

# **THE DETERMINANTS OF FINANCIAL RISK FACED BY SACCOS IN KENYA**

**BY**

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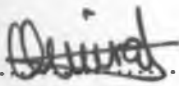


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REQUIREMENTS FOR THE MASTER OF BUSINESS AND ADMINISTRATION  
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## DECLARATION

This research project is my original work and has never been presented for an award of a degree in any University.

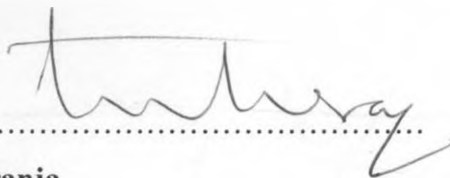
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This research project has been submitted for examination with my approval as University Supervisor.

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## DEDICATION

I dedicate this work to my family and all those who supported me in the completion of this project.

## ACKNOWLEDGEMENTS

I take this opportunity to give thanks to the Almighty God for seeing me through the completion of this project.

The work of carrying out this investigation needed adequate preparation and therefore called for collective responsibility of many personalities. The production of this research document has been made possible by invaluable support of many people. While it is not possible to name all of them, recognition has been given to a few. I am greatly indebted to my supervisor for his professional guidance, advice and unlimited patience in reading through my drafts and suggesting workable alternatives, my profound appreciation to you.

Thank you all. May the Almighty God bless you abundantly.

## ABSTRACT

The fact that most Saccos operate within a defined common bond exposes them to a relatively high degree of financial risks compared to corporate firms. In deed many Saccos in the world have in the past experienced some crisis in their operations and sustainability as a result of lack of risk identification and management mechanisms. Most of the relevant studies conducted have been focusing on the general risk management practices employed by Saccos and only a few have considered causes of financial risks in order to provide clear answers to the directors, management and stakeholders of these Saccos to enable them address these risks.

The general objective of this research was to establish the determinants of financial risks faced by the Saccos in Kenyan and provide strategies to mitigate against these risks. The research design employed in the study is basically exploratory. Population of the study comprises of the two hundred and eight (208) Saccos operating front office services (FOSAs) in Kenya. The sample size of thirty is drawn from representative Saccos over the country due to homogeneity of operations of the Saccos. A random sampling method was used as it provides equal chance of selecting each member of the population. The study depended on secondary data from a sample of Saccos. The data source is the audited financial statements for a period of six years. A regression analysis was applied on the parameters to determine the interrelationship among the various variables. This was an analytical study that adopted a time series or longitudinal approach, supplemented by cross-sectional comparisons. The study used data for the 10 Saccos for the period (2006-2010) which was exposed to sensitivity analysis using OLS regression. The study concludes that credit risks and liquidity risks were determinants of financial risks.

While the study found that Loan size, Sacco membership size and credit product portfolio have a significant influence on the credit risk, Credit product portfolio negatively influence the credit risks implying that the increase in number of loan products in a Sacco reduces the credit exposure of that Sacco. The study also deduced that fixed Asset Level, debt ratio/leverage and dividend influenced the liquidity risks where governance cost and

Debt ratio/leverage negatively influences the liquidity risks. To manage financial risks, the study recommended that Managers of Saccos should concentrate on improving on operational efficiency by investing in good information management system that will assist in managing the larger loan size and membership since its is their desire to increase membership and loans to members. Equally, External borrowing and dividend payment should be at the right time, when the Sacco has good liquidity, to ensure liquidity risks are reduced.

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## ACRONYMS

CAPM	Capital Asset Pricing Model
CIC:	Co-operative Insurance Company
FOSA:	Front Office Services Activities
KUSCCO:	Kenya Union of Savings and Credit Co-operatives
MCD&M:	Ministry of Co-operative Development and Marketing
PT	Portfolio Theory
ROSCAs:	Rotating Savings and Credit Associations
NCUA:	National Credit Union Administration
SACCO:	Savings and Credit Co-operatives
USA:	United States of America
WOCCU:	World Council of Credit Union

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

In Africa, Savings and Credit Co-operative Societies (SACCOs) in Kenya have earned praise as the most successful in the continent. Today, the Kenyan SACCO sector is the largest in Africa with over 12,000 registered co-operative societies including 5,000 Saccos with a membership of over 7million and annual turnover of Kshs 24 billion. Despite these positive trend registered, a number of Saccos have portrayed declining performance. This has been occasioned by lack of proper mechanisms to address the financial risks that they face. Specifically, Saccos have been unable to narrow down to causes of financial risks facing them in order to design specific strategies to mitigate these risks.

Though the concept of financial risk has received much attention in academic literature, the bulk of the work has focused on commercial banks and other financial institutions, and has been on theoretical valuation issues. There is far less research on financial risks on the Saccos yet they have greatly been facing financial risks in the recent past. None of the research has focused on the causes of these risks in order to provide oversight to the Management of Saccos.

According to Maina (2007), Saccos face more risks than other financial institutions due to their dependence on one industry, region, employer or organization i.e the common bond and the only way to manage these risks is to appreciate their root determinants. Manfredo et al (2003), also note that since Saccos themselves tend to face more sources of both business and financial risks than corporate firms, it is imperative to identify the causes of these risks as Saccos operate under pooling arrangements and in a narrowly defined geographic area which minimizes their level of diversification.

In the recent past, the global economy has witnessed collapse of many Saccos due to several factors. However, key among these factors is the risks associated with financial mismanagement. In Kenya, prior to the re-establishment of Ministry of Co-operative Development and Marketing, the Saccos were faced with many challenges. Many Saccos almost collapsed due to mismanagement, anarchy and leadership wrangles.

Learning from previous consequences, Saccos have attempted to identify various risks facing them and employed several risks management practices to guide in identifying these risks, their causes and put in place mitigating measures. By appreciating the various causes of the financial risks Saccos will be in a position to design relevant risks management process aimed at addressing perceived or actual risks as they occur. The study therefore aims at assisting Saccos by highlighting determinants of financial risks as a step of assisting management design risk mitigating strategies.

### **1.1.1 Savings and Credit Co-operative Society (Sacco)**

A Savings and Credit Cooperative Society (SACCO) is a member owned financial cooperative whose primary objective is to mobilize savings and afford members access to credit facilities on competitive terms as a way of enhancing their social-economic well being. In Africa these financial cooperatives are known as Saccos while in other parts of the world such as USA and Canada the financial cooperatives are referred to as credit unions.

SACCOs are owned, governed and managed by their members who have the same common bond. The bond could be employer, social fraternity, geographical among others. Unlike commercial banks, Saccos are member owned and provide credit facilities which are guaranteed by members. In addition, Saccos do not offer current accounts as they are not in the clearing house.

Globally, the operations are driven by the seven principles of cooperatives which include; voluntary and open membership, democratic member control, member economic

participation, Autonomy and independence, Education training and Information, co-operation and concern for community.

Traditionally, Sacco had been offering credit only products for its members based on their non withdrawable savings. However, in early 90s commercial banks withdrew their services from rural areas and those that remained proved to be expensive to Sacco members since they prescribed higher minimum account opening balances. This prompted Saccos to start offering bank like services through a facility known as Front Office Services Activity (FOSA). Through FOSA, Saccos are able to offer broad range of financial services including withdrawable savings, fixed deposit accounts, international money transfer, salary processing on behalf of the employer, advances, debit card facilities among others (WOCCU, 2006).

Though Saccos have improved their returns through involvement in the FOSA activities, they have equally faced various risks as a result of their engagement in products that require larger financing yet they have limited sources of funding. The fact that one does not necessarily need to save with the Sacco in order to enjoy FOSA products exposes the Sacco to financial risks specifically credit and liquidity (Maina, 2007).

### **1.1.2 Financial Risks**

Risk is a wider concept pursued by several academic disciplines. Economists, statisticians, decision theorists and insurance theorists have long discussed the concept of risk in an attempt to arrive at a definition of risk that might be useful for analysis in each field of investigation. A definition of risks that is suitable for the economist or statistician may very well be worthless as an analytical tool for insurance theorist.

