EFFECT OF RISK MANAGEMENT PRACTICES ON FINANCIAL PERFORMANCE OF DEPOSIT TAKING SAVINGS AND CREDIT COOPERATIVES IN KENYA

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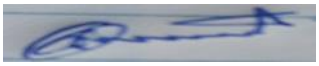
DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

Signed:  Date: 27/10/2022

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

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DEDICATION

I wish to dedicate this work to my dear wife, Beth Nungari Kamande and my children, Jasmine, Terry, James, Jayden and Justin. Thank you for all the support you have accorded me throughout this process.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
CRM	Credit Risk Management
DTS	Deposit Taking SACCO
DT-SACCOs	Deposit Taking Savings and Credit Cooperative Societies
FP	Financial Performance
GDP	Gross Domestic Product
MFI	Micro Finance Institution
NPL	Non- Performing Loans
ROA	Return on Assets
ROE	Return on Equity
ROS	Return on Sales
SACCOs	Savings and Credit Cooperative Societies
SASRA	SACCO Societies Regulatory Authority
SPSS	Statistical Package for Social Sciences
VIF	Variance Inflation Factors

ABSTRACT

Risk is a major factor among financial institutions. Financial institutions should make sure that their exposure to risks is lowered because they influence their main goal which is to lend credit and enable clients to save funds efficiently. Risk management practices determine the capacity a firm in realizing high efficiency which leads to superior performance and sustainability of a firm. The main aim of this study was to determine the effect of risk management practices on financial performance of DT-SACCOs in Kenya. The independent variables for the research were credit risk management, liquidity risk management, operating risk management and market risk management. Capital adequacy and firm size were the control variables while the dependent variable was financial performance measured as ROA. The study was guided by financial intermediation theory, liquidity preference theory and operational risk theory. Descriptive research design was utilized in this research. The 175 DT-SACCOs in Kenya as at December 2021 served as target population. The study collected secondary data for five years (2017-2021) on an annual basis from SASRA and individual DT-SACCOs annual reports. Descriptive, correlation as well as regression analysis were undertaken and outcomes offered in tables followed by pertinent interpretation and discussion. The research conclusions yielded a 0.5304 R square value implying that 53.04% of changes in DT-SACCOs ROA can be described by the six variables chosen for this research. The multivariate regression analysis further revealed that individually, both the liquidity risk management plus credit risk management have an adverse influence towards ROA of DT-SACCOs as shown by (β=-0.1632, p=0.000) and (β=-0.1596, p=0.000) respectively. Operating risk and interest rate risk showed non statistical significance although positive effect on ROA. The control variables which were capital adequacy and entity size exhibited a notable positive ROA impact as shown by (β=0.6852, p=0.000) and (β=0.8561, p=0.000) respectively. The study recommends that DT-SACCOs should implement effective measures of managing financial risk. Specifically, the DT-SACCOs should work at reducing their liquidity risk and credit risk as these two adversely affects ROA. Future research ought to focus on other financial institutions in Kenya to corroborate or refute the conclusions of this research.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Financial institutions are faced with various risks and their financial performance is dependent on how well they manage these risks. The proposition is that lack of proper management of risk often leads to non-performance of financial institutions (Moslehpour, Al-Fadly, Ehsanullah, Chong, Xuyen & Tan, 2020). According to the International Professional Practice Framework for internal auditors, inefficient systems of managing risk translate to minimal return on investment. Consequently, it is necessary that financial institutions regularly assess efficiency of risk management measures to attain their objectives of financial performance (Zhongming, Frimpong & Guoping, 2019). Onsongo, Muathe and Mwangi (2020) give examples of risks that are common to financial institutions as: liquidity, credit, operational, market, strategic and compliance risks. Proper understanding of how these risks affect financial performance is imperative. In addition, proper management of these risks ensures better performance of financial institutions.

