

**MODERATING EFFECT OF INVESTMENT DECISIONS ON CORPORATE RISK
MANAGEMENT AND FINANCIAL PERFORMANCE OF DEPOSIT TAKING
SAVINGS AND CREDIT COOPERATIVE SOCIETIES IN WESTERN KENYA**

BY

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DECLARATION AND APPROVAL

I declare that this thesis is my original work and has not been submitted and approved for examination or otherwise to the examination body of Maseno University or any other University.

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DEDICATION

This thesis is dedicated to my family for their unconditional love, support and always being there for me. Thank you so much.

ABSTRACT

Globally, the financial performance of Savings and Credit Cooperative Societies (SACCOs) has been improving steadily as shown by the increase in membership which is approximated at one billion, with the turnover from the world's 300 top SACCOs amounting to \$2.5 trillion as at December 2017. In Africa, SACCOs have had a significant role in transforming the continent through financial support of businesses. They play a fundamental role in Kenya's financial sector by assisting members save money and offer credit facilities. However, statistics show that financial performance of DT-SACCOs is fluctuating as shown by non-performing loans which stood at 5.12%, 5.23% and 6.14% as at 2015, 2016 and 2017 respectively, with that of DT-SACCOs in Western Kenya averaging 6.2% for the five years. Previous studies linking corporate risk management to financial performance show mixed results indicating lack of an effective framework for enhancing financial performance in the DT-SACCOs. Existing literature on the impact of investment decisions on financial performance has mainly focuses on banks indicating that the effect on DT-SACCOs unexplored. Moreover, studies on the influence of investment decisions on the relationship between corporate risk management and financial performance have received little attention in the context of DT-SACCOs. The study sought to establish the relationship between corporate risk management, investment decisions and financial performance of DT-SACCOs in Western Kenya. Specifically, the study sought to; establish the effect of corporate risk management on financial Performance; assess the effect of investment decisions on financial performance; and to analyse the moderating effect of investment decisions on the relationship between corporate risk management and financial performance of DT-SACCOs in Western Kenya. Finance Distress theory, Portfolio theory, Agency theory and investment value theory guided the study. Correlational and descriptive research designs were adopted. The target population was 19 DT-SACCOs in Western Kenya and a census of 19 DT-SACCOs for the period 2013 to 2017 was selected, yielding 95 data points and a census approach was used to select interviewees. Secondary data from financial statements was used while key informants who were chairpersons of the DT-SACCOs provided primary data that was used for triangulation purposes. Unit root test showed the data stationary at levels. Expert opinion established content and construct validity. Hierarchical panel data regression was used to analyse data. The findings showed corporate risk management has a negative significant effect on financial performance (non-performing loan ratio ($\beta = -0.4059$, $p = 0.0015$), and cost income ratio ($\beta = -0.0499$, $p = 0.0001$), indicating a unit reduction in non-performing loan ratio improves financial performance by 40.59%, and a unit reduction in cost income ratio improves financial performance by 4.99%. Further, investment decisions had positive significant effect on financial performance ($\beta = 0.2038$, $p = 0.0001$) indicating that unit increase in investment decision leads to 20.38% increase in financial performance. The study revealed a significant moderating effect of investment decisions on the relationship between corporate risk management and financial performance ($\Delta R^2 = .166$, $p < 0.05$), indicating that incorporating investment decisions in corporate risk management improves financial performance by 16.6%. The study concludes that investment decisions are important when considered alongside corporate risk management, and recommends that DT-SACCOs in Western Kenya ought to invest in corporate risk management constructs of credit risk and operational risk management while incorporating investment decisions. The findings may be helpful to policy makers in SACCOs and Government in setting policies to govern the operations of DT-SACCOs in Kenya; shareholders in making investment decisions and academicians in forming a basis for future theory development in the fields of corporate risk management, Investment decisions and financial performance.

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LIST OF ACRONYMS AND ABBREVIATIONS

WOCCU - World Council of Credit Unions

SACCOs - Savings and Credit Co-operative Societies

SASRA - SACCO Societies Regulatory Authority

DT-SACCOs -Deposit Taking Savings and Credit Cooperative Societies

ROA -Return on Asset

ROE - Return on Equity

CAMEL -Capital Adequacy, Asset Quality, Management Efficiency & Liquidity

OPERATIONAL DEFINITION OF TERMS

Corporate Risk Management refers to the methods that a DT-SACCO uses to minimize financial losses. This was measured by credit risk management, liquidity risk management and operational risk management.

Credit risk management refers to the systems, procedures and controls which DT-SACCOs put in place to ensure the efficient collection of customer payments and minimize the risk of non-payment. This was measured by a reduction in non-performing loan ratio.

Liquidity risk management is the ability of a DT-SACCO to respond to demands for new loans and provide for unexpected savings withdrawals at a minimum cost. It was measured by an increase in liquidity asset ratio.

Operational risk management is a decision-making tool to systematically help identify operational risks and benefits and determine the best courses of action for any given situation. This was measured by a reduction in cost income ratio.

Investment Decisions – also known as managerial discretion, these are decisions made by the top and middle level management with respect to the amount of funds to be deployed in the investment opportunities. This was measured by the natural log of investments.

Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time. It was measured by an increase in return on asset ratio (ROA).

Western Kenya- The study was conducted among DT-SACCOs established in western Kenya. The area covers the ten counties of Kisii, Nyamira, Homa Bay, Migori, Kakamega, Busia, Vihiga, Kisumu, Bungoma and Siaya.

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CHAPTER ONE

INTRODUCTION

This chapter introduces the concepts of corporate risk management and investment decisions and their relationship on financial performance with the aim of presenting the study's research gaps. The research problem, objectives of the study and the hypotheses of the study are presented herein. Similarly, the scope of the study, justification and the conceptual framework of the study are presented in this chapter.

1.1 Background to the Study

Globally, the financial performance of Savings and Credit Cooperative Societies (SACCOs) has been improving steadily with time as shown by the increase in membership which is approximated at one billion, with the turnover from the world's 300 top SACCOs amounting to \$2.5 trillion as at December 2017 (International Cooperative Alliance, 2017). This increase is attributed to the ever-increasing need for mobilisation funds and investment especially from the low-income earners (Rejda, 2008). However, this growth is threatened by financial and operational risk (Santomero, 2014). The global financial crisis which the world is recovering from has made corporate risk management in financial institutions including SACCOs an integral part in day to day operations (International Cooperative Alliance, 2017).

The first modern SACCO was started in Germany around 1850. A quick review of the developed world shows that not many big banks were born big; most of them began as small SACCOS. In Africa, Ghana was the first country to start SACCO in 1952 (ACCOSCA, 2009). SACCOs in Africa have since then had a role in transforming the continent considering that most entrepreneurs are in need of financial support. In Kenya cooperative movement dates back to 1931 when the first ordinance to regularize the operation of the cooperatives in the country was

enacted. The following decade witnessed increased interventions in the sector with the eventual enactment of the Cooperative Ordinance Act of 1945, the predecessor of the current cooperative Societies Act Cap 490 of the laws of Kenya as amended in 1977. SACCOs are registered and regulated under the Cooperative Societies Act. The vast number of SACCOs in Kenya has been formed over the years with some being created as early as 1968. The main requirement across all SACCOs is that their members have some source of income before qualifying to join the SACCO. The SACCOs mobilize funds from them and give them access to financial services like loans, savings facility, front office services which is otherwise inaccessible to them through the main banks that are either unaffordable or physically inaccessible. (Microfinance house ltd, 2006).

Corporate risk management refers to all of the methods that financial institutions use to minimize financial losses. They are the means through which top and middle managers, as well as all employees prevent loss exposure of shareholders' investment through internal controls of people and technologies. Many risks are common to all financial institutions. From banks to microfinance institutions, these include credit risk, liquidity risk, market or pricing risk, operational risk, corporate risk management practices that are mainly used by financial institutions to mitigate financial loss include credit risk management, liquidity risk management and operational risk management. These practices have however been shown theoretically and empirically to influence financial performance of financial institutions in different ways (Merna and Al-Thani, 2008).

Theoretically, the Finance Distress Theory has been used to explain the importance of corporate risk management on financial performance. This theory proposes that firms enter into financial distress as a result of poor management of risks and economic distress and this affects their

financial performance. When financial performance deteriorates to the point where a firm cannot meet its financial obligation, the firm is said to have entered the state of financial distress. The first signals of financial distress are violations of debt payments and failure or reduction of dividends payouts and this affects financial performance. Firms experience financial distress due to poor managerial policies, inefficient and ineffective internal control systems, non-disclosure of financial information and inability to recognize stakeholder rights. Poor risk management strategies which lead to increase in non-performing loans, operational risk and sub optimal liquidity levels and lack of trainings among firms' employees on risks can result to financial distress and therefore affect financial performance (Boritz (1991).

Empirical studies (Li and Zou, 2014; Bakaeva and Sun, 2009; Ugirase, 2013; Nyamwange, 2010; Makori, 2015, Mutua, 2016; and Ikua, 2015) have studied the relationship between credit risk management and financial performance of firms. While Li and Zou (2014), Bakaeva and Sun (2009), Ugirase (2013), Nyamwange (2010), Makori (2015) and Mutua (2016) report a positive relationship between the variables, the study by Li and Zou (2014) was based on commercial banks using the non-performing loan ratio (NPLR) and capital adequacy ratio(CAR) as independent variables and therefore the results might be different if applied in this study which has NPLR, Liquidity asset ratio (LAR) and cost income ratio (CIR) as variables which measure credit risk; Bakaeva and Sun (2009) conducted their study in a developed country whose economic environment is different from Kenya which is a developing country with more financial risks. Ugirase (2013) used questionnaires to collect data which may have introduced biasness and subjectivity indicting that the findings are spurious. Nyamwange (2010) used cross-sectional data which may have introduced unobserved variable bias. Makori (2015) and Mutua (2016) used a descriptive research design hence the long-run cause effect relationship was not

established. Elsewhere, Ikua (2015) found a negative effect between the variables. The findings cannot however be generalized to SACCOs in other industries since only SACCOs in the hospitality were sampled. None of these studies focuses on financial performance using a hierarchical panel data regression method in DT-SACCOs in western Kenya which was the focus of the present study.

Empirical studies that have investigated the effect of liquidity risk management on financial performance of firms include Bordeleau *et al.* (2010), Ismal (2010), Akhtar (2011), Said (2014), Song'e (2015) and Ogol (2011) all who establish a positive effect of liquidity risk management on financial performance of firms. Konadu (2009), Gwenyi *et al.* (2018) and Mwangi (2014) on the contrary established a negative effect between liquidity risk management and financial performance of firms. Bordeleau *et al.* (2010) use of banks from a developed country indicates that the results were cautiously interpreted; Ismal (2010) used questionnaires to collect data indicates that the results may have been biased and therefore not credible. Akhtar (2011) used sector-based data and therefore the results may not be applicable to the DT-SACCOs in Kenya; Said (2014) applied the pooled ordinary least squares indicating that omitted variable bias was not eliminated; Konadu (2009) used a small sample size of only three commercial banks indicating that the findings may not be plausible; Ogol (2011) used cross-sectional data using the descriptive research design. The present study used the correlational research design and applied the panel data methodology. On the other hand, Gwenyi *et al.* (2018) used cross-sectional data. Osoro and Muturi (2015) also used the descriptive research design and cross-sectional data limited the study findings. None of these studies focused on the effect of liquidity risk management on financial performance using a hierarchical panel data regression methodology in DT-SACCOs in western Kenya which is the focus of the present study.

Studies conducted on the effect of operational risk on financial performance of banks include that of Francis and Hess (2014), Epetimehin and Obafemi (2015), Gikundi *et al.* (2014) and Mathuva (2009). Whereas these studies establish a positive relationship between the variables, Gikundi *et al.* (2014) establishes mixed results. Francis and Hess (2014) study was however based on only one bank. Epetimehin and Obafemi (2015) use primary data collected through questionnaires which may have introduced bias to the findings; Gikundi *et al.* (2014) also used questionnaires. Mathuva (2009) used banks as the sample. Therefore, the effect of operational risk management on financial performance of DT-SACCOs has not been determined.

Reviewed literature indicates that corporate risk management constructs of credit, liquidity and operational risk management may influence financial performance even though with mixed results. Most prior studies use conveniently-selected firm-specific cross-sectional data using the descriptive research design which limits the generalization of findings to DT-SACCOs in western Kenya. Therefore, the effect of corporate risk management on financial performance of DT-SACCOs in western Kenya has not been established.

Investment Decisions relates to the decisions made by top and middle level management with respect to the amount of funds to be deployed in the investment opportunities. Such decisions are important because; they will influence the company's size (fixed assets, sales, and retained earnings),they increase the value of the company's shares and thus its credibility, the fact that they are irreversible means that they have to be made carefully to avoid any mistake which can lead to the failure of such investment and due to heavy capital outlay, more attention is required to avoid loss of huge sums of money which in the extreme may lead to the closure of such a company. One prominent theory proposed to explain the effect of investment decisions on firm's financial performance is Portfolio Theory. 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 and therefore management will make investment decisions that have high return.

The choice of investment decision in the present study as a moderating variable is therefore motivated by this Portfolio Theory. Moreover, previous studies have shown mixed results on the relationship between Investment decisions, constructs of corporate risk management and financial performance.

Studies that have investigated the effect of investment decisions on financial performance of finance include Fazzari *et al.* (2000), Adelegan (2009), Ariemba *et al.* (2016), Machuki (2014), Koroti (2014) and Nyale (2010). Of these studies, Nyale (2010) established a negative relationship between the variables while the others established a strong positive significant effect. Fazzari *et al.* (2000), focused on manufacturing firms in the US whose findings may not be generalized to other industries; Adelegan (2009) sampled listed firms which have different investment risk regulations unlike the DT-SACCOs; Ariemba *et al.* (2016) used descriptive research design and Machuki (2014) used non-financial listed firms to establish the effect of investment decision on the performance of firms indicating that the study findings may not be applicable to SACCOs. Koroti (2014) conducted a study to establish the effect of investing and financing decisions on the financial performance of sugar factories in Kenya. Only sugar firms were sampled. The study did not however employ the use of panel data indicating that the unobservable bias was not eliminated.

Empirical studies reviewed indicate that the effect of investment decisions on financial performance of DT-SACCOs in western Kenya has not been fully addressed. Most of the studies employed cross-sectional data and sector-based samples designs with some attempting to link investment decisions to financial performance of firms; however there was none touching on the effect of investment decisions on financial performance of DT-SACCOs in western Kenya which the current study seeks to establish.

Corporate risk management is one of the critical concerns of managers when they make investment decisions. Managers desire to invest in projects that have less risk and thereby improve financial performance of a firm (Xun Li, 2009). From the foregoing, it is evident that both investment decisions and corporate risk management affect financial performance directly. However, it is not clear whether investment decisions have a moderating influence on the relationship between corporate risk management and financial performance of an organization. Agency theory looks at the interest variations between the shareholders and management of a firm. Managers should be working for the shareholders as they make investment decisions which improve financial performance of a firm (Bass and Bass, 2009).

Empirical studies reveal mixed results on the influence of investment decision on the relationship between corporate risk management and financial performance. Priestley *et al.* (2008) using a broad sample of United States manufacturing firms show that there is a significant positive relationship between corporate governance and investment decisions and the sensitivity of cash flows is moderated by investment decisions. Li and Tang (2010) on the other hand while examining the moderating role of managerial discretion on CEO hubris and firm risk taking revealed significant moderation by managerial discretion on the relationship between CEO

hubris and firm risk taking. Elsewhere, Joshi and Stump (2009) posit that decision-making, uncertainty and trust enhance the effect of manufacturer asset specificity on joint action; however, the moderating effect of reciprocal asset investments was not significant. The use of US manufacturing firms by Priestley *et al.* (2008) limits the applicability of the findings to DT-SACCOs in western Kenya. Li and Tang (2010) only investigated manufacturer-supplier relationships indicating that risk management-financial performance relationships were not investigated. Joshi and Stump (2009) on the other hand use primary data which may have introduced biasness in the findings. Therefore, the moderating influence of investment decision on the relationship between corporate risk management and financial performance of DT-SACCOs in western Kenya has not been established.

Empirical studies that have attempted to address this issue have ineffectively addressed these challenges by focusing on general risk management, used cross sectional data and are sector based and hence biased. Moreover, studies conducted on the effect of corporate risk management on financial performance have assumed that this relationship is direct. An alternative perspective that the relationship can be moderated by variables such as investment decisions has not been explored. Accordingly, the study undertook to establish the moderating effect investment decisions on the relationship between corporate risk management and financial performance of DT-SACCOs in western Kenya which reviewed studies have failed to conclusively address.

Savings and Credit Cooperative Societies (SACCOs) play a fundamental role in Kenya's financial sector through assisting members save money and advance credit to interested members. DT-SACCO is part of the larger Sacco sub-sector in Kenya which comprises the deposit-taking and the non-deposit taking Sacco Societies. The deposit-taking segment of the sub-sector is composed of those Sacco Societies which undertake both withdrawable and non-

withdrawable deposits. Whereas the non-withdrawable deposits portion of the business may be used as collateral and are not refundable unless on withdrawal from membership, the withdrawable deposits portion of the business can be accessed by the members at any time, (SASRA, 2014). Statistics show that non-performing loans in the DT-SACCOs stood at 5.12%, 5.23% and 6.14% as at 2015, 2016 and 2017 respectively which indicates fluctuating financial performance (SASRA, 2017). This rate is relatively high compared with the World Council of Credit Unions (WOCCU) recommended industry average of 5%; and particularly given that the credit lending model in the DT-SACCOs is mostly premised on guarantor-ship, which is meant to cushion DT-SACCOs against bad loans. It also demonstrates that, notwithstanding the fact that the loans and credit advances by DT-SACCOs are guarantee backed, they are still susceptible to default, and thus additional measures to address the risks ought to be put in place (SASRA, 2017). While withdrawable savings deposits do not comprise significant portion of the balance sheet, DT-SACCOs are usually faced with liquidity mismatch when issuing loans based on multiplier of savings.

1.2 Statement of the Problem

The financial performance of Savings and Credit Cooperative Societies (SACCOs) has been improving steadily as shown by the increase in membership which is approximated at one billion globally, with the turnover from the world's 300 top SACCOs amounting to \$2.5 trillion as at December 2017. In Africa, SACCOs have had a significant role in transforming the continent through financial support of businesses. Savings and Credit Cooperative Societies (SACCOs) play a fundamental role in Kenya's financial sector through assisting members save money and advance credit to interested members. However, statistics show that non-performing loans stood at 5.12%, 5.23% and 6.14% as at 2015, 2016 and 2017 respectively which indicates fluctuating

financial performance in the Deposit-taking savings and credit cooperatives Societies (DT-SACCOs) segment. Empirical evidence demonstrates credible but inconsistent relationships between corporate risk management and financial performance. Previous studies testing the effect of corporate risk management on financial performance and effect of investment decisions on financial performance focused on general risk management, used cross-sectional data or sector-based samples. The studies did not analyse the effect of either corporate risk management or investment decisions on financial performance of DT-SACCOs in western Kenya. Moreover, studies conducted on the effect of corporate risk management on financial performance have assumed that this relationship is direct. Limited attention has been given to the moderating effect of variables such as investment decisions on the relationship between corporate risk management and financial performance using hierarchical panel-data regression method. Therefore, this study sought to analyse the moderating effect of investment decisions on the relationship between corporate risk management and financial performance of DT-SACCOs in western Kenya.

1.3 Objectives of the Study

The general objective sought to analyze the relationship between investment decisions, corporate risk management and financial performance of deposit taking savings and credit cooperative societies in western Kenya.

The specific objectives were to:

- i. Establish the effect of corporate risk management on financial performance of deposit taking savings and credit cooperative societies in western Kenya;
- ii. Assess the effect of investment decisions on financial performance of deposit taking savings and credit cooperative societies in western Kenya; and,

- iii. Analyse the moderating effect of investment decisions on the relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in western Kenya.

1.4 Research Hypotheses

H₀₁: Corporate risk management has no significant effect on financial performance of deposit taking savings and credit cooperative societies in western Kenya;

H₀₂: Investment decisions have no significant effect on financial performance of deposit taking savings and credit cooperative societies in western Kenya.

H₀₃: Investment decisions have no significant moderating effect on the relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in western Kenya.

1.5 Scope of the Study

The scope of this study is evaluated in terms of subject, area and time. In terms of subject scope, the study is limited to the broad field of finance and the subfields of corporate governance. According to Tricker (2015), corporate governance refers to the broad mechanisms through which firms are governed with the purpose of achieving financial goals.

The study was conducted in deposit taking savings and credit cooperative societies (DT-SACCOs) licensed by SASRA, registered and located in western Kenya. There are 19 DT-SACCOs in western Kenya. The study was conducted on DT-SACCOs in Western Kenya because majority of the DT-SACCOs in the region had poor financial performance. For instance, of the twelve DT-SACCOs that operated on half-year restricted licenses, which expired in June 2017 and were thereafter renewed for another half-year to the period December 2017, six of them representing 50 percent of the total operate in Western Kenya and they had the same

challenge in 2016. A DT-SACCO is given a restricted license if it has liquidity challenges, high non-performing loans ratio and if it is undercapitalized.