The general definition of risk is the possible variation in an outcome from what is expected to happen (Hu Yida, 2001). This definition takes into account the fact that risk is about visibility, relates to expectations of what will happen and difference between what is expected to happen and the actual outcome.

The Saccos in Kenya continually tackle several types of risk on a daily basis. These include operational, strategic, compliance, business and even financial risks. All these types of risk have a root cause which should be appreciated in order to mitigate them. Financial risk in a Sacco 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 Sacco's ability to meet its objective of mobilizing savings and providing credit to members. According to Maina (2007), financial risks facing Saccos are essentially decomposed into credit and liquidity risks, its determinants in this context can thus be best understood by analyzing the determinants of these two broad classes.

As credit oriented institutions, Saccos are exposed to credit risks. It should be appreciated that Saccos mobilize savings from its own members to on lend. It is the same amount which when recovered avails funds to the other members for borrowing. For success, there should be efficiency in the credit process and this can only be achieved through analyzing the various causes of the risks surrounding the credit process.

While Saccos in Kenya have faced difficulties over the years for a multitude of reasons, the major cause of serious credit problems continues to be directly related to weak credit standards for borrowers, poor portfolio risk management, or a lack of attention to changes in economic or other circumstances that can lead to deterioration in the credit standing.

For Saccos, loans are the largest and most obvious source of credit risk. Since exposure to credit risk continues to be the leading source of problems in Saccos, the management should be able to draw useful lessons from past experiences by identifying the determinants of this risk.

Equally, liquidity risk, which is the second component of financial risks in this study, ought to be appreciated. Saccos often face liquidity problems not only because they do not have access to a lender of last resort facility such as the Central Bank as do commercial banks, but also because they do not understand the various determinants of

these risks (Jazayeri, 2008). Thus risks arising from liquidity shortage have been a major cause of failure of many Saccos thus the need to isolate the various causes of this risk.

By appreciating the various determinants of the two components of the financial risks, the Saccos can reposition themselves in enhancing their financial management practices with a view to enhancing the efficiency and building the members' confidence through reduced number of collapses as experienced in the early years.

## **1.2 Statement of the Problem**

The fact that most Saccos operate within a defined common bond exposes them to a relatively high degree of financial risks compared to corporate firms. In deed many Saccos in the world have in the past experienced some crisis in their operations and sustainability as a result of lack of risk identification and management mechanisms.

Despite the enormous contribution of Saccos to the Kenyan economy, they have been faced with numerous risks such as reputational (poor governance or lack of integrity), financial risks (credit and liquidity), operational risks (weak internal controls and inadequate Information Communication Technology (ICT)), among others. This has reduced their competitiveness in the financial market.

Most of the relevant studies conducted have been focusing on the general risk management practices employed by Saccos and only a few have considered causes of financial risks in order to provide clear answers to the directors, management and stakeholders of these Saccos to enable them address these risks. For instance, in his study of Risk Management practices in Banks, Raghavan (2003), points out the necessity to extent the study to cover credit unions because of the intelinkage of these institutions with the commercial banks. While surveying risk management practices, Okello, (2010) concludes on the need for those entrusted with risks management in Saccos to identify various causes of these risks in order to enhance their mitigating strategies.

In addition, researchers in this field have identified qualitative challenges facing Saccos. Though Maina, (2007) identifies mismanagement and governance issues, staff competencies, lack of good will from the stakeholders, weak regulatory frame work as some of the challenges faced by Saccos, a lot of quantitative factors have a bearing on the performance of the Kenyan Saccos. Factors such as size of the loan book, membership level, product portfolio, and capital level, among others have relationship to the performance of Saccos (WOCCU, 2006).

This study therefore aims at closing this gap by identifying the specific determinants of financial risks that have a bearing on the performance of the Saccos in Kenya with a view to recommending actions against each of the identified causes in order to assist Saccos' management improve on their performance.

### **1.3 Objective of the Study**

The general objective of this research was to establish the determinants of financial risks faced by the Saccos in Kenyan and provide strategies to mitigate against these risks. The specific objectives are;

- To identify the determinants of liquidity risks in saccos
- To identify the determinants of credit risks in saccos

### **1.4 Value of the Study**

In the recent past, a number of Saccos have collapsed due to various risks while others are in the verge of collapsing. For instance, Kirinyaga District Cooperative Union in central province advanced over Kshs 110 million to its members which it could not recover leading to its collapse. The Sacco is now in a financial crisis and cannot operate at all and closed its doors due to lack of finances.

There are instances where two Saccos operating in same environment and precincts record different performance; one flourishes while the other deteriorates. In most instances, these Saccos have been unable to diagnose the determinants of risks they face.



The consequence has been inability to meet the loan demand for members and over dependence on the external funding despite receiving adequate funds from members' funds in form of shares, deposits and savings. This development is creating a lot of concern and the focus is on what exactly are the causes of the high rate of inefficiency and eventual collapse of the Saccos. It is believed that this study will therefore add value to management of the Saccos by highlighting various determinants of the financial risks thus guiding them on where to focus attention in order to guide Saccos to prosperity.

It is against this background that the study aims at identifying various causes of the financial risks faced by the Kenyan Saccos with the objective of providing insights to guide in mitigating against these risks for prosperity of Saccos.

## CHAPTER TWO:

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter underscores relevant studies conducted concerning determinants of risks facing Savings and Credit Co-operative Societies. It considers studies on defining risks, types of risks, classification and theories on risks measurements with special consideration to the financial risks, empirical literature on risks determinants of financial risks models.

#### 2.2 Theoretical Review

##### 2.2.1 Theories on CAPM, PT and R L

This study is conducted against the backdrop of three main theories on risk: Sharpe's (1963) Capital Asset Pricing Theory (CAPM), Markowitz's (1959) Portfolio Theory (PT) and Hamada's (1972) theory on risk and leverage (RL).

The CAPM suggests that price or expected return of an asset is related to its risk-free rate, the systematic risk and the expected risky market's risk-premium.

Hence,

$$E(R_j) = R_f + \beta_j [E(R_m - R_f)] \dots\dots\dots(1)$$

Where,

$E(R_j)$ : the expected return on the asset  $j = 1, \dots, N$ ,

$R_f$ : the risk-free rate of return measured as treasury bill/bond yield,

$R_m$ : the expected return for the risky market portfolio,

$\beta_j$ : the individual asset's systematic risk relative to the risky market's portfolio,  
and

$E(R_m - R_f)$ : the expected risk-premium of risky market portfolio.

Applied to a portfolio of credit loans, Saccos may be said to maintain combination of loans with varying risk levels. The credit portfolio would have to be such that the overall risk of the loans is diversified given the covariance of returns from each pair of loans is likely to be such that the correlation coefficients closer to 0 and not 1 as suggested by the Markowitz for diversifying individual asset's (loan) risk..

Equation 1 denotes that, for risky loans, Saccos would charge a premium equal to the difference between the overall risk-premium applicable in the 'market' for all the loans in the market ( $R_f - R_m$ ) in order for them to compensate for the additional risk of a particular loan.

In essence, the CAPM infers that the required rate of return demanded by Saccos is equal to a risk-free rate (equivalent to the yield of a Treasury instrument) with the same term as that of the loan plus a premium as determined in the market for the total loan portfolio.

Equally, a Sacco will price its loans according to the level of risk perceived whereby a perceived higher risk loan will attract a higher price and vice versa. Since individual loan risk can be eliminated through loan diversification as stated by Markowitz, the risk that a Sacco may be concerned with in its loan-pricing decision is the market risk and the price of risk is estimated as follows:

$$\text{Price of risk} = \text{unit of risk} \times \text{risk-premium} = \beta_j [E(R_m) - R_f] \dots\dots\dots(2)$$

In this case a Sacco has to incorporate in its loan pricing, other risk related costs for example, tax and bankruptcy cost. Bankruptcy costs will arise if the Sacco indulges in excessive risk-taking lending activities. Thus, risk increases if debt to equity ratio increases. Incorporating the leverage effect (Hamada.) into Equation (2), beta of an individual bank, j, with loan capital can be expressed as:

$$\beta_{jL} = \beta_{jU} [1 + D/E_j (1 - t_c)] \dots\dots\dots(3)$$

where,  $\beta_{jL}$  = beta of levered firm,  $\beta_{jU}$  = beta of unlevered firm,  $D/E$  = debt-equity ratio,  $t_c$  = tax rate applicable to income streams of a Sacco. Thus risk increases as leverage increases and capital structure is likely to affect credit risk.