This study was guided by; financial intermediation theory, liquidity preference theory and operational risk theory. The financial intermediation theory by Diamond (1984) is the anchor theory as it aids in addressing Deposit Taking Savings and Credit Cooperative Societies (DT-SACCOs) performance because they consider a lot of risk measures using technology advancements in the field of credit management by obtaining private information, treating, screening and effective monitoring of borrowers. The study also utilizes liquidity preference theory by Keynes (1936) which assumes that an investor demands high interest on investment that have long-term maturities with greater risk since investors have a preference for cash or other highly

liquid investments. The theory explains the relationship between liquidity risk management and performance. Operational risk theory by Sparrow (2000) assumes that entities with relatively high internal operational risk are likely to have optimal operational exposure lower than the exposure of entities that have low internal operational risk.

The current study focused on DT-SACCOs in Kenya; this is because the level of financial risk in these institutions has been a major concern for SACCOs in Kenya (SASRA, 2020). Additionally, Moody's 2019 report stated that increasing Non-performing loans (NPLs) among banks and SACCOs in Kenya reflected weak financial sector health. The credit risk, liquidity risk, market risk and operating risk for SACCOs has increased but focus has mostly been on the banks. It would be necessary to also investigate financial risk management among DT-SACCOs in Kenya as they play a key role in financial intermediation and inclusion. A study of how risk management practices influences performance of DT-SACCOs in Kenya is hence required.

1.1.1 Risk Management Practices

According to Tapiero (2004), risk management refers to the practice of creating economic value in a firm by using financial instruments to manage exposure to risks, particularly risks such as credit and market risk. Managing risk involves setting appropriate risk environment, identifying and measuring the risk exposure, mitigating risk exposure, monitoring risk and constructing controls for protecting the financial institution from financial risks. According to Ngalawa and Ngare (2013), risk management is defined as an order of four procedures: The first one involves identifying the events of one or more wide-ranging categories of market, operational,

liquidity, credit, and other risks into precise sub-categories; The second one involves accessing the risks using data and risk models; The third one involves the examination and reporting of the assessments of the risk on a regular and timely basis; The fourth one and last one involves controlling risks by the senior management. Risk management has also been defined as the systematic use of organization-wide processes of identify, assess, manage, and monitor risks such that aggregated information can be used to protect, release, and create value (Shahbaz, Tabassum, Muhammad, Mansoor , Hafiz & Yasir, 2012).

Risk management is an important aspect among financial institutions as it is the factor that informs financial decisions (Shukla, 2016). Without risks, financial transactions would be simplified but this would also imply low returns on investments as higher risk is associated with better proceeds. Financial institutions are however mandated to control risks as failure to monitor them would lead to collapse of the institutions and this would have a multiplying effect on the entire economy. The future of financial institutions and financial transactions is therefore dependent on stringent and effective management of risks (Ahmed, 2015).

Risk management practices have been operationalized differently by different researchers. Raad (2015) operationalized risk management in terms of credit risk management, liquidity risk management, operating risk management and market risk management. Noor and Abdalla (2014) operationalized risk management into three practices namely; credit risk, liquidity risk and operating risk. Credit risk management is measured using the non-performing loans ratio; liquidity risk management is measured using current ratio, operating risk management is measured using operating expense to operating income ratio while market risk management is measured using

interest rate gap. In this research, risk management practices was operationalized in terms of credit risk management, liquidity risk management, operating risk management and marketing risk management as used before by Raad (2015).

1.1.2 Financial Performance

Financial performance refers to ability of a firm to achieve a set of financial goals (Abernathy & Utterback, 2015). FP stands for the extent firm financial goals have been met. It shows how successfully financial objectives have been attained (Nzuve, 2016). The health of the economy as a whole, as well as shareholders and investors, depends on financial performance. Investors receive a total return on their investment, and a solid company can increase investors' earnings over the long run (Fatihudin & Mochklas, 2018). The financial performance of a firm is crucial to both its survival and prosperity. When a business performs well, it shows that it manages its assets effectively and efficiently for operations, investments, as well as financial transactions (Karajeh & Ibrahim, 2017).