The research is limited to the period January 2013 to December 2017. The Kenya Vision 2030 envisages policy actions and targets of the financial sector which includes streamlining informal finance, SACCOs and microfinance institutions among others. The Kenya Vision 2030 was to be implemented in successive five-year Medium Term Plans, with the first Medium Term Plan (MTP) covering the period 2008 to 2012 and the second MTP covering the period 2013 to 2017 forming the reason of study period to be 2013 to 2017. The variables in this study are limited to Investment decisions, constructs of corporate risk management (credit, liquidity and operational risk management) and financial performance of DT-SACCOs in Western Kenya.

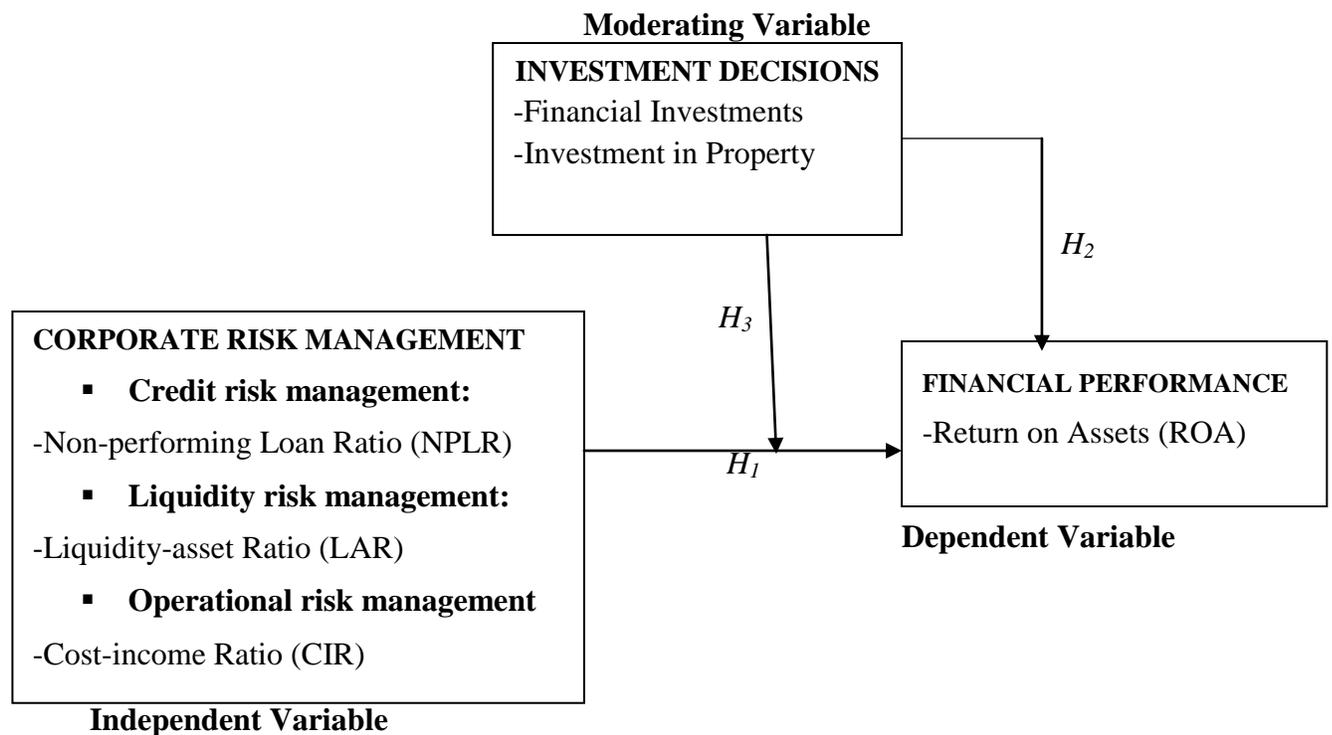
1.6 Significance of the Study

The study provides useful information for decision making in government and managers of DT-SACCOs in Kenya. This would help policy makers in government and SASRA in setting up policies to govern the operations of DT-SACCOs in Kenya. For DT-SACCO management teams, the findings will inform them of the various restructuring strategies in relation to investment decisions and corporate risk management to revitalize their financial performance.

The study is of importance because the moderating effect of investment decisions on the relationship between corporate risk management and financial performance of DT-SACCOs had not been analysed adequately. Academicians may find results from this study useful in forming a basis for future theory development in the fields of investment decisions and corporate risk management. The study findings may contribute to practice and literature in that the study would help in studies relating to the role of corporate risk management and investment decisions on performance of DT-SACCOs.

1.7 Conceptual Framework

Figure 1.1 shows a conceptual framework of the study, which shows the relationships between corporate risk management, investment decisions and financial performance.



Source: Adapted and Modified from Muriithi (2016)

Figure 1.1: Conceptual Framework showing the Relationship between corporate risk management, investment decisions and financial performance

Based on the conceptual framework in Figure 1.1, rather than examining the direct relationship between the two, the study argues that the relationship is moderated by investment decisions. This is based on research that indicates performance can be improved when key variables are correctly aligned (Chenhall, 2008). The conceptual framework includes three sets of hypothesized relationships. The first set posits a direct relationship where more effective management of corporate risk (independent variable) will lead to greater financial performance

(dependent variable). The second set of hypotheses proposes that the relationship between investment decisions and financial performance is direct. The third set proposes that the relationship between corporate risk management and financial performance are moderated by investment decisions. The conceptual framework is adopted from Muriithi (2016) and modified to suit this research. Muriithi (2016) researched on the effect of financial risk on financial performance of commercial banks in Kenya moderated by bank size. In this study, investment decision was chosen to replace the bank size in Muriithi's (2016) model. The choice of investment decision as a moderating variable is motivated by the Portfolio Theory which proposes that there must be compensation in terms of returns for assuming some risks and previous studies have shown mixed results on the relationship between Investment decisions, constructs of corporate risk management and financial performance. Investors would consider taking investments in projects that have return and risks in line with their risk profiles and therefore management will invest in projects that have high returns and in turn influencing financial performance. Muriithi (2016) used financial risk as the independent variable while in this study the independent variable is corporate risk management. Further, financial performance in commercial banks was measured using ROE while this study uses ROA to measure financial performance in DT-SACCOs in Western Kenya.

CHAPTER TWO

LITERATURE REVIEW

This chapter reviews theoretical and empirical literature on the key study variables. The literature review more precisely examines the existing theoretical and empirical literature on corporate risk management, investment decisions and financial performance with the view of indicating the research gaps.

2.1 Theoretical Literature Review

According to Torraco (1997), theories are formulated to explain, predict, and understand phenomena and, in many cases, to challenge and extend existing knowledge within the limits of the critical bounding assumptions. The theories that explain the relationship between corporate risk management and financial performance, investment decisions and financial performance, and the combined role of investment decisions, corporate risk management and financial performance are explained below.

2.1.1 Finance Distress Theory

This theory was proposed by Baldwin and Scott (1983). When financial performance deteriorates to the point where a firm cannot meet its financial obligation, the firm is said to have entered the state of financial distress. The first signals of financial distress are violations of debt payments and failure or reduction of dividends payouts hence affecting financial performance. According to the theory therefore, if firms effectively manage risk and debt payments, their financial performance is likely to improve. Other researchers who have contributed to the theory include; Whitaker (1999), Wruck (1990), and Boritz (1991). These researchers posit that firms enter into financial distress as a result of poor management of risks and economic distress which affects their financial performance.

According to Whitaker (1999) financial distress is a scenario where cash flows are less than current maturities' long-term debt. The firm has enough to pay its creditors as long as the cash flows exceed the current debt obligations. Management must ensure that the management of receivables is efficient and effective by reducing delays on collecting cash from debtors as they fall due to improve financial performance. Wruck (1990) stated that firms enter into financial distress as a result of economic distress and poor management especially on risks. Boritz (1991) depicts a process of a financial distress that begins with an incubation period characterized by a set of poor management of risks and bad economic conditions and therefore declined performance by firms. Firms experience financial distress due to poor managerial policies, inefficient and ineffective internal control systems, non-disclosure of financial information and inability to recognize stakeholder rights. Poor risk management strategies which lead to increase in non-performing loans, operational risk and sub optimal liquidity levels and lack of trainings among firms' employees on risks can result to financial distress and therefore affect financial performance.

Several empirical studies have based their theoretical underpinnings on the Finance Distress Theory. Muriithi (2016) and Wachira (2017) seem to agree that the management of risk and in particular credit, liquidity and operational risks is an important issue that shareholders and management are concerned with. Muriithi (2016) asserts that inability to provide cash to depositors and loans to borrowers as and when they demand may constitute a liquidity crisis. Other creditors also need to be taken into account when firms are putting in place risk management measures. Credit risks in firms also need to be addressed since it may lead to financial distress. Loan portfolio management is an important determinant of the firm's liquidity and hence financial performance.

According to Wachira (2017) majority of the financial institutions both in developed and developing countries can experience financial distress due to poor managerial policies, inefficient and ineffective internal control systems, non-disclosure of financial information and inability to recognize stakeholder rights. Poor risk management strategies and lack of trainings among firms employees on operation risk can result to financial distress and therefore affect financial performance.

This theory seeks to identify the choices of practices that may help a firm improve its performance in respect to corporate risk management and specifically credit, liquidity and operational risks. It helps to examine the relationship between corporate risk management and financial performance of DT-SACCOs in western Kenya.

2.1.2 Portfolio Theory

The theory of Modern Portfolio was proposed by Markowitz (1952). Proponents of this theory argue 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, firms will make investment decisions that have high returns with minimum risks and therefore improving financial performance. Additional scholars who have contributed to the theory include; (Elton *et al.* 1997) and Roy (1952).

According to Elton *et al* (1997) an investor has to consider the correlation of the returns of an asset with the returns of all other assets. Taking into account these co-movements allows the construction of a portfolio that has the same return with lower risk than a portfolio that ignores the interactions. The implication is that management will invest in a portfolio that has high return and therefore improve financial performance. Roy (1952) observes that an investor will select

one portfolio rather than another based on the criterion that the probability of the portfolio's return falling below a minimum desired threshold is minimized.

According to Penrose and Penrose (2009), 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. This theory helps firms identify portfolios that bring high returns and therefore helps in examining the effect of investment decisions on financial performance of DT-SACCOs in Western Kenya.

2.1.3 Agency Theory

Hayne, Leland (1998) and Jensen and Meckling (1976) have contributed to the development of this theory. Agency theory looks at the interest variations between the shareholders and management of a firm. Managers should be working for the shareholders and they make investment decisions which are less risky and it turn improve financial performance of a firm (Bass and Bass, 2009). Hayne Leland E (1998) asserts that the choice of investment decisions and financing and its link with optimal risk exposure is central to the economic performance of firms.

Corporate risk management is one of the critical concerns of managers when they make investment decisions. Managers desire to invest in projects that have less risk and thereby improving financial performance of a firm. (Xun Li, 2009). From the foregoing, it is evident that both investment decisions and corporate risk management affect financial performance and this makes the Agency Theory suitable in this study.

2.1.4 Theory of Investment Value

The theory was proposed by John Burr William(1937). The theory focusses on the fundamental principle of valuation. It posits that the value of any financial asset is its present value of the expected cash flows. Hence, beating the market of investments means outperforming the market by generating a return on investments beyond what is expected after adjusting for risk and transactional costs. The proponent of the theory derived Gordon growth model, the Modigliani-Miller Capital Structure irrelevance theorem and strongly advocated the dividend discount model. Gordon model's assumption is that there is no debt capital used in financing assets in a firm and that it is only equity that is used to finance assets.

Irving Fisher's theory of capital and investment (1906) and rate of interest Theory (1930) set the investment decision of the firm as an intertemporal problem. Through this theory the marginal efficiency of investment was developed to determine the optimum conditions for the firm's investment decisions which could be equated to return on assets (ROA). Thus a relationship exist between investment decisions, interest rate and ROA when analysed from a wider macroeconomic theory on the consumption-savings decision versus the savings investment decision criterion.

2.1.5 Corporate Risk Management

This is the independent variable in this study. Corporate risk management refers to all of the methods that a company uses to minimize financial losses. (Merna and Al-hani, 2008). Top and middle managers, as well as all employees, perform practices to prevent loss exposure through internal controls of people and technologies.

Corporate risk management protects the investment of shareholders through specific measures to control risk. For example, a company needs to ensure that its funds for capital projects, such as construction or technology development, are protected until they are ready to use. Corporate risk management has both external and internal dimensions. The agency approach focuses on the motives, values and intent of the individuals or a firm, especially the founders, while the institutional lens provides a way to view the larger context in which individuals operate. These are the internal and external dimensions of corporate risk management, which are not set against each other, but rather serve to complement each other and contribute to a deeper understanding of the link between good practice in corporate risk management and performance by exploring the different facets of this phenomenon relating to working capital management and performance of the business firm. (Goel, 2013). The risks that firms face is both financial and non-financial. In the context of financial institutions, the focus naturally tends to be on financial risks, such as credit, liquidity and there is also an increasing emphasis on operational risk. (Santomero, 2014). Since DT-SACCOs are financial institutions this study looked at credit, liquidity and operational risk management.

Credit risk is defined as the potential that a borrower or counterparty will fail to meet its obligations in accordance with agreed terms. According to Chijoriga (2007) credit risk is the most expensive risk in financial institutions and its effect is more significant as compared to other risks as it directly threatens the solvency of financial institutions.

Credit risk management refers to the systems, procedures and controls which DT-SACCOs put in place to ensure the efficient collection of customer payments and minimize the risk of non-payment. Credit risk management forms a key part of a company's overall risk management strategy. Weak credit risk management is a primary cause of many business failures. Many small

businesses have neither the resources nor the expertise to operate a sound credit management system (Naceour and Goaid, 2008).

While financial institutions have faced difficulties over the years for a multitude of reasons, the major cause continues to be directly related to lax credit standards for borrowers and counterparties, poor portfolio risk management, or lack of attention to changes in economic or other circumstances that lead to deterioration in the credit standing of financial institution's counterparties (Basel, 2007).

Credit risk management forms a key part of a company's overall risk management strategy. Weak credit risk management is a primary cause of many business failures. Clear established processes of approving new creditors and extending the existing credits has been observed to be very important while managing credit risks in DT-SACCOs. Credit unions must have in place written guidelines on credit approval processes and approval authorities. The board of directors should always monitor loans, approval authorities will cover new credit approvals, renewal of existing credit changes in terms and conditions of previously approved credits particularly credit restructuring which should be fully documented and recorded. Prudent credit practice requires that persons empowered with the credit approval authority should have customer relationship responsibility. Approval authorities of individuals should be commensurate to their positions within the management ranks as well as their expertise (Mwisho, 2009).

Liquidity risk in DT-SACCOs is defined as the risk of being unable either to meet their obligations to depositors or to fund increases in assets as they fall due without incurring unacceptable costs or losses. (Ismael, 2010). This risk occurs when the depositors collectively decide to withdraw more funds than what the SACCO immediately has on hand, or when the borrowers fail to meet their financial obligation to the SACCOs. In other words, liquidity risk

occurs in two cases. Firstly, it arises symmetrically to the borrowers in their relationship with the SACCOs, for example when they decide to terminate the loans but the borrowers cannot afford it. Secondly, it arises in the context of the SACCOs' relationships with their depositors, for example, when the depositors decide to redeem their deposits but the SACCOs cannot afford it. (Hubbard, 2002).

Liquidity risk management is ability of a DT-SACCO to respond to demands for new loans and provide for unexpected savings withdrawals at a minimum cost. (Ismael, 2010). Efficient liquidity management requires maintaining sufficient cash reserves on hand while also investing as many funds as possible to maximize earnings. A lender must be able to honour all cash payment commitments as they fall due and meet customer requests for new loans and savings withdrawals. These commitments can be met by drawing on cash holdings, by using current cash flows, by borrowing cash, or by converting liquid assets into cash. It involves free cash position deposits, maintaining a good customer deposits to loan ratio, not exceeding liquidity limits and implementing policies of liquidity management. (Anas and Mounira, 2008).

Operational risk is defined as the risk of direct or indirect loss coming about because of deficient or failed inner procedures, people and systems or from external events. (Basel, 2007).

Operational risk management is a decision-making tool to systematically help identify operational risks and benefits and determine the best courses of action for any given situation.

The control of operational risk is primarily concerned with good management, which includes a fearless procedure of cautiousness and regular improvement. This is a worth including activity that effects, either specifically or by implication, on short and long-haul exhibitions. It should, in this way, be a key concern for any business. Since operational risk will influence credit ratings, share prices, and organizational reputation, analysts will progressively incorporate it in their

assessment of the management, their technique and the normal long-haul execution of the business. (Koomson, 2011)

In the present study, corporate risk management and its sub-constructs of credit risk management, liquidity risk management and operational risk management were measured by Non-Performing Loans Ratio (NPLR) (Non-performing loans to Total loans), Liquidity Asset Ratio (LAR) (Net current assets to Total Assets) and Cost income Ratio (CIR) (Operating expenses to net income after tax) respectively.

2.1.6 Investment Decisions

Investment decisions are decisions made by the top and middle level management with respect to the amount of funds to be deployed in the investment opportunities. According to Karagu and Bichanga, (2014), DT-SACCOs basically invest their finances in: loans to members, housing schemes, shares, fixed deposits, real estate and stocks. Major investments are in loans, buildings and other financial investments in that order. Such decisions are important because; they will influence the company's size (fixed assets, sales, and retained earnings), they increase the value of the company's shares and thus its credibility, the fact that they are irreversible means that they have to be made carefully to avoid any mistake which can lead to the failure of such investment and due to heavy capital outlay, more attention is required to avoid loss of huge sums of money which in the extreme may lead to the closure of such a company and this will affect financial performance.

Investment decisions is the moderating variable in the present study which is measured by the natural logarithm of the sum invested in both financial assets and property.

2.1.7 Financial Performance

Financial performance of an enterprise is the ability to leverage operational and investment decisions and strategies to achieve a business' financial stability. (Gatsi *et al*, 2013). In accordance with the study of Grier (2007), profitability ratios are often used in a high esteem as the indicators of credit analysis in financial institutions, since profitability is associated with the results of management performance. Financial performance was measured by return on Assets (ROA). In this study, Return on Assets (ROA) was measured as the ratio of Net income after tax to Total assets. This is because ROA is the key component of SACCOs in their creation of assets and liabilities as financial institutions and it measures the true value of the performance of these DT-SACCOs.

2.1.8 Relationship between Corporate Risk Management, Investment Decisions and Financial Performance

Corporate risk management is one of the critical concerns of managers when they make investment decisions. Managers desire to invest in projects that have less risk and thereby improving financial performance of a firm (Xun Li, 2009). From the foregoing, it is evident that both investment decisions and corporate risk management affect financial performance even though directly. However, it is not clear whether investment decisions have a moderating influence on the relationship between corporate risk management and financial performance of an organization.

An alternative view that the relationship can be moderated by variables such as investment decisions has received minimal attention. Studies on the moderating influence of investment decisions show that investment decisions could moderate relationships. Priestley *et al*. (2008) in

their study on corporate governance and investment decisions and growth show significant moderating effect.

Li and Tang (2010) examined the moderating role of managerial discretion on CEO hubris and firm risk taking. The study revealed significant moderation by managerial discretion on the relationship between CEO hubris and firm risk taking. It is therefore expected that investment decisions will moderate the relationship between corporate risk management and financial performance.

2.2 Empirical Literature Review

This section reviews empirical literature on the variables of the study; corporate risk management and financial performance; investment decisions and financial performance and investment decision, corporate risk management and financial performance.

2.2.1 Effect of Corporate Risk Management on Financial Performance

The effect of corporate risk management on firm financial performance has been studied in theory and practice of corporate finance. In the context of financial institutions, the focus naturally tends to be on financial risks, such as credit, liquidity or market risks, although there is also an increasing emphasis on operational risk. (Santomero, 2014). Since DT-SACCOs are financial institutions this study looked at credit, liquidity and operational risk management.

Li and Zou (2014) studied the relationship between credit risk management and profitability of the 47 commercial banks in Europe using multivariate regression analysis. In the research model, return on equity (ROE) and return on assets (ROA) are defined as proxies of profitability while non-performing loan ratio (NPLR) and capital adequacy ratio (CAR) are defined as proxies of credit risk management. The research collected data from the largest 47 commercial banks in Europe from 2007 to 2012 and formulated four hypotheses. A series of statistical tests were

performed in order to test if the relationship exists. The results showed a negative significant correlation between ROA and non-performing loan ratio ($R = -0.412$). The findings revealed that credit risk management does have positive effects on profitability of commercial banks. While the study established that NPLR had a significant effect on both ROE and ROA, and CAR had an insignificant effect on both ROE and ROA, the study was based on only commercial banks using different variables and therefore the results might be different if applied in this study.