## 2.2.2 Liquidity Risks Estimate Model

Various models have been developed to estimate liquidity risk. For instance Pedersen (2005) estimates liquidity risk as follows:

$$E_t(r_{t+1}^i - c_{t+1}^i) = r^f + \lambda_t \frac{\text{cov}_t(r_{t+1}^i - c_{t+1}^i, r_{t+1}^M - c_{t+1}^M)}{\text{var}_t(r_{t+1}^M - c_{t+1}^M)}$$

Where:

Expected Illiquidity  $E_t(c_{t+1}^i)$

Liquidity Risks  $\text{cov}_t(c_{t+1}^i, r_{t+1}^M)$

Risks Premium  $\lambda_t = E_t(r_{t+1}^M - c_{t+1}^M - r^f)$

## 2.3 Empirical Review

### 2.3.1 Determinants of Financial Risks

Two strands in the literature on financial risk continue to receive increasing attention. One strand appears to suggest internal variables as potential determinants of risk measured as the unsystematic risk (Brewer *et al.*, 1996) while the other strand highlights changes in external variables in the financial markets, regulations and economic conditions as affecting the systematic risk (Hassan *et al.*, 1994; Corsetti *et al.*, 1998). Both streams provide evidence of significant relationships among the internal variables, external factors and financial risk.

Financial risk arises through countless transactions of a financial nature, including sales and purchases, investments and loans, and various other business activities. It can arise as a result of legal transactions, new projects, mergers and acquisitions, debt financing, the energy component of costs, or through the activities of management, stakeholders, competitors, foreign governments, or weather (Mowbray, 1995). When financial prices change dramatically, it can increase costs, reduce revenues, or otherwise adversely impact the profitability of an organization. Financial fluctuations may make it more difficult to plan and budget, price goods and services, and allocate capital.

According to Santomero (1997) there are three main sources of financial risk: those that arise from an organization's exposure to changes in market prices, such as interest rates, exchange rates, and commodity Prices; those that arise from the actions of, and transactions with, other organizations such as vendors, customers, and counterparties in derivatives transactions and those that result from internal actions or failures of the organization, particularly people, processes, and systems

Thus, financial services sector is no stranger to the risk management. The exposure facing financial institutions are both diverse and familiar. High unemployment rate or loss of jobs has been identified as a contributing factor to financial risks as it leads to the rise in delinquency and loan losses (Wendy Angus (NCUA). Credit Unions in some states in USA such as California, Nevada, Florida and Arizona that have very high unemployment combat a high delinquency rates.

In Tanzania, majority of members lack knowledge of what Saccos are, their uses and benefits. As a result some of the members join believing that they are actually going to get what amounts to free money and that they do not have to put back anything to grow and sustain the Saccos. There are members who are downright dishonest, who become members, then borrow, apparently with no intention to repay and then withdraw their membership. This exposes these Saccos to credit risk leading to their eventual collapse a few months after their launch.

The risks faced by Saccos depend on their nature, type and areas of operations. In their article, Manfredo et al (2003), note that Agricultural cooperatives operate in a business environment that is inherently risky and tend to have a relatively high degree of business risk compared to investor-oriented firms. This is because limited access to public equity markets and the requirement to return earnings to members often mean that Saccos are highly leveraged and, hence, have greater financial risk than investor-oriented firms.

According to the study by Ribbey (1997), about two out of three of the Saccos sampled were not operational (either dormant or had collapsed) due to financial risks as a result of



organizational restructuring which affects institution based Saccos, Poor governance, fraud and mismanagement of institutional funds causing bankruptcy and loss of confidence by members and High default rates which paralyse operations and affect sustainability.

The poor investment priorities have also been sighted as the cause of financial challenges among credit unions. In US, in 2009, the regulator seized two largest credit unions, U.S. Central Federal Credit Union in Lenexa, Kansas, and Western Corp. Federal Credit Union in San Dimas, California which had combined assets of \$57 billion due to investments in toxic mortgage backed securities that felled global banks and led to the credit crunch.

### **2.3.2 Credit Risks**

Credit Risk is the potential that a borrower/counter party fails to meet the obligations on agreed terms. There is always scope for the borrower to default from his commitments for one or the other reason resulting in crystallization of credit risk to the bank or credit union. These losses could take the form of outright default or alternatively, losses from changes in portfolio value arising from actual or perceived deterioration in credit quality that is short of default.

Credit risk is inherent to the business of lending funds to the operations linked closely to market risk variables. The objective of credit risk management is to minimize the risk and maximize Sacco's risk adjusted rate of return by assuming and maintaining credit exposure within the acceptable parameters. Credit risk consists of primarily two components; Quantity of risk, which is nothing but the outstanding loan balance as on the date of default and the quality of risk, that is, the severity of loss defined by both Probability of Default as reduced by the recoveries that could be made in the event of default. Thus credit risk is a combined outcome of Default Risk and Exposure Risk

Maina, (1998) defines Credit Risks as a possible risk that is likely to affect the earning of a financial institution or affect its capital as a result of failure by customers to honour

their contractual obligation with the institutions. In this context, Credit risk is simplified as un recovered loans equated with member's hard earned savings getting lost. The most important asset of the Saccos is loan with members which remain the biggest source of credit risk to many Saccos.

A large part of the literature highlights that the ownership structure might play a role in influencing credit risk in a financial institution. For instance, a particular focus is put on the relationship between public ownership or State-owned banks and their levels of risk. Generally, it is assumed that State owned banks take more risks than the private and foreign capital requirements and bank risks in complete markets. Micco and Panizza (2004) have found that public banks are exposed to more risk than other banks since they play an important role in the facilitation of the credit policies and their loans are less sensitive to macroeconomic shocks in comparison with private banks.

Moreover, macroeconomic indicators can also influence credit risks. These indicators are those at the origin of banking crises: inflation rate of growth GDP, interest rate and exchange rate. In this setting, many researches have been conducted to analyze the relationship between these indicators and the occurrence of banking crises. The findings in this respect indicate that there is a close relationship between macroeconomic indicators and banking crises and excessive risk (Angeloni and al (2009), Olga Bohachova (2008), Buch and al (2010).

Micco and Panizza (2004) attribute credit risk to two factors i.e lack of control systems and improper loan analysis. Poor control systems is defined by the failure of a Saccos to identify risks. In order to manage credit risks Saccos ought to institute proper control systems reinforced by good loan guarantees and securities which should be supported by members education, loan follow ups based on regularly produced loan delinquency reports that enable directors and managers monitor loan recoveries and effect changes necessary to improve repayments.

Equally, lack of sound loan analysis framework in Saccos contributes to the level of credit risks they face. The current loan analysis in the savings and credit co-operatives focuses on the member's contribution, ability to repay based on the salary package rather than on the viability of the funded projects. In Kenya, the serious challenge facing Saccos are poor financial discipline and the culture of not repaying loans among some members (Ouma, 1980). This is exacerbated by weak internal controls, in competencies among the loaning personnel and poor loan appraisal system that focuses on member's salary.

Diversion of funds by members has also been identified as the key cause of credit risk. Instead of using loans for the stated activities, some members divert such funds to meet other needs, such as buying Television sets and jewellery and as a result fail to repay the loans. Lack of qualified auditors, inspectors and consultants, result in many of them being plagued by operational problems which kill some of them. Further analysis on causes of credit risks by Santomero (1997) identifies the composition of the membership. Saccos whose membership consists of those without regular income such as farmers and traders are exposed to more risks than those that have membership with regular income.

