

**EFFECT OF ENTERPRISE RISK MANAGEMENT PRACTICES
ON PERFORMANCE OF SAVINGS AND CREDIT
COOPERATIVES IN KENYA: A CASE OF SAVINGS AND
CREDIT COOPERATIVE SOCIETIES REGULATORY
AUTHORITY GUIDELINES**

BY

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ACCOUNTING AT KCA UNIVERSITY**

October, 2017

DECLARATION

This dissertation is my original work and has not been presented for any award of degree in any other University.

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

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13/03215

This dissertation has been presented for examination with my approval as the University Supervisor

Signature:Date:

Dr. Abraham Rotich

KCA University

DEDICATION

I dedicate this study to my mum, Lucy Wakonyo who motivated me to scale to this height in my education. Much thanks to you for your ceaseless and limitless dedication all along the way. I am and will always be grateful.

ACKNOWLEDGEMENT

I am most grateful to the Almighty God for giving me hope and making me have all that I have. My appreciation goes to my study supervisor, Dr Rotich, who guided me through the study to make it a success. I also wish to thank KCA University for allowing me to pursue this course. To my colleagues at the school, I owe you much for the support. Lastly, I thank my family for the moral support throughout the entire period of study.

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LIST OF ABBREVIATIONS AND ACRONYMS

AQ-	Asset Quality
CBK-	Central Bank of Kenya
CAPM-	Capital Pricing Model
COSO-	Committee of Sponsoring Organisations of the Treadway Commission
DTS-	Deposit Taking SACCOs
FOSA-	Front Office Savings Activities
FSD-	Financial Sector Deeping
ERM-	Enterprise Risk Management
IMA-	Institute of Management Accountants
EBIT-	Earningsbefore Interest and Tax
DW-	Durbin Watson
NPV-	Net Present Value
MPT-	Modern Portfolio Theory
KUSCO-	Kenya Union of SACCOs Company
ICT-	Information and Communication Technology
ROA-	Return on Assets
PwC-	Pricewaterhouse Coopers
SASRA-	Sacco Societies Regulatory Authority
US-	United States
VIF-	Variance Inflation Factor

LM-	Liquidity Management
SMEs-	Small and Medium Enterprises
SACCOS-	Savings and Credit Cooperative Societies

OPERATIONAL DEFINITION OF TERMS

Enterprise Risk Management

Enterprise risk management is a framework that majors in developing a systematic approach on identifying all the risks facing an organization (Tseng, 2007).

Capital Adequacy

Capital adequacy is the level of leverage an entity in the financial sector has when compared to the statutory requirement (Johnson, 2007).

Liquidity Management

Liquidity of a Sacco is the ability of the Sacco to own liquid assets. Liquid assets are those assets that are held in cash or can be converted to cash with ease without loss in value. Liquidity management is the process of ensuring that a Sacco has liquid assets as per the regulations (Government of Kenya, 2008).

Asset Quality

Asset quality may be defined as the total risk that is associated with the various classes of assets that are held by Sacco. The quality of assets is an economic indicator of how the chances of an improved profitability of an entity (Ombaba, 2013)

ABSTRACT

The existence of risk in many sectors of the economies has been a nightmare for management of organizations. SACCOs owing to the nature of the deposit taking and credit issuing business are vulnerable to a quite large number of risks both internally and externally. Enterprise Risk Management (ERM) seeks to address and manage risks across all departments of an entity. Before 2008, SACCOs had no regulatory guidelines that helped them in managing risks. Thus, risk management was left at the discretion of the individuals SACCOs that saw most fail. The Sacco societies Act came into place in 2008 and the Sacco regulation took effect as from 2010. Hence, there is a need for a study to assess the effect of enterprise risk management practices on performance of SACCOs in Kenya: a case of SASRA guidelines. This study had the following specific objectives; to establish the effect of share capital adequacy, liquidity management, and asset quality on performance of Savings and Credit Cooperatives Societies in Kenya. The study adopted a panel data analysis where secondary data was collected and analyzed. Data was collected for the period 2011 to 2016 from the Sacco Society Regulatory Reports on SACCO supervision reports. The study had a target population of all the SACCOs and a sample of 41 SACCOs was selected for data analysis. The study used panel regression (pooled panel regression with robust standard errors) to investigate the relationship between the independent variables and the dependent variable. The study results indicated that liquidity and asset quality were statistically significant predictors of ROA for the deposit taking SACCOs while the relationship between capital adequacy and ROA was not statistically significant. Based on the study findings discussed above, several recommendations are provided. SACCOs need to improve their capital position to achieve benefits of good capitalization to profitability. Secondly, deposit taking SACCOs should observe their liquidity levels to ensure that they are liquid enough to perform their activities. Poor liquidity levels in SACCOs point to high riskiness and the inability of the SACCO to perform their short term obligations competently. Further, it is recommended that deposit taking SACCOs to observe efficiency and effectiveness in dealing with delinquencies since the greatest asset of a given SACCO is in terms of performing loans. A high number of non-performing loans affects the SACCOs operations and has a trickledown effect on the SACCOs financial performance. The study recommends that SASRA should offer guidelines on how to sustainably adopt the prudential guidelines issued by them since they positively affect the performance of deposit taking SACCOS in Kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Risk is the loss exposure inherent in an organization's environment (Dorfam, 2007). Thus, risks are always present in the business realm. Accordingly therefore, it would be prudent for organizations to carry out proactive measures of dealing with risks exposures. According Knechel (2006), risk may be defined as the likelihood that the actual outcome of a process may deviate from the expectation. Thus, risks compromises on the optimum results of an organization's goals. Harrington & Niehaus (2003) cites that risks from a business point of view are the exposures that reduce future net cash flows and may results into losses. According to Dickinson (2001), risks from an enterprise point of view are the chances that the firms' returns may differ from the firms' objectives.

Risk management is a process that is based on risk identification and control thereof with an aim of minimizing the exposures (Rejda, 2011). Risk management is a step by step procedure that is done by an organization with a goal of lowering loss likelihood as much as it can be possible. It is true to suffice that risks may not be eliminated fully, but with the right process they can be minimized. Rejda(2011), insights that risk management involves the identification of risks, analysis of risks, taking appropriate measures to reduce the risks exposures and ultimately implementing the controls and monitoring the risks management framework. Risk management has the primary role of optimizing the shareholders' value and thus is supposed to improve performance of the organization (Pagach and Warr, 2010; Hoyt and Liebenberg, 2011).

A major risk facing SACCOs is credit risk. According to Nawai and Shariff (2010), there is a close relationship between borrowers and the SACCOs and it is for this reason that early detection of credit risks is possible. This is one facet of risk management, which takes one

risk at a time but it is true to suffice that there are more than one risk exposures facing organizations. However, it is crucial to note that risks do not operate singly, but rather it is the confluence of all risks that affects the performance of SACCOs.

According to COSO (2004), ERM is a risk management practice that seeks to look into the risks at an overall point of view. Risk management may entail the assessment and control of specific risks department wise, but on the other hand ERM focuses on the entire enterprise in terms of risks. In this respect, ERM does not consider functions of the organization single handedly but takes a holistic approach where all risks are identified and mitigating measures formulated.

1.1.1 The Concept of Enterprise Risk Management (ERM)

According to Rasid and Golshan (2012), as much as Enterprise Risk Management (ERM) has attracted major concerns in the global arena, several risks are on the rise and new risks are also emerging. Thus, risks cannot be eliminated in totality as long as an organization is in operation. Tseng (2007) defines ERM as a framework that majors in developing a systematic approach on identifying all the risks facing an organization. Gordon(2009), notes that ERM is a holistic process of identifying and managing risks exposures that may compromise on the realization of the organization's objectives. According to Beasley *et al* (2006), ERM is the optimum matching process of risks and opportunities done by organization with an emphasis on the whole organization. Lai (2011) idealizes that ERM aligns risk management strategies with the strategic goals of the organization hence considers the entire organization.

Hoyt and Liebenberg (2011) established that there is a positive relationship between adoption of ERM strategies and firm value. For this very reason it becomes necessary for SACCOs to adopt appropriate risk management strategies. SACCOs may face different challenges in pursuit of their financial goals. Achou and Tengoh, (2008) argues that risk management of SACCOs is more inclined to credit risk management since their main source of income is

interest on members' loans. Increase in defaults on loan may lead to low business performance. It is therefore of concern that ERM may not be fully operational among SACCOs in Kenya.

1.1.2 Enterprise Risk Management in Kenya

Delloite (2012) reported that 85 % of the respondents in their survey indicated that ERM was adding value to their entities through reduced liquidity issues. The same report established that a 69 % of the respondents had weak ERM systems and this hampered their efforts towards risk management. According to the CBK (2010), 94% of commercial banks and financial institutions had developed ERM systems. However, 74 % had weak ERM and thus were exposed to risks vulnerabilities in the market. Waweru and Kisaka (2011) reported that ERM once implemented successfully leads to improved performance.

Risk profile in Kenya is high at 52 % which is above the average for Africa, 50 % (PwC, 2014). The survey indicated that the prevalent risks included; accounting fraud, asset misappropriations, bribery and corruption and cyber-crimes and this to a large extent affected the performance of firms in Kenya. According to (Nyang'aya, 2012) the common risks are operational risks, regulatory and market risks. In the light of this discussion it can be seen that ERM has not been fully in operation in Kenya. With the issues of malpractices in the business, it is therefore necessary for financial institutions to align ERM with their corporate governance strategies (Sobel and Reding, 2004).

Nain (2004) noted that risk management does not have significant effect on the value of companies. Thus, it means that ERM does not necessarily result into better companies. However, according to Yow and Sherris (2008) the various facets of risk management can add value to the operations of the companies and consequently improve their performance. To this extent, it can be seen that various studies have resulted into conflicting findings. Thus, there is need for a study to be carried out to compare and contrast what prior studies have

established on ERM and its effect on performance of organizations. In as much as risk management is being done by entities new cases of financial losses are frequently reported. Thus, it means that, there is a chance that organizations in Kenya may not be applying the appropriate risk mitigating measures. In Kenya information on ERM by entities is seldom published. This poses the question on the awareness of the strategy in the country.

1.1.3 Risk Management Guidelines by SACCO Societies Regulatory Authority

In Kenya SACCOs are regulated by the SASRA (SACCOs Societies Regulatory Authority). According to the Government of Kenya(2008) SACCOs are majorly faced by credit risk, liquidity risks, and legal risk and investment risks. For this reason, there is a need for them to be guided by prudential guidelines to ensure they safeguard the interests of depositors and other stakeholders. These guidelines are mandatory and are meant to be followed by SACCOs operating under the regulations of SASRA. SACCOs are expected to adhere to regulatory standards and stipulations (McConnel, 2007). Thus, failure to follow the guidelines may lead to deregistration of SACCOs. These guidelines aim at helping the SACCOs manage their risks. For instance, the guidelines on capital adequacy ensure that a SACCO is liquid and thus is in a position of meeting its financial obligations. Further, the Asset quality ratio measures the quality of the assets owned by the SACCOs. It is of paramount importance that assets are balanced between liquid and those that may not be termed as “liquid”.

SASRA (2010) notes that the guidelines act as a minimum of operational regulations in order to ensure SACCOs improve on financial safety and soundness. In this light, the guidelines are a framework for ensuring that SACCOs carry their activities in a way that safeguards the interests of all stakeholders. According to Musyoka(2008), the board and the management of the SACCO have a role in aligning their operations in line with the guidelines issued by the regulator. It is subtle to note that SACCOs are meant to foster the savings and investment

ability of the members. The management is expected to curtail their operations in a way that they ensure capital adequacy, liquidity and asset quality ratios are favorable. These guidelines were issued in 2010 and thus it is crucial to assess their impact on the financial performance of SACCOs.

SACCOs' operations are enshrined in the SACCO Societal Act of 2008. The Act was enacted owing to the importance of SACCOs in the economy. According to Mirie (2014), SACCOs are important tools that ensure reductions in poverty levels in Kenya. For this reason, there is need of regulating their operations. Further, Kobia (2011) cites that due to mismanagement by SACCO boards, the government had to establish guidelines to enhance the performance and restore public trust among these financial institutions. Therefore, the prudential guidelines enhance risk management of the SACCOs. It is important to note that risks are those factors that compromise the achievement of objectives of entities. Without proper regulatory measures SACCOs were faced with substantial issues of risks that threatened the deposits of members, continued existence of the SACCOs and the sustainability of sector (FSD, 2009). These challenges included capital adequacy problems, liquidity problems, credit management, product and geographical growth. Guiso(2009), notes that regulatory measures are important in addressing risks at firm level and also at industry level.

According to SASRA(2010), such regulatory requirements are important because they safeguard the SACCOs against the externalities within or outside the financial markets. The regulator indicates that due to the regulatory measures being adhered and enforced there has been growth and improved profitability in the industry. Where the SACCOs are performing well, it follows that they increase in size, experience growth in membership and exhibit operational efficiencies. Kobia(2011) argues that adherence to regulatory requirements ensures increased business due to appropriate management of all risks. ERM is a system of managing all risks with an entity. Thus, the SASRA guidelines are a means of mitigating

most risks that are faced by the Savings and Credit Cooperatives Societies. In as much as the guidelines are good enough for risk management, it is important to note that they are issued as a minimum. It is the responsibility of the board of the SACCOs and management to ensure that stakeholders' interests are safeguarded at all times.

1.1.4 Enterprise Risk Management and SACCOs Performance in Kenya

Savings and credit cooperatives (SACCOs) are associations of people with voluntary membership and are democratically controlled. This way, SACCOs are meant to pool resources and achieve common financial goals. Deposits taking SACCOs in Kenya are regulated by SASRA. The role of SACCOs in the economy of Kenya cannot be overlooked. According to Olando, Jagongo and Mbewa (2013) the growth of SACCOs in Kenya is related to their loans management processes, strengths of the institutions and product innovations.

Effective risk management has benefits to all types of organizations (Ranong and Phuenggam, 2009). The same authors argue that both private and public entities, large or small organizations have chances of improving their performance when they adopt appropriate risk management tools. Risk mitigating strategies increases, saves the company the cost of dealing with risks after they have occurred. It should be noted that the basic aim of risk management is to reduce the extent of losses in the event of risks materializing. It is thus, of paramount importance to define the risk exposures of SACCOs, identify mitigating procedures and keep monitoring the process to ensure it is working as intended. It is true to suffice that SACCOs are faced with major risks owing to the fact they operate in a volatile financial industry.