Bakaeva and Sun (2009) conducted a study on the impact of credit risk management on profitability using a sample of four commercial banks in Sweden. Descriptive research design was used and regression model was used to analyse data. Profitability indicator was ROE while NPLR and CAR were credit risk management indicators. Data was collected from the sample banks annual reports (2000-2008). While the study revealed a positive correlation between credit risk management and profitability, it was also shown that credit risk management had a positive effect on profitability in all four banks. The analysis on each bank showed that the effect of credit risk management on profitability was not the same. The credit risk management of Nordea and SEB had a significant effect on their profitability. Handelsbanken's results indicated that NPLR and CAR had insignificant effect on ROE. However there In case of Swedbank, NPLR and CAR had no effect on ROE. The study was however conducted in a developed country whose economic environment is different from Kenya which is a developing country with more financial risks. Moreover, only commercial banks were sampled.

Ugirase (2013) reported findings on a study conducted to establish the effect of credit risk management on financial performance of commercial banks in Rwanda using descriptive research design. The sample size as well as the population of the study was eleven commercial banks and data was collected using a questionnaire. The study established that all the measures

of credit risk management used in the study significantly affect financial performance of commercial banks in Rwanda except risk monitoring. Credit risk identification, credit risk scoring and credit analysis and assessment significantly explain financial performance of commercial banks in Rwanda. The use of questionnaires to collect data may have introduced biasness and subjectivity indicating that the findings are spurious.

The relationship between credit risk management and firm financial performance in Kenya has also been studied. Nyamwange (2010) sought to establish the relationship between credit risk management practices and financial performance of SACCOs in Kenya. The sample size of the study was 41 SACCOs from where questionnaires were used to collect data. The findings of the study concluded that SACCOs adopted credit risk management practices to counter credit risks they are exposed to. The study further concluded that there was a positive relationship between credit risk management practices and the financial performance of SACCOs measured by ROA. Unlike the present study which uses panel data, the study used cross-sectional data which may have introduced unobserved variable bias.

Makori (2015) analyzed the effect of credit risk management practices on the profitability of DT SACCOs in Nairobi County. This study was carried out through a descriptive research design. Simple random sampling technique was used and a questionnaire was used to obtain information from the respondents. The study concluded that credit appraisal practices, credit monitoring, debt collection practices and credit risk governance practices have a positive effect on financial profitability of the DT SACCOs in Nairobi County. The methodology used in the study indicates that the study findings were not plausible since a descriptive research design was used.

Mutua (2016) conducted a study on the impact of credit risk management on financial performance in savings and co-operative societies in Kitui County. The research design used in

this study was a descriptive research design and data collection instruments in this study included self-administered questionnaires. The findings of the study were; there was a positive relationship between credit monitoring, loan policy in mitigation of risk, loan defaulters and financial performance of SACCOs and therefore, credit risk management had a significant effect on financial performance of SACCOs.

In a study with contradicting results to those of Makori (2015) and Mutua (2016), Ikua (2015) analyzed the effect of credit risk management practices on the performance of SACCOs in the hospitality industry in Nairobi. Descriptive research design was used with a target population of 67 active SACCOs in the hospitality industry based in Nairobi. A sample size of 10 SACCOs was selected using systematic random sampling technique. The questionnaire was formulated with both open ended and close ended questions based on the objectives of the study. The study determined that SACCOs have heavily relied on particular credit risk techniques which are not adequate to mitigate against loan losses in a dynamic and competitive lending environment and therefore credit risk management has a negative effect on financial performance of SACCOs in the hospitality industry in Nairobi. The findings cannot however be generalized to SACCOs in other industries since only SACCOs in the hospitality were sampled.

A number of studies have also investigated the effect of liquidity risk management on financial performance. Bordeleau *et al.* (2010) assessed the impact of liquidity on bank profitability for 55 US banks and 10 Canadian banks between the period of 1997 and 2010. The study employed quantitative measures to assess the impact of liquidity on bank profitability. Results from the study suggest that a relationship exists, whereby profitability is improved for banks that hold some liquid assets, however, there is a point beyond which holding further liquid assets

diminishes a banks' profitability, all else equal. Profitability was measured by ROE and ROA. The use of banks from a developed county indicates that the results were cautiously interpreted. Ismal (2010) conducted a research on the management of liquidity risk in Islamic Banks in Indonesia. Using a triangulation method together with a combination of quantitative and qualitative research approaches, the study sought to analyse liquidity risk management in these banks as well as gain information on the perception of banking depositors and Islamic bankers. Industry performance analysis and econometric time series analysis were conducted to analyse liquidity risk management for Islamic banking. Furthermore, primary data collection was done through questionnaire surveys. The results with respect to financial performance measured by return on equity ROE and return on assets (ROA) show significant coefficients suggesting a relevant relationship between liquidity risk management and financial performance. The use of questionnaires to collect data indicates that the results may have been biased and therefore not credible.

Akhtar (2011) studied the association of liquidity risk with the solvency of a financial institution through a comparative analysis between conventional and Islamic banks of Pakistan. The study investigated the significance of size of the firm, networking capital, return on equity, capital adequacy and return on assets (ROA), with liquidity risk management in conventional and Islamic banks. Their study was based on secondary data that covered a period of four years (2006-2009). The study found positive but insignificant relationship of size of the bank and networking capital to net assets with liquidity risks. In addition, capital adequacy ratio in conventional banks and return on assets in Islamic banks was found to be positive and significant at 10% significance level. The sample was sector-based and therefore the results may not be applicable to the DT-SACCOs in Kenya.

Said (2014) analyzed the impact of net stable funding ratio (NSFR) on Malaysian commercial banks profitability. The study used panel data of eight commercial banks for the period 2005-2011. It also employed pooled ordinary least squares and Fixed Effect estimations to analyse the data. There exist positive relationships between NSFR and indicators of performance which were ROE, ROA and net interest margin (NIM). The study also indicated that there exists a positive relationship between equity and profit, and size of banks and profit, and a negative relationship between cost to income ratio and profit. The ability of banks in managing the stability of their funding sources as well as liquidity of its assets is an advantage to them and is translated into higher profitability. The use of pooled ordinary least squares indicates that omitted variable bias was not eliminated.

Konadu (2009) reported findings of a study they conducted to analyse the relationship between banks' liquidity and profitability levels from 2002 to 2006 in Ghana. The researcher considered only banks listed on the Ghanaian stock exchange. The banks randomly selected were Standard Chartered Bank Ghana Ltd, Cal Bank Ltd and SG-SSB Ltd. The researcher considered current ratio, quick ratio, cash ratio, net operating cash flow ratio under liquidity ratios. Profitability ratios comprise of net profit margin, return on equity, return on assets and net asset turnover ratios. The researcher employed trend analysis to achieve the set objectives. The study concluded that there is a negative relationship between liquidity and profitability in the Ghana banking sector. The study used a small sample size of only three commercial banks indicating that the findings may not be plausible.

Ogol (2011) conducted a research on liquidity risk management practices in microfinance institutions in Kenya. The emphasis of the study was on understanding the process of liquidity risk identification by micro finance institutions (MFIs), the extent to which MFIs are classified,

monitor liquidity risks, liquidity risk exposure of MFIs and to identify the various practices that the MFIs adopt in managing the liquidity risks. Using a descriptive research design, primary data was collected through questionnaires distributed to MFIs operating in Nairobi City. Results indicated that MFIs have in place liquidity risk management practices and there is a significant positive effect on financial performance of MFIs. The used cross-sectional data using the descriptive research design. The present study used the correlational research design and applies the panel data methodology.

Song'e (2015) conducted a study on the effect of liquidity management on the financial performance of DT SACCOS in Nairobi County. A sample of the 27 DT-SACCOs that are licensed under Sacco Society Regulatory Authority was carried out where secondary data was collected from their financial statement between years 2010 to 2014. The findings were that financial performance as measured by profit before tax over total assets is positively related to Liquidity, funding liquidity risk, operational efficiency, quick ratio and log of total assets and therefore liquidity management has a positive effect on financial performance.

Gwenyi *et al.* (2018) sought to establish the influence of liquidity risk on financial performance of deposit taking savings and credit co-operatives (DT-SACCOs) in Kenya. The study adopted a descriptive research design and census sampling technique. The target population for this study was 164 deposit taking Sacco societies licensed to undertake deposit-taking Sacco business in Kenya for the financial year ending 31st December 2016. The result indicated liquidity risk has a negative and significant influence on financial performance and the study recommended that DT-SACCOs should manage liquidity risk so as to improve performance. The study was cross-sectional.

In another contradicting study, Mwangi (2014) conducted a study to determine the effect of liquidity risk management on the financial performance of Commercial Banks in Kenya. The study adopted a descriptive study design. The population for this research is the 43 listed Commercial Banks in Kenya analysed for a period from 2010-2013. The results of the study show that a unit increase in liquid assets to total assets ratio decreases return on assets by 1%. A unit increase in liquid assets to total deposits ratio decreases return on assets by 2.2%. A unit increase in borrowings from banks decreases return on assets by 14.2%. Finally, the control variable which was asset quality shows that a unit increase in non-performing loans as a proportion of total loans would lead to a 12.4% decrease in return on assets. The study concluded that liquidity risk management has a significant negative relationship with financial performance of commercial banks.

Osoro and Muturi (2015) researched on effects of liquidity-risk management practices on the financial performance of savings and credit co-operative societies in Kisii County, Kenya. By collecting data using questionnaires and the descriptive research design on cross-sectional data, the study found out that Capital adequacy significantly affected ROA in SACCOs, Asset quality and capital leverage did not have a significant impact on ROA. The use of questionnaires, descriptive research design and cross-sectional data limited the study findings.

Studies conducted on the effect of operational risk on financial performance of banks include that of Francis and Hess (2014) who examined how cost income ratio benchmarking was used by ASB Bank, a New Zealand-based retail bank when reviewing its operational efficiency. The research revealed that though the cost income ratio was the principal metric used in this benchmarking exercise, it sought to identify best practice not in terms of minimizing this ratio but rather in terms of identifying typical ratios and cost structures among successful banking

institutions. The study observed that there is an inverse relationship between the cost income ratio and the bank's profitability and hence a positive relationship between operational risk management and financial performance. The study was however based on only one bank.

Epetimehin and Obafemi (2015) conducted a study on operational risk management and the financial sector development. A research was conducted on 150 employees from different financial institutions, such as banks, insurance, stockbrokers and microfinance companies. Even though the result showed that operational risk management has positive effects on the financial development and growth in the financial sector, the use of primary data collected through questionnaires may have introduced bias to the findings.

Gikundi *et al.* (2014) conducted a study on effects of operational risks in the lending process of commercial banks profitability in Kakamega Towns using a descriptive approach with 54 individuals in the lending process from 10 commercial banks in Kakamega Town. Data was collected using questionnaires. The study established that compliance, systems, character and culture have a significant positive correlation with profitability and on the other hand fraud was found to be negatively correlated indicating that operational risk management has a significant effect on financial performance of the banks.

Mathuva (2009) examined the relationship between Capital Adequacy, Cost Income Ratio and the profitability of Kenyan Commercial Banks. The study used the return on assets and the return on equity as proxies for bank profitability for the period 1998 to 2007. The data was obtained from the annual financial statements for a selected sample of 41 out of the 44 licensed commercial banks in Kenya by Central Bank of Kenya in the year 2008. The study found out that Kenyan banks are not competitive enough globally in terms of their efficiency as measured by the Cost-Income Ratio (CIR). The study revealed that the CIR is inversely related return on

assets and return on equity. The study showed that the cost-income ratio is negative and strongly significant with profitability measures, indicating that more efficient banks generate higher profits. The study was however based on only banks.

Several studies (Li and Zou, 2014; Bakaeva and Sun, 2009; Ugirase, 2013; Nyamwange, 2010; Makori, 2015, Mutua, 2016; and Ikua, 2015) have studied the relationship between credit risk management and financial performance of firms. While Li and Zou (2014) Bakaeva and Sun (2009), Ugirase (2013), Nyamwange (2010), Makori (2015) and Mutua (2016) report a positive relationship between the variables, the study by Li and Zou (2014) was based on commercial banks using different variables and therefore the results might be different if applied in this study; Bakaeva and Sun (2009) conducted their study in a developed country whose economic environment is different from Kenya which is a developing country with more financial risks. Ugirase (2013) used questionnaires to collect data which may have introduced biasness and subjectivity indicting that the findings are spurious. Nyamwange (2010) used cross-sectional data which may have introduced unobserved variable bias. Makori (2015) and Mutua (2016) used a descriptive research design hence the long-run cause effect relationship was not established. Elsewhere, Ikua (2015) found a negative effect between the variables. The findings cannot however be generalised to SACCOs in other industries since only SACCOs in the hospitality were sampled.

Empirical studies that have investigated the effect of liquidity risk management on financial performance of firms include Bordeleau *et al.* (2010), Ismal (2010), Akhtar (2011), Said (2014), Song'e (2015) and Ogol (2011) all who establish a positive effect of liquidity risk management on financial performance of firms. Konadu (2009), Gwenyi *et al.* (2018) and Mwangi (2014) on the contrary established a negative effect between liquidity risk management and financial

performance of firms. Bordeleau *et al.* (2010) use of banks from a developed county indicates that the results were cautiously interpreted; Ismal (2010) used questionnaires to collect data indicates that the results may have been biased and therefore not credible. Akhtar (2011) used sector-based data and therefore the results may not be applicable to the DT-SACCOs in Kenya; Said (2014) applied the pooled ordinary least squares indicating that omitted variable bias was not eliminated; Konadu (2009) used a small sample size of only three commercial banks indicating that the findings may not be plausible; Ogol (2011) used cross-sectional data using the descriptive research design. The present study used the correlational research design and applies the panel data methodology. On the other hand, Gwenyi *et al.* (2018) used cross-sectional data. Osoro and Muturi (2015) also used the descriptive research design and cross-sectional data limited the study findings. None of these studies focused on the effect of liquidity risk management on financial performance using a hierarchical panel data regression methodology in DT-SACCOs in western Kenya which is the focus of the present study.

Studies conducted on the effect of operational risk on financial performance of banks include that of Francis and Hess (2014), Epetimehin and Obafemi (2015), Gikundi *et al.* (2014) and Mathuva (2009). Whereas these studies establish a positive relationship between the variables, Gikundi *et al.* (2014) establishes mixed results. Francis and Hess (2014) study was however based on only one bank. Epetimehin and Obafemi (2015) use primary data collected through questionnaires which may have introduced bias to the findings; Gikundi *et al.* (2014) also used questionnaires. Mathuva (2009) used banks as the sample. None of these studies specifically focused on the effect of liquidity risk management on financial performance using a hierarchical panel data regression methodology in DT-SACCOs in western Kenya. This is the focus of the present study.

Reviewed literature indicates that corporate risk management constructs of credit, liquidity and operational risk management may influence financial performance even though with mixed results. Most prior studies use conveniently-selected firm-specific cross-sectional data using the descriptive research design which limits the generalization of findings to DT-SACCOs in western Kenya.

2.2.2 Effect of Investment Decision on Financial Performance

An investment decision may be defined as the firm's decisions to invest its current funds most efficiently in the long-term assets in anticipation of an expected flow of benefits over a series of years. Investment decisions or Capital budgeting are of considerable importance to the firm since they tend to determine its value by influencing profitability and risk. (Memba and Nyanumba, 2013).

Empirical studies have shown that investment decisions have interrelationships with other financial decisions and affects financial performance. Fazzari *et al.* (2000) investigated the effect of financing constraints on the investment-to-cash flow sensitivity in United States of America (US) manufacturing sector. The study established that investment by firms with higher financial constraints is more responsive to variations in cash flow than that of mature, high dividend firms and that cash flow is more important for larger firms than for smaller ones and also for newer firms' investment. The study was focused on manufacturing firms in the US whose findings may not be generalised to other industries.

Adelegan (2009) evaluated the impact of capital market imperfections on investment behaviour of productive sector firms by use of questionnaires in Nigeria. Their results revealed that the Nigerian capital market is imperfect and that bigger and older firms rely more on internal funds compared to smaller and newer firms. The study showed that an increase in both future profit

prospects measured by Tobin's Q and cash flow result in an increase in corporate investments of firms that have low credit worthiness. The study established that the incidence and severity of information and agency problems vary across firms and over time, thereby having different effects on investment behaviour. The implication is that capital market imperfections lead to binding financial constraints on corporate investment behavior in Nigeria and therefore affecting financial performance. The study sampled listed firms which have different investment risk regulations unlike the DT-SACCOs and the use of questionnaires introduced biasness.

Ariemba *et al.* (2016) conducted a study on the effect of investment decision on financial performance of savings and credit cooperatives in Kitui central sub-county, Kenya. The research was undertaken on all twelve (12) SACCOS located in Kitui Town thus utilizing a Census technique in selection of respondents. The study findings indicated that only research and development decision had a significant effect to SACCO performance while expansion decision, replacement decision, and renewal decision had none. The study recommended that SACCOs should invest more in research and development decision as it had a significant effect to SACCO financial performance. The study used a descriptive research design.

In a study on the effect of investment decision on the performance of firms listed in the Nairobi Securities Exchange as at 31st December 2013, Machuki (2014) reported significant and positive correlations between ROA and Investment Decision. The study employed a descriptive research design. The target population of the study was all the 61 companies listed at the Nairobi Securities Exchange (NSE). The study adopted a census approach because of the small number of non-financial companies in the NSE and used cross sectional data indicating unobserved variable bias was not eliminated.

Koroti (2014) conducted a study to establish the effect of investing and financing decisions on the financial performance of sugar factories in Kenya. These researches adopted a non-probability sampling method, in which four factories were chosen from a population of eleven factories in existence as at 31st December 2013 in Kenya. This was a descriptive study that examined the effect of investing decision as measured by investment of total assets and financing decision as measured by debt to equity ratio on financial performance measure of return on assets (ROA). Secondary data on statement of comprehensive income and statement of financial position for a period of five financial years was analyzed using regression analysis derived by applying Minitab statistical analysis tool. The study found out that investing decision positively affected financial performance, whereas there was a negative effect of financing decision on financial performance of sugar factories in Kenya. The study used cross sectional data which may have introduced unobserved variable bias.

According to Nyale (2010), a study on the relationship between leverage and investment decisions for companies quoted at the NSE by use of multi-linear regression analysis method. The study considered diversification that involved investments in new products, investments in totally new service lines and venture into new geographical with different political and economic environments. Findings indicated that 36% of listed companies at the NSE engaged in diversification investment decisions. The study further found out that, there was a weak relationship between the levels of leverage of a company and how much money the company can commit to a diversification investment decision. This insinuates that companies view each diversification investment decision on their own merit and how much money is committed to an investment decision is not entirely dependent on the level of leverage of the company. The study

did not however employ the use of panel data indicating that the unobservable variable bias was not eliminated.

Studies that have investigated the effect of investment decisions on financial performance of finance include Fazzari *et al.* (2000), Adelegan (2009), Machuki (2014), Koroti (2014) and Nyale (2010). Of these studies, Nyale (2010) established a negative relationship between the variables while the others established a strong positive significant effect. Fazzari *et al.* (2000), focused on manufacturing firms in the US whose findings may not be generalised to other industries; Adelegan (2009) sampled listed firms which have different investment risk regulations unlike the DT-SACCOs and the use of questionnaires introduced biasness; Ariemba *et al.* (2016) used descriptive research design and Machuki (2014) used non-financial listed firms to establish the effect of investment decision on the performance of firms indicating that the study findings may not be applicable to SACCOs. Koroti (2014) only sampled sugar firm. The study did not however employ the use of panel data indicating that the unobservable bias was not eliminated.

Evidence from reviewed literature on the effect of investment decisions on financial performance show a possibility of investment decisions influencing financial performance. However, the existing literature is predominantly from listed firms. Moreover, most of the studies employed cross-sectional data and sector-based samples designs with some attempting to link investment decisions to financial performance of firms. None of these studies focused on the effect of investment decisions on financial performance of DT-SACCOs in western Kenya which the current study seeks to establish.

2.2.3 Role of Investment Decision and Corporate Risk Management on Financial Performance

There is empirical evidence that firm performance depends on corporate governance practices and investment decisions.

Priestley *et al.* (2008) using a broad sample of US manufacturing firms, researched on corporate governance and investment decisions on growth. The study concluded that there is a significant positive relationship between corporate governance and investment decisions and the sensitivity of cash flows is moderated by investment decisions. Increased governance quality is associated with higher levels of investment and greater responsiveness of investment to growth opportunities. Investment decisions by well governed firms are substantially more sensitive to their investment opportunities and less sensitive to cash flows than investments made by badly governed firms. This governance-driven quality improvement in real investments seems to occur through a reduced tendency for well governed firms to underinvest and this improves financial performance. The study does not reveal the influence of the specific corporate governance practices in influencing firm performance implying that the specific role of corporate risk management elements and investment decisions in influencing firm performance has not been analysed. The use of US manufacturing firms limited the applicability of the findings to DT-SACCOs in western Kenya.