## **Risk Measurement Models**

### **2.3.3 Value- at-Risk**

The measure of risk that is most widely used by the industry is value-at-risk, VaR. For a possible return distribution  $\xi$ , and a level  $\alpha$ , (say  $\alpha = 1$  or 5%), the value-at-risk is the negative  $\alpha$ -quantile of the distribution of the random variable  $\xi$ . Precise mathematical definition is given by:

$$\text{- VaR } \alpha (\xi) = \text{minimum capital } x$$

**so that the probability of a loss of magnitude  $x$  is at most  $\alpha$  .**

Artzner, Delbaen, Eber and Heath (2000) define a static risk measure in an axiomatic way. This object can be seen as a map  $\pi (\xi)$  that assigns a real number to each a future (thus risky) position  $\xi$ .



The value  $\pi(\xi)$  of this map can be seen as the capital needed to cover the potential risk.

This mapping may differ depending on the nature of the particular operation, the regulation structure of the specific context and the risk profile of the participants. However, it must satisfy certain core properties (axioms).

Using an appropriate numéraire, any map  $\pi$  is called a convex risk measure provided that it satisfies:

- monotonicity :  $\pi(\xi) \geq \pi(\hat{\xi})$ , for all  $(\xi) \leq \hat{\xi}$ , a.s.,
- cash invariance:  $\pi(\xi + a) = \pi(\xi) - a$ , for any constant  $a$ ,
- sub-additivity:  $\pi(\xi + \eta) \leq \pi(\xi) + \pi(\eta)$ ,
- positive homogeneity :  $\pi(\lambda\xi) = \lambda \pi(\xi)$  for any constant  $\lambda \geq 0$ .

Each one of the above axioms has firm roots in economics. The sub-additivity property is crucial. It ensures diversification. In other terms, it makes sure that the risk is added up "correctly" as it goes up in an institution or country. Due to this property, a manager can simply add the capital requirements of each component. Through this she is certain to satisfy her requirement. Commonly used measure of risk, VaR does not satisfy this property.

### 2.3.4 Stress Testing:

The term stress testing describes a range of techniques used to assess the vulnerability of a portfolio to major changes in a macro economic environment or to exceptional but plausible events. The objective of stress test is to make risks more transparent by estimating the potential losses on a portfolio in abnormal markets. Stress tests are often used to complement internal models and management systems used by financial institutions for capital allocation decisions.

Stress tests begin with the specification of types of risks to be considered and the appropriate models used. It can focus on individual risks, such as credit risks, or interest rate risk or can encompass multiple risks. The next step involves deciding on the range of factors to include followed by the specifications scenarios. Stress test can involve

estimation of the impact of a change in a single risk factor (a sensitivity test) or the effect of simultaneous move in a group of risks (a scenario analysis).

### **2.3.5 Other Risks Measurement techniques:**

From the survey conducted by the Central bank of Kenya 40% of the respondents indicated that they applied other models besides the VaR and Stress Testing above and these models included:

- Internally customized risk measurement models.
- Risk control assessment models.
- Self-assessments on Business Continuity Planning.
- Scenario planning and sensitivity analysis.
- Trend analysis on risk variables.
- Dashboard reporting.
- Internal rating programs (quantitative and qualitative).
- Probability of default models for counterparty risk.
- Pricing Engine models.

## **2.4 General Reviews**

### **2.4.1 Definition of Risks**

The etymology of the word “Risk” can be traced to the Latin word “Rescum” meaning Risk at Sea or that which cuts. Risk is associated with uncertainty and reflected by way of charge on the fundamental i.e. in the case of business it is the Capital, which is the cushion that protects the liability holders of an institution. These risks are inter-dependent and events affecting one area of risk can have ramifications and penetrations for a range of other categories of risks. Foremost thing is to understand the risks facing Saccos and to ensure that the risks are properly confronted, effectively controlled and rightly managed.

Since it is not always possible or desirable to eliminate risk, understanding it is an important step in determining how to manage it. Identifying exposures and risks forms the basis for an appropriate financial risk management strategy.

Dowd (2010) differentiates the terms risk and exposure. The two have subtle differences in their meaning. Risk refers to the probability of loss while exposure is the possibility of loss, although they are often used interchangeably. Risk arises as a result of exposure.

Exposure to financial markets affects most organizations, either directly or indirectly. When an organization has financial market exposure, there is a possibility of loss but also an opportunity for gain or profit. Financial market exposure may provide strategic or competitive benefits.

Thus, risk is the likelihood of losses resulting from events such as changes in market prices. Events with a low probability of occurring, but that may result in a high loss, are particularly troublesome because they are often not anticipated. Put another way, risk is the probable variability of returns.

Potential Size of Loss	Probability of Loss
Potential for Large Loss	High Probability of Occurrence
Potential for Small Loss	Low Probability of Occurrence

#### 2.4.2 Classification of Risks

This section appreciates various types of risks in a financial institution set up besides mapping relevance of these risks to the Sacco operations. Further emphasis is given on the financial risks which is the major focus.

Risks may be classified in many ways. Kulp (1998), classifies risks as fundamental and particular risks. The distinction between the two is based on the differences in the origin and the consequence. While fundamental risks involve losses that are impersonal in origin and consequence, they are group based risks caused in most part of the economy,

social and political phenomena and affects large segments or the entire population. Particular risks involve losses that arise out of individual events and are felt by individuals rather than by the entire group.

Power (1966), classifies risks into pure and speculative. Pure risks are a family of risks in which all possible outcomes are harmful in some way. In other words a pure risk is a situation that can only end in a loss For example, the risks of an accident, a car theft or earthquake are pure risks. He further proposes pure risk to be named as empirical risks

Speculative risks on the other hand are a family of risks in which some possible outcomes are beneficial. In other words a speculative risk is a situation that might also end in a gain. For example, the risks of stock investment or business venture are speculative risks. This he terms as market risks.

Mowbray (1995), formalized the distinction of pure and speculative risks by defining the pure risk as the situation which involves only the chance of loss or no loss and speculative risks as a situation where there is a possibility of loss and gain at the same time.

Risks can be classified as Dynamic and Static risks where dynamic risks are those resulting from changes in the economy that causes financial loss to members of the said economy (Beech, 2002). These changes may be in the price level, consumer tastes, income, employment and output. Static risks involve those losses that would occur even if there were no changes in the economy such as perils of nature.

### **2.4.3 Strategic Risk**

Strategic risks are future oriented, according to The Institute of Risk Management (IRM), and can arise when a new competitor enters the industry, when two businesses merge to create an industry powerhouse, or when faced with decisions about creating new products or entering new markets. A Sacco faces strategic risk in areas such as management of its

backups, entrance of another Sacco targeting same membership which may reduce the market share, introduction of new loan product without proper mapping and feasibility study.

#### **2.4.4 Operational Risk**

Operational risks are short term in nature, impacting on the activities the Sacco. Basel II defines operational risks as the risk of loss resulting from failed processes, people and systems, or from external events. Essentially, operational risk is the possibility that transactions or processes will fail due to poor design, inadequately trained personnel or external business disruptions such as a fire. It also covers the risk of fraud and the possibility that the business will fail to meet a contractual obligation due to operational reasons.

Operational risk is associated with the problems of accurately processing, settling, and taking or making delivery on trades in exchange for cash (Santomero, 1997). It also arises in record keeping, processing system failures and compliance with various regulations. As such, individual operating problems are small probability events for well-run organizations but they expose a firm to outcomes that may be quite costly.

#### **2.4.5 Compliance Risk**

Compliance risk is the possibility that the business will not comply with laws and regulations in the jurisdictions where it operates or that the organization will violate a legally binding contract. Compliance risk is also known as regulatory risk. Noncompliance can be deliberate, or it can result from being unaware or local legal requirements. Compliance risk is the current and prospective risk to earnings or capital arising from violations of, or nonconformance with, laws, rules, regulations, prescribed practices, internal policies, and procedures, or ethical standards (Crane, 1984). Compliance risk also arises in situations where the laws or rules governing certain Sacco products or activities may be ambiguous or untested. This risk exposes the institution to

finances, civil money penalties, payment of damages, and the voiding of contracts. Compliance risk can lead to diminished reputation, limited business opportunities, reduced expansion potential, and an inability to enforce contracts.