Risk management should be an integral part of the strategies of the SACCOs in the country. According to Fadum(2013) where there is a successful implementation of ERM, there is a chance of improved financial performance due to minimized loss exposures. Njiru and Mengich(2015) established that risk analysis had significant effect on financial growth of

SACCOs in Nakuru County. Mwirigi(2006) identified that credit risk management was regarded highly by the management of SACCOs in order to mitigate on the performance of loans. Wasike(2012) indicated that the growth of SACCOs since the 1970s was remarkable. Lagat, Mugo and Otuya(2013), found out that credit risk management was a crucial aspect in SACCOs lending procedures. Their study identified that risk management helped in sustaining the SACCOs' profitability and stability. In as much as research has been done on SACCOs and risk management, none has been done with an aim of relating ERM and performance of SACCOs in Kenya. This study was carried out to establish the effect of enterprise risk management in a holistic approach, on the performance of deposit taking SACCOs.

1.1.5 Components of Enterprise Risk Management

According to COSO (2004), ERM is a risk management practice that seeks to look into the risks at an overall point of view. Risk management may entail the assessment and control of specific risks department wise, but on the other hand ERM focuses on the entire enterprise in terms of risks. Thus, with respect to a Sacco, there are a number of risks that are monitored. It is crucial to state that a Sacco is a financial institution that operates under dynamic markets. Haron and Hin Hock (2007), notes that credit risks and market risks are inherent in the financial markets. Credit risk is the likelihood that borrowers will not be able to refund the principal borrowed and that they may default on the installments if granted loans. In this light, the performance of the Sacco will be inevitably compromised if the borrowers are not to meet their obligations as far as the loan terms are concerned. Market risks are those unfavorable conditions that are in the entire market and are not within the control of an individual entity. According to (Nocco and Stulz, 2006) market risks include interest rates and foreign exchange fluctuations. Of huge concern is the interest rates risk that affects earnings and value of assets (Sensarma and Jayadev, 2009). This is perhaps, because the

loans are the major assets of the savings and credit financial institutions. SACCOs operate under competition from the conventional commercial banks and thus has to manage their interests in order to keep their earning favorable.

Upon identification of risks, all measures must be undertaken to manage risks (Dorfman, 2007). Thus, enterprise risk management entails taking deliberate measures to manage risks by setting up controls. To a large extent controls ensures that the loss in the event of risks materializing is kept at the lowest level possible. In as much as entities may wish to run away from risks, it is usually not possible since the best gains are made in risky environments. Al-Tamini (2002) argues that the match between risk and returns is a critical analysis that must be carefully planned and meticulously executed. According to Dorfman (2007), there are a number if risk controls that may be considered by an enterprise. The authors advocates for: risk avoidance, risk abatement, risk allocation and risk retention. Risk avoidance is virtually the safest form of risk management since it involves elimination of all activities that has risks. However, non-risky activities, more often than not carries low returns. It must be noted that among the traditional goals of entities is to maximize returns. Thus, it is plausible for entities to venture in risky opportunities depending on their risk appetites. On the other hand, risk abatement is a strategy that employs optimization principles in order to manage risks. The process employs a portfolio look at ventures and picks the mix with highest returns at the lowest risks. Risk allocation is the spread of investments across different industries with an aim of sharing risks. The basic assumption is that, economically speaking, it is not possible for all markets to be hit by hazards at the same time. For instance, the entity may invest in real estate and automobiles each cushioning the other in case of a bad day. Lastly, risk retention is the keeping of the risks within the organization under consideration. According to Jansson and Norrman (2004) a good risk management strategy should be a process of identifying risks and reducing their impact at a holistic level. This forms the mantra of ERM.

Enterprise risk management aims at identifying risks from all operations of the entities and hence managing such risks in order to minimize their impact.

According to Golshan & Rasid (2012) the size of the firm is a critical factor to consider before implementing the concept of ERM. This suggests that ERM should not be applied blindly in any organization as its failure may affect the whole organization due to its holistic nature of operation. Risk management is a key strategy of ensuring that organizations live to their missions and meet their day to day objectives. ERM calls for a huge chunk of entities resources in order to be implemented successfully. COSO (2004) identifies that ERM is a multidimensional approach to risk management of entities. The process starts by the close monitoring of the organizations process and the internal environment to identify how the workforce views risks and their closely followed by the management setting the risk objectives of the entity. It is of crucial importance that entities align their risks within the risk appetite as designated by the board of directors and or members in the case of a Sacco. Risk identification is the first stage that entails the identification of all loss events, both controllable and uncontrollable, internally or externally and their loss probability is evaluated. Haron (2007), notes that risk identification is a crucial stage of risk management. Perhaps this is because; it is not possible for entities to manage risks they are yet to identify. For this reason, risk identification is an operation that ensures the ERM process and is critical since it is its output that determines the next phase that is risk assessment. Griffin et al (2009) puts it that without proper identification of risks the entire risk management process is bound to collapse.

Risk assessment is the analysis of risks and idealizing how the risks should be managed. According to Sundararajan (2007) risk assessment should take a comprehensive approach in order not to leave some risks without management. At this stage, the entity has the mandate of settling on the type of risk management to adopt. This is equally a critical phase since the

entity must consider the mix of risks and returns that are at the disposal of the entity. The failure to assess the risks and adoption of proper risk strategies contributed to the financial crisis of the mortgage industry in the US (Allen and Carletti (2009)). Thus, it is paramount importance for entities to assess the impact of risks and thereby placing themselves in positions of advantage should the risks materialize. Equally Gupta (2007) identified that the risk assessment process of many Indian insurance companies was not integrated. Thus, the impact of event had not received enterprise-wide approach and consequently the entities were hit hard when risks materialized. Further, risks should be assessed from all points of view, that is from within the enterprise and outside in the industry and also outside the industry of operations. According to Rudolph (2009) risks that are previously unrelated to the industry of an entities are currently affected the entities. With this in consideration risk assessment needs quite a handful of resources and skills in order to bear fruits.

After risk assessment, there follows risk response. According to (Hoyt & Liebenberg, 2009), enterprise risk management is a strategy that fosters the awareness of existence or risks and enhances better decisions on risk management. Risk response may be explained as the measures that are taken by the entity in managing risks. This measures may be globally classified as risk avoidance, risk acceptance, risk sharing and risk reduction (COSO 2004). According to Kleffner et al. (2003) defines ERM as strategy that considered both operational risks and financial risks while ensuring that that the risk management process if efficient. (Beasley et al., 2006) notes that ERM aims at cost effectiveness of the entity and consequently increasing the value of the entity. At this phase, risks are classified with respect to their returns and the risk appetite of the organization is used to guide in the risk response. Risks response aims at setting into place the specific activities that manages the risks. Risk avoidance is seldom followed since, by not taking up the opportunity, the entity has no

chance of making a gain. It is for this reason that entities set up control activities in order to curb the probable losses in the event of risks materializing.

Control activities are the setting of policies in lieu of controls in order to manage risks. This is a critical stage since there is a need to match the activities with the risks identified in the initial stage of ERM. Nocco and Stulz (2006) notes that risk management activities include developing of a framework of control in order to reduce the losses posed by risks. With this in mind, the activities should be in line with the strategic goals of the entity. Where this is the case, ERM works best and a higher chance of meeting the objectives of the organization is realized. Risk management is best done at the strategic level where support during the implementation phase will be greatly required.

Information and communication is the second last stage of ERM. This phase entails the collection of information in order to gauge on the consistency if the ERM framework with the strategic goals of the entity. Lastly, monitoring of the ERM process is of vital importance. Like any other input-output process, monitoring is mandatory. Through monitoring, evaluation of the process is done; hence if there are deviations from the expected outcome, corrective measures are undertaken in good time. Crucial to the ERM process, is review since it ensures continued advancement and benchmarking. This phase is equally important. This is because, it is the phase where any chances of improvements are evaluated and incorporated into the ERM strategy of the entity.

1.1.6 Performance of Savings and Credit Cooperative Societies

SACCOs operates in the banking industry whose main line of business is collecting deposits from members and disbursing loans to members. Thus, their major source of income is loan interests. In other words, SACCOs has loans as their large assets bases. It is important to note that performance is either measured in terms of financial or non-financial elements (Divenney et al., 2008). Financial performance is the measure of the profits of the entity since it

measures cost efficiency in achieving the institutions financial goals. On the other hand non-financial performance measures entail such parameters as customer's satisfaction, new customer acquisition and customer's retention.

According to Grace et al (2013), ERM has an effect on cost and revenue efficiency and also employee satisfaction. In this light, ERM has an effect on both financial and non-financial results of the entity. This study will consider customer satisfaction as a pillar of performance of SACCOs. This is because; with delighted customers the Sacco will acquire new customers due to referrals from already existing customers. Consequently, this boosts the amount of deposits available for loans to the members. Where this is the case, the performance of the SACCOs is enhanced. The overall objective of this study is to assess the effect of ERM on performance of SACCOs.

Savings and credit cooperatives (SACCOs) are associations of people with voluntary membership and are democratically controlled. This way, SACCOs are meant to pool resources and achieve common financial goals SACCOs in Kenya are regulated by SASRA. The role of SACCOs in the economy of Kenya cannot be overlooked. According to Olando, Jagongo and Mbewa (2013) the growth of SACCOs in Kenya is related to their loans management processes, strengths of the institutions and product innovations.

Effective risk management has benefits to all types of organization (Ranong and Phuenngam, 2009). The same authors argue that both private and public entities, large or small organisations have chances of improving their performance when they adopt appropriate risk management tools. Risk mitigating strategies increases saves the company the cost of dealing with risks after they have occurred. It should be noted that the basic aim of risk management is to reduce the extent of losses in the event of risks materializing. It is thus, of paramount importance to define the risk exposures of SACCOs, identify mitigating procedures and keep monitoring the process to ensure it is working as intended. It is true to suffice that SACCOs are faced with major risks owing to the fact they operate in a volatile financial industry.

Risk management should be an integral part of the strategies of the SACCOs in the county. According to Fadum(2013) where there is a successful implementation of ERM, there is a chance of improved financial performance due to minimized loss exposures. Njiru and Mengich(2015), established that risk analysis had significant effect on financial growth of

SACCOs in Nakuru County. Mwirigi(2006) identified that credit risk management was regarded highly by the management of SACCOs in order to mitigate on the performance of loans. Wasike(2012),indicated that the growth of SACCOs since the 1970s was remarkable. Lagat, Mugo and Otuya(2013), found out that credit risk management was a crucial aspect in SACCOs lending procedures. Their study identified that risk management helped in sustaining the SACCOs profitability and stability. In as much as research has been done SACCOs and risk management, none has been done with an aim of relating ERM and performance of SACCOs in Kenya. This study will seek to establish the effect of enterprise risk management that has a holistic approach, on the performance of the SACCOs.

1.2 Statement of the Problem

Enterprise risk management may be a good tool of safeguarding an entity against losses that may be caused by occurrence of risks. However, not all organizations have the capabilities of setting a clear ERM system due to resources and skills requirement. It follows that the institution's management may be well aware of the benefits of an ERM but not adopt it. To avert this, the regulated industries such as financial and insurance sectors operate under prudential guidelines. In Kenya, SACCOs involved in deposit taking business are regulated by the SACCO Societies Regulatory Authority (SASRA). SASRA has issued guidelines that aims at sensitizing the deposit taking SACCOs on risks and makes sure they operate within the legal framework. Thus it is important to consider the effect of these guidelines on performance of SACCOs. Nevertheless, a number of SACCOs have failed, others have their licenses revoked for instance, Transcom SACCO Society Limited, Ufundi SACCO Society Limited, Maono SACCO Society Limited, Daima SACCO Society Limited, Green Hills SACCO Society Limited, Nest SACCO Society Limited. Other SACCOs have been placed under receivership, for example, Jijenge SACCO was placed under receivership in 2017and others like Oriental SACCO and Moi University SACCO have been issued with temporary licenses. Thus, it is of paramount importance to assess the effect of SASRA guidelines in ensuring the financial health of SACCOs.

Gisemba (2010) carried a study with an aim of establishing the effect of credit risk management on performance of SACCOs in Kenya. The study indicated that credit risk decisions were not fully documented and thus exposed the entities to credit risks.

An effective ERM is crucial to SACCOs since it ensures that they utilize their scarce resources efficiently in order to achieve their objectives (Okochi, 2008). Risks need to be monitored closely in order for entities to realize their organizational goals. According to Riley (2012) an effective ERM ensures that entities have adopted the right policies that enhance compliance to legal and other statutory regulations. In a bid to enhance risk bearing capability of SACCOs, SASRA formulated ERM and guidelines to help SACCOs deal with risks. However, in spite of these guidelines the performance of SACCOs has not significantly improved as it would be logically expected. According to The Central Bank of Kenya (2011), 74 % of the financial institutions had what the regulator termed as “a weak risk management system”. Perhaps, this begs the question of why the entities do not invest in ERM given the possible benefits that accrues to such mechanism. This may be due to low capacity in terms of skills among the players in the financial markets in Kenya

However, not all agree on the benefits of ERM. McShane et al. (2011) argues that ERM is an overvalued risk management practice. Baxter et al. (2012) established that ERM had no significant equity performance owing to the low change in share prices in the market and thus do not associate good performance being due to success of an ERM process. A few studies have been done in Kenya (Njiru, 2003; Simiyu, 2008) on enterprise risk management. Simiyu (2008) undertook a study on credit risk management among microfinance institutions in Kenya. On the other hand Njiru (2003) did a study on risk management of coffee cooperatives in Embu District. However, none of these studies have been undertaken on deposit taking SACCOs. It is for this reason that this study was being carried out. This study sought to establish the effect of enterprise risk management practices on performance of SACCOs in Kenya, a case of SASRA guidelines.

1.3 General Objective

The general objective of this study was to assess the effect of enterprise risk management practices on performance of SACCOs in Kenya, a case of SASRA guidelines.

1.3.1 Specific Objectives of the Study

The specific objectives of the study were:

- i. To establish the effect of capital adequacy on performance of Savings and Credit Cooperatives Societies in Kenya.
- ii. To establish the effect of liquidity management on performance of Savings and Credit Cooperatives Societies in Kenya.
- iii. To establish the effect of asset quality on performance of Savings and Credit Cooperatives Societies in Kenya.

1.4 Research Questions

The study sought to answer the following questions:

- i. What is the effect of capital adequacy on performance of Savings and Credit Cooperatives Societies in Kenya?
- ii. How does liquidity management affect performance of Savings and Credit Cooperatives Societies in Kenya?
- iii. To what extent does asset quality affect performance of Savings and Credit Cooperatives Societies in Kenya?

1.5 Significance of the Study

1.5.1 Savings and Credit Co-operatives Societies

This study is of significance to SACCOs as their top management who are charged with the responsibility of managing risk will get valuable information in this field and ways of mitigating risk exposures are discussed in line with the SASRA guidelines.