Li and Tang (2010) examined the moderating role of managerial discretion on CEO hubris and firm risk taking. Drawing on upper echelons theory and behavioral decision theory, they developed and tested hypotheses using original survey data from 2,790 CEOs of diverse manufacturing firms in China. The study revealed significant moderation by managerial discretion on the relationship between CEO hubris and firm risk taking. This study investigated

manufacturer-supplier relationships indicating that risk management-financial performance relationships were not investigated.

Joshi and Stump (2009) studied on the moderating role of reciprocal asset investments on joint action in manufacturer-supplier relationships. Drawing from transaction cost analysis and relational exchange theory; the authors propose a conceptual model that explicates the moderating role of reciprocal asset investments by the supplier. Consistent with their hypotheses, results showed that decision-making uncertainty and trust enhance the effect of manufacturer asset specificity on joint action. Contrary to expectation, however, the moderating effect of reciprocal asset investments was not significant. The study only investigated manufacturer-supplier relationships indicating that risk management-financial performance relationships were not investigated. The use of primary data may have introduced biasness to findings.

The review of empirical studies above has revealed that while Priestley *et al.* (2008) using a broad sample of US manufacturing firms show that there is a significant positive relationship between corporate governance and investment decisions and the sensitivity of cash flows is moderated by investment decisions, Li and Tang (2010) on the other hand while examining the moderating role of managerial discretion on CEO hubris and firm risk taking and reveal significant moderation by managerial discretion on the relationship between CEO hubris and firm risk taking. Elsewhere, Joshi and Stump (2009) while studying the moderating role of reciprocal asset investments on joint action in manufacturer-supplier relationships show that decision-making uncertainty and trust enhance the effect of manufacturer asset specificity on joint action. However, the moderating effect of reciprocal asset investments was not significant. While the results establish these inconsistent results, the use of US manufacturing firms by Priestley *et al.* (2008) limited the applicability of the findings to DT-SACCOs in western Kenya

and The study does not reveal the influence of the specific corporate governance practices in influencing firm performance implying that the specific role of corporate risk management elements and investment decisions in influencing firm performance has not been analysed. Li and Tang (2010) only investigated manufacturer-supplier relationships indicating that risk management-financial performance relationships were not investigated. Joshi and Stump (2009) on the other hand use primary data which may have introduced biasness in the findings. This study therefore seeks to analyse the moderating effect of investment decisions on corporate risk management and financial performance of DT-SACCOs in Western Kenya.

Empirical studies that have attempted to address the moderating effect investment decisions on the relationship between corporate risk management and financial performance have ineffectively addressed these challenges by focusing on general risk management, used cross sectional data and are sector based and hence biased. Moreover, studies conducted on the effect of corporate risk management on financial performance have assumed that this relationship is direct. An alternative perspective that the relationship can be moderated by variables such as investment decisions has not been explored. However, no specific study has been conducted to establish the moderating effect of investment decisions on the relationship between corporate risk management and financial performance of DT-SACCOs in western Kenya. The present study sought to fill this gap.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter presents the methodology that was adopted in the study including the research design, study area, data sources and collection methods, methods of data processing, analysis and presentation.

3.1 Research Philosophy

A research philosophy (paradigm) encompasses both theories and methods used in the study. Creswell and Plano (2014) argue that there are two main paradigms that are applicable in research; quantitative and qualitative. The quantitative paradigm is termed the traditional and positivist, while the qualitative research is considered constructivist and experiential. Positivists believe that reality is stable and can be observed and described from an objective viewpoint (Creswell, 2012), i.e. without interfering with the phenomena being studied. This study used positivist (quantitative) and constructivist (qualitative) philosophies.

3.2 Research Design

The study adopted both correlation and descriptive research designs. Creswell (2012) notes that correlational designs are procedures in quantitative research in which investigators measure the degree of association between two or more variables using the statistical procedure of correlational analysis. This degree of association, expressed as a number, indicates whether the two variables are related or whether one can predict another.

According to Gujarati (2007), a research design is a conceptual structure within which research would be conducted whose function is to provide for the collection of relevant information with minimal expenditure of effort, time and money master plan of the research study to be undertaken which gives a general statement of the methods to be used to ensure that requisite

data in accordance with the problem at hand is collected accurately and economically. Robson (2011) opines that the first step in conducting a research is selecting the research paradigm.

Further, (Creswell, 2012) descriptive research design as procedures in qualitative research in which investigators administer a survey to a sample or to the entire population of people to describe the attitudes, opinions, behaviors, or characteristics of the population. This type of design was deemed useful in this study because apart from just describing, survey can also be used to explain and explore the existing status of two or more variables at a given point in time.

3.3 Study Area

The study was conducted among DT-SACCOs operating in western Kenya. The area covers the ten counties of Kisii, Nyamira, Homa Bay, Migori, Kakamega, Busia, Vihiga, Kisumu, Bungoma and Siaya. This area lies between latitude 2° North and 3° South, and 33° East and 35° East. The area generally lies in an altitude of 1800 meters above sea level and has agriculture as the main economic activity. According to the Kenya Housing Survey (2009), the population in the region was 9,776,913. The western region of Kenya has seen an increase in the number of economic activities which has led to an increase in the number of financial institutions especially SACCOs. These SACCOs help members financially by allowing them to save and at the same time borrow money to finance their businesses. DT-SACCOs in Western Kenya were selected because, in spite of their increase in number, the SACCOs in the region just like those in Kenya as a whole still face several challenges of high levels of non-performing loans, liquidity and high operational costs which have affected their financial performance. The study area map is appended in Appendix VII.

3.4 Target Population

The target population of this study was 19 DT-SACCOs in western region. The study was conducted on DT-SACCOs in western Kenya because, of the twelve DT-SACCOs that operated on half-year restricted licenses, which expired in June, 2017 and were thereafter renewed for another half-year to the period December 2017, six operate in Western Kenya. A DT-SACCO is given a restricted license if it has liquidity challenges, high non-performing loans ratio and if it is undercapitalized.

The DT-SACCOs was studied because of the important role they play in enhancing the livelihoods of the people in western region. Statistical information shows that SACCOs averagely control averagely 30% of Kenya's Gross Domestic Product (GDP) and accounts for 80% of the total accumulated savings (Ayieko, 2016). Additionally, the DT-SACCOs are selected since their financial data which was used in the present study is statutorily audited.

3.5 Sampling Technique and Sample Frame

A census was used to select all the 19 DT-SACCOs in western region. The study adopted a census approach because of the small number of DT-SACCOs in the region. A census was also used to select interviewees to assist in collection of primary data. All the chairpersons of the 19 DT-SACCOs were interviewed. The sampling technique describes the sampling unit, sampling frame, sampling procedures and the sample size for the study. The sampling frame describes the list of all population units from which the sample is selected (Cooper and Schindler, 2003). A census approach enhances validity of the collected data by including certain information-rich cases for study. (Saunders *et al.*, 2009).

3.6 Data Collection

3.6.1 Sources of Data

The study used both primary and secondary data. Secondary data was collected from financial reports of the DT-SACCOs that were obtained from both SASRA and the DT-SACCOs. Data was collected on Total loans, Non-performing loans, Cash, Net balances with commercial banks, Net balances with financial institutions other than banks, Government securities, Total assets, Operating expenses, Net income after tax, Investment in companies, Balances with other SACCOs and other financial securities and Property and equipment and covered a period of five years (2013-2017). This data was extracted using data collection sheet (Appendix III). Secondary data from annual financial reports were used because, being statutory documents, the reports facilitate easy comparisons since they are produced on an annual basis by the DT-SACCOs (Branco *et al.*, 2011). Furthermore, since they are audited annually, data reliability and validity are enhanced making them more credible sources of data.

Primary data were collected using a structured interview schedule (Appendix II) where key informants; Chairmen or Chairladies of Board of Directors of the 19 DT-SACCOs were interviewed who provided opinions on the study constructs. The data was used for triangulation purposes.

3.6.2 Data Collection Procedure

The study used both primary and secondary data to validate the research hypotheses. After obtaining authorization to the field by the University, the researcher obtained a letter of authority to conduct research from the National Commission for Science, Technology and Innovation (NACOSTI). Three research assistants were then trained on how to extract the data from the financial statements and record it in the data collection sheets.

3.7 Data Validity and Reliability

According to De Vaus (2002), validity can be evaluated using four elements; face, criterion, content and construct. Sekaran (2000) observes that validity is the degree to which an assessment tool measures what it is intended to measure and the extent to which it provides information that answers specific important questions. Robson (2011) defines validity as the extent to which a construct correctly represents the concept of study, and the degree to which it is free from any systematic error. As observed by De Vaus (2002), construct validity is the degree to which the item on an instrument relates to the relevant theoretical constructs. Construct validity was assessed using correlational analysis. The results for the correlation analysis testing for construct validity are shown in below.

Construct Validity Table

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Q1	1								
Q2	1.000**	1							
Q3	.668	.594	1						
Q4	.578	.632	.780	1					
Q5	.731	.728	.638	.839	1				
Q6	.631	.683	.509	.752	.501	1			
Q7	.674	.602	.666	.741	.509	.609	1		
Q8	.737	.581	.701	.706	.725	.791	.589	1	
Q9	.892	.769	.821	.598	.730	.700	.771	.972	1

Hair *et al.* (2010) suggests that the ideal standardized estimates should be 0.7 or higher but a score of 0.5 and greater are very significant. As observed in the table above, all the correlation coefficients are above 0.5, indicating that construct validity is ensured.

In the present study, content validity was established by the Content Validity Index (CVI) which is the ratio between the number of experts who rated a question as good and the total number of experts. Mason (2010) indicates that six to 10 experts are adequate for content validity. In this study, eight experts were used. Katuri and Pals (1993) argue that instruments with validity confidence of at least 0.7 are valid in research. The CVI was found to be 0.8, which validated the instrument. Thereafter, suggestions given by the experts were used to amend the research instrument.

Reliability of data was tested using stationarity of the data series. Reliability is achieved when the same research process is repeated and reproduces results within stated confidence limits. Bells (2003) cited in (Eriksson, 2007) states that the reliability of an investigation is satisfying if another researcher can conduct the same research and draw the same conclusions. Reliability is concerned with estimates of the degree to which a measurement is free of random or unstable error. This has to do with the ability of a research finding to replicate itself if a parallel study is conducted. Since the data collected was secondary panel data, an assumption that was considered before the data was considered reliable is the data's stationarity (Field, 2000). To establish the stationarity conditions of the data series in this study, unit root test using the Levin-Lin- Chu test was conducted, with the null hypothesis being that the series under consideration is non-stationary or has a unit root. Gujarati (2007) asserts that stationarity tests are conducted to avoid change of estimates over time in the study variables which would in turn lead to spurious estimates. Testing for stationarity of the individual time series is important because if a time series is non-stationary, we can study its behaviour only for the time period under consideration and as a consequence, it is not possible to generalize it to other time periods. Moreover,

regression of a nonstationary time series on another nonstationary time series may produce spurious regression.

The results are shown in Table 3.1.

Table 3.1: Testing for Stationarity

Variable	t-Statistic	Prob.
ROA	-9.407	0.000
LAR	-3.538	0.035
NPLR	-11.916	0.000
CIR	-4.392	0.027
LN-INVD	-8.069	0.000
ln-INVD*NPLR	-12.063	0.000
ln-INVD*LQA-RATIO	-4.601	0.003
ln-INVD*CIR	-6.584	0.000

Source: Research Data (2020)

From the findings in table 4.3, it was revealed that all the variables under study had a Levin-Lin-Chu test probability statistic of less than 0.05. Thus, the null hypothesis that the series under consideration is non-stationary was rejected and therefore, the panel data is stationary.

3.8 Testing Assumptions for Linear Regression Analysis

Before the data was subjected to analysis, it was tested for assumptions of linear regression that yield Best Least Unbiased Estimates (BLUE). According to Field (2000), the common tests that should be conducted are; types of variables, normality, homoscedasticity, multicollinearity and serial correlation. The data was checked to avoid violation of the assumptions of classical linear regression model as asserted by Hair *et al.* (2010).

3.8.1 Types of Variables

The independent variable in the study is corporate risk management which was measured by credit risk management, liquidity risk management and operational risk management. The

dependent variable is financial performance of the DT-SACCOs while the moderating variable is investment decisions.

According to Field (2000), for reasonable empirical conclusions from sample data, the independent variables must either be quantitative or categorical and the dependent variable must be continuous, quantitative or unbound. In this study, this condition is fulfilled since all the variables are quantitative. In line with previous studies (Muriithi, 2016 and Wachira (2017) the independent variable of corporate risk management and its sub-constructs of credit risk management, liquidity risk management and operational risk management were measured by Non-Performing Loans Ratio (NPLR), (Non-performing loans to Total loans), Liquidity Asset Ratio (LAR), (Net current assets to Total Assets) and Cost income Ratio (CIR) (Operating expenses to net income after tax) respectively. The dependent variable of financial performance was measured by Return on Assets (ROA), (Net income after tax to Total assets).

ROA was used to measure financial performance because it is easy to use and it measures the true value of the performance of the deposit taking SACCOs (Pandey, 2012). The moderating variable of the study is the investment decisions which was measured by the natural logarithm of the sum invested in both financial assets and property.

3.8.2 Testing for Normality of Residuals

There are several methods of testing for normality of residuals. In this study, normality was diagnosed using a histogram of regression standardized residuals along with their summary statistics for financial performance. The shape of the histogram and the Jarque-Bera (JB) statistic was used to determine normality of residuals. According to Gujarati (2007), the assumption of normality of residuals signifies the generalizability of findings. Normalization is essential so as to ascertain whether the data provided by the dependent variable is normally distributed. The null

hypothesis (H_0) states that the residuals are normally distributed. If the probability value is greater than 0.05, then the data is normally distributed. The test for normality for the dependent variable (financial performance) using the graphical method approach and the Jarque-Bera test is shown in figure 3.1.

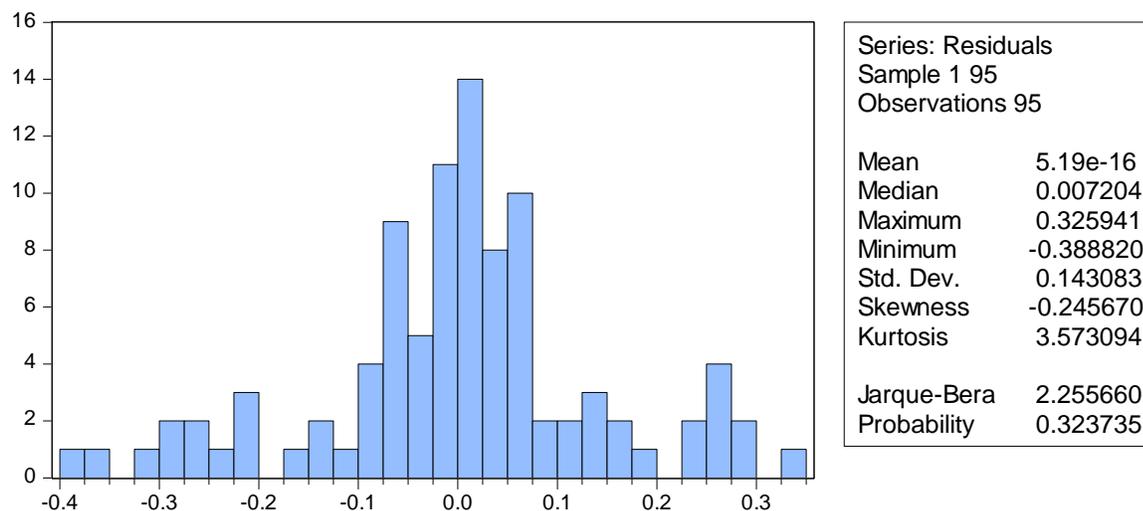


Figure 3.1: Normality Test for the Residuals

Source: Research Data (2020)

The results in the Figure 3.1 indicated that the data residuals are normally distributed, since the Jarque-Bera's probability value (0.323735) was greater than 0.05. Therefore, the null hypothesis was upheld.

3.8.3 Testing for Homoscedasticity

This condition was not tested in the present study since it is not considered a serious problem for panel data since it allows identification and measurement of effects that are not detectable in pure cross-sectional or pure time-series data. As asserted by Field (2000), the homoscedasticity condition is fulfilled when at each level of the predictor variables; the variance of the residual's terms is constant. Panel data therefore, allows the researcher to account for heteroscedasticity

which may arise due to the variations in several dimensions for the listed firms under study (Gujarati, 2007).

3.8.4 Testing for Multicollinearity

Testing for multicollinearity is necessary before data analysis because highly collinear explanatory variables result to estimators that are not best linear unbiased estimators (BLUE). This is because as multicollinearity increases, the standard error of coefficients increases making them less reliable. Multicollinearity was tested in the present study by means of variance inflation factor (VIF). Hair *et al.* (2010) recommend that a large VIF value (10 or above) indicates high collinearity. According to Hair *et al.* (2010), multicollinearity refers to a situation where two or more explanatory variables are highly linearly related. The result is presented in Table 3.1.

Table 3.1: Testing for Multicollinearity Using VIF

Variable	Coefficient Variance	Uncentered VIF	Centred VIF
Cost income ratio (CIR)	0.0003	178.5294	1.5291
Liquidity asset ratio (LAR)	0.0001	2194.6967	1.6200
Non-Performing loan ratio (NPLR)	1.9625	4.5504	1.3721
C	0.4675	1619.0272	

Source: Research Data (2020)

According to Field (2009) VIF values in excess of 10 is an indication of the presence of Multicollinearity. The results present variance inflation factor results and were established to be less than 10 (1.5291, 1.6200 and 1.3721) and hence there is no Multicollinearity.

3.8.5 Testing for Autocorrelation

Autocorrelation refers to lack of independence between the residual terms of observations (Field, 2000). For data to have high predictive power, the residual terms between any two observations in different time periods should not be auto correlated. (Maddala, 2001). Serial correlation/Auto

correlation occurs when the effect of one independent variable on another independent variable travels across time intervals affecting the future levels of the other independent variable. Bhargava *et al.* (1982) generalize the Durbin-Watson statistic (Durbin & Watson, 1971) to the fixed effects panel model. Baltagi and Li (1991, 1995) derive an LM statistic that tests for first order serial correlation. Wooldridge (2002) proposes an easily implementable test for serial correlation based on the OLS residuals of the first-differenced model. The null hypothesis is that there is no first-order autocorrelation (Wallis, 1995). The Durbin-Watson statistic was used to test whether prediction of dependence errors is auto correlated.

The Durbin-Watson statistic should range between 1.0 to 3.0 to imply absence of correlation between residual terms (Field, 2000). Values outside this range could be cause for concern (Field, 2009). Due to the fact that serial correlation in models biases the standard errors and causes the results to be less efficient, The results are shown in Table 3.2.

Table 3.2: Test of 1st Order Autocorrelation

H₀: No first-order autocorrelation	
Durbin-Watson test	
Durbin-Watson stat	1.6874
F-statistic	2.2716
Prob(F-statistic)	0.0325

Source: Research Data (2020)

From the findings in the table, the results indicate there is no 1st order correlation that is within one period, and thus the null hypothesis is accepted.

3.8.6 Testing for Stationarity

Gujarati (2007) asserts that stationarity tests are conducted to avoid change of estimates over time in the study variables which would in turn lead to spurious estimates. Testing for stationarity of the individual time series is important because if a time series is non-stationary, we can study its behaviour only for the time period under consideration and as a consequence, it

is not possible to generalize it to other time periods. Moreover, regression of a nonstationary time series on another nonstationary time series may produce spurious regression. To establish the stationarity conditions of the data series in this study, unit root test using the Levin-Lin- Chu test methodology was conducted, with the null hypothesis being that the series under consideration is non-stationary or has a unit root. The results are shown in Table 3.3.

Table 3.3: Testing for Stationarity

Variable	t-Statistic	Prob.
ROA	-9.407	0.000
LAR	-3.538	0.035
NPLR	-11.916	0.000
CIR	-4.392	0.027
LN-INVD	-8.069	0.000
ln-INVD*NPLR	-12.063	0.000
ln-INVD*LQA-RATIO	-4.601	0.003
ln-INVD*CIR	-6.584	0.000

Source: Research Data (2020)

From the findings in table 4.3, it was revealed that all the variables under study had an Levin-Lin- Chu test probability statistic of less than 0.05. Thus, the null hypothesis that the series under consideration is non-stationary was rejected and therefore, the panel data is stationary.