With the enactment of new laws on the operations of Saccos, there is likelihood that some of the Saccos may not comply with the requirement thus exposing them to compliance risks.

#### **2.4.6 Financial Risks**

Financial risk is the possibility that a business will not have adequate liquidity to meet its ongoing obligations. Financial obligations include debt repayment, payroll requirements, dividend payments, government licenses and taxes (Mowbray, 1995). Financial risk can also be defined as the danger likely to be caused by an event or a loss that could impair the value of member's savings or substantially affect assets, hence its delivery and earning capacity (Maina, 2007). Maina further identifies financial risks facing co-operatives as Interest Rate risks, Credit Risks, Exchange Risks and Liquidity Risk.

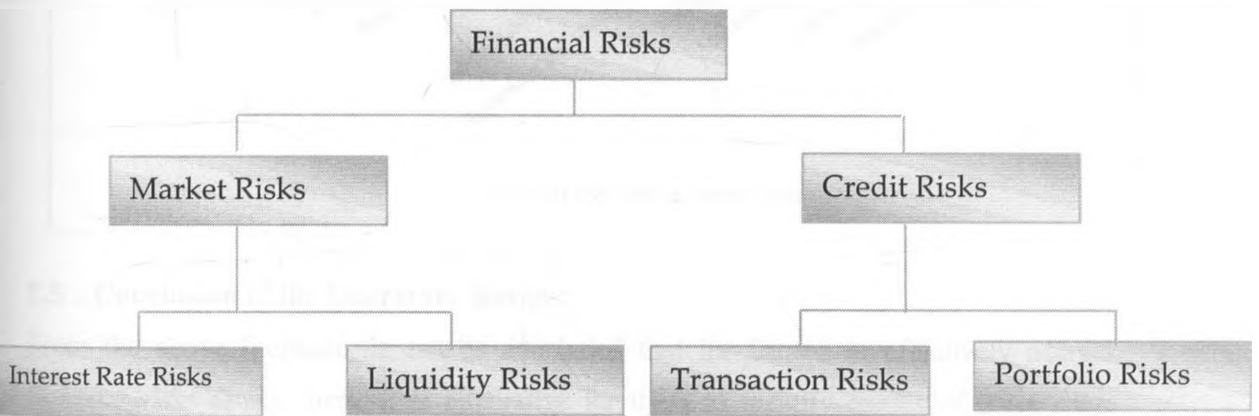
Financial risk is the final manifestation of deeper problems facing financial institution (William, 1999). For a SACCO, the underlying problem could be large loan losses, a major fraud or theft that become known to general public and raise doubts about the solidity of the institution. For this reason, financial risk is essentially synonymous with market confidence: as long as members, savers and the general public are confident that the SACCO can meet all of its obligations, the liquidity will never be challenged. But once rumors start to circulate and members and depositors become worried about the safety of their money, it becomes very difficult to head off a run on the institution and prevent collapse.

The financial risks facing Saccos can be looked at from the point of view of either the Sacco itself or its members. The inability of the Sacco to meet members' loan demand and the inability of members to repay their loans respectively underscore these two

distinctions (Ouma, 1980). Coyle (2009), points out that the risk of losses arise from inadequate financial controls (systems) which could expose the Sacco business to fraud or the possibility of unauthorized financial spending.

The financial risks facing Saccos can be broadly classified into market and credit risks (Ouma, 1980). Market risk is further decomposed into interest rate risks, Foreign exchange risks, equity price risks and liquidity risks while Credit risks include transaction risks and portfolio risks. Since Saccos generally do not hold trading positions in equity securities, equity price risk is not an important concern. The market risks related to positions in foreign currency and derivatives are equally not relevant as Saccos are not permitted to and prudently should not engage in such transactions. Thus the structure of financial risks relevant to Saccos is presented as follows:

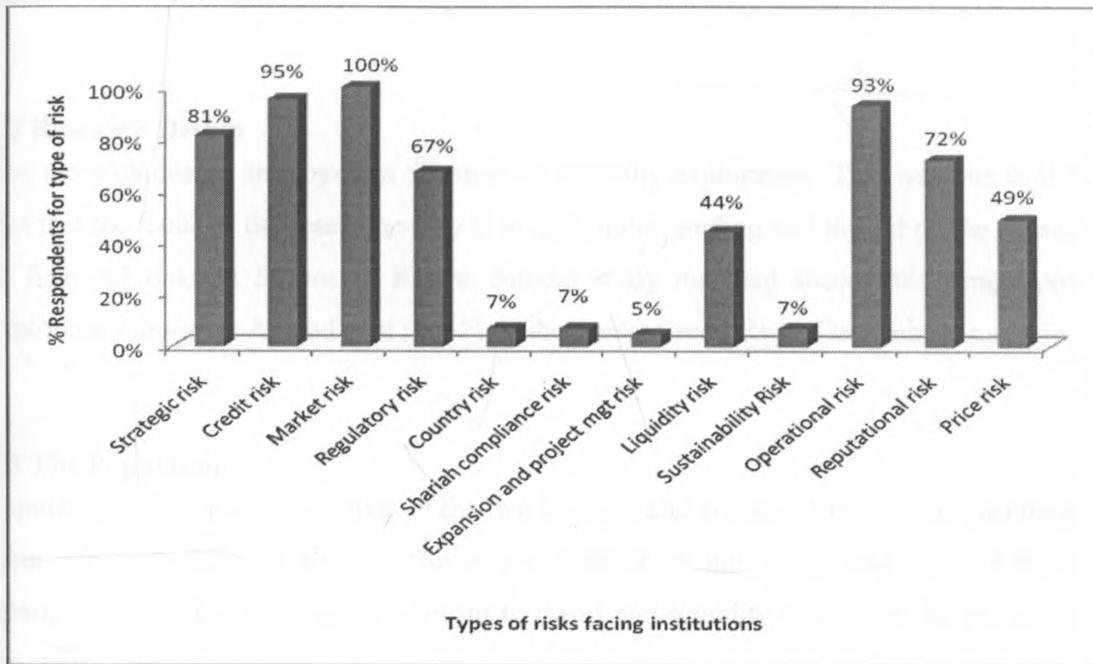
**Chart 1: Classification of Financial Risks: R S Rhagavan; Risk Management Process**



In the USA, though National Credit Union Administration (NCUA) provides seven categories of risks for Credit Unions as Credit, interest rate, liquidity, transaction, compliance, strategic and reputation, Ouma (1980) acknowledges that the most important risks facing Saccos are liquidity and credit risks.

In the 2004 survey by Central Bank of Kenya, credit risk was the most widely identified risk (97% of respondents). The survey's results show that credit risk is essentially significant as is attributed to the large proportion of banks' asset portfolio made up of loans and advances to customers.

**Chart 2: Risks facing financial institutions in Kenya. (Source: Central Bank of Kenya)**



**2.5 Conclusion of the Literature Review:**

From the above literature, it can be concluded that for Saccos to effectively address financial risks facing them, it is imperative for them to identify causes of these risks. Consequently, the most relevant financial risks include credit and liquidity risks. A number of potential determinants of these risks such as loan size, membership, dividend level, credit product portfolio have been explained by Micco and Panizza (2004), Angeloni and al (2009), Olga Bohachova (2008), Buch and al (2010). Theoretically, the Saccos should put in place internal controls, systems, procedures and policies to aid in managing the financial risks. In conclusion, effective risks management is dictated by ability to identify the causes of these risks.



## **CHAPTER THREE:**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The chapter explains research design, population of interest, sample and techniques that was used in data analysis.

#### **3.2 Research Design**

The research design employed in the study is basically exploratory. This was due to the fact that the focus of the research study is to gain understanding and insight on the causes of financial risks in Saccos in Kenya. Similar study that had successfully employed exploratory design is Ahmed et al (2007) on the Banks Credit Risks Determinants.