1.5.2 Other Researchers and Scholars

This study may be used as a basis of further research on SACCOs and Enterprise risk management. It's useful since it provokes other studies to be undertaken in this field. Further, the study is a source of information in the field of SACCOs, ERM and performance.

1.5.3 Policy Makers

This study may be useful to policy makers and in particular the SASRA for instance in setting up policies to govern the operations of SACCOs in Kenya. The study will discuss and document issues relating to adoption of prudential guidelines and their effects on performance hence enhancing its use by policy makes in the SACCOs industry. SASRA guidelines are very helpful because they ensure stability in the industry. It is for this reason, that this study will be of significance to policy makers in that it will provide information on how to regulate the SACCOs with respect to the guidelines assessed by the study.

1.6 Scope of the Study

This is concerned with the assessment of the effects of enterprise risk management practices on performance of SACCOs in Kenya. It assesses the influence of share capital adequacy, liquidity management, and asset quality on performance (ROA) of SACCOs in Kenya. Secondary data extracted from SASRA Annual Reports on Supervision of Deposit-taking SACCOs was used. Data was collected for a period of 6 years from 2011 to 2016.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter contains theoretical literature on the study. The chapter starts with an introduction, then theoretical review, empirical review, research gaps and finally a conceptual framework is developed.

2.2 Theoretical Review

This study was underpinned in the following theories; Modern Portfolio Theory, Capital Asset Pricing Model, Innovations Diffusion Theory.

2.2.1 Portfolio Theory

The theory of Modern Portfolio was introduced by Markowitz (1959). This theory is based on two fundamental bases of economic decisions, that is, risk and return. The theory postulates that there must be compensation in terms of returns for assuming some risks. Investors would consider taking investments in projects that have return and risks in line with their risk profiles. As a principle, this theory takes into account that it is not always that the expected results are realized to the last digit. The model appreciates that risk is the chance of deviation of the actual returns from the planned returns. According to (Chijoriga, 2007), this theory assumes that the investors are rational and the market is efficient and perfect. This means that the investors are capable of making economic decisions out of reason as opposed to intuition. Thus, they know when to invest or not to invest and that they can predict the changes in the market. Consequently, it can be deduced that firms may use this theory stipulations to mitigate on risks facing them. According to (Omisore, Munirat and Nwufu, 2012), MPT advocates the diversification of assets as a risk mitigating strategy. All factors held constant, investing in different classes of assets acts as a safeguard in the event of

volatilities in the market. Put differently, this theory encourages investors to have a variety of assets in their portfolio. Companies should weigh the risks and returns of the various classes of assets and pick the one that maximizes the members' wealth.

(Liebenberg & Hoyt, 2003) notes that the consideration of the firms all risks in a holistic manner guides the organization to achieving its goals. This is the basic working of ERM. ERM seeks to reduce the volatility of companies earning, share prices and reduces the cost of capital. This theory is very crucial to the study since it helps in shedding light on the role of risks in influencing the returns of investments. Further, it helps on developing insights on why risk management is a crucial strategic goal of companies, and hence SACCOs are not exempted.

2.2.2 Capital Asset Pricing Model

According to Sharpe and Lintner (1965), CAPM is a theory that seeks to explain the relationships between risks and returns. Thus, it is an advancement of the MPT to some extent. CAPM advocates that investors seek to make good returns from their capital commitments by lowering the variance and maximizing the expected returns of the portfolios. One major concern of CAPM is the introduction of systematic risks. As per this model, systematic risks are the risks denoted by beta and they cannot be completely eliminated by diversification of assets. Thus, investors enjoy better returns from their investments only by accepting systematic risk. CAPM thus seems to put it forward that investors should consider assets with high beta values since they lead to more expected returns. An extension to the theory is the theory of which is consideration of unsystematic risks Miller Modigliani (1958). According to the scholar, there is no point in hedging or managing risks against losses that can be occasioned by unsystematic risks. Further, they note that the market does not necessarily price such actions and thus may not influence the investors' decisions in the

market. They argue that since investors are rational they consider the statuses of their portfolio and act accordingly.

This theory is important to this study in that it gives insights on the preference of the different sources of financing. The major source of financing for a SACCO is in share capital and which at the end of the financial year, members are paid dividends. The other potential source is acquiring of debts which has a cost in terms of interests. However, the debts may not be preferred since the SACCOs are owned by the members whose main aim is to save and access credit facilities. CAPM helps in explain the subtle logics that guide management on the choice of financing of entities. It is true to suffice that capital is invested in various projects that may not be free of risks. Consequently, the boards of SACCOs need to decide on the classes of assets to commit members' funds without compromising on their contributions. CAPM idealizes that risks are inherent in the business realm and management of organizations need match risks and returns. Thus, this theory fundamentally gives insights on the risks and return trade-offs.

According to Berk (2009), companies should not manage risks since by doing so at the internal level, results to the realization of negative NPVs (net present value) for projects. Contrary to this notion, Stulz (2003) argues that it is important to manage risks since not all investors have the chances of diversifying their assets and equally the market is not usually perfect. According to Dhamini (2007) risk management is valuable to the firms' performance in an imperfect market. His proposition is also advocated by Oosterhof, (2001) who notes that risk management plays a role in performance of the firm and adds the value of the firm. This theory is important to this study in that it provokes on the issues of risks and the need to or not manages them at the firm level. SACCOs may use this model in order to manage risks since the Kenyan market, like any other financial market is imperfect Further, this theory offers a critical analysis on risks and their possible impact on the performance of SACCOs in

Kenya. Risks are found within the organization or outside the organization. It is important for the Sacco to identify which risks it can keep without compromising on its existence and performance.

2.2.3 Innovation Diffusion Theory

Diffusion innovation theory is based on how development in information technology has been used to manage risks by firms. According to Pincher (2008), diffusion of innovations model seeks to explain how new innovations flow within the departments. Rogers (2003), asserts that there are a variety of reasons why diffusions of innovations happens within an organization. However, Lundblad and Jennifer (2003), notes that not all new technology is advantageous to organization. Thus, it is important for firms to consider what new technologies to adopt after a careful analysis of the benefits and costs of the proposed changes. Pincher (2008) adds that new technology seeks to solve a certain existing problem. According to Anderson *et al.* (2004), information technology may be managed as single function or as an integrated system. The model gives insights on ERM since it is the management of risks from a holistic point of view. Anderson et al. (2004) notes that the totaling of all risk management systems through adoption of new information and technology tolls may lead to the betterment of the performance of the firm. Technology has a part in risk management systems especially in risk identification Institute of Management Accountants (IMA) (2007). This theory is crucial to this study since it provides a link between technology and risk management in firms. Modern risk management methods, such as ERM use a great amount of data and involve large information processing. It is thus important that the entities use the appropriate technology in order to boost the timely providence of information. It is true to suffice that information on risk management is only of benefit if obtained accurately and in a timely fashion.

2.3 Empirical Review

2.3.1 Share Capital Adequacy and Performance of Savings and credit Co-operatives

A study on the impact of SACCO regulatory authority guidelines was done by Ngaira (2011). The study was a case of deposit taking SACCOs in Nairobi. The study collected primary data from 50 SACCOs in Nairobi through administration of questionnaires. The study had an overall aim of establishing whether regulatory stipulations fostered the financial performance of SACCOs in Kenya. The study analyzed data by use of descriptive statistics in order to assess the impact of the regulations on performance. The study found out that SASRA guidelines had a huge impact on the performance of SACCOs in Nairobi. Particularly, the study established that capital adequacy encouraged new members to join the SACCOs and increase their customer base. It should be noted that SASRA guidelines are statutory risk management guidelines. This study sought to establish whether share capital adequacy stipulation has an impact on the performance of SACCOs in Kenya.

Njagi et al (2013) conducted a study on the front office savings activity (FOSA) of SACCOs on performance, a case of DTS in Meru South, Tharaka Nithi County. The study established that even SACCOs with low capital but practicing FOSA had better performance and exhibited more growth. Thus it indicates that capital may not necessarily impact on the financial performance of SACCOs. The study observed that FOSA was risky business but nevertheless attracted new members to the SACCOs. This current study will seek to assess whether share capital adequacy has an influence on the performance of SACCOs in Kenya.

According to Gisemba(2010), there is appositive relationship between risk management and performance of SACCOs. This study had a general objective of examining the potential impact of credit risk management among SACCOs. The study adopted a descriptive research design and sampled data from 41 SACCOs. Further, the study found out that credit risk

management had a benefit to the firms since they reduced the number of non-performing loans, cash losses cases reduced and also improved the return on assets of the SACCOs. Concurring with findings are the results of Kimari (2013). The study had a general objective of establishing the role of credit risk management on the performance of SACCOs in Kenya. The study was a cross sectional survey and had a sample size of 30 SACCOs. The study established that there was a positive significant impact of risk management and the Return on Equity. Ondieki (2011) investigated the role of financing externally among the SACCOs in Kisii County. The study adopted a descriptive research design in which primary data was collected through questionnaires. Data was collected and analyzed and the findings indicated that among the challenges facing cooperative societies are inadequacies in ICT platforms, poor governance and mismanagement of SACCOs. Alrashidi & Baakeel (2012) also established that operational risk management has effects on SACCOs. The study had analyzed data from 15 SMEs in Saudi Arabia. The study had a target population of SMEs in Saudi Arabia.

Odunga (2013) carried a study on the effects of credit risk and capital adequacy on the performance of commercial banks. The study established that credit risk had an effect on the performance of commercial banks. It is important to note that credit risk is the chance that loans will not be repaid by the borrowers. Where loan defaults are too often, this would greatly lower the profitability of the financial institutions. However, the study, found out that capital adequacy had no significant relationship with performance of commercial banks. This is an indication that there is a need to carry out a study on the potential effect of capital adequacy on the performance of savings and credit cooperatives in Kenya. The SASRA guidelines are essentially risk management tools that are statutory and institutionalized as per the best practices in the SACCO business. Kivuvo & Olweny, (2014) also identified that

liquidity management and capital adequacy had effects on the performance of SACCOs in Kenya.

2.3.2 Liquidity Management and Performance of Savings and Credit Co-operatives

Magambo(2014) carried out a study on the effects of regulations on the performance of deposit taking SACCOs in Kenya. The study had an aim of establishing whether the SASRA guidelines on risk management had an influence on the performance of the SACCOs. The study used a descriptive study where both primary and secondary data were used for analysis. The study identified that liquidity management had a positive effect on the performance of SACCOs in Kenya. Liquidity management ensures that SACCOs are able to disburse loans to members and also can service their financial obligations when due. This study sought to assess the impact of the combination of liquidity management, share capital adequacy and asset quality on performance of deposit taking SACCOs in Kenya. It should be noted that the SASRA guidelines are essentially institutional risk management tools.

According to Ademba (2010) there is a vital need of SACCOs to have system of managing risks. The researcher carried out a study with an aim of establishing the challenges facing SACCOs regulations in Africa. The study established that SACCOs faced challenges in terms of risk assessment on liquidity and governance issues. Thus, it can be identified that risk assessment is a challenge to many SACCOs. Thus, SACCOs need to establish and develop a system of dealing with risks that compromises their objectives. Ideally risks are better looked at whole than singly. ERM is the identification, assessment and monitoring of the system to decide if it is working as intended. Risks keep changing every time since the business environment is changing fast. It is for this reason that SACCOs need to keep monitoring their risk management systems to make sure that deviations are checked at the earliest of time possible. New markets are constantly faced with new sets of risks (Fuss, 2002).

Hoyt and Liebenberg (2008), idealizes that adoption of ERM is usually necessitated by the various stakeholders. It is important to note that SACCOs are composed of members who have a common goal. The entry and exit to SACCOs is voluntary and management is of democratic nature. SACCOs in Kenya are governed by the Cooperative Societies Act that does not require them to have share capital. SACCOs operate in an environment that has stiff competition. There are other financial institutions that are involved in financial service business. A study done by Siba (2012), established that there was an influence of effective risk management on the performance of commercial banks in Kenya. On the other hand, Jared (2013), identified that compliance to regulator requirement was a major hindrance to the performance of deposit taking savings and credit cooperatives. Exposure to risks needs to be managed in order to reduce losses in the event of risks materializing. Risks should be identified and assessment done on those that can be minimized in order to increase the profitability and performance of SACCOs.

A research on the assessment of the relationship between ERM and the value of firms in Malaysia was done by Tahir and Razali (2011). The study had a sample size of 538 picked by stratified sampling. The study established that ERM has benefits to organizations that implemented them successfully. According to Gordon, Loeb and Tseng (2009), the firms that have weak ERM have their shares in the market trading at low prices. Their study had a general objective of examining the effects of adopting ERM on the market value of the firms. Thus, it may be seen that ERM has an impact on the market value of the firms. This study sought to establish the effects of enterprise risk management on performance of SACCOs in Kenya.

The study on strategic responses by SACCOs in Nairobi was undertaken by Ndubi (2006). The study adopted a case study design where KUSCO Nairobi was studied. The study had an aim of establishing the new products and processes that SACCOs had adopted upon the

liberalization of the sector. The study collected primary data through the administration of questionnaires that had both open and close ended questions. A descriptive research study was adopted. The study established that SACCOs had changed from their traditional setting and embraced modern ways of delivering products and also had done product development. The study further found that SACCOs had changed their lending methods and how they mobilized for new members in order to remain liquid. This, liquidity management is a strategic tool of ensuring that the performance of SACCOs is improved. According to Tseng (2007), Enterprise Risk Management (ERM) is a holistic approach that aims at setting mitigating measures on risks facing an organization. ERM is the cost effective risk management mechanism that ensures entities can operate optimum within the tolerant risks levels as defined by the management (Kleffner 2013). Gordon (2009) defines ERM as the overall process of managing risk exposures enabling the organization to perform well in meeting its objectives.

A research on the impact of credit risk management on performance was done by Mutua (2016),. The study concentrated on SACCOs in Kitui SACCOs. The research concentrated on credit risk management as a factor that may influence the performance of SACCOs in Kitui County. The general objective of the study was to analyse the potential effect of credit risk management on Sacco's financial performance in Kitui County. The research adopted a descriptive research design where data was collected through questionnaire. Thus the study used primary data. The study established that there was a significant influence of credit risk management and performance of SACCOs. Further the study indicated that the relationship was positive. In the light of this finding risk management has a role on performance of SACCOs however this study was done in Kitui County while this study considered deposit taking SACCOs only and analysed secondary data.