3.8.7 Fixed or Random Effect Test

In order to determine whether the fixed or random effects model is appropriate Hausman test was used. The Hausman test fundamentally tested whether the unique errors (ui) are correlated with the regressors. If the p value from the Hausman test is significant, the study would reject the null hypothesis and adopt the alternative hypothesis. The difference between the fixed effects and random effects approaches is the assumption made about the likely correlation between the individual or cross-section specific error component and the regressors. To make the choice, the Hausman test was conducted with the null hypothesis being that the errors are not correlated with the regressors (Hsiao, 2005). The results are thus presented in the Table 3.4 below:

Table 3.4: Correlated Random Effects - Hausman Test

Cross-section random effects test equation:

Dependent Variable: ROA

Method: Panel Least Squares

Periods included: 5

Cross-sections included: 19

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Cross-section random	2.7259	7.0000	0.9091	
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var (Diff.)	Prob.
Non-Performing loan ratio (NPLR)	233.2346	265.3405	4804.0200	0.6432
Cost income ratio (CIR)	-1.3346	-1.8039	0.5637	0.5319
Liquidity asset ratio (LAR)	2.5820	2.8512	1.1371	0.8007
LN_INVVD	-2.9744	-4.4738	7.0491	0.5722
LN_INVVD_CIR	7.7845	10.5267	19.2939	0.5324
LN_INVVD_LQA_RATIO	-14.7607	-16.4542	37.3006	0.7816
LN_INVVD_NPLR	-13.7908	-15.7150	16.7193	0.6379
Total panel (balanced) observations: 95				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	52.7442	61.0298	0.8642	0.3905
Non-Performing loan ratio (NPLR)	233.2346	134.1165	1.7390	0.0865
Cost income ratio (CIR)	-1.3346	1.1894	-1.1220	0.2657
Liquidity asset ratio (LAR)	2.5820	1.9355	1.3340	0.1866
LN_INVVD	-2.9744	3.5495	-0.8380	0.4049
LN_INVVD_CIR	7.7845	6.9231	1.1244	0.2647
LN_INVVD_LQA_RATIO	-14.7607	11.2571	-1.3112	0.1941
LN_INVVD_NPLR	-13.7908	7.9367	-1.7376	0.0867
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.3271	Mean dependent var		2.3758
Adjusted R-squared	0.0833	S.D. dependent var		0.2052
S.E. of regression	0.1965	Akaike info criterion		-0.1890
Sum squared resid	2.6635	Schwarz criterion		0.5100
Log likelihood	34.9772	Hannan-Quinn criter.		0.0934
F-statistic	1.3415	Durbin-Watson stat		2.4175
Prob(F-statistic)	0.1696			

Source: Research Data (2020)

Table 3.4 presents the results for Hausman test; from a fixed then a random test. A resultant p value of 0.9091 was greater than the conventional p value of 0.05 leading to non rejection of the null hypothesis that the unique errors (ui) are correlated with the regressors and thus the random effects model is more appropriate.

3.9 Data Analysis and Presentation

Hierarchical Panel data methodology was employed in this study. This is because the observations have two dimensions; cross-section and time-series. Hsiao (2005) observes that panel data estimation methodology contains more degrees of freedom and less multicollinearity leading to more efficient estimates. Moreover, it allows for greater flexibility in modelling differences in behaviour across entities which enables the control for unobserved heterogeneity (Wooldridge, 2002). Panel data regression analysis was used to determine the moderating effect of investment decisions. Researchers have posited that moderated regression analysis is the most general and conservative method for testing contingency hypotheses in which interaction exists (Fairchild and Mackinnon, 2009). This procedure involved the regression of the dependent variable (financial performance) on the independent variable (corporate risk management), the potential moderating variable (investment decisions) and the cross-product interaction term of the independent variable and the moderating variable. If the coefficient of the interaction term differs significantly from zero or the cross-product interaction term produces a significant change in adjusted R-square value (that is, significantly increases the amount of variance accounted for in the dependent variable), then the moderating variable was identified as having a significant effect on the nature of the relationship between corporate risk management and financial performance (Field, 2000).

3.9.1 Study Variables

The dependent variable is financial performance of the deposit taking SACCOs which is the ratio between net profit after tax and total assets i.e.

$$ROA = \frac{\text{Net income after tax}}{\text{Total assets}}$$

The independent variables in the study were:

a. Non – Performing Loans Ratio (NPLR) = $\frac{\text{Non-performing loans}}{\text{Total Loans}}$,

b. Liquidity Asset Ratio (LAR) = $\frac{\text{Net current assets}}{\text{Total Assets}}$

c. Cost income Ratio (CIR) = $\frac{\text{Operating expenses}}{\text{Net income after tax}}$.

The moderating variable of the study is the investment decisions which was measured by the natural logarithm of the sum invested in both financial investments and property i.e.

$$INVD = \ln(\text{financial investments} + \text{investment property})$$

3.9.2 Model Specification

The study adopted the model used by Fairchild and Mackinnon (2009) with some modifications.

The regression analysis is mathematically presented below:

$$Y_{it} = \beta_0 + \beta_1 X_i + \varepsilon_{it} \dots\dots\dots (3.1)$$

$$Y_{it} = \beta_0 + \beta_1 X_i + \beta_2 Z_i + \varepsilon_{it} \dots\dots\dots (3.2)$$

$$Y_{it} = \beta_0 + \beta_1 X_i + \beta_2 Z_i + \beta_3 X_i Z_i + \varepsilon_{it} \dots\dots\dots (3.3)$$

Source: Adopted from Fairchild and Mackinnon (2009)

The following panel data regression model was mathematically tested. The regression models are modified as follows:

The first model is for the effect of corporate risk management on financial performance of deposit taking savings and credit cooperative societies in western Kenya. Where appropriate;

CRE_{it} is Credit risk management for firm i during time t

LIQ_{it} is Liquidity risk Management for firm i during time t

OPR_{it} is Operation risk Management for firm i during time t

ROA_{it} is Return on Assets for firm i during time t

$INVD_{it}$ is Investment Decision for firm i during time t

ε_{it} is the remainder disturbance term for firm i during time t .

$$ROA_{it} = \beta_0 + \beta_1 CRE_{it} + \beta_2 LIQ_{it} + \beta_3 OPR_{it} + \varepsilon_{it} \dots \dots \dots (3.4)$$

Where: ROA_{it} = Financial performance of deposit taking savings and credit cooperative societies in western Kenya measured by ROA

The second model is for the effect of investment decisions on financial performance of deposit taking savings and credit cooperative societies in western Kenya.

$$ROA_{it} = \beta_0 + \beta_1 INVD_{it} + \varepsilon_{it} \dots \dots \dots (3.5)$$

Where: ROA_{it} = Financial performance of deposit taking savings and credit cooperative societies in western Kenya.

The moderation model tests whether the prediction of a dependent variable from an independent variable differs across levels of a third variable, Z. Moderation variables affect the strength and/or the direction of the relation between a predictor and an outcome; enhancing, reducing or changing the influence of the predictor. To establish the moderating effect of investment decisions on the relationship between corporate risk management and financial performance of

deposit taking savings and credit cooperative societies in western Kenya, model 3 introduces investment decision in order to establish its contribution in the general financial performance in model 1.

$$ROA_{it} = \beta_0 + \beta_1 CRE_{it} + \beta_2 LIQ_{it} + \beta_3 OPR_{it} + \beta_4 INVD_{it} + \varepsilon_{it} \dots\dots\dots (3.6)$$

Model 4 encompasses corporate risk management constructs, financial performance, investment decision and the cross-product interaction term of corporate risk management constructs and investment decision.

$$ROA_{it} = \beta_0 + \beta_1 CRE_{it} + \beta_2 LIQ_{it} + \beta_3 OPR_{it} + \beta_4 INVD_{it} + \beta_5 CRE*INDVD_{it} + \beta_6 LIQ*INDVD_{it} + \beta_7 OPR*INDVD_{it} + \varepsilon_{it} \dots\dots\dots (3.7)$$

3.10 Research Ethics

The study involved the collection of primary and secondary data and as such the research process observed ethical issues in order to ensure privacy of data collected and electronic storage. The data was collected accurately and transparently to avoid missing data. Informed consent was sought from participants and data collected was handled with high level of confidentiality. A research permit was obtained from Maseno University Ethics Review Committee (MUERC) and NACOSTI to conduct research in the area of study. Access permission was also obtained from the management of SASRA and DT-SACCOs. The researcher ensured voluntary participation by ensuring that the participants understand that their participation is voluntary and that there are no consequences for refusing to participate in the study or to answer specific questions.

The consent of the respondents was obtained prior to administration of the questionnaire (Appendix I). Respondents were guaranteed anonymity and assured that their responses were used for purposes of the study only. Confidentiality was ensured by keeping personal information that was revealed confidential and ensuring that no information is identified to a

particular study participant. All the information gained from the respondent was treated with confidentiality. The names of the respondents were not included in the study. Data files obtained will be kept in lockable cabinets and once it is processed, the data will be secured by a password and stored for a period of 5 years.

Respect for other peoples' rights, dignity and diversity was upheld which include respect for others to hold values, attitudes and opinions that differ from those of the researcher. The respondents were free to stop answering the questions in the interview schedule whenever they felt that they are uncomfortable with its contents. There were no direct benefits to the respondents however; the results generated from this study will be shared with the various stakeholders including the participating SACCOs upon request.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the results and analysis of the findings in relations to the objectives of the study. The data was collected using data collection sheet and interview schedule as research tools. The tools were designed in line with the objectives of the study. Regression and correlation analysis models were employed to analyse data. Tables summarising test of hypotheses and the subsequent interpretation of results are also provided.

4.1 Data Analysis

Data analysis involved cleaning the data collected by checking for any incompleteness, inconsistencies and mistakes. Hypotheses were tested using multiple regression models to determine if significant associations existed between the study variables.

4.2 Descriptive Statistics

Descriptive statistics for financial performance (ROA), Corporate risk management and Investment decisions.

Table 4.1: Summary of the Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
ROA	95	0.0237	0.0205	0.0201	0.0287	0.052	2.226
NPLR	95	0.062	0.014	0.030	0.279	3.646	18.380
LAR	95	0.1330	0.0124	0.099	0.14	-1.102	3.798
CIR	95	0.6579	0.0179	0.6120	0.6856	-0.725	3.038
LN-INVD	95	17.289	0.647	15.854	21.563	3.168	21.903

Source: Research Data (2020)

The results in Table 4.1 revealed that the mean financial performance measured by Return on Assets (ROA) for the 19 deposit taking SACCOs in western region was 2.37%. This means that the net income for the average DT-SACCO in Western Kenya is two percent of total assets.

The minimum reported Return on Assets was 2.01% while the maximum was 2.87%. The Return on Assets was spread within a standard deviation of 0.0205 implying that there was a narrow deviation of the Return on Assets from the mean as a measure of financial performance.

Likewise, the mean credit risk management measured by non-performing loan ratio was 6.2%. This implies that the non-performing loans were on average 6.2% of the total loans in the DT-SACCOs. This is far much higher than the ratio recommended by World Council of Credit Unions of 5% indicating that the DT-SACCOs are performing poorly. The minimum reported Non-Performing loan ratio was 3.0% while the maximum was 29.7%. The Non-Performing loan ratio was spread within a standard deviation of 0.014 from the mean Non-Performing loan ratio as a measure of credit risk management.

Liquidity risk management was measured by the ratio between liquid assets and total assets. The mean for liquidity was 13.3% implying that liquid assets form 13.3% of the total assets. The minimum reported Liquidity asset ratio was 9.9% while the maximum was 14%. The Liquidity asset ratio was spread from the mean Liquidity asset ratio within a standard deviation of 0.0124. The reported liquidity asset ratio is lower than the recommended 15% by SASRA (SASRA, 2017). This shows that DT-SACCOs in Western Kenya are exposed to liquidity risk which may affect their daily operations such as lending. According to Ismal (2010), liquidity risk in DT-SACCOs is defined as the risk of being unable either to meet their obligations to depositors or to fund increases in assets as they fall due without incurring unacceptable costs or losses.

Operational risk management was measured by the cost income ratio. The mean for Cost income ratio was 65.79% indicating that operational cost constitutes 65.79% of net income. The minimum reported cost income ratio was 61.20% while the maximum was 68.56%. The Cost income ratio was spread from the mean cost income ratio within a standard deviation of 0.0179. According to SASRA (2017), a SACCO should have a maximum cost income ratio of 60%. This shows that DT-SACCOs in Western Kenya are performing below the expected performance.

Key Informants Responses

The Chairmen of Board of Directors of the 19 DT-SACCOs who were interviewed responded as shown:

Table 4.2: Opinions of the Key Informants regarding the performance of Non-Performing loan ratio

Respondent Code	Has the Sacco's Non-performing loan ratio increased or decreased across the five (5) years (2013-2017)? Explain	How has the change in Non-performing loan ratio influenced the financial performance (ROA) of the Sacco within the last five (5) years (2013-2017)?
1	Yes NPLs have been poorly performing in the last 2 years unlike in the latter years.	Loans have been on the rise however, the rise in NPLs has been significantly limiting the financial health of the Sacco. This has escalated especially due to the inflation where consumers are not willing to pay back their loans in time
2	Slightly or else we would be running at a loss	This rise in NPLs has dwindled the asset quality since we have had a dip in the successive 2 quarters Debt to a deposit taking company is an asset and its increase increases the cash for its operations. This implies that in turn we are leveraged to trade in the market competitively. Ultimately, income as a result of the sales improves. In our case we have tried as much to reduce the defaulters' loans
3	Yes, they have been rising but they persist due to unfavourable changes in interest rates	Loan defaulting is a negative factor to how we perform since it means we run at loss of assets and liquidity. How do you operate without money in a financial institution? It is a loss in general to us
4	Yes	Increased NPLs have resulted in decline in internal assets
5	This thing is constantly on the rise	Loan defaulters are always there and given the price of loans in uncertain situations, the NPLs increase since the customers are not able to pay the loans in time or at all. It becomes even worse when the company has no financial reserves in form of liquid cash. You fall at the brink of loss of business
6	Slightly at some point in the years after the introduction of the interest rate CAP	The high level of NPL showed that a low bank health occurs because many non-performing loans in the bank's activities.
7	Nil	nil
8	The NPLs have not been performing very well since defaults are accumulating and to off-set them we result in borrowings from the loans	Increase in NPLs has reduced our returns from the total loans sold out
9	The NPLs have been persistent and it can even be seen in the reports that	NPLs have a negative impact on the total loans since when they increase the total loans become
10		

	eliminating NPLs is not entirely possible	depreciated. In essence, the income of the company from the loans to be sold out is jeopardized and thus low ROA
11	NPLs have increased immensely	Given the NPLs alone, the increase has made it unhealthy to reap from the total loan deposits thus reduced sales
12	NPLs have increased	Increased in these loans have lowered the quality of our assets due to low levels of loan sales
13	Quite as much but the increase has been at a decreasing rate	Increase in NPLs implies that the more the bank operates with increasing amounts of NPLs, the more it is at a risk to collapse in its equity performance.
14	The loan ratio has been fluctuating overtime, which have an effect on the management of the operations of the SACCOS.	The NP loan ratio have affected the financial performance (ROA) of the Sacco by creating deficits and losses which are not necessarily not awaited to bring profit later
15	The non-p loans have reduced. the company have increased the loan requirement and therefore the minimization of members being in violation of loan repayment	It has decreased because right now Saccos have efficient loan payment of income
16	plans	It has brought about losses that is felt by Saccos
17	Quite as much but the increase has been at a decreasing rate	Increase in NPLs implies that the more the bank operates with increasing amounts of NPLs, the more it is at a risk to collapse in its equity performance.
18	NPLs have been fluctuating but increased significantly in the last 3 quarters	Increase in NPLs has reduced the quality of our loans and thus the pricing of loans is affected.
19	NPLs have been rising and affecting our performance	The rise in the NPLs to total loan ratio implies that the assets of the company are not doing ok and thus the income generated is not at its optimum levels

Source: Research Data (2020)

Table 4.2 above on responses from key informants, shows that generally, the non performing loan ratio was increasing across the five years. This concurs with information in Table 4.1 which shows that non performing loan ratio was high at 6.2%.

Table 4.3: Opinions of the Key Informants regarding the performance of Liquidity asset ratio

Respondent Code	Has the Sacco's liquidity asset ratio increased or decreased across the five (5) years (2013-2017)? Explain	How has the change in liquidity asset ratio influenced the financial performance (ROA) of the Sacco within the last five (5) years (2013-2017)?
1.	Yes	The ROA has been improving significantly due to the increased liquid assets of the company
2.	the liquid assets have really been performing very well	Presence of High Capital has aided in improved the market performance of our firm's total equity
3.	Yes, since there has been proper planning of funding liquidity management	proper planning of funding liquidity management has boosted the company's capital base therefore, better financial performance
4.	The ratio has improved over the years	The increase has enabled the company to settle its debt obligations therefore good returns at the end of the financial year
5.	No	Increase in liquidity has reduced the performance especially with the decline in stocks and bonds in the year 2015/16
6.	The liquidity asset ratio in the last 6 years has been slightly improving but given the uncertainties in the market, the journey hasn't really been smooth	Presence of liquid cash means that the Sacco has convertible assets that a quickly turn into cash. At this point, the company is at a better place to offset its short-term obligations and still operate without borrowing.
7.	yes, it has been increasing with a drop in some quarters	Availability of liquid cash reserves is an assurance for us to carry out basic business operations
8.	Nil	nil
9.	the ratio has been decreasing	This decrease has affected our returns since there is no sufficient liquid assets, which at times forces the company to borrow
10.	Yes, the rise has been shaky but commendable especially in the last two years	Increase in the liquid assets has given us the leverage to settle current expenses, thus improved performance
11.	Yes	Increase in the LAR has enhanced our

		operating performance
		Increase in liquidity asset ratio has not improved the overall performance due to the high costs that was experienced during the Capping period
12.	Yes	The increase has seen the company managing short-term and daily operating expenses thus improved ROA
13.	Yes	The liquidity ratio of the have an effect on the profitability of the organization and therefore the performance in measure of returns
14.	in the course of time the Sacco have improved the liquidity level steadily, but have kept on growing.	The financial performance has improved due to reduced financial potential risks due to minimized liabilities of the Sacco
15.	the liquidity ratio has increased, generally with fluctuations however. this is due to different economic situations across different years	
16.	The Sacco's liquidity asset ratio has increased over the past 5 years because Sacco's have invested in assets and members borrowing at an interest hence increasing the Sacco's liquidity.	Members can borrow more right now and cash disbursed on time, Saccos are investing in asset s hence increasing their financial performance.
17.	Yes	The increase has seen the company managing short-term and daily operating expenses thus improved ROA
18.	There has been a decrease and then an increase	Increase in LAR improved our performance vice versa was also true
19.	Somehow	The availability of liquid cash and assets are a leverage for the company to carry out daily operations thus guarantees the overall performance increase

Source: Research Data (2020)

Results in Table 4.3 corroborate the descriptive statistics in Table 4.1 which shows that liquidity asset ratio has been increasing over time. Generally respondents indicated that the liquidity asset ratio has been on the increase but it has not reached the SASRA recommended thresh hold of 15%.

Table 4.4: Opinions of the Key Informants regarding the performance of Cost income ratio

Respondent Code	Has the Sacco's cost income ratio increased or decreased across the five (5) years (2013-2017)? Explain	How has the change in cost income ratio influenced the financial performance (ROA) of the Sacco within the last five (5) years (2013-2017)?
1	Yes	The change has been poor at times due to unsettled operating costs within the company
2	Cost have been fluctuating here and there especially in times of recession.	In times of recession, we have managed to cut down on the costs and stay afloat by maintaining enough liquid assets for operating.
3	Yes	Internal costs and expenses have been well managed for instance, personnel have the required and up-to-date skills and competencies especially in financial management practices. This is a big boost in the overall reduction of costs and improvement of ROA
4	Yes	The rise in operating costs have been detrimental to the efficiency of internal operations. At some point the costs incurred required external borrowing to offset the them and loans are a sign of backwardness
5	Yes	Cost have been on the rise especially the managerial and operating costs and when costs rise, profits decline
6	Not exactly	The more the cost in a business setting the more the negative profits. Likewise, the cost of equity is more than the cost of debts. The cheapest source should be selected prudently. In other words, we aim at reducing the costs to a manageable threshold that we do not fall down the breakeven line
7	Costs have been slightly consistent but majorly being under close monitoring	the higher the operating costs means influencing the performance by limiting the income that is used to settle the costs
8	Nil	nil
9	Slightly	Increase in operating costs that cannot be easily settled results in poor performance

10	The increase was experienced largely in the year last 3 years	Increase in such costs and/or expenses are at the expense of the net income of the company. Thus, negative profits given other factors held constant
11	Slightly but there has been a decrease in the 2 successive years	Reduced operating expenses has resulted in higher income and thus improved ROA
12	Yes	Interest rate capping slightly minimized the marginal revenue and thus the costs were high, therefore reducing the ROA
13	CIR has been increasing but slightly since the revenue has been on the rise too	Increase in CIR means that the revenue generated will not be able to off-set the obligations, cover the expenses and cater for future investments.
14	The cost income ratio has been decreasing. This have been as a result of the reduction and minimization of the costs incurred by the SACCOs in their operations, and the avoidable costs are skipped.	The reduced operational costs have led to an increased liquidity flow which have in turn improved the financial performance
15	The ratio has reduced due to growing incomes from Sacco assets.	The financial performance has improved. this is due to increased utilization of the assets in the business
16	It has increased because of the investments and loans	More members can join and enjoy ready financial assistance
17	CIR has been increasing but slightly since the revenue has been on the rise too	Increase in CIR means that the revenue generated will not be able to off-set the obligations, cover the expenses and cater for future investments.
18	The changes have been varying	Increase in costs have a negative impact on the returns generally
19	Cost have been managed and as such they have been fluctuating but manageable	Management of the CIR helps the Sacco maximize its output and thus improved ROA

Source: Research Data (2020)

Results in table 4.4 corroborate the descriptive statistics in table 4.1 above which shows that cost income ratio has been on the increase affecting financial performance as measured by ROA.