The focus on financial performance is of importance as it majorly touches on items that directly change financial statements or the company’s reports (Omondi & Muturi, 2013). The company's FP is the primary evaluation tool used by external stakeholders (Bonn, 2000). Consequently, the company's FP is used as a metric. How successfully the company meets its financial objectives determines its financial performance. The performance of a company is the outcome of accomplishing both internal and external goals (Nyamita, 2014).

Various methods of evaluating financial performance are used and should be harmonized. Asset returns (ROA), size of company, equity returns (ROE) and sales return (ROS) are factors recognized as measures of FP. ROA and ROE are the most

recognized measures. As per Mwangi and Murigu, (2015), ROA evaluates the company's FP using its total assets, whereas the ROE examines the way a company is using shareholder's equity. Market-based measures such as market capitalization, market to equity par value, dividend yield, and earnings per share can also be used in FP measurement (Baba & Nasieku, 2016). As the most widely used indicator of financial performance, ROA was used in the current study (Fatihudin & Mochklas, 2018).

1.1.3 Risk Management Practices and Financial Performance

Risk in the financial sector is the result of moral hazards and adverse selection owing to asymmetric information. Financial institutions' profitability is influenced by the firm's financial risk because most of their revenue is from loans which attract interest. Nonetheless, financial risk has an effect on the institutions' efficiency. As a result, the risk must be effectively controlled (Bhattarai, 2016). From prior studies, risk is a financial institutions' efficiency predictor in finance. For example NPL which is a proxy for credit risk can destabilize a bank's general system of credit lowering its value (Afriyie & Akotey, 2012).

The information asymmetry theory gives a broader perspective on the feasible rationale for managing risks like bad debt. Indirect evidence is provided by a financial distress hypothesis. According to the adverse selection theory, principals incur agency costs in order to reduce dispute. These are the monitoring costs shareholders incur in supervising managers and lowering the divergent activities of agents, connection costs used for optimum contracts as security that their actions shall not contradict principal's interests as well as loss costs from the divergence of decisions of agents and those that will maximize the principal's interests (Shukla, 2016).

Risk is a major factor among financial institutions. SACCOs should make sure that their exposure to risks is lowered because they influence their main goal which is to lend credit and enable owners to save funds efficiently (Kariuki, 2017). Mohammed (2017) posits that risks determine the capability a company to realize high efficiency which leads to superior performance and sustainability of a firm. The basis is that in order to diversify business and to enhance efficiency, companies should be knowledgeable of risks involved (Naz & Naqvi, 2016).

1.1.4 Deposit Taking SACCOs in Kenya

Government of Kenya (2018) defined DTS as SACCOs carrying out the business of accepting savings and in turn offers credit facilities to her clientele. The DTS also accepts to undertake business of depositing and withdrawing monies on daily basis like what banks do. Non-Deposit taking SACCOs normally operate at the back office only and have not obtained licensing from SASRA to have operations at a front office. FOSAs are considered one of the main profit centers for SACCOs and provide their members with valuable services (Wambua, 2015). By introducing FOSAs, there has been positive performance of SACCOs through improvement in profitability thereby leading to declaration of a high rate of dividend to members (IFSB, 2015).

According to Mudibo (2015), deposit taking SACCOs highly impact Kenya's economy. These institutions are responsible for approximately 45% of Kenya's GDP. This is in spite of the fact that they had not been formally recognized into the financial system. After the enactment of SACCO Societies Act no.14 of 2008 in 2010 these institutions have registered tremendous growth. The SASRA Annual report (June, 2022) at the end of 2021 stated that they had grown to 175 from 110 DTS in 2011 a

growth of 59%. In 2020, these institutions' total assets under their management totaled over 393 billion, up from 167 billion in 2011, a 135 percent increase in ten years.

Availing members with credit and availing saving products are the main goals of SACCOs and these are threatened by risk hence the need to manage them. The main cause of failures in SACCOs is poor management of risk (Mugo et al., 2019). The returns from making investments in a business are the reward for risk taken by business owners. Proper risk management practices can assist SACCOs in lowering their general exposures to finance risks. This ensures they can compete in the sector (Odhiambo, 2019).