2.3.3 Asset Quality and Performance of Savings and Credit Co-operatives

The study on the business opportunities in a new regulatory environment for Stima SACCO was conducted by Mbui (2010). The study had an aim establishing the new challenges that were brought about by the SASRA guidelines. The study collected primary data by use of interviewing method. Qualitative data was collected and was analyzed through content analysis. The study found out that the new guidelines was beneficial to the SACCOs because it ensured that members funds were invested in classes of assets that are secure. Further the study identified that the new environment posed challenges of compliance but ensured that SACCOs have a framework of managing risks.

Hoyt and Lienberg (2009) carried out a study to the contribution of ERM to the performance of insurance companies. Their study sampled a number of insurance companies in the United State of America. The study found out that there was positive and significant relationship between adoption of ERM strategies and the value of the firms under consideration. The study did not categorically find the point in time where ERM was implemented in the insurance companies. For this reason, they could not thus generalize that it was clear to define the full contribution of ERM on performance of businesses. Perhaps, this critically implies that there is a need to have a clear cut point in which risk management gains the status of enterprise risk management. Most importantly, enterprise risk management involves the identification and analysis of all risk facing the organization. Pagach and Warr (2011) assert that there is a positive economic advantage that results due to adoption or ERM by organisations

Adeolu (2014) carried out a study on the effect of asset quality on the performance of commercial banks in Kenya. The study concluded that asset quality had positive and statistically significant influence on performance of commercial banks in Nigeria. In reverse, Kahid (2012) established that asset quality had a negative relationship with profitability of

commercial banks. Also, Kimotho(2006) identified that investment policies of savings and credit cooperatives affected the performance of the entities.

A study seeking to establish ICT risk management and probable effects on businesses was conducted by Corbitt *et al* (2010). This study considered businesses in Thailand. The study established that effective planning was an aid to mitigation of risks by the organization. Thus it can be seen that risk management needs a careful planning in order to benefit the organization. Hoyt and Lienberg (2009) carried out a study to the contribution of ERM to the performance of insurance companies. Their study sampled a number of insurance companies in the United State of America. The study found out that there was positive and significant relationship between adoption of ERM strategies and the value of the firms under consideration. The study did not categorically find the point in time where ERM was implemented in the insurance companies. For this reason, they could not thus generalize that it was clear to define the full contribution of ERM on performance of businesses. Perhaps, this critically implies that there is a need to have a clear cut point in which risk management gains the status of enterprise risk management. Most importantly, enterprise risk management involves the identification and analysis of all risk facing the organization. Pagach and Warr (2011) assert that there is a positive economic advantage that results due to adoption or ERM by organizations.

Njiru and Momanyi (2016), did a study on financial risk management and its effects on performance of SACCOs in Nakuru Sub County. The study had a target population of 15 SACCOs and adopted a descriptive research design. The study collected primary data through the issuance of questionnaires and data was analyzed through SPSS. Further, the study considered a causal approach in order to relate the variables that were being investigated. The study had sought to explain whether risk identification methods, financial risk mitigating strategies and risk monitoring procedures had influence on the performance of

SACCOs in Nakuru. The study identified that financial risk management was positively correlated to the performance of SACCOs in the area under study. According to Jared (2013) among the challenges facing saving and credit societies in Kenya were inadequate ICT systems, managerial incompetence and poor financial management practices. This may be summarized as incomplete implementation of ERM systems since it looks at the organization as a whole. It is important to note that ERM takes the institutions as whole and manages the risks that compromise on meeting their objectives and goals.

It is important to consider the size of the firm before deciding on the type of risk management to adopt Golshan&Rasid (2012). Their study identified that there are factors that should be considered before implementing ERM systems in organizations. They established that firm size was crucial to the adoption of ERM because it calls for a holistic approach of dealing with risks. ERM is a risk management approach that ensures all risks have been dealt with. It is important to note that elimination of all risks may not be feasible in the business realm. For this reason, risk management ensures that the organization seeks the investments in assets whose risks and return falls within their risk appetite. Yazid et al (2012) identifies that adopting ERM is very beneficial to firms since it considers effects on a wider range of risks and their potential effect on the performance of businesses. However, it is important to note that ERM systems need support from top management in order to succeed.

The study on the on corporate governance and performance of SACCOs, a case of Elimu SACCO was carried out by Wasike (2012). The SACCO had an aim of establishing how corporate governance affected the performance of SACCOs and equally assessed the challenges facing the implementation of corporate governance guidelines as indicated in the SASRA guidelines. The study collected both types of data, that is, primary and secondary data. The study established that corporate governance guidelines were important in that it ensured that investments were done for the interest of the SACCOs members. Further, the

study found out that investment in assets was done in a manner that risks were lowered and returns maximized. Thus, asset quality is important and is embedded in the management's grasp of cooperative governance principles. It is important for SACCOs to have a portfolio of assets that ensures that they meet their financial obligation as and they fall due. Notably, a SACCO should have enough liquid assets to ensure they disburse loans to members when they are called upon. The management and the board should make prudent decisions that foster all the activities of the SACCO.

It is important to consider the size of the firm before deciding on the type of risk management to adopt Golshan&Rasid (2012). Their study identified that there are factors that should be considered before implementing ERM systems in organisations. They established that firm size was crucial to the adoption of ERM because it calls for a holistic approach of dealing with risks. ERM is a risk management approach that ensures all risks have been dealt with. It is important to note that elimination of all risks may not be feasible in the business realm. For this reason, risk management ensures that the organization seeks the investments whose risks and return falls within their risk appetite. Yazid et al (2012) identifies that adopting ERM is very beneficial to firms since it considers effects on a wider range of risks and their potential effect on the performance of businesses. However, it is important to note that ERM systems need support from top management in order to succeed.

Hoyt and Liebenberg (2008) idealizes that adoption of ERM is usually necessitated by the various stakeholders. It is important to note that SACCOs are composed of members who have a common goal. The entry and exit to SACCOs is voluntary and management is of democratic nature. SACCOs in Kenya are governed by the Cooperative Societies Act that does not require them to have share capital. SACCOS operate in an environment that has stiff competition. There are other financial institutions that are involved in financial service business. A study done by Siba (2012) established that there was an influence of effective

risk management on the performance of commercial banks in Kenya. On the other hand, Jared (2013) identified that compliance to regulator requirement was a major hindrance to the performance of deposit taking savings and credit cooperatives. Exposure to risks needs to be managed in order to reduce losses in the event of risks materializing. Risks should be identified and assessment done on those that can be minimized in order to increase the profitability and performance of SACCOs.

2.4 Gaps in Literature Review

The review of literature has indicated that a number of studies have been done on risk management. However, very few have been done to assess the influence of enterprise of risk management on performance of firms in Kenya and in Africa at large. Equally those researches that have been on risk management had yielded different results. Simiyu(2008), sought to establish the techniques used by SACCOs in credit risk management while Weru(2010) revealed that SACCOs had various risk management strategies in combating risks. Waweru and Kisaka (2013) reveal that ERM increases the value of the firm. On the contrary Tahir and Razali (2011) established that there was no significant relationship between ERM and shareholders value. Thus, this study sought to fill this gap by assessing the influence of Enterprise Risk management on the performance of SACCOs in Kenya.

2.5 Research Hypothesis

The study had null hypothesis. Null hypothesis (H_0) puts it that there is no relationship between the independent variables and the dependent variables. On the other hand, an alternative (H_1) hypothesis shows that there is a relationship between the independent variables and the dependent variables. Ngaira (2012) established that capital adequacy encouraged new members to join the SACCOs and increase their customer base. On the other hand, capital may not necessarily impact on the financial performance of SACCOs (Njagi et al (2013). Thus, the effect of capital adequacy may be positive or negative. This study adopted a null hypothesis.

H₀₁: Capital adequacy has no effect on the performance of Savings and Credit Cooperatives Societies in Kenya

Magambo (2014) identified that liquidity management had a positive effect on the performance of SACCOs in Kenya. This sought to establish the null hypothesis.

H₀₂: Liquidity management has no effect on the performance of Savings and Credit Cooperatives Societies in Kenya

Mbui (2010) found out that the new guidelines were beneficial to the SACCOs because they ensured that members' funds were invested in classes of assets that are secure. Adeolu (2014), concluded that asset quality had positive and statistically significant influence on performance of commercial banks in Nigeria. This study had the following null hypothesis.

H₀₃: Asset quality has no effect on the performance of Savings and Credit Cooperatives Societies in Kenya

2.6 Conceptual Framework

The independent variables were capital adequacy, liquidity management, and asset quality.

The dependent variable was Return on Assets of SACCOs.

Independent variables

Dependent Variable

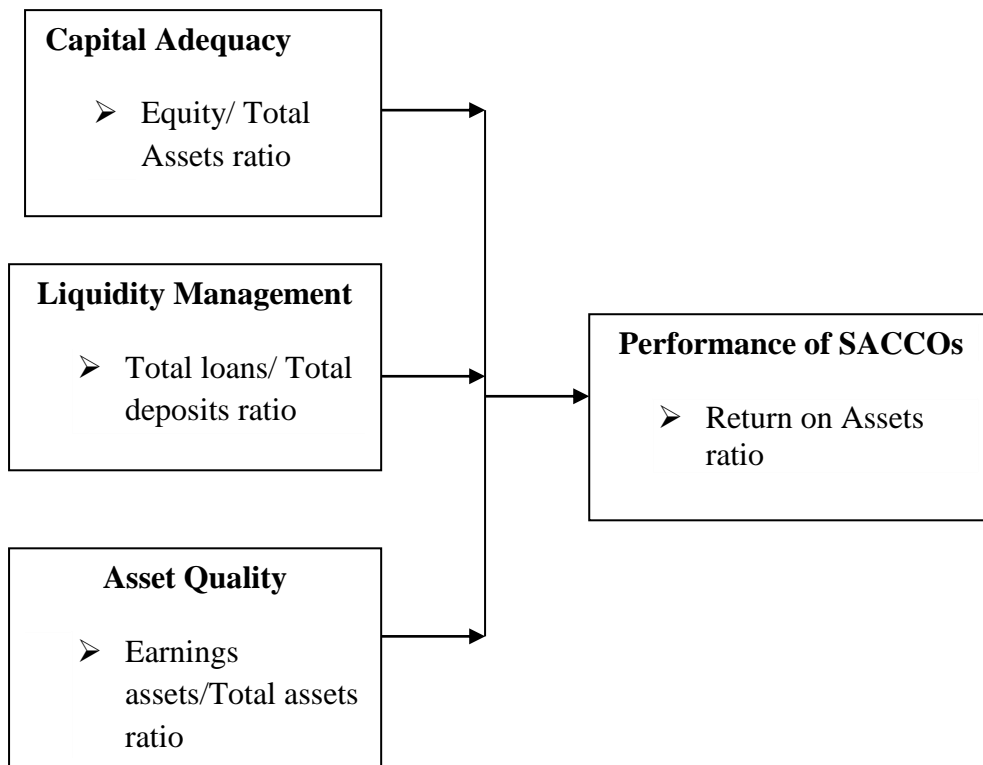


Figure 2. 1 Conceptual Framework

Capital adequacy is a guideline issued by SASRA to mitigate financial risks. It is usually measured in a ratio of the funds available to safeguard the SACCO against losses. This is important as it insures the SACCOs against any reasonable losses in its normal operations. Capital adequacy is expressed as the ratio of equity over total assets. Notably, different SACCOs have different share capital reserved depending on their risk appetite. Thus it is of significance to assess whether share capital has an influence on performance of SACCOs in Kenya. Liquidity management is the ability of an entity to meet its financial obligations as and when they fall due. For the SACCOs, it is crucial that they are at a favorable liquidity position at all times. This is because, they deal with the public who over time call for funds in form if disbursement of loans. Liquidity of financial institutions is generally high. Liquidity

is paramount for SACCOs since it measures the ability of the SACCO to meet its obligations which in turn may influence its performance.

Asset quality is the measure of the assets that earns income over the total assets. This ratio is important since SACCOs need to maximize income for their members. It is crucial to mention that SASRA issued these guidelines with an aim of aiding the SACCOs in mitigating risks. The management of SACCOs needs to carefully invest the members' funds in a way that they reap maximum benefits. Return on assets was taken as the measure of performance of SACCOs in Kenya.

2.7 Operationalization of the Variables

The operationalization of the variable is per Table 2.1

Table 2. 1 Operationalization of the Variables

Category	Variables	Operationalization	Measurement	Hypothesis Direction
Independent variable	Capital Adequacy	The total amount of capital invested in the assets	Equity/Total Assets	Positive/Negative
Independent variable	Sacco's Liquidity Management	The total loans advanced against deposits received.	Total Loans/Total Deposits	Positive/Negative
Independent variable	Asset quality	The portion of assets generating income on total assets	Earning assets/Total assets	Positive/Negative
Dependent variable	Performance	Return on Assets (ROA) as returns earned on asset investment	EBIT/Total Assets.	Positive/Negative

2.7 Summary of the Chapter

The chapter discussed the literature review. This study was coined by the following theories; Portfolio Theory, Capital Asset Pricing Model, Innovations Diffusion Theory. Also the chapter has discussed empirical review on ERM and performance of SACCOs. At the end,

the chapter justified the need to carry out this study because of the gaps that have been identified in literature review.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains the methodology that was adopted in carrying out this study that aims to assess the effects of enterprise risk management practices on performance of SACCOs in Kenya. This section has the following contents: research design, target population and sample size, data collection procedures and data analysis.

3.2 Research Design

The study adopted a descriptive research design because it was an effective design to explain the type of relationship and impact that the independent variables have on dependent variable. According to Cooper & Schindler (2011), a research design is a blue print that facilitates collection and analysis of data in order to meet the objectives. Kothari (2009), idealizes that research design is an arrangement of conditions and methods that ensures that the objectives being sought by the study are realized. This adopts a descriptive research design since it aims at describing the elements as they are in their natural phenomenon. This study collected data on the performance of SACCOs in terms of ROA and other ratios for measuring the independent variables. In this light, a descriptive research design was best for this study since data was collected as it is in its natural setting. According to Mugenda and Mugenda (2003) a descriptive research design aims at determining and describing whether there exists a certain relationship between the variables being assessed. For this reason, this study sought to describe the relationship between enterprise risk management guidelines as provided by SASRA and performance of SACCOs.

3.3 Target Population

According to Mugenda and Mugenda (2008), a population is the entire group of items, events, individuals or objects that have similar features which are observable. The target population is the portion of the entire population that is considered in the study which allows generalization of findings. The population of the study was the deposit taking SACCOs operating in Kenya. As at April 2016 there were 176 deposit taking SACCOS that had operations in the country.