Table 4.5: Opinions of the Key Informants regarding the performance of Investment decisions

Respondent Code	Have the Sacco's investment decisions increased or decreased across the five (5) years (2013-2017)? Explain	How has the change in investment decisions influenced the financial performance (ROA) of the Sacco within the last five (5) years (2013-2017)?
1	Yes	Financial assets and property have fared on well and the performance especially the assurance of assets has been improving
2	Yes	The investors have commended the financial assets since they are able to put in money with the certainty of accruing dividends in the near future
3	Yes, they have since Shares and Fixed deposit accounts have a positive influence on financial performance	The increase in the financial assets such as current assets, bank deposits, bonds, and stocks have helped the investors and shareholders have more confidence in the company's performance. Therefore, they are willing to invest more. This is a good sign for the company in the short and long run.
4	Yes, they have improved given the increased profitability	Good financial decisions have indeed been a good leverage for us since utilisation of the available resources makes it worthwhile to achieve our objectives. For instance, during financial crises or during the Interest rate capping period, without such decisions from investors and management, we definitely would have shut down.
5	Yes	You know investing in such assets as property, plant, and equipment makes it not easy to convert them to cash. Thus, the best option is to invest and these augers well for the future
6	Investment decisions have increased and in essence they have made the company scale up higher points in the investors/clients list	Financial assets such as lands and enterprises set across the region have been a big boost to us since they help us secure our future. This helps shareholders and property holders have more confidence in investing in the company
7	Generally, this is a constantly increasing aspect for us	Decisions to invest in long term assets is very essential for a banking/financial institution since it is a security for the future of the institution
8	Nil	Nil
9	Yes, they have	Investments in physical assets has been on the rise however, the returns are slow given long term investments

10	We can boast around investments in land and assets such as machinery which are our security	Investors increasing investments is a sign of good performance Increase in the investment decisions especially on financial assets have secured a direct and positive impact on the performance of the total loans sold out, since investors are willing to buy more for investment purposes.
11	Yes	These decisions have improved our potential to invest
12	Yes	Increase in investments in financial and physical assets is more like a security to a company since, the money cannot be easily converted to cash thus future is secure
13	Yes, since the revenue generated has offered room for more investments and as well the uncertainties in the future can be taken care of the investments projects have been increasing which helps in more spread of risk and minimized financial crisis in case of losses	the spread of risk is enabled which minimize the impact of loss in case of a financial crisis and therefore a stabilized financial performance progress
14	the investments have been growing overtime. this is necessitated by the need to grow income to the Sacco	the result is improved financial performance. the increase in investments enhance the growth of the organization in finances and incomes.
15	They have increased as many Saccos have identified investing as the best income generating project	Rules and regulations have to be changed to accommodate this which causes confusion and loss from members
16	Yes, since the revenue generated has offered room for more investments and as well the uncertainties in the future can be taken care of	Increase in investments in financial and physical assets is more like a security to a company since, the money cannot be easily converted to cash thus future is secure
17	Not so much however, there has been an increasing trend	The proliferation of investment opportunities has helped the Sacco achieve greater heights Investments for instance in stock markets, real estates and farming activities among others have been our major strength. Therefore, having such a solid background assures us of the investment opportunities and running income across the years
18		
19	Increased substantially	

Source: Research Data (2020)

Table 4.5 above on responses from key informants, shows that generally, the investment decisions was increasing across the five years. These responses concur with information in Table 4.1 which shows that investment decisions increased throughout the 5 years.

Table 4.6: Opinions of the Key Informants regarding Financial Performance (ROA)

Respondent Code	Has the Sacco's return on assets increased or decreased across the five (5) years (2013-2017)? Explain
1	Yes.
2	For sure the performance has been rising but with hiccups here and there since the NPLs have not been really performing well.
3	Given the good management of the corporate risks such as liquidity, costs and defaulted loans, I can confidently claim that the ROA has been on the rising trend. You can refer to the financial statements.
4	Yes
5	Generally, the performance has been shaky given fluctuations in the risk management aspects especially the NPLs
6	We have been performing over the breakeven line but with ups and downs
7	Yes
8	No change
9	Generally given the poor performance of liquidity, increase in costs and NPLs, the performance is not healthy but there is hope in the future given long term investments
10	Returns on assets can be concluded to have improved however the trend is not that steep as it should be.
11	Increase in corporate strategies to manage the NPLs especially from increasing has been a benefit to the ROA which has increased
12	Yes
13	Revenue increase and investments all across the region means the company ROA is healthy
14	ROA ratio have increased steadily with increased financial investment decisions and cut down of avoidable costs.
15	The ratio has grown with time. There have been minor fluctuations however due to shifting economic times and inflation in the nation.
16	It has increased steadily as Saccos have invested which in return increases the returns
17	Revenue increase and investments all across the region means the company ROA is healthy
18	Given the good management of the internal practices, the performance has appreciated however, much is yet to be achieved
19	We can confidently that our performance has been faring on well in the past years.

Table 4.6 above on responses from key informants, shows that generally, return on asset ratio was increasing across the five years. This corroborates the information in Table 4.1 which shows that return on asset ratio was at 2.37%. These responses concur with the theoretical and empirical study's findings.

4.4 Correlation Analysis

Before establishing regression between the variables, a correlation was run. According to Field (2000) correlation measures the strength and direction between variables. The correlation matrix in Table 4.7 shows the correlation between the variables.

Table 4.7: Correlation between Corporate Risk Management and Financial Performance

Variables	ROA	NPLR	LAR	CIR	LN_INV D
ROA	1				
Sig. (2-tailed)	-----				
NPLR	-0.482	1			
Sig. (2-tailed)	0.000	-----			
LAR	-0.029	-0.225	1		
Sig. (2-tailed)	0.783	0.029	-----		
CIR	-0.499	0.322	0.442	1	
Sig. (2-tailed)	0.000	0.002	0.000	-----	
LN_INV D	-0.131	-0.045	0.461	0.449	1
Sig. (2-tailed)	0.206	0.668	0.000	0.000	-----

Source: Research Data (2020)

Note: ROA - Return on Assets, NPLR-Non-Performing Loan Ratio, LAR - Liquidity Asset Ratio, INVD - Investment Decisions and CIR - Cost Income Ratio

The results in the Table 4.7 revealed that there was a negative and significant association between credit risk management as measured by non-performing loan ratio and financial performance measured by Return on Assets of deposit taking savings and credit cooperative societies ($R = -0.482$, $p = 0.000$). This implies that a unit increase in nonperforming loan ratio leads to a decrease in return on asset ratio of 48.2%. This is consistent with findings by Li and Zou (2014), Bakaeva and Sun (2009), Ugirase (2013), Nyamwange (2010), Makori (2015) and Mutua (2016) who reported a positive association between credit risk management and financial

performance in their empirical studies. The reported findings however contradict those by Ikua (2015) who established a negative association between the variables.

It is further shown that operational risk management measured by cost income ratio (CIR) and financial performance of deposit taking savings and credit cooperative societies have a negative and significant relationship with each other ($R = -0.499$, $p = 0.000$). This implies that a unit increase in cost income ratio leads to a 49.9% drop in financial performance in the DT-SACCOs. This result is in tandem with results by Francis and Hess (2014), Epetimehin and Obafemi (2015), Gikundi *et al.* (2014) and Mathuva (2009) which established a positive relationship between the variables. Elsewhere, the results contradict those by Gikundi *et al.* (2014) established no relationship between operational risk management and financial performance commercial banks profitability in Kakamega Towns using a descriptive approach.

The findings in Table 4.7 further indicate that there is a negative but an insignificant association between liquidity risk management as measured by liquidity asset ratio (LAR) and financial performance of deposit taking savings and credit cooperative societies in western Kenya ($R = -0.029$, $p = 0.783$). This implies that there is no significant association between the management of liquidity risk and return on assets in the DT-SACCOs. The results contradict results by Bordeleau *et al.* (2010), Ismal (2010), Akhtar (2011), Said (2014), Song'e (2015) and Ogol (2011) all who establish a positive relationship between liquidity risk management on financial performance of firms. Moreover, they contradict results by Konadu (2009), Gwenyi *et al.* (2018) and Mwangi (2014) who on the contrary established a negative effect between liquidity risk management and financial performance of firms.

4.5 Tests of Hypotheses

4.5.1 Effect of Corporate Risk Management on Financial Performance

The first objective was to determine the effect of corporate risk management on financial performance. Corporate risk management was operationalised as a composite variable that consisted of three indicators namely; credit risk management, liquidity risk management and operation risk management.

To achieve the first objective, a null hypothesis was formulated as;

H_0I : Corporate risk management has no significant effect on financial performance of deposit taking savings and credit cooperative societies in Western Kenya.

To tests the hypothesis **H_0I** , linear regression model was conducted. The model was run as;

$$ROA_{it} = \beta_0 + \beta_1 CRE_{it} + \beta_2 LIQ_{it} + \beta_3 OPR_{it} + \varepsilon_{it}$$

Where

CRE_{it} is Credit risk management for firm i during time t

LIQ_{it} is Liquidity risk Management for firm i during time t

OPR_{it} is Operation risk Management for firm i during time t

ROA_{it} is financial performance of deposit taking savings and credit cooperative societies in Western Kenya for firm i during time t

ε_{it} is the remainder disturbance term for firm i during time t assumed to have a mean of zero and constant variance.

The results for the multiple regression analysis for the three corporate risk management is presented in table 4.8.

Table 4.8: Effect of Corporate Risk Management on Financial Performance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Liquidity asset ratio (LAR)	0.0153	0.0170	0.9013	0.3698
Cost income ratio (CIR)	-0.0499	0.0121	-4.1235	0.0001
Non-Performing loan ratio (NPLR)	-0.4059	0.1009	-4.0227	0.0015
C(constant)	5.5527	0.6837	8.1213	0.0002
R-squared	0.3693	Mean dependent var		2.3758
Adjusted R-squared	0.3486	S.D. dependent var		0.2052
S.E. of regression	0.1656	Akaike info criterion		-0.7170
Sum squared resid	2.4962	Schwarz criterion		-0.6095
Log likelihood	38.0593	Hannan-Quinn criter.		-0.6736
F-statistic	17.7648	Durbin-Watson stat		1.88860
Prob(F-statistic)	0.00100			

Dependent Variable: ROA

Total panel observations: 95

Source: Research Data (2020)

Note: ROA - Return on Assets, NPLR-Non-Performing Loan Ratio, LAR - Liquidity Asset ratio, and CIR - Cost Income Ratio

The model adjusted R-squared was 0.3486, this implies that the goodness of fit of the model explains only 34.86% of the variation in the financial performance of deposit taking savings and credit cooperative societies in western Kenya while the remaining 65.14% is explained by other factors not captured in the model. This shows that Liquidity asset ratio, Cost income ratio and Non-Performing loan ratio are good predictors of financial performance (ROA) in the model used. This is further supported by a significant F statistic 17.7648 where the value was greater than the critical value at 0.05 significance level. This implies the general linear (OLS) model is statistically significant.

The study adopted a null hypothesis which stated that corporate risk management has no significant effect on financial performance of deposit taking savings and credit cooperative societies in western Kenya. That is, there is no significant effect of liquidity asset ratio (LAR), cost income ratio (CIR) and non-performing loan ratio (NPLR) on financial performance of

deposit taking savings and credit cooperative societies in western Kenya. The acceptance/rejection criteria were that, if the p value is greater than 0.05, the H_{o1} is not rejected but if it's less than 0.05, the H_{o1} is rejected.

The results in Table 4.8 show that the p-value of liquidity asset ratio (LAR), cost income ratio (CIR) and non-performing loan ratio (NPLR) was 0.3698, 0.0001 and 0.0015 respectively. This suggests that only cost income ratio (CIR) and non-performing loan ratio (NPLR) have a statistically significant relationship with financial performance. Liquidity asset ratio (LAR) was found to have a statistically insignificant relationship with financial performance.

$$ROA = 5.527 - 0.4059CRE + 0.0153LIQ - 0.0499OPR$$

Where

CRE is Credit risk management

LIQ is Liquidity risk Management

OPR is Operation risk Management

ROA is financial performance of deposit taking savings and credit cooperative societies in Western Kenya

The results in Table 4.8 further revealed that liquidity risk management as measured by liquidity asset ratio was positive but statistically insignificant ($\beta = 0.0153$; $p = 0.3698$) in its effect on financial performance. This implies that management of liquidity among the DT-SACCOs has no significant effect on their financial management. It therefore shows that management of the DT-SACCOs should not overemphasize on the liquidity asset ratio in their endeavour to enhance financial performance of the organizations. The results contradict results reported by Bordeleau *et al.* (2010), Ismal (2010), Akhtar (2011), Song'e (2015) and Ogol (2011) all who establish a positive significant effect of liquidity risk management on financial performance of firms, and those by Konadu (2009), Gwenyi *et al.* (2018) and Mwangi (2014) who on the contrary established a negative effect between liquidity risk management and financial performance of

firms. Bordeleau *et al.* (2010) assessed the impact of liquidity on bank profitability for 55 US banks and 10 Canadian banks between the period of 1997 and 2010. Results from the study suggest that a relationship exists, whereby profitability is improved for banks that hold some liquid assets, however, there is a point beyond which holding further liquid assets diminishes a banks' profitability, all else equal. Profitability was measured by ROE and ROA. Ismal (2010) conducted a research on the management of liquidity risk in Islamic Banks in Indonesia. Using a triangulation method together with a combination of quantitative and qualitative research approaches. The results with respect to financial performance measured by return on equity ROE and return on assets (ROA) showed significant coefficients suggesting a relevant relationship between liquidity risk management and financial performance. Akhtar (2011) studied the association of liquidity risk with the solvency of a financial institution through a comparative analysis between conventional and Islamic banks of Pakistan. The study found positive but insignificant relationship of size of the bank and net-working capital to net assets with liquidity risks. Capital adequacy ratio in conventional banks and return on assets in Islamic banks was found to be positive and significant at 10% significance level.

Said (2014) analyzed the impact of net stable funding ratio (NSFR) on Malaysian commercial banks profitability. There exist positive relationships between NSFR and indicators of performance which were ROE, ROA and net interest margin (NIM). The study also indicated that there exists a positive relationship between equity and profit, and size of banks and profit, and a negative relationship between cost to income ratio and profit. Konadu (2009) reported findings of a study they conducted to analyse the relationship between banks' liquidity and profitability levels from 2002 to 2006 in Ghana. The study concluded that there is a negative relationship between liquidity and profitability in the Ghana banking sector. Ogol (2011)

conducted a research on liquidity risk management practices in microfinance institutions in Kenya. Results indicated that MFIs have in place liquidity risk management practices and there is a significant positive effect on financial performance of MFIs. Song'e (2015) conducted a study on the effect of liquidity management on the financial performance of DT SACCOS in Nairobi County. The findings were that financial performance as measured by profit before tax over total assets is positively related to Liquidity, funding liquidity risk, operational efficiency, quick ratio and log of total assets and therefore liquidity management has a positive effect on financial performance.

Gwenyi *et al.* (2018) sought to establish the influence of liquidity risk on financial performance of deposit taking savings and credit co-operatives (DT-SACCOs) in Kenya. The result indicated liquidity risk has a negative and significant influence on financial performance. Mwangi (2014) conducted a study to determine the effect of liquidity risk management on the financial performance of Commercial Banks in Kenya. The results of the study show that a unit increase in liquid assets to total assets ratio decreases return on assets by 1%. A unit increase in liquid assets to total deposits ratio decreases return on assets by 2.2%. The study concluded that liquidity risk management has a significant negative relationship with financial performance of commercial banks.

The result therefore disapproves the finance distress theory which advocates for efficient management of risks. The insignificant effect of liquidity risk management could therefore be interpreted that DT-SACCOs are performing poorly in terms meeting their obligations to depositors as they fall due without incurring costs or losses.

It is further shown in Table 4.8 that the effect of operational risk management by the DT-SACCOs in western Kenya measured by cost income ratio (CIR) on financial performance is

negative but statistically significant ($\beta = -0.0499$; $p = 0.0001$). The implication of these result is that a unit decrease in cost income ratio leads to a 4.99% significant increase in financial performance, when all other factors are held constant. Since operational risk was measured by the ratio between cost and income, this further implies that an increase in costs in relation to income by the DT-SACCOs results to a significant reduction in return on assets. This result is in tandem with results by Francis and Hess (2014), Epetimehin and Obafemi (2015), and Mathuva (2009) which established a positive significant effect between the variables. This confirms the tenets of the Finance Distress Theory that firms which manage their risks reduce operational costs leading to higher financial performance; that more efficient firms generate higher profits. However, the results contradict those by Gikundi *et al.* (2014) who established mixed results on the effect of operational risk management on financial performance commercial banks profitability in Kakamega Town. Practically, the results imply that a reduction in operational risks does not necessarily improve financial performance.

Francis and Hess (2014) who examined how cost income ratio benchmarking was used by ASB Bank, a New Zealand-based retail bank when reviewing its operational efficiency established that operational risk management has a positive effect on the financial development and growth in the financial sector. Gikundi *et al.* (2014) conducted a study on effects of operational risks in the lending process of commercial banks profitability in Kakamega Towns reported mixed results between operational risk management has a significant effect on financial performance of the banks. Mathuva (2009) examined the relationship between Capital Adequacy, Cost Income Ratio and the profitability of Kenyan Commercial Banks and reported a significant effect of operational risk management on financial performance.

Credit risk management which was measured by non-performing loan ratio was found to have a negative and significant relationship with financial performance ($\beta = -0.4059$; $p = 0.0015$). This implies that holding all other factors constant, a unit increase in credit risk management (a unit reduction in credit risk) leads to a 40.59% increase in financial performance in the DT-SACCOs. Since, Non Performing Loans are an indication of poor financial health of financial institutions, these findings corroborate those by Li and Zou (2014), Bakaeva and Sun (2009), Ugirase (2013), Nyamwange (2010), Makori (2015) and Mutua (2016) who reported a positive significant effect between credit risk management and financial performance in their empirical studies. The study results confirm the tenets of finance distress theory that firms which manage their risks will not enter into financial distress and therefore improve financial performance. However contradict those by Ikua (2015) who established a negative association between the variables implying that a management of credit risks reduces financial performance thereby disapproves finance distress theory. Li and Zou (2014) studied the relationship between credit risk management and profitability of the 47 commercial banks in Europe using multivariate regression analysis and established a significant effect of credit risk management and financial performance of the banks. Bakaeva and Sun (2009) conducted a study on the impact of credit risk management on profitability using a sample of four commercial banks in Sweden. It showed that credit risk management had a positive effect on profitability in all four banks. Ugirase (2013) reported findings on a study conducted to establish the effect of credit risk management on financial performance of commercial banks in Rwanda and established that all the measures of credit risk management used in the study significantly affect financial performance of commercial banks in Rwanda. Nyamwange (2010) sought to establish the relationship between credit risk management practices and financial performance of SACCOs in Kenya. The study concluded

that there was a positive relationship between credit risk management practices and the financial performance of SACCOs measured by ROA. Makori (2015) analyzed the effect of credit risk management practices on the profitability of DT SACCOs in Nairobi County. The study concluded that credit appraisal practices, credit monitoring, debt collection practices and credit risk governance practices have a positive effect on financial profitability of the DT SACCOs in Nairobi County. Mutua (2016) conducted a study on the impact of credit risk management on financial performance in savings and co-operative societies in Kitui County. The findings of the study were; there was a positive relationship between credit monitoring, loan policy in mitigation of risk, loan defaulters and financial performance of SACCOs and therefore, credit risk management had a significant effect on financial performance of SACCOs.

Ikua (2015) analyzed the effect of credit risk management practices on the performance of SACCOs in the hospitality industry in Nairobi. The study determined that SACCOs have heavily relied on particular credit risk techniques which are not adequate to mitigate against loan losses in a dynamic and competitive lending environment and therefore credit risk management has a negative effect on financial performance of SACCOs in the hospitality industry in Nairobi.

The null hypothesis, H_{01} , that corporate risk management has no significant effect of financial performance of deposit taking savings and credit cooperative societies in western Kenya is rejected based on the findings. It is therefore concluded that corporate risk management has significant effect of financial performance of deposit taking savings and credit cooperative societies in western Kenya.