#### **3.3 The Population**

Population of the study comprises of the two hundred and sixteen (208) Saccos operating front office services in Kenya. The major variable in this study was derived from financial statements information relevant to credit and liquidity risks over the period of the study.

#### **3.4 The Sample**

The sample size of 30 is drawn from representative Saccos over the country due to homogeneity of operations of the Saccos. A random sampling method was used as it provides equal chance of selecting each member of the population.

#### **3.5 Data Source**

The study depended on secondary data from a sample of Saccos. The data source is the audited financial statements for a period of time. These included balance sheet, profit and loss account and the cash flows statements.

### 3.6 Data Analysis

A regression analysis was applied on the various parameters to determine the interrelationship among the various variables. In this case Credit and Liquidity risk form the dependent variables while determinants will be the independent variable. The model was as provided in equations (i), (ii) and (iii) below:

$$\text{Credit Risk} = \alpha_0 + \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 + \epsilon \dots \dots \dots (i)$$

$$\text{Liquidity Risks} = \beta_0 + \beta_1 + \beta_2 + \beta_3 + \beta_4 + \epsilon \dots \dots \dots (ii)$$

$$\text{Total Risks (Financial Risks)} = \partial_0 + \partial_1 + \partial_2 + \partial_3 + \partial_4 + \epsilon \dots \dots \dots (iii)$$

Where:

Credit Risks was estimated as the standard deviation of the difference between the **expected interest income** and the **actual interest income** as reported in the Profit and Loss statements of the Saccos audited annual accounts. The expected income is estimated from outstanding loans to members reported in the audited accounts and the Weighted Average Interest on Loans (WAIOL). The major assumption is that Saccos do not accrue interest on delinquent loans.

Liquidity Risks risk is estimated by the current ratio which is current assets divided by current liabilities. The ratio is a perfect estimator of liquidity risk since the bulk of the Saccos' current assets is cash and bank balances

$\alpha_i$ : represents the independent variables for the credit risks including Loan size, Sacco membership, credit product portfolio among others

$\beta_i$ : represents the independent variables for the liquidity investments, governance costs, external debt level

**Loan Size:** this is the loan portfolio disbursed to members. It is estimated as a ratio of members' loans to total assets of the Sacco. The aim is to investigate the relationship between the size of the Sacco's loan book and the level of recovery. It is a good measure

of recovery mechanism employed by the Saccos. Sacco with higher loan book is expected to have more efficient loan recovery system.

**Sacco membership:** this is the number of members served by a Sacco at a given period of time. Sacco membership is obtained directly from the secondary data as provided.

**Credit Product Portfolio:** this is the number of loan products that a society has for its members. It is obtained directly from Sacco product brochures and credit policies documents.

**Dividend:** this is interest declared on members' savings and is applied as a portion of the total income generated by the Society.

**Investments in Fixed Asset level:** The proportion of the total assets that are dedicated to the Sacco's fixed assets (property, plant and equipment). This paints a picture of what is available for members' loans which is the core business of the Sacco.

**Governance Costs:** These include expenses in relation to the Central Management Committee (Board) and members. The aim is to ascertain the impact of the committee and members expenses on the liquidity position of the Society. This was a portion of the total income that is dedicated to the governance.

**External Debt Ratio:** this is the level of leverage by the saccos. It is measured by the ratio of bank loans to saccos' total assets. It is imperative to note that prudential standards prescribes this to 25% as stipulated in the Sacco Societies (Deposit Taking Sacco Business) Regulations, 2010.

## CHAPTER FOUR

### DATA ANALYSIS AND INTERPRETATION

#### 4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research methodology. The study findings are presented to establish the determinants of financial risks faced by the Saccos in Kenyan and provide strategies to mitigate against these risks. The data was gathered exclusively from the Audited financial statements.

#### 4.2 Descriptive Statistics

**Table 1: Financial risks for the Saccos**

	Mean	Std. Deviation
Financial risks	0.356	0.4326

For the dependent variable, financial risks have a mean of 0.356 and a standard deviation of 0.4326.

**Table 2: Independent variables descriptive statistics**

	Credit risks	Liquidity
Mean	6.832	0.176
Std. Deviation	0.753	0.295

For the independent variables, credit risks have a mean of 6.832 and a standard deviation of 0.753 and liquidity has a mean of 0.176 and a standard deviation of 0.295. A reasonable level of consistency is observed between the mean and standard deviation for all variables as it reflects normal distribution of the variables. A small standard deviation indicates that the deviation is heavily weighted closer to the mean and vice versa.

### 4.3 Regression Results

In addition to descriptive analysis, the study conducted a cross-sectional OLS multiple regression on several Saccos' characteristics over the period 2006–2010 average and results of credit risks and liquidity.

#### 4.3.1 Credit risk Analysis and Interpretations

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (credit risks) that is explained by all the three independent variables (loan size, Sacco membership and credit product portfolio).

**Table 3: ANOVA Statistics**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.998 <sup>a</sup>	0.996	0.994	.3099

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27832650480804480.000	4	6958162620201120.000	348.166	.0089
	Residual	99925807646809.400	5	19985161529361.880		
	Total	27932576288451290.000	9			

**Table 4: Coefficients of the Model**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	39931357.073	15604592.038		-2.559	.0005
	LOAN SIZE	74329025.857	17995176.389	.121	4.130	0.009
	MEMBERSHIP	962.758	230.851	-.273	-4.170	0.009
	PORTFOLIO	-1860513.724	1054006.335	-.055	-1.765	0.013

The data findings from Sacco market statistics were analyzed and the SPSS output presented in table 3 and 4 above. From the ANOVA statistics in table 3, the processed data, which are the population parameters, had a significance level of 95.5% which shows that the data is not ideal for making a conclusion on the population's parameter. The F critical at 5% level of significance was 2.76. Since F calculated (value = 348.17) is more than the F critical, this shows that the overall model was significant. The coefficient table

in table 4 above was used in coming up with the model below:

$$\text{Credit risks} = 39931357.073 + 74329025.857 \text{ loan size} + 962.758 \text{ Sacco membership} - 1860513.724 \text{ credit product portfolio}$$

According to the model, loan size and Sacco membership were positively correlated with credit risks implying that an increase in loan size increases credit risk. Therefore, a Sacco with larger loan book is likely to face higher credit risk than that with a smaller loan book. The same applies to membership where credit risk increases with an increase in membership though with low sensitivity compared to loan book. On the other hand the negative correlation between the credit product portfolio and credit risk implies that Saccos with several loan products faces lower credit risk compared to those with fewer loan product portfolio.

From the model, taking all factors (loan size, Sacco membership and credit product portfolio) constant at zero, credit risk will be 39931357.073. This larger figure indicate that there are other factors that significantly influence credit risks other than loan size, membership and credit product portfolio. The data findings analyzed also shows that holding other independent variables at zero, a unit increase in loan size will lead to a 74329025.857 increase in credit risk implying a high positive influence of loan size on credit risk. A unit increase in Sacco membership will lead to a 962.758 increase in credit risk, a relatively low positive influence; a unit increase in credit product portfolio will lead to an 1860513.724 decrease in credit risk. This infers that loan size contributed more to the credit risk followed by Sacco membership while the credit product portfolio had a negative effect.

From the above figures, loan size has a larger positive bearing on the credit risk compared to Sacco membership while credit product portfolio has a negative impact on credit risk. Saccos therefore can manage credit risks by increasing on credit products and efficiently managing their loan book and having controlled membership growth.

### 4.3.1 Liquidity risk Analysis and Interpretations

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (liquidity risks) that is explained by all the four independent variables (dividend, fixed Asset Level, governance cost and Debt ratio/leverage). The ANOVA and coefficient tables below analyse the relationship of these variables.