3.4 Sample size

According to Cooper and Schindler (2011), a sample size is the number of items selected to represent the target population. It is important to select a sample size especially where the target population is large and a census is not feasible. The sample size selected should be based on the type of data that is sought to be collected, the confidence level and the accuracy levels being sought by the researcher (Mugenda and Mugenda, 2003). The study selected a sample size of 41 Saccos which have been in existence from 2011 to 2016. This number is deemed fit because the data being run for analysis was to be uniform and available for all the time period for all Savings and Credit Cooperative Societies.

3.5 Data Collection

The study used secondary data collected from SASRA regulatory reports. SASRA analyses the performance of SACCOs based on the prudential guidelines it issues. Among the measures that are reported include; capital adequacy ratios, asset quality ratios, earnings/profitability ratios and liquidity ratios. Critically observed, these guidelines are tools of ensuring that the depositors' interests are safeguarded and that the risk of losing of their investments is kept at minimum.

3.6 Research Instrumentation

The study collected secondary data from SASRA records and from financial records of the individual SACCOs. The Data collected was with respect to the specific objectives of the study. The study collected data on Return on Assets (EBIT/Total Assets.), capital adequacy (Equity/Total Assets), liquidity management (Total Loans/Total Deposits) and Asset quality(Earning assets/Total assets).

3.7 Data Analysis and Presentation

This study adopted a panel data analysis approach. Data was extracted from SASRA records. Analysis was done to establish the effect of share capital adequacy, liquidity management, and asset quality on Return of Asset. Among the descriptive statistics that the study adopted was computation of means, standard deviations and variance, maximum values and minimum value for the variables.

Data analysis was done by use of STATA version 12. The study used STATA since it was very helpful for in describing the relationships between capital adequacy, liquidity management and asset quality on Return on Assets in Kenya. The study adopted a coefficient of determination(R square) in order to describe the extent of the relationships among the variables. It was important to define the direction and magnitude of the relationships. This was done through testing the hypothesis.

The Return on Asset was obtained by dividing the Earnings before Interest and taxes with total assets, while liquidity was expressed as the total loans advanced against deposits received. Capital adequacy as the total amount of capital invested in the assets and asset quality was obtained as the portion of assets generating income on total assets. Data was collected for the period of 2011 to 2016 in which all the sampled SACCOs were in operations.

The study adopted a panel data estimation method owing to the nature of data collected. Data was collected for a period of more than two years which is the prerequisite for panel data and also the number of observations was numerous. It was also important to decide on the regression model to adopt, that is, whether to adopt fixed regression model or random regression model.

3.7.1 Diagnostic Testing

Before commencing the process of data analysis the researcher carried out diagnostic tests in order to find out if there would be problems due to violation of the basic assumptions of the regression model. The study assessed the following diagnostic tests; multicollinearity, autocorrelation, heteroscedasticity. After that, model specification was done using the Hausman specification test.

3.7.2 Testing for Multicollinearity

Multi collinearity is a linear regression problem that arises when one or more of the independent variables are highly correlated with one or more of the other independent variables. According to Brooks (2008), where an independent variable becomes the exact combination of other independent variables, the model cannot thus be estimated since it is in a perfect collinearity position. The standard statistical method for testing data for multicollinearity is analyzing the explanatory variables correlation coefficients, condition index and variance inflation factor, Gujarati (2004). This study used the Variance Inflation Factors (VIF) in testing for multicollinearity.

3.7.3 Testing for Serial Correlation

Autocorrelation implies that error terms are linearly related with one another. Failure to identify and account for serial correlation in a panel regression model would result into biased standard errors and inefficient parameter estimates (Wooldridge, 2002). This study adopted the Wooldridge Test to test for autocorrelation. The Wooldridge test p value that is below 5% implies that the data has autocorrelation.

3.7.4 Testing for Heteroscedasticity

According to Brooks (2008), heteroscedasticity is the reverse case of homoscedasticity. Homoscedasticity is an assumption that error terms in the regression models have constant variance and therefore they cannot influence each other. Heteroskedasticity is an assumption of linear regression that accounts for the error term in the regression equation. The linear regression assumes that the error term is homoscedastic which means that its constant variance. This study used the Likelihood ratio test for heteroscedasticity.

3.8 Model Specification

The study adopted the Hausman test for model specification. This test is used to differentiate between the fixed effect models and random effects models in panel data. The Hausman test is used when a comparison of an efficient or inefficient estimator which ordinarily are consistent for the null hypothesis. On the contrary for alternative hypothesis the efficient results to inconsistent while the inefficient stays consistent. Endogeneity of variables with respect to a regression model implies a case where variables values are determined by other variables values in the coefficient estimation model. Thus endogenous variables cause the regression model to fail because as a basic assumption of ordinary least square models it is assumed that no predictor variables are correlated. The Hausman test is particularly crucial where panel data analysis is in place as it guides in the acceptance or rejection of hypothesis.

3.9 Model Fitting

The study fitted the following regression model:

$$PS_{it} = \beta_{0i} + \beta_1 CA_{it} + \beta_2 LM_{it} + \beta_3 AQ_{it} + \varepsilon_{it}$$

Where:

PS_{it} = Performance of Sacco i in year t

β_0 = is the constant to be estimated by the model

β_1 , β_2 and β_3 = Coefficients indicating influence of independent variables on the dependent variable.

CA_{it} = Capital adequacy for SACCO i in year t

LM_{it} = Liquidity management for SACCO i in year t

AQ_{it} = Asset quality for SACCO i in year t

ε_{it} = error term

The study used a significance level of 95 % in testing the statistical significance of the independent variables on performance of SACCOs. In order to explain the magnitude of the relationship between the independent variables on the dependent variable, coefficient of determination of R^2 was used.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 Introduction

This chapter discusses the actual analysis which was carried out in this research. Analysis started with a presentation of the data's descriptive statistics. Next, key pre-estimation diagnostic tests were carried out on the data to evaluate its appropriateness for the envisaged analysis. The pooled OLS model fitted with corrected standard errors emerged as the most

suitable model and as such, it was chosen for regression analysis. This is because this model is robust for autocorrelation and heteroscedasticity problems that were detected after diagnostic testing.

4.2 Descriptive Data Analysis

The researcher explored the study data descriptively to yield to output in table two below. It can be seen that the mean capital adequacy for the sampled SACCOs was 14.6%. This implies that on average, SACCOs exceeded the SASRA requirement that core capital should be at least 10% of total assets. The SACCO with the best adequacy was at 1.94 while the least adequacy was 0.001012. The data also shows that the least liquid SACCO had a loan to deposits ratio of 1.765431 while that most liquid SACCO had a loans to deposit ratio of 20%. The mean value for liquidity was 1.018. SASRA regulations hold that SACCOs should maintain at least 15% of customer deposits as liquid assets and loans lent out should be at most 85% of customer deposits. This observation reveals a blatant violation of this regulation by SACCOs.

Asset quality was measured by the ratio of nonperforming loans to total loans. Table 4.1 below shows an average value of 11.6355% for this variable. It is also plainly evident that the SACCO with the highest burden of poor quality assets had 50.541% of the value of all its loans being classified as nonperforming. Conversely, the best performing SACCO had an asset quality of 0.00127%. The overall average for this variable was 11.6355%. The sample SACCOs had a mean return on assets of 11.6355% and a mean return on equity of 17.6395%. The highest return on assets was 20.212%; and this implies a net profit of 20.212 shillings for every 100 shillings of gross income.

Table 4: 1 Descriptive Statistics

STATS	ADEQUACY	LIQUIDITY	QUALITY	ROA
MEAN	0.145891	1.018773	0.039688	0.116355
MAX	1.945873	1.765431	0.50541	0.20212
MIN	0.001012	0.203211	0.000127	0.00123
SD	0.221252	0.215734	0.072866	0.03125

4.3 Exploratory Data Analysis

Exploratory data analysis was done using graphs to examine the trend of returns within and across SACCOs over time. Figure 4.1 below indicates the empirical growth of ROA over the six-year period. The growth plot reveals that for most SACCOs, ROA did not change much with time period under study. There were however some few cases where ROA appeared to change significantly.

Exploratory data analysis seeks to explain the general trend of variables in study and this is crucial in identification of the model to adopt in data analysis. The study has established that that there were no major variations in terms of Return on Assets for the 41 SACCOs under observations. The individual graphs appears to be positively skewed hence indicating that the ROA for SACCOs has been increasing over time. This test is important as it helps in identification of the general trend of variable in a panel data. Panel data is that data that is collected for a period of more than 2 years with several observations which changes. As a result, the study established that The growth plot reveals that for most SACCOs, ROA did not change much with time period under study although for some SACCOs in changed significantly.

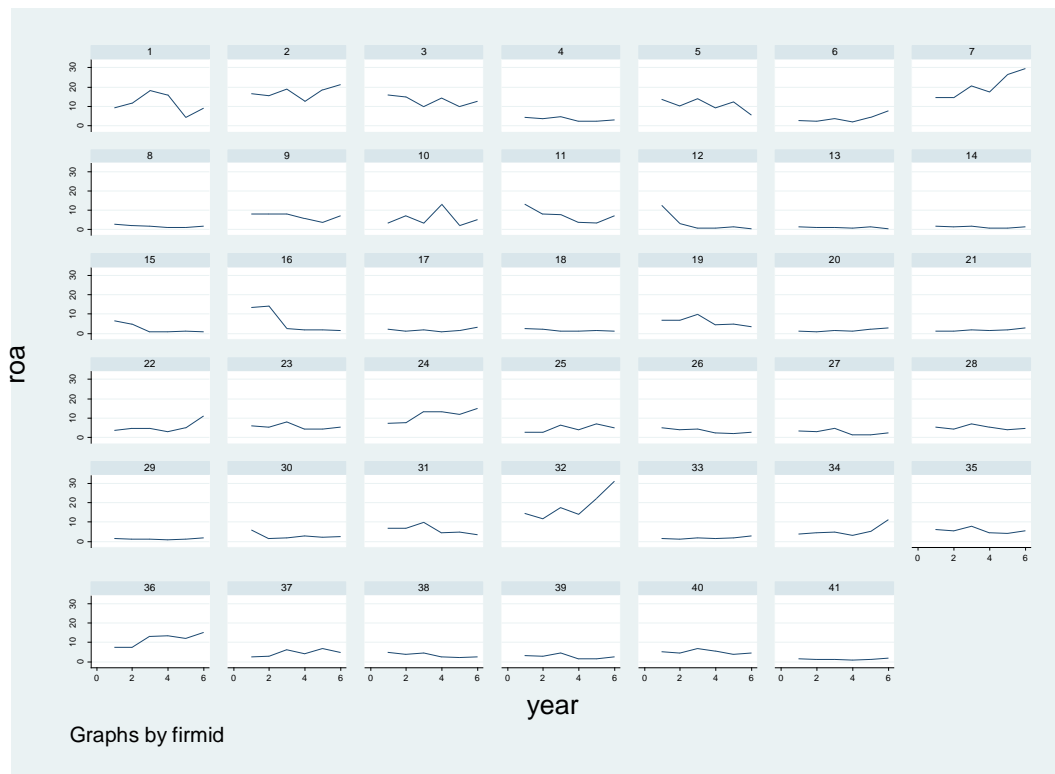


Figure 4: 1 Growth Plot of ROA

Source: Researcher (2017)

Further observation of the overlain ROA plot indicated slopes being non-significantly different among most of the SACCOs except a few with the y intercepts not similar for all the SACCOs. Figure 4.2 below indicates the Overlain Plot of ROA. This finding indicates that the values of the ROA were changing and thus making this data meet the criteria for being analysed as panel data. Further, the fact that the slopes are not very much different from each other allows for inclusion of all SACCOs in the analysis. It is important to note that when the slopes are significantly different, it forms outliers and this may distort the validity of findings. As a result for this study, since the slopes for the SACCOs were not significantly different, the analysis could be carried out without having the problem of outliers in the panel data.

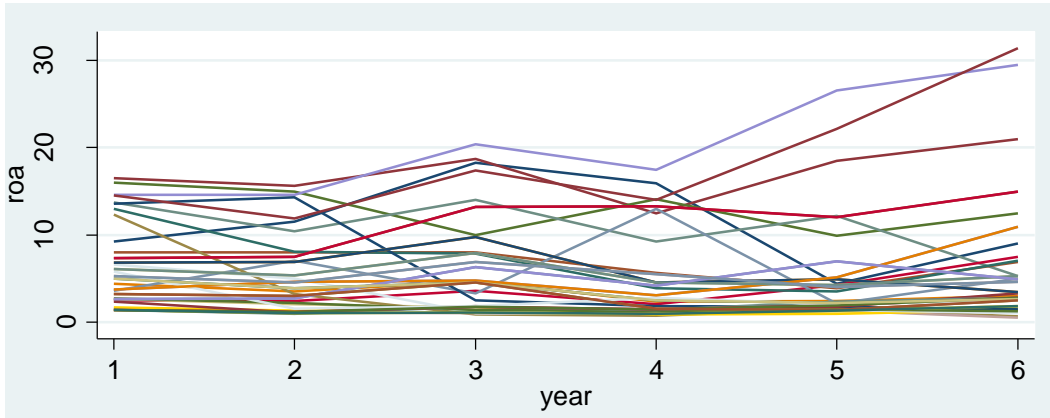


Figure 4: 2 Overlain Plot of ROA

4.4 Diagnostic Tests

Several pre-estimation diagnostic tests were carried out to explore various characteristics of the study data in order to evaluate whether it was appropriate for panel regression. These tests and their results are discussed below.

4.4.1 Multicollinearity

Multicollinearity is evident in data when two or more independent variables are highly correlated in such a manner that one variable can be estimated from another one with a high degree of accuracy. High degrees of multicollinearity inflate the R^2 such that the overall regression looks good in as much as individual regressors could be insignificant. Multicollinearity also makes a research to lose robustness. In highly collinear data, small changes in specification can cause big changes in regression coefficients and/or their significance. Multicollinearity is usually evaluated using the Variance Inflation Factor (VIF). A rule of thumb is that the VIF should never exceed 10. Using the *collin* STATA addon, Variance Inflation Factors for the research data were computed, as shown in table 4.2 below.

Table 4: 2 Variance Inflation Factors

Collinearity Diagnostics				
Variable	VIF	SQRT VIF	Tolerance	R- Squared
adequacy	1.03	1.01	0.9711	0.0289
liquidity	1.03	1.01	0.9712	0.0288
quality	1.00	1.00	0.9999	0.0001
Mean VIF	1.02			

It can be noted that all the Variance Inflation Factors are significantly small, implying that the research data didn't have multicollinearity.

4.4.2 Serial correlation

Serial correlation is a phenomenon which occurs when the error terms of regression variables for successive periods are correlated. When present in a dataset, it can distort the efficiency of regression estimators. Using the *xtserial* STATA addon, this study's data was tested for serial correlation. The results for this test are shown in table 4.3 below.