4.5.2 Effect of Investment Decisions on Financial Performance

The second objective was to determine the effect of investment decisions on financial performance. To answer the objective, a hypothesis was set as follows;

H₀₂: Investment decisions have no significant effect on financial performance of deposit taking savings and credit cooperative societies in Western Kenya.

To tests hypothesis **H₀₂**, linear regression model was conducted. The model was run as

$$ROA = 0.9963 + 0.2038INVD$$

Where;

ROA is financial performance of deposit taking savings and credit cooperative societies in Western Kenya

INVD is Investment Decision for the firms

The results for the multiple regression analysis for investment decisions and financial performance are presented in table 4.9.

Table 4.9: Effect of Investment Decisions with Financial Performance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_INVD	0.2038	0.0592	3.4421	0.0009
C (Constant)	0.9963	0.5244	1.8999	0.0607
R-squared	0.4138	Mean dependent var		2.3758
Adjusted R-squared	0.3877	S.D. dependent var		0.2052
S.E. of regression	0.1606	Akaike info criterion		-0.7691
Sum squared resid	2.3202	Schwarz criterion		-0.6347
Log likelihood	41.5306	Hannan-Quinn criter.		-0.7148
F-statistic	15.8821	Durbin-Watson stat		0.5677
Prob(F-statistic)	0.0000			

Source: Research Data (2020)

Note: Dependent Variable: ROA

The model adjusted R- squared in Table 4.9 was 0.3877. This implies that the goodness of fit of the model explains only 38.77% of the variation in the financial performance of deposit taking savings and credit cooperative societies in western Kenya. This shows that the variable investment decisions are good predictors of financial performance in the model used. This is further supported by a significant the F statistic 15.8821 where the value was greater than the critical value at 0.05 significance level. This implies the general regression model is statistically significant. Besides, the results revealed that investment decisions have a positive significant relationship with financial performance ($\beta = 0.2038$); $p = 0.0009$). The findings are consistent

with those of Fazzari *et al.* (2000), Adelegan (2009), Machuki (2014), Koroti (2014) who in their various researches established a strong positive significant effect of investment decisions on financial performance. This result supports the portfolio theory which proposes that firms make investments decisions that have high returns with minimum risks and therefore improving financial performance. However, Nyale (2010) in his research established a negative relationship between the investment decisions and financial performance in firms. Fazzari *et al.* (2000) investigated the effect of financing constraints on the investment-to-cash flow sensitivity in United States of America (US) manufacturing sector. The study established that investment by firms with higher financial constraints is more responsive to variations in cash flow than that of mature, high dividend firms and that cash flow is more important for larger firms than for smaller ones and also for newer firms' investment. Adelegan (2009) evaluated the impact of capital market imperfections on investment behaviour of productive sector firms by use of questionnaires in Nigeria. The study showed that an increase in both future profit prospects and cash flow result in an increase in corporate investments of firms that have low credit worthiness. Ariemba *et al.* (2016) conducted a study on the effect of investment decision on financial performance of savings and credit cooperatives in Kitui central sub-county, Kenya. The study concluded that investment decisions had a significant positive effect on financial performance. In a study on the effect of investment decision on the performance of firms listed in the Nairobi Securities Exchange as at 31st December 2013, Machuki (2014) reported significant and positive correlations between ROA and Investment Decision. Koroti (2014) conducted a study to establish the effect of investing and financing decisions on the financial performance of sugar factories in Kenya. These researches adopted a non-probability sampling method, in which four factories were chosen from a population of eleven factories in existence as at 31st December

2013 in Kenya. This was a descriptive study that examined the effect of investing decision as measured by investment of total assets and financing decision as measured by debt to equity ratio on financial performance measure of return on assets (ROA). The study found out that investing decision positively and significantly affected financial performance. According to Nyale (2010), a study on the relationship between leverage and investment decisions for companies quoted at the NSE indicated that 36% of listed companies at the NSE engaged in diversification investment decisions. The study further found out that, there was a negative significant effect on the relationship between the levels of leverage of a company and how much money the company can commit to a diversification investment decision. This insinuates that companies view each diversification investment decision on their own merit and financial performance is not dependent on investment decisions

The null hypothesis, H_{02} , that investment decisions have no significant effect on financial performance of deposit taking savings and credit cooperative societies in Western Kenya is not supported by findings of the present study. It is therefore concluded that there is a significant relationship between investment decisions and financial performance of deposit taking savings and credit cooperative societies in Western Kenya.

4.5.3 Moderating influence of Investment Decisions on Corporate Risk Management and Financial Performance

The third objective was to determine whether investment decisions have a significant moderating influence on the relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in Western Kenya. A hypothesis was formulated as follows;

H₀₃: Investment decisions have no significant moderating influence on the relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in Western Kenya.

To establish this moderating effect, model 3 was introduced encompassing investment decision and corporate risk management constructs in order to establish its contribution in the general financial performance in model 1. The model results was;

$$ROA = 5.5269 - 0.4120CRE + 0.0148LIQ - 0.0503OPR + 0.00399 INVD$$

The results for the regression are shown in Table 4.10 below.

4.10: Effect of Corporate Risk Management and Investment Decision on Financial Performance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Liquidity asset ratio (LAR)	0.0148	0.0177	0.8344	0.4062
Cost income ratio (CIR)	-0.0503	0.0128	-3.9289	0.0002
Non-Performing loan ratio (NPLR)	-0.4120	0.1430	-2.8810	0.0017
Investment decisions (LN_INVD).	0.0037	0.0316	0.1166	0.9075
C(Constant)	5.5269	0.7223	7.6516	0.0000
R-squared	0.3782	Mean dependent var		2.3758
Adjusted R-squared	0.3575	S.D. dependent var		0.2052
S.E. of regression	0.1665	Akaike info criterion		-0.6961
Sum squared resid	2.4958	Schwarz criterion		-0.5617
Log likelihood	38.0664	Hannan-Quinn criter.		-0.6418
F-statistic	13.1826	Durbin-Watson stat		0.5221
Prob(F-statistic)	0.0000			

Source: Research Data (2020)

Dependent Variable: ROA

Total panel (balanced) observations: 95

Note: ROA - return on assets, NPLR-non-performing loan ratio, LAR - liquidity asset ratio, INVD - Investment decisions and CIR - cost income ratio

After introducing investment decision into model one, adjusted R-squared changes to 0.3575 from 0.3486, an increase of 0.0089. This implies that including investment decision in the model improves it by about 0.89%.

The next step involved introducing investment decision as a cross-product interaction term and below was the model substituted with coefficients from table 4.11;

$$ROA = 2.6892 - 0.2338CRE + 0.0449LIQ - 0.0358OPR + 0.0782INVD + 0.0621CRE*INDVD - 0.5596LIQ*INDVD + 0.1235OPR*INDVD$$

The results for the multiple regression analysis of the moderating effect of investment decisions on the relationship between corporate risk management and financial performance is shown in table 4.11

Table 4.11: Moderating Effect of Investment Decisions on the Relationship between Corporate Risk Management and Financial Performance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Liquidity asset ratio (LAR)	0.0449	0.0158	2.8431	0.0056
Cost income ratio (CIR)	-0.0358	0.0143	-2.4997	0.0143
Non-Performing loan ratio (NPLR)	-0.2338	0.1267	-1.8453	0.0684
Investment decisions (LN_INVD).	0.0782	0.0244	3.2007	0.0019
LN_INVD*CIR	0.1235	0.0484	2.5510	0.0125
LN_INVD* LAR	-0.5596	0.1145	-4.8883	0.0000
LN_INVD*NPLR	0.0621	0.0677	0.9172	0.3616
C	2.6892	0.7947	3.3841	0.0011
R-squared	0.5590	Mean dependent var		2.3758
Adjusted R-squared	0.5235	S.D. dependent var		0.2052
S.E. of regression	0.1416	Akaike info criterion		-0.9905
Sum squared resid.	1.7455	Schwarz criterion		-0.7755
Log likelihood	55.0504	Hannan-Quinn criter.		-0.9036
F-statistic	15.7540	Durbin-Watson stat		0.7819
Prob(F-statistic)	0.0000			

Source: Research Data (2020)

Dependent Variable: ROA

Total panel (balanced) observations: 95

Note: ROA - return on assets, NPLR-non-performing loan ratio, LAR - liquidity asset ratio, INVD - Investment decisions and CIR - cost income ratio, $ln_invd*cir$, $ln_invd*lar$, $ln_invd*nplr$

After cross-interacting investment decision with corporate risk management constructs, the model adjusted R- squared in Table 4.11 increased to 52.35% from 35.75%. This implies that the goodness of fit of the model explains 52.35% of the variation in the financial performance of deposit taking savings and credit cooperative societies in western Kenya. This shows that investment decision is a significant positive moderator on the relationship between corporate risk management and financial performance of the DT-SACCOs in Western Kenya. This further shows that introducing investment decision in the model explains 16.6% of financial performance.

Results in Table 4.11 indicate can be explained that corporate risk management decisions should be evaluated alongside investment decisions in order to improve financial performance.

Table 4.12: Before and after Moderation

	Before Moderation	After Moderation
R squared	0.3782	0.5590
Adjusted R-squared	0.3575	0.5235
P – Value	0.0000	0.0000
F – Statistics	13.1826	15.7540

Source: Research Data (2020)

The adjusted R squared before moderation was 0.3575 while the regression model was significant ($P = 0.0010$). This implies that the adjusted R-squared improved to 0.5235 ($p=0.000$) after moderation with investment decisions. This is an indication that there is a significant moderation effect of the investment decisions on the relationship between corporate risk management and financial performance; therefore, the null hypothesis that investment decisions do not have a moderating effect on the corporate risk management and financial performance of deposit taking SACCOs in Western Kenya was rejected and the alternate hypothesis accepted. The acceptance/rejection criteria was that, if the p value is greater than 0.05, the H_{o3} is not rejected but if it's less than 0.05, the H_{o3} is rejected. The results in Table 4.10 shows that there was a statistically significant moderating influence ($p=0.000$) of investment decisions after interacting investment decisions with liquidity asset ratio (LAR) and cost income ratio (CIR)

($p=0.000$; $p=0.0125$ respectively). However, there was a statistically insignificant moderating influence ($p=0.3616$) of investment decisions after interacting investment decisions with non-performing loan ratio (NPLR).

In addition, (as shown in Table 4.11) after moderation the adjusted R squared improved from significantly 0.3575 ($p=0.0010$) to 0.5235 ($p=0.000$) after moderation with investment decisions. This indicates that there is a significant moderating effect of the investment decisions on the overall model.

The moderation result in this study are in tandem with those by Priestley *et al.* (2008) who using a broad sample of US manufacturing firms and Li and Tang (2010) who examined the moderating role of managerial discretion on CEO hubris and firm risk taking showed that there is a significant moderating effect between variables. The results therefore are consistent with Agency theory. The result however contradicts those by Joshi and Stump (2009) who while studying the moderating role of reciprocal asset investments on joint action in manufacturer-supplier relationships show that the moderating effect of reciprocal asset investments was not significant.

The null hypothesis H_{03} , that investment decisions do not have a moderating effect on the corporate risk management and financial performance of deposit taking SACCOs in Western Kenya was rejected and the alternate hypothesis accepted. It is therefore concluded that investment decisions have significant moderating effect on corporate risk management and financial performance of deposit taking SACCOs in Western Kenya. This implies that investment decisions are important when considered alongside corporate risk management to improve financial performance.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECCOMENDATIONS

The chapter presents the summary of the study findings, the conclusions and recommendations made. It also outlines the restrictions of the study and makes suggestions on areas for further research. The general objective of the study was to analyze the influence of investment decisions on the relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in Western Kenya. Specifically the study aimed to; establish the effect of corporate risk management on financial performance of deposit taking savings and credit cooperative societies in Western Kenya; assess the effect of investment decisions on financial performance of deposit taking savings and credit cooperative societies in Western Kenya and determine the moderating influence of investment decisions on the relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in Western Kenya. The study collected data from 19 deposit taking SACCOs in Western Kenya using a data collection sheet.

5.1 Summary of Findings

The first objective sought to establish the relationship between corporate risk management and financial performance of deposit taking SACCOs in Western Kenya. It was established that cost income ratio and non-performing loan ratio have a statistically significant relationship with financial performance while liquidity asset ratio was found to have a statistically insignificant relationship with financial performance.

The second objective sought to determine the relationship between investment decisions and financial performance of deposit taking SACCOs in Western Kenya. It was found that investment decisions had a significant positive effect on financial performance of the DT-

SACCOs indicating that whenever firms in the industry invested on investment decisions there was improvement on their financial performance.

Finally, objective three sought to determine the moderating influence of investment decisions on the relationship between corporate risk management and financial performance of deposit taking SACCOs in Western Kenya. The findings indicated that investment decision had a statistically significant moderating influence on the relationship between corporate risk management and financial performance.

Further, the findings indicated that after moderation the adjusted R squared improved significantly indicating that there is a significant moderating influence of the investment decisions on the overall model. This means that whenever firms invested in investment decisions there was a moderate improvement in the relationship between corporate risk management and financial performance.

5.2 Conclusion of the Study

The first objective sought to establish the effect of corporate risk management on financial performance of deposit taking SACCOs in Western Kenya. It was established that there was a significant effect of corporate risk management (operational risk management and credit risk management) on financial performance implying that whenever DT-SACCOs invested on them there was a significant improvement on their financial performance.

The second objective sought to determine the relationship between investment decisions and financial performance of deposit taking SACCOs in Western Kenya. It was found that there was also a significant relationship between investment decisions and financial performance indicating that whenever DT-SACCOs in the industry invested on investment decisions there was a great improvement on their financial performance.

Finally, objective three sought to determine the moderating influence of investment decisions on the relationship between corporate risk management and financial performance of deposit taking SACCOs in Western Kenya. The findings indicated that there was a positive significant variation in the relationship between corporate risk management and financial performance due to moderation indicating that whenever firms invested in investment decisions there was a moderate improvement in the relationship between corporate risk management and financial performance. The study helps to provide evidence to explain the past contradictory results presented by different authors.

5.3 Recommendations of the Study

Based on the conclusion for objective one that there was significant relationship between corporate risk management and financial performance and it is recommended that deposit taking SACCOs in Western Kenya effectively manage corporate risk as it has been established to contribute immensely in their financial performance.

On conclusion of objective two, that there was significant relationship between investment decisions and financial performance of deposit taking SACCOs in Western Kenya, the recommendation is that these firms should invest more in investment decisions since it greatly influences their financial performance.

Finally, on the conclusions of objective three that investment decisions influence the relationship between corporate risk management and financial performance significantly, the study recommends that deposit taking SACCOs in Western Kenya should incorporate investment decisions and corporate risk management since this combination improves financial performance.

5.4 Limitations of the Study

The study achieved its aim of providing a general view on the influence of corporate risk management and investment decisions by exposing some of the significant associations between the context variables and financial performance of deposit taking SACCOs in western which may be indicative of a causal effect of the said context. Some limitations were however encountered; these include the following; first, the study interviewed only the management of the 19 deposit taking SACCOS in Western Kenya.

Secondly the study relied mostly on quantitative methodology of data collection, more of qualitative data methods of collection should be undertaken in future to give a wider perspective than the present study.

Thirdly the study only focused on one sector of the economy, the findings may therefore be limiting since other factors in others sectors may contribute to financial performance other than the ones used in the current study.

5.5 Areas of Further Research

The current study sought to analyse the influence of investment decisions on relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in western Kenya. This was specifically achieved through the use of three variables that is the effect of corporate risk management, investment decisions and the moderating influence of investment decisions on financial performance of deposit taking savings and credit cooperative societies in western Kenya.

However, the study recommends future extrapolation of the research by looking into the performance of the Saccos in terms of other financial measures such as returns on equity (ROE). Likewise, since the study established insignificance in the relationship between the Cost income

ratio (CIR) and the financial performance, it would offer a se for future scholars to look into the area and explore the variable in other sectors other than the Saccos. This can likewise be done by including more Saccos under observation; that is by expanding the scope to other regions apart from western Kenya.

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APPENDICES

APPENDIX I: LETTER TO THE RESPONDENT AND INFORMED CONSENT FORM FOR RESEARCH PARTICIPANTS

I am a student pursuing a Doctor of Philosophy (PhD.) Degree in Business Administration from Maseno University. As part of the requirements for the course, I am collecting data with the aim of analysing it to achieve the objectives of the study on; **The Influence of Investment Decisions on the Relationship between Corporate Risk Management and Financial Performance of Deposit Taking Savings and Credit Cooperative Societies in Western Kenya.**

I humbly request that you permit me to extract information from your DT-SACCO for the years 2013 to 2017. The information obtained will be treated confidentially and used for research purposes only. Your support and cooperation will be highly appreciated.

Thank You.

Name of Principle Investigator: Otanga Grace
Name of Organization: Maseno University
Name of Project and Version: PhD Research

This Informed Consent Form has two parts:

- I. Information Sheet (to share information about the study with you)
- II. Certificate of Consent (for signatures if you choose to participate)

You will be given a copy of the full Informed Consent Form

Part I: INFORMATION SHEET

Introduction

I am a student pursuing a Doctor of Philosophy (PhD.) Degree in Business Administration from Maseno University. As part of the requirements for the course, I am to collect data with the aim of analysing it to achieve the objectives of a study that I am carrying on the Influence of Investment Decisions on the Relationship between Corporate Risk Management and Financial

Performance of Deposit Taking Savings and Credit Cooperative Societies in Western Kenya. I humbly request that you permit me to extract information from your DT-SACCO for the years 2013 to 2017. Attached herein is a letter from Maseno University's School of Graduate Studies that permits me to carry out the research. It is my sincere hope that you will accord me this chance.

Purpose of the Research

The purpose of the study is to analyze the influence of investment decisions on the relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in Western Kenya.

Type of Research Intervention

This research will involve your participation in one phase; interview schedule will be use to interview the chairpersons of all deposit taking savings and credit cooperative societies in Western Kenya.

Participant Selection

You are being invited to take part in this research because we feel that your experience can contribute much and provide insight to the study.

Voluntary Participation

Your participation in this research is entirely voluntary and the choice that you make will have no bearing on your job or organization or on any work-related evaluations or reports.

Procedures

We are inviting you to take part in this research project. If you accept, you will be asked to....:

For interview schedule... answer the questions that will be asked from the interview schedule which will be administered by the research assistants on the day of data collection that will have been agreed on upon consultations with the selected respondents. Any question or clarification regarding the research are welcomed and can be directed to the principal investigator at any time through the contacts provided. If you do not wish to

answer any of the questions included in the interview schedule, you may skip them and move on to the next question. The information recorded will be treated with highest level of confidentiality and your name or that of your institution will not be mentioned anywhere. The data will be stored in the principal researcher's computer and the content will be password protected. The information is solely for writing my PhD thesis and no one else except me and my research assistant will have access to your responses.

Duration

The research takes place over a period of three months during which we will visit you twice. The interview schedule survey will be conducted for three months after which data analysis will commence.

Benefits and Compensations

There will be no direct benefit to you, but your participation is likely to help us develop insights that will be useful in analyzing the influence of investment decisions on the relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in Western Kenya. You will also not be provided any incentive to take part in the research.

Risks

We don't envisage any negative consequences for you in taking part in this study. However, it is possible that you may share some personal or confidential information by chance, or that you may feel uncomfortable talking about some of the topics. We do not wish for this to happen. You therefore do not have to answer any question if you feel the question(s) are too personal or if talking about them makes you uncomfortable.

Sharing the Results

Nothing that you tell us will be shared with anybody outside the research team, and nothing will be attributed to you by name. The knowledge that we get from this research will be shared through my PhD dissertation, publications in journals and conferences. Each participant may also request a summary of the results six months after their participation. Questions regarding this research are welcomed now or later. If you wish to ask questions later, you may contact any of

the following: Otanga Grace Kemunto, Maseno University, Private Bag, Maseno, Mobile number: 0726 650 543; Email: gracekemuo@gmail.com. Proposal for this study has been reviewed and approved by Maseno University SGS board and NACOSTI, whose goal is to ensure that research to be conducted are up to the expected standards. If you wish to find out more about the SGS, contact the Director, School of Graduate Studies, Maseno University, Private Bag, Maseno, Kenya, Tel: +254-057-351620, 351622 Ext. 3049/351468. It has also been reviewed by the Maseno University Ethics Review Committee (MUERC) which is a committee whose task it is to review and make informed decisions on all research protocols and/or applications that involve human participation and protect human subjects from undue risk and deprivation of personal rights and dignity. MUERC can also be contacted through the following: Maseno University Ethics Review Committee, (MUERC) Directorate of Research, Publications and Consultancies, Private Bag, Maseno, Kenya; Tel: + 254 57 351 622 Ext. 305.

Part II: CERTIFICATE OF CONSENT

Research Title: Influence of investment decisions on the relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in Western Kenya.

