DAIRY	0.156219629	0.100088311	0.191806148	0.004194	0.194941625	0

	<b>2012</b>	Financial Performance	Capital Adequacy	Asset Quality	Management Efficiency	Earnings	Liquidity
		ROE	CAR	RR	ME	ROATA	CR
1	AFYA	0.10199971	0.023853718	0	0.0011	0.127648315	0.637796565
2	AIRPORTS	1.735939163	0.007333997	0.009033336	0.0155	0.138028605	0.029076038
3	ASILI COOPERATIVE	0.882388374	0.037312937	0.046890168	0.0343	0.155168146	0.366475329
4	BANDARI	0.07283085	0.147180304	0.053595423	0.0040	0.139910222	2.277909575
5	BARAKA	0.260892178	0.044199762	0.02109028	0.0334	0.091922515	0.269432375
6	BARINGO FARMERS (SKYLINE)	0.433145714	0.027294391	0	0.0166	0.079536002	1.005253968
7	BIASHARA	0.125920043	0.15474045	0.046677735	0.0172	0.192204178	0.675726845
8	BINGWA	0.128488891	0.016011909	0.006699428	0.0164	0.077584983	0.70386152
9	BORABU FARMERS	-0.949292183	0.07946369	0.115116977	0.0863	0.137493699	0.657548104
10	BORESHA SACCO	0.194389112	0.196979318	0.019858099	0.0206	0.301013207	0.088668818
11	BUNGOMA TEACHERS	0.072462823	0.019012813	0.003015653	0.0166	0.084254872	0.901111066
12	BURETI TEA GROWERS	0.462926471	0.07826064	0.065690118	0.0086	0.17086051	9.574471271
13	BUSIA TESO TEACHERS	0.724526755	0.099019142	0.024188685	0.0195	0.188458347	6.016736163
14	CENTENARY	0.048135862	0.045994403	0	0.0079	0.1023923	0.163753409
15	CHAI	0.336351567	0.016097618	0.007705684	0.0079	0.169790683	0.209951642
16	CHEMELIL	0.054078128	0.194605066	0.005692674	0.0306	0.166802358	2.488257986
17	CHEPSOL SACCO	0.662570174	0.013035373	0.010600216	0.0100	0.128958697	2.22150602
18	CHUNA	0.216420591	0.02044642	0.017495276	0.0087	0.119348726	0.326775426
19	COMOCO	0.247589533	0.150013306	0.110153265	0.0063	0.218899005	3.884700264
20	COSMOPOLITAN	0.060663025	0.180295787	0.053924178	0.0088	0.344364194	0.295535665
21	COUNTY	-0.546992746	0.187178171	0.027390354	0.0435	0.194862626	1.034991826



	<b>2012</b>	Financial Performance	Capital Adequacy	Asset Quality	Management Efficiency	Earnings	Liquidity
		ROE	CAR	RR	ME	ROATA	CR
22	DAIMA	0.428686937	0.019252459	0.006938414	0.0042	0.084128106	-0.158043006
23	DHABITI	1.894962026	0.020780726	0.00241144	0.0089	0.163412619	0.489678481
24	DIMKES	0.929124152	0.02440798	0.000871388	0.0068	0.125287535	0.701534608
25	EGERTON UNIVERSITY	0.108916161	0.058877025	0.017203047	0.0018	0.091855877	0.789331725
26	EMBU TEACHERS	0.120834489	0.069276391	0.025088969	0.0130	0.169322211	0.213059735
27	FARIJI	0.395429876	0.02761835	0.018961506	0.0134	0.151573976	1.472537878
28	FORTUNE	0.216711399	0.041931722	0.007874276	0.0249	0.033392033	0.188981617
29	FUNDILIMA	0.184421107	0.03992202	0.008863047	0.0107	0.210847509	0.213458516
30	GITHUNGURI DAIRY	0.408768461	0.079096525	0.015998426	0.0042	0.608212149	0.296018552

Source: SASRA (2012)