Table 4: 3 Serial Correlation Test

```
. xtserial roa adequacy liquidity quality

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
      F( 1,      40) =      12.773
          Prob > F =      0.0009
```

According to Table 4.3, the study found out that there was no serial autocorrelation. Auto correlation is a problem that arises when an independent variable is related to another independent variables making regression complex. Auto correlation is the chance that independent variables are related to each other. It is a problem because; it limits the establishment of the relationship between dependent variable and independent variables

4.4.3 Testing for Heteroscedasticity

Heteroscedasticity is a serious problem since it tends to inflate the standard errors, thereby increasing the probability of committing a type two errors, i.e. failing to reject a false hypothesis about a coefficient. The Likelihood Ratio test was used to test the panel data for heteroscedasticity. The null hypothesis of the Likelihood Ratio test is that the data is homoscedastic across entities, i.e. the error terms have a constant variance. If the null is rejected, the conclusion is that the data is heteroscedastic, i.e. the variance of error terms across entities is not constant. The rejection criteria is that the null of homoscedasticity is rejected if the P-Value of the Likelihood Ratio test is less than 5%.

According to Books (2008), heteroscedasticity is the reverse case of homoscedasticity. Homoscedasticity is an assumption that error terms in the regression models have constant variance and therefore they cannot influence each other. Heteroskedasticity is an assumption of linear regression that accounts for the error term in the regression equation. The linear regression assumes that the error term is homoscedastic which means that its constant variance, where, if the error variance is not constant, then there is heteroscedasticity in the data.

Table 4: 4 Likelihood ratio Test for Heteroscedasticity

Likelihood-ratio test	LR chi2(29)	=	116.54
(Assumption: nested in hetero)	Prob > chi2	=	0.0304

Results for the likelihood ratio test in table 4.4 above show that there was heteroscedasticity in the data at the 5% level. This is because the p value of the test is less than 5%.

4.4.4 Skewness and Kurtosis

The skewness and Kurtosis is a test that is used to evaluate whether data is distributed in a linear manner. The Study computed the Skewness and Kurtosis for normality Test. The findings is presented in Table 4.5

Table 4: 5 Skewness and Kurtosis

```
Skewness/Kurtosis tests for Normality
```

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
myResidual	246	0.0000	0.0000	.	0.0000

The P-Value was found to be at 0.000 which was very small when compared to the alpha value of 0.05 and thus it was not feasible to reject the null hypothesis at this point. It is for this reason that the study assessed on whether to adopt a fixed regression model or random effect model as discussed in the subsequent section.

4.4.6 Pearson's Correlation Matrix

The study carried out a correlation test in order to establish whether there were significant correlations among the variables. The findings are indicated in Table 4.6

```
. correlate adequacy liquidity quality
(obs=246)
```

	adequacy	liquidity	quality
adequacy	1.0000		
liquidity	-0.4583	1.0000	
quality	-0.6317	-0.2438	1.0000

According to Table 4.6 none of independent variables was perfectly correlated with each other. Correlation analysis is important because it aims at testing the degree of the relationship among variables. It can be noted that the correlation value of a variable is obviously 1.000 because it is a correlation of a variable with itself. It can be deduced that the correlation among all the independent variables are negative and none which is perfectly correlated with each other. Thus, without the problem of correlation, data was analysed in order to find out the extent of influence of capital adequacy, liquidity management and asset quality on performance of SACCOs in Kenya.

4.5 Model Selection and Fitting

In this study, there is a violation of the assumption of homoscedasticity, and no autocorrelation. In panel datasets that have heteroscedasticity and autocorrelation, the *xtpcse* Stata command should be used to fit the model using Prais Winsten Regression with robust standard errors that are able to remedy the problems of heteroscedasticity and serial correlation (Hoechle, 2007). This procedure was therefore utilized and the analysis results were as in Table 4.5 below.

Table 4: 6 Prais Winstein Regression Using Robust Standard Errors

Prais-Winsten regression, heteroskedastic panels corrected standard errors

```

Group variable:   firmid           Number of obs   =   246
Time variable:   year             Number of groups =   41
Panels:          heteroskedastic (balanced)  Obs per group: min =   6
Autocorrelation: panel-specific AR(1)      avg =   6
                                                    max =   6

Estimated covariances   =   41           R-squared       =   0.5937
Estimated autocorrelations =   41       Wald chi2(3)    =   81.31
Estimated coefficients   =   4           Prob > chi2     =   0.0000
    
```

roa	Het-corrected				[95% Conf. Interval]	
	Coef.	Std. Err.	z	P> z		
adequacy	.2364325	.3185948	0.74	0.458	-.3880018	.8608668
liquidity	8.568505	1.686146	5.08	0.000	5.26372	11.87329
quality	5.166077	1.888747	2.74	0.006	1.4642	8.867953
_cons	.7177268	1.51434	0.47	0.636	-2.250325	3.685779
<hr/>						
rhos = .7499673 .9813121 .6911187 .8669668 .45136297945897						

The chi square test had a p value of 0.000. This is an indication that the entire model is significant in explaining the relationship between the independent variables and the dependent variable. Moreover, the R squared was 59.37%. Essentially, this implies that 40.63% of variability in the return on assets can be explained by variability in capital adequacy, liquidity, and asset quality. The remaining variability can be attributed to other factors that are not included in the model.

From the results of the regression analysis, the regression equation can be expressed as:

$$ROA = 0.718 + 0.236 * Adequacy + 8.569 * Liquidity + 5.166 * Quality$$

Where:

0.718 is the ROA in the absence of other study variables

0.236 is the increase in ROA in response to a unit increase in Capital Adequacy

8.569 is the increase in ROA in response to a unit increase in Liquidity

5.166 is the increase in ROA in response to a unit increase in Asset Quality

The study has thus found out that capital adequacy, liquidity management and asset quality has a positive impact on Return on Assets. This is indicated by the positive coefficients of determination that have been established by the regression model. It is important to note that capital adequacy ensures that the Savings and Credit cooperative society has buffer cash that keeps it safe in case of any financial eventualities. On the other hand, liquidity management ensures that the SACCOs can service their financial obligations as and when they fall due. The liquidity of a financial institution is very important in the eyes of the various stakeholders and thus the reason why increase in liquidity leads to an improved performance. Asset quality ensures that the financial institution has classes of assets that earn income and thus improving their performance.

The R squared was 59.37%. implies that more than half of variations in Return on Assets are explained by changes in capital adequacy, liquidity management and asset quality. Return on Assets is the income generated by assets of a given company. In this respect , it means that the variations in Return on Assets are substantially influenced by changes in capital adequacy, liquidity ratios and asset quality. It is important to note that the prudential guidelines were introduced by the SASRA in order to curb cases of savings and credit societies collapsing due to risks that could have been managed.

4.6 Hypothesis Testing

The study had the following hypothesis:

H₀₁: Capital adequacy has no effect on the performance of Savings and Credit Cooperatives

Societies in Kenya

H₀₂: Liquidity management has no effect on the performance of Savings and Credit Cooperatives Societies in Kenya

H₀₃: Asset quality has no effect on the performance of Savings and Credit Cooperatives Societies in Kenya

Table 4: 7 Hypothesis Testing

Prais-Winsten regression, heteroskedastic panels corrected standard errors

```

Group variable:   firmid           Number of obs   =   246
Time variable:   year             Number of groups =   41
Panels:          heteroskedastic (balanced)  Obs per group: min =   6
Autocorrelation: panel-specific AR(1)      avg =   6
                                                    max =   6

Estimated covariances   =   41      R-squared       =   0.5937
Estimated autocorrelations =   41      Wald chi2(3)    =   81.31
Estimated coefficients   =   4        Prob > chi2     =   0.0000

```

roa	Het-corrected					[95% Conf. Interval]	
	Coef.	Std. Err.	z	P> z			
adequacy	.2364325	.3185948	0.74	0.458	-.3880018	.8608668	
liquidity	8.568505	1.686146	5.08	0.000	5.26372	11.87329	
quality	5.166077	1.888747	2.74	0.006	1.4642	8.867953	
_cons	.7177268	1.51434	0.47	0.636	-2.250325	3.685779	
rhos = .7499673 .9813121 .6911187 .8669668 .45136297945897							

4.6.1 Capital Adequacy and Performance of Savings and Credit Cooperative Societies

The P-Value for Capital adequacy is 0.458 which is more than the alpha value of 0.05 and thus the null hypothesis **H₀₁**: Capital adequacy has no effect on the performance of Savings and Credit Cooperatives Societies in Kenya is accepted. This means that capital adequacy does not affect performance of savings and credit cooperatives societies, in terms of Return on Assets. The general criteria for rejecting a null hypothesis are when the P-Value is less than the alpha value (the margin of error) which is 0.05 for this study.

4.6.2 Liquidity Management and Performance of Savings and Credit Cooperative Societies

The P-Value for Liquidity Management is 0.000 which is less than the alpha value of 0.05 and thus the null hypothesis H_{01} : Capital adequacy has no effect on the performance of Savings and Credit Cooperatives Societies in Kenya is rejected. This means that liquidity management affects the performance of SACCOs in a statistically significant manner. The general criteria for rejecting a null hypothesis are when the P-Value is less than the alpha value (the margin of error) which is 0.05 for this study.

4.6.3 Asset Quality and Performance of Savings and Credit Cooperative Societies

The P-Value for Asset Quality is 0.006 which is less than the alpha value of 0.05 and thus the null hypothesis H_{01} : Capital adequacy has no effect on the performance of Savings and Credit Cooperatives Societies in Kenya is rejected. This means that liquidity management affects the performance of SACCOs in a statistically significant manner. The general criteria for rejecting a null hypothesis are when the P-Value is less than the alpha value (the margin of error) which is 0.05 for this study. In summary, the study concludes that liquidity management and asset quality have significant relationship with performance of deposit SACCOs while Capital adequacy has not significant relationship with performance of deposit taking SACCOs in Kenya.

4.7 Model Fitting

From the results of the regression analysis and test of hypothesis the final regression was obtained by dropping capital adequacy since its effect on performance of SACCOs was not statistically significant. The model was thus fit as:

$$ROA = 0.718 + 8.569 * Liquidity + 5.166 * Quality$$

Where:

0.718 is the ROA in the absence of other study variables

8.569 is the increase in ROA in response to a unit increase in Liquidity

5.166 is the increase in ROA in response to a unit increase in Asset Quality

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the major findings with respect to the objectives of the study; it also provides the conclusions, the recommendations made and the suggested areas for further research.

5.2 Summary of Major Findings

The research estimated the effects of capital adequacy, liquidity, and asset quality on Sacco's return on assets. The results implied that an increase of one unit in capital adequacy should lead to a 0.23643 increment in the return on assets. If liquidity increases by one unit, the return on assets should increase by 8.568. Further, a unit increase in the asset quality ratio should lead to an increase of 5.166 in the return on assets.

Further, the study found out that liquidity management and asset quality have a statistically significant relationship with performance of SACCOs where the relationship between capital adequacy and Return on Assets was found not to be statistically significant.

5.2.1 Capital Adequacy and Performance of Savings and Credit Cooperative Societies

The study has found out that there is a positive relationship between capital adequacy and performance of SACCOs in Kenya. Further, the relationship between Capital adequacy and performance is not statistically significant. This finding agrees with those of Ngaira (2012), who established that capital adequacy encouraged new members to join the SACCOs and increase their customer base. However, this finding contradicts with those of Njagi et al (2013). Who found out that capital may not necessarily impact on the financial performance of SACCOs. Capital is essential since it ensures that a financial institution has a back-up in the event that financial need arises. It is crucial to consider that a large capital base implies

that there are more funds that can be invested in income generating ventures. Also, Capital adequacy was measured by the ratio of share capital to total assets. SASRA has capital requirement as one of its prudential guidelines on deposit taking SACCOs. The study has established that there is a positive relationship between capital adequacy ratios and return on assets. These findings agree with those of Kilonzi(2012), who identified that capital requirements had a positive impact on the performance of SACCOs Kenya

5.2.2 Liquidity Management and Performance of SACCOs

The study has found a positive relationship between liquidity management and performance of SACCOs. Further, the study has established that the relationship between liquidity management and performance is statistically significant. This finding agrees with those of Magambo (2014), who identified that liquidity management had a positive effect on the performance of SACCOs in Kenya. This sought to establish the null hypothesis. It is important to note that liquidity management is the ensuring that there are available funds for meeting financial institutions' obligations as and when they fall. The financial institution is involved in the business of accepting deposits and investing on behalf of the member's. In this case, it is important that funds are available to pay the deposits as and when called upon. This finding agrees with those of Magambo (2014) who established that there was a positive relationship between liquidity management and performance of SACCOs

5.2.3 Asset Quality and Performance of Savings and Credit Cooperative Societies

The study has found out that there is a positive relationship between asset quality and performance of SACCOs in Kenya. Further, the study has established that the relationship between asset quality and performance of SACCOs is statistically significant. This means that the changes in asset quality explain the variations of performance of SACCOs in a great extent. Asset quality is the portion of a financial institution's assets that are committed to

ventures that generate income. It is subtle to note that savings and credit and thus it is important that the deposits are committed in income generating ventures.

The study has found a positive relationship between asset quality ratios and performance of deposit taking SACCOs in Kenya. Asset quality is the ratio of earnings asset to total assets. It is important for a financial institution such as a SACCO to commit its cash in acquisition of assets that are capable of generating income for the members. This finding agrees with those of Adeolu (2014) who identified a positive and statistically significant impact of asset quality on performance of SACCOs in Kenya. Also, Njiru and Momanyi (2016), did a study on financial risk management and its effects performance of SACCOs in Nakuru Sub County and established a positive impact on asset quality as a tool of financial risk management. It is important for financial institutions to own assets that are generating income

5.3 Conclusions

Based on the data analysis presented in chapter four the study makes the following conclusions. In summary the study concludes that capital adequacy, liquidity management and asset quality influences ROA of deposit taking SACCOs in Kenya. As indicated by R, R square and adjusted R square, the independent variables affects the performance of SACCOs. The study concludes that liquidity and asset quality ratios are substantial predictors of return on asset and by extension the profitability levels of the regulated and licensed deposit taking SACCOs. These findings indicate that capital adequacy was most important factor in determining return on assets of deposit taking SACCOs. However, all the three ratios expressed a relatively high significance while determining the return on assets revealing a high influence on investors return.