**Table 5: ANOVA Statistics**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.886(a)	.784	.612	1.10823760

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.323	4	5.581	4.544	.034(a)
	Residual	6.141	5	1.228		
	Total	28.464	9			

**Table 6: Coefficients of the Model**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.213	1.850		1.196	.004
	DIVIDEND	2.455	2.667	.210	.920	.008
	FIXED ASSETS	5.052	9.574	.141	.528	.002
	GOVERNANCE	-31.367	8.836	-.825	-3.550	.023
	DEBT RATIO	-12.801	8.491	-.362	-1.508	.007

The data findings from Sacco market statistics were analyzed and the SPSS output presented in table 5 and 6 above. From the ANOVA statistics in table 5, the processed data, which are the population parameters, had a significance level of 95.5% which shows that the data is not ideal for making a conclusion on the population's parameter. The F critical at 5% level of significance was 2.76. Since F calculated (Value 4.544) is greater

than the F critical, this shows that the overall model was significant. The coefficient table in table 6 above was used in coming up with the model below:

**Liquidity risks** = 2.213+ 2.455 dividend + 5.052 fixed Asset Level -31.367 governance cost - 12.801 Debt ratio/leverage

According to the model, dividend, fixed Asset Level was positively correlated with liquidity risks while governance cost and Debt ratio/leverage were negatively correlated with liquidity risk. From the model, taking all factors (dividend, fixed Asset Level, governance cost and Debt ratio/leverage) constant at zero, liquidity risk will be 2.213. This low figure implies that fixed asset level, dividend, debt ratio and governance are the exhaustive determinant of liquidity risk in a sacco.

Holding other independent variables constant, fixed Asset Level contributed more to the liquidity risk followed by dividend while the governance cost and Debt ratio/leverage had a negative effect.

This conforms with the theory that most of the Saccos face liquidity challenges as a result of investing in non core business such as land and buildings (Plazas) at the expense of providing loans to members. The negative relationship of governance cost to liquidity supports the fact that the frequent meetings by directors and management focus solely on strategies of managing liquidity pressure in Saccos. A perusal of the directors' meeting minutes confirms that the major agenda for discussion is how to improve on liquidity either through borrowing, staggering loan disbursement, improving on loan recovery, introduction of more non funded or commission based products among others. These have helped them manage liquidity risk.

#### **4.3.2 Correlations Analysis and Interpretations**

The study conducted a correlation analysis of the credit risk and liquidity risk of the study. To quantify the strength of the relationship between the variables, the study used Karl Pearson's coefficient of correlation.

A 2-tailed Pearson Correlation test was done at 99% and 95% confidence levels and the analysis presented in table below.



**Table 7: Correlation test**

		CREDIT	LIQUIDITY
Credit Risk	Pearson Correlation	1	.224
	Sig. (2-tailed)	.	.533
	N	10	10
Liquidity Risk	Pearson Correlation	.224	1
	Sig. (2-tailed)	.533	.
	N	10	10

The Karl Pearson's coefficient of correlation ( $r$ ) was used to study the correlation between the study variables and the findings. From the findings, it was clear that there was a positive correlation between credit risk and liquidity risk framework as shown by a correlation figure of 0.224. This indicates that both credit risks and liquidity risks influenced the total financial risks of the Saccos.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Summary

Though Mowbray, (1995) found out that financial risk arises through countless transactions including composition of assets, Sales and purchases, investments and loans, and various other business activities, other factors related to credit and liquidity also have significance bearing on financial risk. These factors include loan size, size of sacco membership, credit product portfolio, dividend, external borrowing, investment in fixed assets and governance cost.

The purpose of the study is to establish the determinants of financial risks faced by the Saccos in Kenyan and provide strategies to mitigate against these risks. This was an analytical study that adopted a time series or longitudinal approach, supplemented by cross-sectional comparisons. The study used data for the 10 Saccos for the period (2006-2010) which was exposed to sensitivity analysis using OLS regression.

The study found that the regression equations for the period 2006 to 2010 related financial risks of the Saccos were:

**Credit risks** =  $39931357.073 + 74329025.857 \text{ loan size} + 962.758 \text{ Sacco membership} - 1860513.724 \text{ credit portfolio}$

**Liquidity risks** =  $2.213 + 2.455 \text{ dividend} + 5.052 \text{ fixed Asset Level} - 31.367 \text{ governance cost} - 12.801 \text{ Debt ratio/leverage}$

From the above regression models for the five years, the study found out that factors determining the financial risks were the loan size, Sacco membership, credit portfolio, dividend, fixed Asset Level, governance cost and Debt ratio/leverage. They either influenced it positively or negatively.

## 5.2 Conclusions

This paper examines the determinants of the financial risks in Saccos. The study concludes that credit risks and liquidity risks were determinants of financial risks. The study concludes that loan size and Sacco membership have a significant influence on the credit risk. Thus, to manage credit risks management should focus on strategies that will enhance efficiency in managing large loan book and Sacco membership. These include good management information system together with reliable members' information/details. Micco and Panizza (2004) attribute credit risk to two factors i.e lack of control systems and improper loan analysis. In order to manage credit risks Saccos ought to institute proper control systems reinforced by good loan guarantees and securities which should be supported by members education, loan follow ups based on regularly produced loan delinquency reports that enable directors and managers monitor loan recoveries and effect changes necessary to improve repayments.

The study deduced that fixed Asset Level and dividend size influenced the liquidity risks. Thus poor investment priority is a recipe of financial challenges. To manage liquidity risks, Saccos should focus on their core business of providing loans to members and limit investment in non core activities. Santomero (1997), identifies diversion of funds by Saccos from core business to other activities as key cause of risks.

The study also concluded that governance cost and Debt ratio/leverage negatively influences the liquidity risks. According to the study by Ribbey (1997), about two out of three of the Saccos sampled were not operational (either dormant or had collapsed) due to financial risks as a result of organizational restructuring which affects institution based Saccos, Poor governance, fraud and mismanagement of institutional funds causing bankruptcy and loss of confidence by members and High default rates which paralyzes operations and affect sustainability.

### **5.3 Recommendations**

Since the study established that loan size and Sacco membership have a significant influence on the credit risks, and it is the managements' desire to issue more loans and serve many members, this exposes them to credit risk. To mitigate credit risks in Saccos, the managers of the Saccos should concentrate on improving on their operational efficiency by investing in good management system that will assist in managing loans issued to members. Equally, the internal controls, procedures and process should be efficient to ensure that quality loans are issued. Though efforts should be made towards increasing the membership, this should be in tandem with effective membership management policies including "Know your Customer" policy to guarantee that only qualified members enjoy Sacco loan products.

The negative relationship between the credit risk and credit product portfolio manifests the importance of diversification of loan products by Saccos to cushion against the credit risks. Management therefore should evaluate the members' loan appetite and introduce several need based loan products.

On the other hand, since Fixed Asset Level and dividend affected liquidity risks, the managers should work on investing on the Saccos' core activity of loaning to members and focus less on the fixed assets level. Paying of dividend should be based on the true surplus realized and only at the right time while external borrowing from commercial banks should be moderated taking into account financial costs. These measures will ensure liquidity risks are reduced.

### **5.5 Suggestion for Further Research**

While the paper examines the determinants of the financial risks in Saccos, it is appreciated that there are numerous determinants of this risk. Because of data limitation, it was not possible to include all the determinants in our sample. Factors such as nature of income of members, members' deposits, interest rates, economic growth have strong bearing on the financial risks. Therefore I suggest further research on the determinants of the financial risks in the other Saccos that will consider these parameters.

Though the study showed that the credit risks and liquidity risks influences the financial risks of the Sacco. The financial risk model may be incomplete without consideration of other risks such as the interest rate risk, operational risk and transaction risk which might impact on financial risks. The study excluded these variables due to data and cost constraints. Future research could also consider these issues.