Name and Contacts of the Researcher: *Otanga Grace Kemunto, Maseno University, Private Bag, Maseno. Mobile number: 0726 650 543; Email: gracekemuo@gmail.com.*

You have been invited to participate in research whose title is “*influence of investment decisions on the relationship between corporate risk management and financial performance of deposit taking savings and credit cooperative societies in Western Kenya*”.

Please indicate the following:-

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. []
2. The purpose and nature of the study has been explained to me in writing []
3. I agree to take part in the above study. []

4. I understand that my participation in this study is voluntary and that I am free to withdraw at any time, without giving reason. []
5. I agree to the interview being audio recorded []
6. I agree to the interview being video recorded []
7. I understand that anonymity will be ensured in the write-up by disguising my identity. []
8. I understand that disguised extracts from my interview and or questionnaire survey may be quoted in the thesis and any subsequent publications []
9. I agree to the use of anonymized quotes in publications []

Signature /thumb _____

APPENDIX II: INTERVIEW SCHEDULE

i. Has the Sacco's liquidity asset ratio increased or decreased across the five (5) years (2013-2017)? Explain.

.....
.....

ii. How has the change in liquidity asset ratio influenced the financial performance (ROA) of the Sacco within the last five (5) years (2013-2017)?

.....
.....

iii. Has the Sacco's cost income ratio increased or decreased across the five (5) years (2013-2017)? Explain.

.....
.....

iv. How has the change in cost income ratio influenced the financial performance (ROA) of the Sacco within the last five (5) years (2013-2017)?

.....
.....

v. Has the Sacco's Non-performing loan ratio increased or decreased across the five (5) years (2013-2017)? Explain.

.....
.....

vi. How has the change in Non-performing loan ratio influenced the financial performance (ROA) of the Sacco within the last five (5) years (2013-2017)?

.....
.....

vii. Have the Sacco's investment decisions increased or decreased across the five (5) years (2013-2017)? Explain.

.....
.....

viii. How has the change in investment decisions (financial assets and property) influenced the financial performance (ROA) of the Sacco within the last five (5) years (2013-2017)?

.....
.....

ix. Has the Sacco's return on assets increased or decreased across the five (5) years (2013-2017)? Explain.

.....
.....

APPENDIX III: ETHICS REVIEW PERMIT



MASENO UNIVERSITY ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622 Ext: 3050
Fax: +254 057 351 221

Private Bag – 40105, Maseno, Kenya
Email: muerc-secretariate@maseno.ac.ke

FROM: Secretary - MUERC

DATE: 29th May, 2020

TO: Grace Kemunto Otanga
PG/PHD/ 00029/2013
Department of Accounting and Finance
School of Business and Economics
P. O. Box, Private Bag, Maseno, Kenya

REF: MSU/DRPI/MUERC/00831/20

RE: Influence of Investment Decisions on the Relationship between Corporate Risk Management and Financial Performance of Deposit Taking Savings and Credit Cooperative Societies in Western Kenya. Proposal Reference Number MSU/DRPI/MUERC/831/20

This is to inform you that the Maseno University Ethics Review Committee (MUERC) determined that the ethics issues raised at the initial review were adequately addressed in the revised proposal. Consequently, the study is granted approval for implementation effective this 29th day of May, 2020 for a period of one (1) year. This is subject to getting approvals from NACOSTI and other relevant authorities.

Please note that authorization to conduct this study will automatically expire on 28th May, 2021. If you plan to continue with the study beyond this date, please submit an application for continuation approval to the MUERC Secretariat by 15th April, 2021.

Approval for continuation of the study will be subject to successful submission of an annual progress report that is to reach the MUERC Secretariat by 15th April, 2021.

Please note that any unanticipated problems resulting from the conduct of this study must be reported to MUERC. You are required to submit any proposed changes to this study to MUERC for review and approval prior to initiation. Please advise MUERC when the study is completed or discontinued.

Thank you.


Dr. Bonuke Anyona,
Secretary,
Maseno University Ethics Review Committee.



Cc: Chairman,
Maseno University Ethics Review Committee.

MASENO UNIVERSITY IS ISO 9001:2008 CERTIFIED



APPENDIX IV: NACOSTI PERMIT




REPUBLIC OF KENYA
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION.

Ref No: 488301 **Date of Issue: 08/March/2020**

RESEARCH LICENSE



This is to Certify that Ms. Grace Kemunto Otanga of Maseno University, has been licensed to conduct research in Bungoma, Busia, Homabay, Kakamega, Kisii, Kisumu, Migori, Nyamira, Siaya, Vihiga on the topic: INFLUENCE OF INVESTMENT DECISIONS ON THE RELATIONSHIP BETWEEN CORPORATE RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF DEPOSIT TAKING SAVINGS AND CREDIT COOPERATIVE SOCIETIES IN WESTERN KENYA for the period ending : 08/March/2021.

License No: NACOSTI/P/20/4073 Ammended

488301
Applicant Identification Number


Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

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APPENDIX V: DATA COLLECTION SHEET

NAME OF DT-SACCO:

YEAR	2013	2014	2015	2016	2017
Total loans					
Non-performing loans					
Cash					
Net balances with commercial					
Net balances with financial institutions other than banks					
Short term Government securities					
Total assets					
Operating expenses					
Net income after tax					
Financial Investment					
Property and equipment					

APPENDIX VI: FIELD DATA

CO	YR	NPLR	LAR	CIR	ROA	LN- INVD	ln- INVD*N PLR	ln- INVD*L QA- RATIO	ln- INVD* CIR
1	2013	0.03234	0.09950	0.61232	0.02875	15.8535	0.4032	1.5774	9.7074
1	2014	0.0348	0.09990	0.61211	0.02872	21.5627	0.6905	1.5987	9.7955
1	2015	0.03561	0.09970	0.61202	0.02786	17.2400	0.5112	1.6038	9.8453
1	2016	0.03618	0.10050	0.61742	0.02682	17.2237	0.3377	1.6579	10.3026
1	2017	0.03663	0.10160	0.61864	0.02675	17.1913	1.6541	1.6958	10.3332
2	2013	0.03786	0.10190	0.61908	0.02635	17.1838	0.2752	1.7003	10.6397
2	2014	0.03822	0.11670	0.62453	0.02611	17.1787	1.3121	1.9555	10.7841
2	2015	0.03837	0.11650	0.62986	0.02609	17.1747	0.2798	1.9377	10.2898
2	2016	0.03909	0.11090	0.63204	0.02600	17.1733	0.4015	1.8598	10.3542
2	2017	0.04071	0.14960	0.63652	0.02579	17.1624	0.4596	2.0362	10.6803
3	2013	0.04254	0.14930	0.63764	0.02561	17.1367	0.3132	2.0413	10.7521
3	2014	0.04341	0.14840	0.63764	0.02557	17.1366	0.3876	2.0775	10.5954
3	2015	0.04515	0.14830	0.63769	0.02553	17.1294	0.2117	2.0285	10.9038
3	2016	0.04551	0.14760	0.63786	0.02541	17.1076	0.2501	2.7773	13.8739
3	2017	0.0456	0.14650	0.64146	0.02528	17.1007	0.2301	2.1991	11.0177
4	2013	0.04845	0.14530	0.64342	0.02518	17.1007	0.7053	2.1974	11.0045
4	2014	0.04947	0.14190	0.64357	0.02513	17.0962	0.5609	2.1077	11.0742
4	2015	0.05046	0.14190	0.64752	0.02513	17.0831	0.5133	2.0290	11.1596
4	2016	0.05211	0.14170	0.64981	0.02510	17.0829	0.5699	1.8817	11.1020
4	2017	0.05334	0.14010	0.64986	0.02510	17.0762	0.5192	2.0548	11.3001
5	2013	0.05388	0.14010	0.65314	0.02510	17.0723	0.4306	2.1648	11.1382
5	2014	0.05574	0.13980	0.65413	0.02506	17.0714	0.2172	2.1536	11.2135
5	2015	0.05586	0.13980	0.65754	0.02495	17.0558	0.2577	2.1971	10.8101
5	2016	0.05793	0.13960	0.65763	0.02473	17.0515	1.5615	2.2103	10.8388
5	2017	0.05889	0.13960	0.65763	0.02459	17.0513	0.2183	2.0639	10.9506
6	2013	0.05907	0.13940	0.65892	0.02454	17.0504	0.3071	2.1649	11.3827
6	2014	0.0597	0.13920	0.66278	0.02452	17.0346	0.2057	2.0535	11.2164
6	2015	0.05979	0.13910	0.66431	0.02452	17.0283	0.3438	2.0663	11.2902
6	2016	0.06054	0.13850	0.66563	0.02450	17.0103	0.3784	2.1672	11.4030
6	2017	0.06078	0.13840	0.66652	0.02434	16.9978	0.5780	2.2464	11.4140
7	2013	0.06141	0.13830	0.66748	0.02433	16.9949	0.4688	2.3813	10.8936
7	2014	0.06168	0.13830	0.66763	0.02419	16.9753	0.4598	2.3423	11.3954
7	2015	0.0627	0.13830	0.66874	0.02411	16.9552	0.4956	2.3463	11.3816
7	2016	0.06516	0.13830	0.65917	0.02410	16.9533	0.3357	2.3376	11.2391
7	2017	0.06597	0.13780	0.64452	0.02382	16.9392	0.5164	2.3626	11.0104
8	2013	0.06654	0.13760	0.66154	0.02373	16.9362	0.3687	2.3613	11.2298
8	2014	0.06657	0.13740	0.64765	0.02345	16.9296	0.3047	2.3580	11.0986
8	2015	0.06732	0.13720	0.66531	0.02342	16.8981	0.4643	2.3765	11.4325
8	2016	0.06912	0.13710	0.65627	0.02340	16.8565	0.3575	2.3677	11.2272

8	2017	0.07182	0.13670	0.67975	0.02328	16.8218	0.3774	2.2414	11.6662
9	2013	0.07257	0.13670	0.67341	0.02319	16.7787	0.4627	2.3360	11.5158
9	2014	0.07626	0.13660	0.65787	0.02309	16.7701	0.3364	2.3923	11.2736
9	2015	0.07629	0.13610	0.66763	0.02309	16.7567	0.4728	2.4008	11.4654
9	2016	0.07833	0.13510	0.66539	0.02307	16.6912	0.4484	2.3478	11.4279
9	2017	0.08079	0.13140	0.67132	0.02296	16.6861	0.3844	2.3947	11.4993
10	2013	0.08106	0.13060	0.63459	0.02279	16.6330	0.2774	2.3208	10.9014
10	2014	0.08118	0.13010	0.64784	0.02238	16.4966	0.1857	2.4044	11.1582
10	2015	0.0816	0.12980	0.64981	0.02219	16.0866	0.3426	2.3776	11.1711
10	2016	0.08232	0.12970	0.65198	0.02216	16.0029	0.4170	2.2429	11.2402
10	2017	0.08247	0.12960	0.67789	0.02202	17.2418	0.4740	2.3759	11.6881
11	2013	0.08259	0.12930	0.65781	0.02191	17.2465	0.4869	2.4007	11.3449
11	2014	0.08469	0.12890	0.66456	0.02190	17.2769	0.3500	2.3514	11.4815
11	2015	0.08706	0.12880	0.67234	0.02187	17.2200	0.2044	2.5227	11.5777
11	2016	0.09069	0.12780	0.66988	0.02183	17.2614	0.3435	2.4183	11.5631
11	2017	0.09093	0.12710	0.64786	0.02183	17.2051	0.2989	2.5687	11.1465
12	2013	0.09156	0.12660	0.64908	0.02179	17.2053	0.2490	2.5533	11.1676
12	2014	0.09534	0.12630	0.64196	0.02158	17.1710	0.2097	2.5465	11.0231
12	2015	0.09939	0.12450	0.65984	0.02157	17.2483	0.2446	2.4441	11.3811
12	2016	0.10059	0.12350	0.66562	0.02129	17.1403	0.2600	2.4322	11.4089
12	2017	0.10143	0.12130	0.67781	0.02110	17.1793	0.3810	2.5700	11.6443
13	2013	0.1245	0.12110	0.67241	0.02108	17.2228	0.3326	2.5025	11.5808
13	2014	0.12945	0.12090	0.67568	0.02106	17.2702	0.3551	2.4506	11.6691
13	2015	0.2349	0.12090	0.68345	0.02105	17.3034	0.3222	2.5540	11.8260
13	2016	0.2751	0.12080	0.68567	0.02097	17.3183	0.2257	2.4263	11.8746
13	2017	0.2973	0.12050	0.67895	0.00210	17.3056	0.2604	2.3657	11.7496
14	2013	0.04221	0.12040	0.66895	0.02095	17.5749	0.2473	2.4306	11.7567
14	2014	0.04734	0.11980	0.66671	0.02094	17.6071	0.2778	2.4386	11.7388
14	2015	0.06861	0.11070	0.66785	0.02090	17.3283	0.3963	2.2336	11.5727
14	2016	0.05634	0.12340	0.64789	0.02079	17.4083	0.3269	2.1482	11.2786
14	2017	0.04269	0.12690	0.65145	0.02079	17.3364	0.2467	2.2000	11.2938
15	2013	0.04536	0.13710	0.66897	0.02079	17.3226	0.2619	2.3749	11.5883
15	2014	0.03981	0.13840	0.67231	0.02045	17.4128	0.2311	2.4099	11.7068
15	2015	0.03564	0.14660	0.67783	0.02020	17.3756	0.2064	2.5473	11.7777
15	2016	0.0372	0.14420	0.67781	0.02017	17.3705	0.2154	2.5048	11.7739
15	2017	0.066	0.13960	0.64876	0.02096	17.6113	0.3874	2.4585	11.4255
16	2013	0.04287	0.14510	0.65108	0.02240	17.5423	0.2507	2.5454	11.4215
16	2014	0.04194	0.13450	0.66702	0.02550	17.5192	0.2449	2.3563	11.6856
16	2015	0.04146	0.13430	0.65788	0.02528	17.5323	0.2423	2.3546	11.5341
16	2016	0.04107	0.13220	0.67967	0.02451	17.5088	0.2397	2.3147	11.9002
16	2017	0.03372	0.13560	0.66678	0.02659	17.5084	0.1968	2.3741	11.6742
17	2013	0.04191	0.13070	0.65981	0.02459	17.4448	0.2437	2.2800	11.5103
17	2014	0.04188	0.13440	0.65108	0.02457	17.5169	0.2445	2.3543	11.4049
17	2015	0.04467	0.13730	0.65276	0.02372	17.5794	0.2618	2.4136	11.4751
17	2016	0.04647	0.14310	0.65905	0.02409	17.6134	0.2728	2.5205	11.6081

17	2017	0.04245	0.14330	0.66309	0.02280	17.6008	0.2491	2.5222	11.6709
18.	2013	0.04668	0.13890	0.66674	0.02486	17.6871	0.2752	2.4567	11.7927
18	2014	0.03297	0.14030	0.67506	0.02395	17.7626	0.1952	2.4921	11.9908
18	2015	0.03105	0.14810	0.67612	0.02562	18.0868	0.1872	2.6787	12.2289
18	2016	0.04092	0.14340	0.68102	0.02602	18.1475	0.2475	2.6024	12.3588
18	2017	0.03726	0.14650	0.68111	0.02502	18.2133	0.2262	2.6683	12.4053
19	2013	0.03792	0.14980	0.68201	0.02078	18.2595	0.2308	2.7353	12.4532
19	2014	0.03642	0.14940	0.68133	0.02625	18.3893	0.2232	2.7474	12.5292
19	2015	0.05067	0.14610	0.68189	0.02602	18.5146	0.3127	2.7050	12.6249
19	2016	0.04707	0.14380	0.68206	0.02582	18.5648	0.2913	2.6696	12.6623
19	2017	0.03774	0.14630	0.68144	0.02610	18.7088	0.2354	2.7371	12.7489

**APPENDIX VII: LIST OF DEPOSIT-TAKING SACCOs IN WESTERN KENYA AS AT
DECEMBER 2017**

KISII COUNTY

- 1 .Gusii Mwalimu Sacco Society Ltd. P.O.Box 1335 – 40200, Kisii.
2. Kenya Achievas Sacco Society Ltd .P.O. Box 3080-40200, Kisii
3. Wakenya Pamoja Sacco Society Ltd. P.O.Box 829 – 40200, Kisii.

NYAMIRA COUNTY

4. Nyamira Tea Sacco Society Ltd .P.O. Box 633 – 40500, Nyamira
5. Vision Point Sacco Society Ltd .P.O.Box 42 – 40502, Nyansiongo

HOMABAY COUNTY

6. Suba Teachers Sacco Society Ltd .P.O. Box 237-40305, Mbita.
7. Rachuonyo Teachers Sacco Society Ltd. P.O. Box 147-40332, Kosele.

MIGORI COUNTY

8. Stake Kenya Sacco Society Ltd. P.O.Box 208 – 40413, Kehancha

KAKAMEGA COUNTY

9. IG Sacco Society Ltd P.O.Box. 1150 –50100, Kakamega.
10. Mudete Tea Growers Sacco Society Ltd .P.O.Box 221 – 50104, Khayega.
11. Sukari Sacco Society Ltd. P.O Box 841-50102, Mumias
12. Wevarsity Sacco Society Ltd .P.O Box 873-50100, Kakamega

BUSIA COUNTY

13. Faridi Sacco Society Ltd .P.O. Box 448-50400, Busia.

VIHIGA COUNTY

14. Kaimosi Sacco Society Ltd. P.O Box 153-50305, Sirwa

KISUMU COUNTY

- 15.** Jumuika Sacco Society Ltd. P.O. Box 14-40112, Awasi.
- 16.** Kite Sacco Society Ltd .P.O.Box 2073 – 40100, Kisumu
- 17.** Koru Sacco Society Ltd. P.O. Box Private Bag-40100, Koru.

BUNGOMA COUNTY

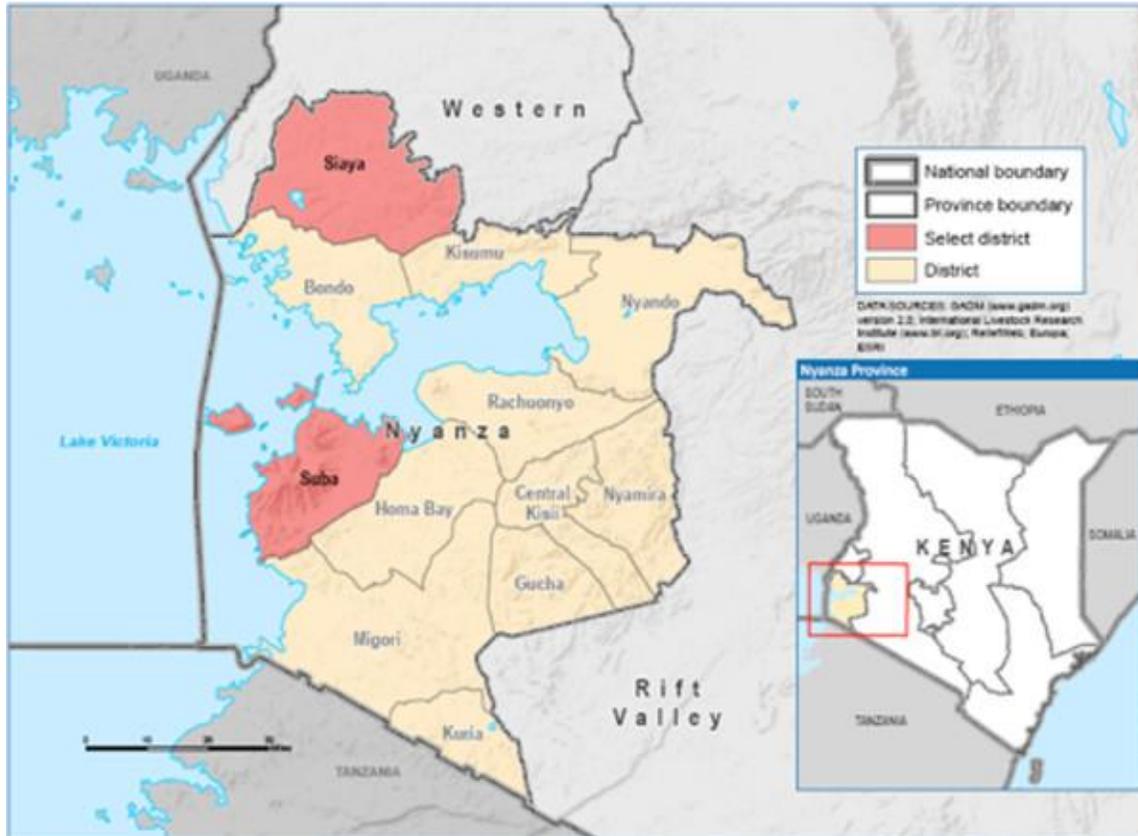
- 18.** Ng'arisha Sacco Society Ltd .P.O.Box 1199 – 50200, Bungoma

SIAYA COUNTY

- 19.** Taraji Sacco Society Ltd .P.O.Box 605 – 40600, Siaya

Source: SASRA, 2017

APPENDIX VIII: MAP OF STUDY AREA



Source: Google Maps, 2019