5.3.1 Effect of Capital Adequacy on Return on Assets

The study results revealed that an increase of one unit in capital adequacy should lead to a 0.23643 increment in the return on assets. This will positively impact on the overall financial performance of the individual SACCO. This findings concur with a study carried out by Kioko (2012) that higher capital requirements and increase in management efficiency impacted positively to SACCO's profitability in the post- capital regulation period. However, the results contradicted Maina and Ondongo (2013) who concluded that the more the firm builds its capital structure from debt, the higher the possibility that such a firm will perform poorly. The study found out that Capital adequacy is not statistically significant in explaining variations of Return on Assets. However, capital adequacy affects ROA in a positive way in that an increase in units of capital adequacy increases return on assets. In as much as the result indicated that capital adequacy was not statistically significant in influencing Return on Assets, the relationship was positive and hence it is important that SACCOs keep the adherence to the guidelines.

5.3.2 Effect of Liquidity on Return on Assets

The study found out that if liquidity increases by one unit, the return on assets should increase by 8.56. On the ground of research results it is evident that liquidity is statistically significant on SACCO performance. Liquidity levels thus are vital for any firm including Sacco's existence. Predominantly, liquidity has an effect on financial costs reduction or development, as well as it impacts on SACCO risk level. However, the decisive significance of liquidity means that it is important for SACCO development and in particular its main focus which is to provide loans to members. The results coincide with Sanghai (2013) on effect of liquidity on the performance of companies listed in Nairobi Stock Exchange and who concluded that liquidity positively influence financial performance of firms. The results further concurred with findings by Zygmunt (2013) on how liquidity had a statistically

significant relationship with Polish information technology companies. The study has further concluded that the relationship between liquidity management and return on assets is statistically significant.

5.3.3 Effect of Asset Quality on Return on Assets

The study further noted that a unit decrease in the asset quality ratio should lead to an increase of 5.166 in the return on assets. This result is expected since non-performing loans pose a huge credit risk to the SACCOs and their provisions negate income. This is in line with findings by Anjili (2014) who concluded that assets liability management is the most significant factor that influences performance of commercial banks hence, a slight decrease in efficiency can lead to very high reduction in profits. The study has further concluded that the relationship between asset quality and return on assets is statistically significant.

5.4 Limitations of the Study

This study was limited by the fact that performance of SACCOs is influenced by a variety of factors. However, the study considered share capital adequacy, liquidity management, and asset quality. This study wishes to caution that effects of these independent variables on performance of SACCOs should be considered in the light of the probable influence of other factors such as managerial skills, competition from other financial institutions and changes in interest rates in the economy among other factors.

5.5 Recommendations

Based on the study findings discussed above three recommendations are provided based on the objectives of the study. First SACCOs should revamp their levels of capital adequacy

since the effect of capital adequacy on profitability was quite low. This could be due to a systemic problem pertaining this indicator across the entire sector.

Secondly, deposit taking SACCOs should observe their liquidity levels to ensure that they are liquid enough to perform their activities. Poor liquidity levels for SACCOs point to high riskiness and the inability of the SACCO to perform their short term obligations competently. Further, it is important for deposit taking SACCOs to observe efficiency and effectiveness in dealing with delinquencies since the greatest asset of a given SACCO is in terms of performing loans. A high non-performing loan affects the SACCOs operations and has a trickle-down effect on the SACCOs financial performance.

Lastly, the study recommends for further study in the subject area of other factors that could affect the performance of deposit taking SACCOs, except the ones that are covered in the study.

5.6 Suggestions for Further Research

The general objective of this study was to assess the effect of enterprise risk management practices on performance of SACCOs in Kenya, a case of SASRA guidelines. The study has found out that capital adequacy, liquidity management and asset quality have a significant effect on financial performance of deposit taking SACCOs. This study suggests that other studies may be done using these variables with qualitative performance measures such as customer satisfaction being the dependent variables. Also, a study may be done on other prudential guidelines other than those considered in this study and their effect on financial performance of Savings and Credit Cooperative Societies in Kenya. Further, another study can be carried out using primary data in order to compare and contrast the findings of this study.

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APPENDICES

Appendix A : List of Deposit Taking SACCOs

1. Mwalimu National Sacco Society	2. Harambee Sacco Society Limited
3. Stima Sacco Society Limited	4. Kenya Police Sacco Society Limited
5. Afya Sacco Society Limited	6. United Nations Sacco society Limited
7. Unaitas Sacco Society Limited	8. Ukulima Sacco Society Limited
9. Metropolitan Sacco Society Limited	10. Imarisha Sacco Society Limited
11. Kenya Bankers sacco Society Limited	12. Kakemega Teachers Sacco Society
13. Gusii Mwalimu Sacco Society Limited	14. Bandari Sacco Society Limited
15. Hazina Sacco Society Limited	16. Nyeri Teachers Sacco Society Limited
17. Imarika Sacco Society Limited	18. Boresha Sacco Society Limited
19. Magreza Sacco Society Limited	20. Sheria Sacco Society Limited
21. Tower Sacco Society Limited	22. Mentor Sacco Society Limited
23. Mombasa Port Sacco Society Limited	24. Cosmopolitan Sacco Society Limited
25. Safaricom Sacco Society Limited	26. Bingwa Sacco Society Limited
27. Kwetu Sacco Society Limited	28. Solution Sacco Society Limited
29. Kitui Teachers Sacco Society Limited	30. Nacico Sacco Society Limited
31. Winas Sacco Society Limited	32. Waumini Sacco Society Limited
33. Ollin Sacco Society Limited	34. K-Unity Sacco Society Limited
35. Jamii Sacco Society Limited	36. Murata Sacco Society Limited
37. Chai Sacco Society Limited	38. Transnation Sacco Society Limited
39. Ndege Chai Sacco Society Limited	40. Taifa Sacco Society Limited
41. Egerton University Sacco Society	42. Capital Sacco Society Limited
43. Maisha Bora Sacco Society Limited	44. Chuna Sacco Society Limited
45. Yetu Sacco Society Limited	46. Naku Sacco Society Limited
47. Kenpipe Sacco Society Limited	48. Nyati Sacco Society Limited
49. Asili Sacco Society Limited	50. Fortune Sacco Society Limited
51. Unison Sacco Society Limited	52. Shirika Sacco Society Limited
53. Kenya Highlands	54. Tai Sacco Society Limited
55. Kenversity Sacco Society	56. Ardhi Sacco Society Limited
57. Ng'arisha Sacco Society Limited	58. Moi University Sacco Society Limited
59. Tembo Sacco Society Limited	60. Noble Sacco Society Limited

61. Wanandegge Sacco Society Limited	62. Nation Sacco Society Limited
63. Wakenya Pamoja Sacco Society	64. Wananchi Sacco Society Limited
65. Wanaanga Sacco Society Limited	66. Mwito Sacco Society Limited
67. Nassefu Sacco Society Limited	68. Ukirsitu Na Ufanisi Sacco Society
69. Qwetu Sacco Society Limited	70. Nawiri Sacco Society Limited
71. Teleposta Sacco Society Limited	72. Elimu Sacco Society Limited
73. Kenya Caners Sacco Society Limited	74. Transnational Sacco Society Limited
75. Simba Chai Sacco Society Limited	76. Dimkes Sacco Society Limited
77. Githunguri Diary Sacco Society	78. Sukari Sacco Society Limited
79. Southern Star Sacco Society Limited	80. Smartlife Sacco Society Limited
81. Trans-Elite County Sacco Society	82. Biashara Sacco Society Limited
83. 2 Nk Sacco Society Limited	84. Skyline Sacco Society Limited
85. Kingdom Sacco Society Limited	86. Kite Sacco Society Limited
87. Eco-Pillar Sacco Society Limited	88. Comoco Sacco Society Limited
89. Stergo Sacco Society Limited	90. Orient Sacco Society Limited
91. Fundamila Sacco Society Limited	92. Jitegemee Sacco Society Limited
93. Universal Traders Sacco Society	94. Faridi Sacco Society Limited
95. Mafanikio Sacco Society Limited	96. Narok Teachers Sacco Society Limited
97. Daima Sacco Society Limited	98. Muki Sacco Society Limited
99. Prime-Time Sacco Society Limited	100. Airports Sacco Society Limited
101. Dhabiti Sacco Society Limited	102. Kwale Teachers Sacco Society
103. Centenary Sacco Society	104. Magadi Sacco Society Limited
105. Nitunze Sacco Society Limited	106. Thamani Sacco Society Limited
107. Taraji Sacco Society Limited	108. Marsabit Teachers Sacco
109. Patnas Sacco Society Limited	110. Ndetika Rural Sacco Society
111. Vision Point Sacco Society	112. Kimbilo Daima Sacco Society
113. Mwingi Mwalimu Sacco	114. Nafaka Sacco Society Limited
115. MMH Sacco Society Limited	116. County Sacco Society Limited
117. Lainisha Sacco Society Limited	118. Kenya Achievas Sacco Society
119. Nyamira Tea Farmers Sacco	120. Times U Sacco Society Limited
121. Jumuika Sacco Society Limited	122. Wevarsity Sacco Society
123. Konoin Sacco Society Limited	124. Kmfri Sacco Society Limited

125. Puan Sacco Society Limited	126. Wakulima Commercial Sacco
127. Siraji Sacco Society Limited	128. Baraka Sacco Society Limited
129. Supa Sacco Society Limited	130. Imenti Sacco Society Limited
131. Nandi Hekima Sacco Society	132. Dumisha Sacco Society Limited
133. Nyala Sacco Society Limited	134. Vision Africa Sacco Society
136. Lamu Teachers Sacco Society	137. Tenhos Sacco Society Limited
138. Stake Kenya Sacco Society	139. Joinas Sacco Society Limited
140. Mudete Tea Factory Sacco	141. Nyambene Arimi Sacco Society
142. Ndosha Sacco Society Limited	143. Smart Champion Sacco Society
144. Washa Sacco Society Limited	145. Kenya Midland Sacco Society
146. Ufanisi Sacco Society Limited	147. Elgon Teachers Sacco Society
148. Rachuonyo Teachers Sacco	149. Sotico Sacco Society Limited
150. Enea Sacco Society Limited	151. Lengo Sacco Society Limited
152. Nyahururu Umoja Sacco	154. Nandi Farmers Sacco Society
156. Trans-Counties Sacco Society	157. Jacaranda Sacco Society Limited
158. Nufaika Sacco Society Limited	159. Baraton Sacco Society Limited
160. Fariji Sacco Society Limited	161. Agro-Chem Sacco
162. Ainabkoi Rural Sacco Society	163. Ilkisonko Sacco Society Limited
164. Kolenge Tea Sacco Society	165. Kipsigis Edis Sacco Society
166. Uni-County Sacco Society	167. Mwietheri Sacco Society
169. All Churches Sacco Society	169.Kathera Sacco Society Limited
170.Good Faith Sacco Society Limited	171.Koru Sacco Society Limited
172.Gastameco Sacco Society Limited	173.Vihiga Farmers County Sacco Society
174.Kaimosi Sacco Society Limited	175.Godway Sacco Society Limited
176.Miliki Sacco Society Limited	

Appendix B: Gantt Chart

The time frame for this study is presented in the Gantt chart below:

Task of	Week 1-4	Week	Week	Week 7-	Week 8-	Week	Week 12
Research		5	6	8	9	10-11	
Proposal Writing and correction							
Proposal defense							
Post-defense Presentation Reviews							
Field Data Collection							
Data cleaning, editing and coding							
Data analysis and Presentation							
Report Writing and final defense of project							

Appendix C: Financial Budget

NO.	ITEM	AMOUNT(KSHS)
1	Writing of the Proposal	
	i. Typing & printing 60 pages @ 10/=	600.00
	ii. Photocopying 3 copies of 60 pages @ 3/= per page and Binding the proposal	740.00
	iii. Miscellaneous expenses	700.00
	Sub-Total	2,040.00
2	Data Collection, Analysis and Report Writing	
	(a) Data Collection and Analysis	
	i. Traveling expenses to SASRA offices for data mining	15,000.00
	ii. Stationery and computer data entry and analysis services	15,000.00
	Sub-Total	30, 000.00
	(b) Developing Final Study Report	
	i. Printing 80 pages @ 10/=	800.00
	ii. Photocopying 3 copies @ 3/=	600.00
	iii. Binding 3 copies @ 200/=	600.00
	Sub-Total	1, 100.00
	GRAND TOTAL	32,140.00

Appendix D: Secondary Data Collection Sheet

Data was collected for a period of 6 years from 2011 to 2016.

SACCO	firmid	year	roa	adequacy	liquidity	quality	d_ratio
Mwalimu	1	1	92	0.770247	0.27	0.41	0.32
Mwalimu	1	2	115	0.53266	0.23	0.5	0.27
Mwalimu	1	3	183	1.37303	0.19	0.34	0.47
Mwalimu	1	4	159	1.33201	0.21	0.34	0.45
Mwalimu	1	5	44	1.55526	0.21	0.31	0.48
Mwalimu	1	6	90	1.45929	0.24	0.31	0.45
Harambee	2	1	165	0.275389	0.31	0.54	0.15
Harambee	2	2	156	0.170527	0.37	0.53	0.09
Harambee	2	3	187	0.08721	0.4	0.55	0.05
Harambee	2	4	125	0.031935	0.42	0.56	0.02
Harambee	2	5	185	0.009332	0.38	0.62	0.01
Harambee	2	6	210	0.009806	0.37	0.62	0.01
Afya	3	1	160	0	0.44	0.56	0
Afya	3	2	150	0	0.41	0.59	0
Afya	3	3	100	0	0.43	0.57	0
Afya	3	4	141	0	0.41	0.59	0
Afya	3	5	99	0	0.44	0.56	0
Afya	3	6	125	0	0.37	0.63	0
Police	4	1	44	0.497966	0.31	0.46	0.23
Police	4	2	35	0.757645	0.32	0.38	0.29
Police	4	3	47	0.741645	0.31	0.39	0.29
Police	4	4	23	0.983333	0.27	0.37	0.36
Police	4	5	24	0.796547	0.3	0.39	0.31
Police	4	6	30	0.767971	0.31	0.39	0.3
UN	5	1	137	0	0.41	0.59	0
UN	5	2	104	0	0.42	0.58	0
UN	5	3	140	0	0.41	0.59	0
UN	5	4	92	0	0.31	0.69	0
UN	5	5	122	0	0.28	0.72	0
UN	5	6	53	0	0.32	0.68	0
Stima	6	1	25	0.703163	0.34	0.39	0.27
Stima	6	2	24	0.410992	0.42	0.41	0.17
Stima	6	3	36	0.119734	0.43	0.51	0.06
Stima	6	4	20.5	0.327947	0.46	0.41	0.13
Stima	6	5	42.5	0.193027	0.43	0.48	0.09
Stima	6	6	75	0.198238	0.43	0.47	0.09
Ukulima	7	1	146	0	0.23	0.77	0
Ukulima	7	2	146	0	0.15	0.85	0
Ukulima	7	3	204	0	0.31	0.69	0
Ukulima	7	4	175	0.191461	0.26	0.62	0.12