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**Appendix**  
**Credit Risk Estimates**

**Unstandardised**

	<b>Credit Risk</b>	<b>Loan Size</b>	<b>Membership</b>	<b>Credit Product Portfolio</b>
S1	22,571,075	0.6818	44,000	5
S2	1,585,635	0.5460	7,500	4
S3	2,140,935	0.6602	4,365	4
S4	14,253,966	0.5686	34,099	18
S5	14,430,693	0.7116	3,000	4
S6	208,954	0.5212	975	4
S7	16,340,153	0.7627	12,000	6
S8	33,786,249	0.7915	44,757	4
S9	7,968,192	0.6187	4,594	3
S10	4,724,504	0.6131	4,027	4
	<b>118,010,356</b>	<b>6.48</b>	<b>159,317</b>	<b>56</b>

**Credit Risk Estimate: Standardized**

<b>Sacco</b>	<b>Credit Risk</b>	<b>Loan Size</b>	<b>Membership</b>	<b>Credit Product Portfolio</b>
S1	0.1913	0.1053	0.2762	0.0893
S2	0.0134	0.0843	0.0471	0.0714
S3	0.0181	0.1020	0.0274	0.0714
S4	0.1208	0.0878	0.2140	0.3214
S5	0.1223	0.1099	0.0188	0.0714
S6	0.0018	0.0805	0.0061	0.0714
S7	0.1385	0.1178	0.0753	0.1071
S8	0.2863	0.1222	0.2809	0.0714
S9	0.0675	0.0956	0.0288	0.0536
S10	0.0400	0.0947	0.0253	0.0714

**Liquidity Risk Estimates**

<b>Sacco</b>	<b>Liquidity Risk</b>	<b>Dividend</b>	<b>Fixed Asset Level</b>	<b>Governance Cost</b>	<b>Debt ratio/leverage</b>
S1	1.1107	0.2696	0.0429	0.0923	0.0201
S2	1.2969	0.4778	0.2525	0.5270	0.0354
S3	1.0300	0.5575	0.0979	0.0724	0.0577
S4	1.2083	0.0282	0.0969	0.0452	0.0000
S5	1.1084	0.1709	0.0921	0.1715	0.1251
S6	1.0302	0.1066	0.1276	0.2001	0.0891
S7	0.9249	0.5825	0.1013	0.0651	0.0251
S8	1.1632	1.0671	0.0194	0.0468	0.0000
S9	0.6165	0.2687	0.2887	0.0717	0.2677
S10	2.7916	0.8869	0.0893	0.0255	0.0239



List of some of the Saccos operating Front Office Service Activity (FOSA) in Kenya

1	2Nk Sacco
2	Aberdare Rural Sacco
3	Afya
4	Agro-Chemical
5	Ainabkoi Rural
6	Ardhi
7	Asili
8	Banana Hill Sacco
9	Bandari Sacco
10	Baraton University Sacco
11	Baringo Farmers Sacco
12	Baringo Teachers Sacco
13	Biashara
14	Bidii Sacco
15	Bingwa Fsa Rural Sacco
16	Bonde La Kerio Sacco
17	Bondo Teachers
18	Borabu Farmers
19	Bungoma Teachers
20	Bureti Tea Growers Sacco
21	Busia Teso Teachers
22	Cent
23	Chai
24	Chemelil Sacco
25	Chepsol Rural Sacco
26	Chesikaki Rural Sacco
27	Chuna
28	Comoco
29	Diocese Of Meru
30	Egerton University Sacco
31	Eldoret Municipal Staff Sacco
32	Elgon Teachers
33	Elimu
34	Embu Farmers
35	Embu Teachers
36	Fariji/Kagwe Christian Devt Sacco
37	Fundilima

38	Gichugu F. Sacco
39	Githongo Majani
40	Githunguri Dairy Farmers Sacco
41	Good Faith
42	Gurudumu
43	Gusii Mwalimu
44	Harambee
45	Ilkisonko Rural Sacco
46	Imenti
47	Irianyi Tea
48	Isiolo Teachers
49	Jacaranda
50	Jamii
51	Jitegemee Sacco
52	Kaimosi Tea Sacco
53	Kakamega Teachers
54	Kangundo Rural
55	Kapenguria Teachers
56	Keiyo Teachers Sacco
57	Kenversity
58	Kenya Bankers
59	Kenya Cannery Sacco
60	Kenya Police
61	Kerenga Sacco
62	Kericho Tea Growers Sacco
63	Kermuco
64	Kiambaa Dairy Rural Sacco
65	Kiambu Teachers Sacco/Metropolitan
66	Kiambu Unity Finance
67	Kicejuki
68	Kikai Rural
69	Kilifi Teachers Sacco
70	Kimute
71	Kingdom
72	Kipsigis Teachers Sacco
73	Kirinyaga District Farmers Sacco
74	Kirinyaga Tea Sacco/Bingwa
75	Kisumu Nyando D.R
76	Kitale Tea

77	Kite(Kisumu Teachers)
78	Kitui Teachers
79	Kmfri Sacco
80	Kolenge
81	Konoin Tea Sacco
82	Koru
83	Kukena Sacco
84	Kuria Teachers
85	Kwale Teachers Sacco
86	Laikipia Teachers Sacco
87	Lamu Teachers Sacco
88	Lenga Tumaini
89	Lengo-Malindi Municipal
90	Limuru Traders
91	Magadi Sacco
92	Magereza
93	Maisha Bora
94	Marakwet Teachers Sacco
95	Marsabit Teachers
96	Masaku Teachers
97	Mater
98	Mathira Coffee Farmers Sacco
99	Mathira Tea Sacco/Baraka
100	Maua Methodist
101	Mek
102	Meru Central Farmers
103	Meru Mwalimu
104	Meru North Farmers
105	Meru South Farmers
106	Miciei Mikuru
107	Migori Teachers
108	Moi University Sacco
109	Mombasa Port Sacco
110	Mombasa Teachers Sacco
111	Mosacco
112	Mudete
113	Mugama Fcu
114	Muhigia Sacco
115	Muki Sacco

116	Mulot Fsa Rural Sacco
117	Mulot Teachers Sacco
118	Mungania Tea
119	Muramati Sacco
120	Murang'A Teachers Saccoco
121	Murata Sacco
122	Mwalimu
123	Mwea Rice Growers Sacco
124	Mwendiwega
125	Mwingi Mwalimu
126	Mwito
127	Nacico
128	Nakuru Teachers Sacco
129	Nandi Fcs
130	Nandi Hekima
131	Nandi Hills Tea Growers Sacco
132	Nandi Teachers Sacco
133	Nanyuki Equator
134	Narok Juakali
135	Narok Teachers
136	Nasaruni
137	Nassefu
138	Nation Staff
139	Ndege Chai Sacco
140	Ndetika Rural Sacco
141	Ndosha
142	Nest
143	Ngong Residents Dev'T Forum
144	Ngp
145	Nithi Tea
146	Njiwa
147	Ntiminyakiru
148	Nyala Dairy Sacco
149	Nyambene Arimi
150	Nyamira Tea
151	Nyandarua Teachers Sacco
152	Nyeri Teachers Sacco
153	Nzoia
154	Ogembo Tea

155	Olenguruone F. R.
156	Panpaper
157	Pcea
158	Puan Sacco
159	Rachuonyo Teachers
160	Reli
161	Rongai Rural Sacco
162	Rukuriri Rural
163	Rung'Eto Farmers
164	Samburu Teachers
165	Samburu Traders Sacco
166	Sheria
167	Siaya Teachers
168	Sigor Fsa
169	Silibwet Fsa Rural Sacco
170	Simba Chai Sacco
171	Sot Tea Sacco
172	Sotico
173	South Imenti Tea
174	Stima
175	Suba Teachers
176	Sukari
177	Tai/Kiambu Tea Growers
178	Taifa Sacco
179	Taita Taveta Teachers Sacco
180	Tana Teachers Sacco
181	Telepost
182	Tembo
183	Tenhos Sacco
184	Tescom
185	Tharaka Nithi Teachers
186	Thika District Teachers Sacco
187	Thika Tea
188	Times U (Uruku)
189	Transcom
190	Transzoia Teachers
191	Tupendane Sacco
192	Uchongaji Sacco
193	Ufanisi

194	Ufundi
195	Ukristo Na Ufanisi
196	Ukulima
197	United Nation
198	Universal Traders
199	Vihiga District Tea
200	Wakenya Pamoja
201	Wakulima Dairy Sacco
202	Wanaanga
203	Wananchi Sacco
204	Wanandege
205	Wareng Teachers Sacco
206	Washa
207	Waumini
208	Weversity