Ukulima	7	5	266	0.694011	0.57	0.25	0.17
Ukulima	7	6	295	1.33318	0.51	0.21	0.28
Bankers	8	1	26.26	0.27286	0.36	0.51	0.14
Bankers	8	2	20.5	0.700783	0.24	0.45	0.31
Bankers	8	3	16.5	0.535174	0.24	0.5	0.27
Bankers	8	4	11	0.5365	0.24	0.5	0.27
Bankers	8	5	12.3	0.402051	0.24	0.54	0.22
Bankers	8	6	17	1.11314	0.18	0.39	0.43
Magereza	9	1	79.5	0.670226	0.21	0.47	0.32
Magereza	9	2	80	0.533279	0.26	0.48	0.26
Magereza	9	3	80	0	0.37	0.63	0
Magereza	9	4	56	0.75	0.25	0.43	0.32
Magereza	9	5	39	1.36362	0.19	0.34	0.47
Magereza	9	6	69	0.766008	0.25	0.43	0.33
NACICO	10	1	3.55	0.535519	0.22	0.51	0.27
NACICO	10	2	2.95	0.918987	0.2	0.42	0.38
NACICO	10	3	3.3	1.09677	0.19	0.39	0.43
NACICO	10	4	1.75	1.65233	0.09	0.34	0.57
NACICO	10	5	2.1	0.768571	0.18	0.46	0.35
NACICO	10	6	2.95	0.357868	0.26	0.55	0.2
Hazina	11	1	13	1.21065	0.1	0.41	0.5
Hazina	11	2	8.05	0.963592	0.12	0.45	0.43
Hazina	11	3	7.85	1.25	0.1	0.4	0.5
Hazina	11	4	3.9	2.1462	0.14	0.27	0.59
Hazina	11	5	3.5	0.5	-0.34	0.9	0.45
Hazina	11	6	3.9	0.316583	-0.39	1.06	0.34
Sheria	12	1	123	0.228462	0.42	0.48	0.11
Sheria	12	2	31.75	0	0.46	0.54	0
Sheria	12	3	82	0	0.44	0.56	0
Sheria	12	4	70	0	0.44	0.56	0
Sheria	12	5	72	0	0.48	0.52	0
Sheria	12	6	95	0	0.48	0.52	0
Chuma	13	1	68	0.019324	0.49	0.5	0.01
Chuma	13	2	86	0.04209	0.48	0.5	0.02
Chuma	13	3	100	0.002442	0.49	0.51	0
Chuma	13	4	125	1.0123	0.33	0.33	0.34
Chuma	13	5	118	0	0.45	0.55	0
Chuma	13	6	125	0	0.46	0.54	0
Waumini	14	1	16.5	0.307018	0.4	0.46	0.14
Waumini	14	2	13	0.556948	0.37	0.4	0.23
Waumini	14	3	17.05	0.87214	0.18	0.44	0.38
Waumini	14	4	8.75	0.988893	0.18	0.41	0.41
Waumini	14	5	8.95	0.984853	0.19	0.41	0.4
Waumini	14	6	13.65	1.09181	0.2	0.38	0.42

Maisha Bora	15	1	66	0.604342	0.21	0.49	0.3
Maisha Bora	15	2	50	0.373636	0.26	0.54	0.2
Maisha Bora	15	3	10	1.1281	0.18	0.38	0.43
Maisha Bora	15	4	10	1.62261	0.18	0.31	0.51
Maisha Bora	15	5	13.65	2.57757	0.04	0.27	0.69
Maisha Bora	15	6	10.35	2.30678	0.05	0.29	0.66
Jamii	16	1	136	0.54673	0.14	0.55	0.3
Jamii	16	2	143	0.578889	0.15	0.54	0.31
Jamii	16	3	25	0.516962	0.18	0.54	0.28
Jamii	16	4	18	0.619123	0.05	0.59	0.36
Jamii	16	5	17.45	0.676871	0.19	0.49	0.33
Jamii	16	6	14.25	1.15272	0.17	0.39	0.45
Chai	17	1	305	0	0.33	0.67	0
Chai	17	2	305	0	0.29	0.71	0
Chai	17	3	300	0	0.42	0.58	0
Chai	17	4	335	0	0.44	0.56	0
Chai	17	5	430	0	0.46	0.54	0
Chai	17	6	500	0	0.47	0.53	0
Asili	18	1	27	3.07469	0	0.25	0.75
Asili	18	2	21.75	1.67715	0	0.37	0.63
Asili	18	3	14	6.36842	0	0.14	0.86
Asili	18	4	12.5	1.24318	0	0.45	0.55
Asili	18	5	14.2	0.785714	0.19	0.45	0.36
Asili	18	6	12	0.102837	0.16	0.76	0.08
Wanadege	19	1	6.8	0.113692	0.29	0.64	0.07
Wanadege	19	2	6.9	0.326693	0.28	0.54	0.18
Wanadege	19	3	9.75	0.23	0.32	0.55	0.13
Wanadege	19	4	4.5	0.207654	0.31	0.57	0.12
Wanadege	19	5	4.9	0.342746	0.31	0.52	0.18
Wanadege	19	6	3.4	0.454511	0.27	0.5	0.23
Kenpipe	20	1	145	0.031981	0.43	0.56	0.02
Kenpipe	20	2	119	0.017607	0.43	0.56	0.01
Kenpipe	20	3	174	0.003873	0.42	0.58	0
Kenpipe	20	4	140	0.024012	0.42	0.56	0.01
Kenpipe	20	5	222	0.015292	0.43	0.56	0.01
Kenpipe	20	6	314	0.011282	0.43	0.57	0.01
Nassefu	21	1	14	0.513143	0.29	0.47	0.24
Nassefu	21	2	11.5	0.135385	0.38	0.54	0.07
Nassefu	21	3	17.5	0.300303	0.36	0.49	0.15
Nassefu	21	4	14.45	0.187883	0.39	0.51	0.1

Nassefu	21	5	19	0.087689	0.44	0.52	0.05
Nassefu	21	6	27.5	0.027672	0.46	0.53	0.01
Kenversity	22	1	3.7	0.197221	0.4	0.5	0.1
Kenversity	22	2	4.6	0.221147	0.41	0.48	0.11
Kenversity	22	3	4.75	0.337075	0.38	0.46	0.16
Kenversity	22	4	3.05	0.222853	0.4	0.49	0.11
Kenversity	22	5	5.1	0.265115	0.4	0.48	0.13
Kenversity	22	6	10.95	0.252015	0.39	0.49	0.12
Safaricom	23	1	6.05	0.264045	0.22	0.61	0.16
Safaricom	23	2	5.35	1.47657	0.12	0.35	0.52
Safaricom	23	3	7.9	0.199723	0.25	0.63	0.13
Safaricom	23	4	4.5	0.201778	0.25	0.63	0.13
Safaricom	23	5	4.25	0.207563	0.27	0.61	0.13
Safaricom	23	6	5.3	0.21306	0.29	0.59	0.12
NAKU	24	1	7.35	0.339058	0.62	0.29	0.1
NAKU	24	2	7.5	0.281003	0.63	0.29	0.08
NAKU	24	3	13.2	0.083975	0.12	0.81	0.07
NAKU	24	4	13.3	0.028327	0.15	0.82	0.02
NAKU	24	5	12	0.008869	0.43	0.57	0.01
NAKU	24	6	15	0.027573	0.42	0.56	0.02
Wanaanga	25	1	26.25	0.070192	0.19	0.76	0.05
Wanaanga	25	2	27	0.004227	0.25	0.75	0
Wanaanga	25	3	63	0.058133	0.25	0.71	0.04
Wanaanga	25	4	41.5	0.077382	0.28	0.67	0.05
Wanaanga	25	5	69.5	0.061837	0.3	0.66	0.04
Wanaanga	25	6	48.75	0.040596	-0.06	1.02	0.04
Ardhi	26	1	50	0.825651	0.17	0.46	0.38
Ardhi	26	2	39	0.662173	0.22	0.47	0.31
Ardhi	26	3	45	0.46461	0	0.68	0.32
Ardhi	26	4	25	0.488513	0.29	0.48	0.23
Ardhi	26	5	21.75	0.359978	0.32	0.5	0.18
Ardhi	26	6	26	0.457594	0.32	0.47	0.21
Ufanisi	27	1	32	1.00478	0.18	0.41	0.41
Ufanisi	27	2	30	1.54675	0.09	0.36	0.55
Ufanisi	27	3	45.5	0.688831	0.15	0.5	0.35
Ufanisi	27	4	15	1.34889	0.1	0.38	0.52
Ufanisi	27	5	14	0.293193	0.11	0.69	0.2
Ufanisi	27	6	25	0.181741	0.16	0.71	0.13
Ufundi	28	1	53	0.343908	0.16	0.62	0.21
Ufundi	28	2	45	0.377461	0.16	0.61	0.23
Ufundi	28	3	69	0.216782	0.13	0.71	0.15
Ufundi	28	4	55	0.264198	0.14	0.68	0.18
Ufundi	28	5	40	0.25657	0.2	0.63	0.16
Ufundi	28	6	46	0.159717	0.19	0.7	0.11

Ukristo	29	1	13.8	0.144028	0.38	0.54	0.08
Ukristo	29	2	10.35	0.001552	0.37	0.63	0
Ukristo	29	3	11	0.001006	0.25	0.75	0
Ukristo	29	4	9	0	0.36	0.64	0
Ukristo	29	5	13.05	0	0.2	0.8	0
Ukristo	29	6	18	0.03619	0.18	0.8	0.03
Elimu	30	1	57.5	0.022979	0.48	0.51	0.01
Elimu	30	2	149	0.03308	0.48	0.5	0.02
Elimu	30	3	185	0.008643	0.49	0.51	0
Elimu	30	4	283	0.003512	0.49	0.51	0
Elimu	30	5	200	0.012133	0.32	0.67	0.01
Elimu	30	6	250	0	0.33	0.67	0
Mwito	31	1	6.8	0.113692	0.29	0.64	0.07
Mwito	31	2	6.9	0.326693	0.28	0.54	0.18
Mwito	31	3	9.75	0.23	0.32	0.55	0.13
Mwito	31	4	4.5	0.207654	0.31	0.57	0.12
Mwito	31	5	4.9	0.342746	0.31	0.52	0.18
Mwito	31	6	3.4	0.454511	0.27	0.5	0.23
COMOCO	32	1	145	0.031981	0.43	0.56	0.02
COMOCO	32	2	119	0.017607	0.43	0.56	0.01
COMOCO	32	3	174	0.003873	0.42	0.58	0
COMOCO	32	4	140	0.024012	0.42	0.56	0.01
COMOCO	32	5	222	0.015292	0.43	0.56	0.01
COMOCO	32	6	314	0.011282	0.43	0.57	0.01
Fundilima	33	1	14	0.513143	0.29	0.47	0.24
Fundilima	33	2	11.5	0.135385	0.38	0.54	0.07
Fundilima	33	3	17.5	0.300303	0.36	0.49	0.15
Fundilima	33	4	14.45	0.187883	0.39	0.51	0.1
Fundilima	33	5	19	0.087689	0.44	0.52	0.05
Fundilima	33	6	27.5	0.027672	0.46	0.53	0.01
Nafaka	34	1	3.7	0.197221	0.4	0.5	0.1
Nafaka	34	2	4.6	0.221147	0.41	0.48	0.11
Nafaka	34	3	4.75	0.337075	0.38	0.46	0.16
Nafaka	34	4	3.05	0.222853	0.4	0.49	0.11
Nafaka	34	5	5.1	0.265115	0.4	0.48	0.13
Nafaka	34	6	10.95	0.252015	0.39	0.49	0.12
Telepost	35	1	6.05	0.264045	0.22	0.61	0.16
Telepost	35	2	5.35	1.47657	0.12	0.35	0.52
Telepost	35	3	7.9	0.199723	0.25	0.63	0.13
Telepost	35	4	4.5	0.201778	0.25	0.63	0.13
Telepost	35	5	4.25	0.207563	0.27	0.61	0.13
Telepost	35	6	5.3	0.21306	0.29	0.59	0.12
Shirika	36	1	7.35	0.339058	0.62	0.29	0.1
Shirika	36	2	7.5	0.281003	0.63	0.29	0.08

Shirika	36	3	13.2	0.083975	0.12	0.81	0.07
Shirika	36	4	13.3	0.028327	0.15	0.82	0.02
Shirika	36	5	12	0.008869	0.43	0.57	0.01
Shirika	36	6	15	0.027573	0.42	0.56	0.02
Nest	37	1	26.25	0.070192	0.19	0.76	0.05
Nest	37	2	27	0.004227	0.25	0.75	0
Nest	37	3	63	0.058133	0.25	0.71	0.04
Nest	37	4	41.5	0.077382	0.28	0.67	0.05
Nest	37	5	69.5	0.061837	0.3	0.66	0.04
Nest	37	6	48.75	0.040596	-0.06	1.02	0.04
Nation	38	1	50	0.825651	0.17	0.46	0.38
Nation	38	2	39	0.662173	0.22	0.47	0.31
Nation	38	3	45	0.46461	0	0.68	0.32
Nation	38	4	25	0.488513	0.29	0.48	0.23
Nation	38	5	21.75	0.359978	0.32	0.5	0.18
Nation	38	6	26	0.457594	0.32	0.47	0.21
Kingdom	39	1	32	1.00478	0.18	0.41	0.41
Kingdom	39	2	30	1.54675	0.09	0.36	0.55
Kingdom	39	3	45.5	0.688831	0.15	0.5	0.35
Kingdom	39	4	15	1.34889	0.1	0.38	0.52
Kingdom	39	5	14	0.293193	0.11	0.69	0.2
Kingdom	39	6	25	0.181741	0.16	0.71	0.13
Airport	40	1	53	0.343908	0.16	0.62	0.21
Airport	40	2	45	0.377461	0.16	0.61	0.23
Airport	40	3	69	0.216782	0.13	0.71	0.15
Airport	40	4	55	0.264198	0.14	0.68	0.18
Airport	40	5	40	0.25657	0.2	0.63	0.16
Airport	40	6	46	0.159717	0.19	0.7	0.11
Miliki	41	1	13.8	0.144028	0.38	0.54	0.08
Miliki	41	2	10.35	0.001552	0.37	0.63	0
Miliki	41	3	11	0.001006	0.25	0.75	0
Miliki	41	4	9	0	0.36	0.64	0
Miliki	41	5	13.05	0	0.2	0.8	0
Miliki	41	6	18	0.03619	0.18	0.8	0.03