1.2 Research Problem

Risk is a major factor among financial institutions. Financial institutions should make sure that their exposure to risks is lowered because they influence their main goal which is to lend credit and enable clients to save funds efficiently (Kariuki, 2017). Mohammed (2017) posits that risk management practices determine the capacity a firm in realizing high efficiency which leads to superior performance and sustainability of a firm. The premise is that businesses ought to be aware of the risks involved that have a substantial effect on their daily operations in order to diversifying their business and improve financial performance (Naz & Naqvi, 2016).

DT-SACCOs play a role in financial intermediation which has included 6.3% Kenyans and approximately 60% of Kenyans are dependent on them (FinAccess, 2022). Despite this, 30% lack prudent financial risk management practices as evidenced by unremitted deductions by employer institutions or borrowers' default and unskilled staff (SASRA, 2021). This renders them susceptible to de-licensing for having financial vulnerabilities thereby, putting the 341 billion shillings member

funds at risk (FSD, 2017). Even with the government's investment in a regulatory authority to ensure that DT-SACCOs follow regulations and are financially viable, this remains an issue. This is because members can lose value for their hard-earned money because their deposits lack protection. This can in turn cause panic and reduced confidence in the subsector (SASRA, 2021).

Empirical evidence exists on how risk management practices affect financial performance of institutions like banks. The studies have also produced varied results. Moslehpour et al. (2022) surveyed financial risks influence on global financial markets. The empirical findings demonstrate that financial risks affect the global financial markets negatively. Zhongming, Frimpong and Guoping (2019) studied the impact of financial risk indicators on financial performance of banks in Ghana and showed that financial risk management improves performance. Gadzo et al. (2019) did an examination of how credit and operational risk impact the performance of Ghanaian banks. Conclusions depicted credit risk and operational risk had a negative relation to performance of the banks.

Locally, Ochieng (2021) sought to establish financial risk management practices effect on ROA of deposit-taking SACCOs in Nairobi County, Kenya. The results revealed that credit risk and liquidity risk have a negative effect on ROA while operating risk and interest rate risk have no significant influence on ROA. Gitau (2021) investigated how financial risk impacts performance of Dairy cooperatives in Kisii, Nyamira, Bomet and Kericho Counties, Kenya. From the findings, it was noted that financial risk has a substantial impact on performance of dairy cooperatives. Omondi (2019) undertook an empirical study on financial risks and financial performance of commercial banks in Kenya. Findings showed a substantial

negative relation between credit risk, liquidity risk and exchange rate risk on performance.

This study was motivated by the increasing cases of collapse and losses reported by the deposit-taking SACCOs over the years. Financial risk has been cited as one of the factors leading to the collapse. This research was also inspired by the fact that despite the existence of prior studies shows that there exist contextual, conceptual and methodological gaps that need to be filled. Conceptually, prior studies have operationalized financial risk differently as majority have not considered market risk and operating risk which will be considered in this study. Contextually, most of the available studies are on commercial banks and therefore need to investigate if similar findings hold for DT-SACCOs. Methodologically, most of the previous studies have employed ordinary least square to which has its shortcomings when dealing with panel data. The current study employed a panel regression model. The current research was founded on these gaps and attempted to answer the research question; how do risk management practices influence financial performance of deposit taking SACCOs in Kenya?

1.3 Research Objective

To determine the effect of risk management practices on financial performance of deposit-taking SACCOs in Kenya

1.4 Value of the Study

This study's results will contribute to the existing theoretical and empirical literature on risk management practices and financial performance. The findings will also help in theory development as they will offer insights on the shortcomings and relevance

of the current theories to the variables of the study. On the basis of the suggestions for additional research, additional research may also be conducted.

The findings of the research may be helpful to the government and the regulator (SASRA) in creating regulations for the population under investigation. Investors who are interested in the population under research will gain from the research findings because they will be able to learn more about the performance impact of these institutions' intrinsic risk and return tradeoffs.

The findings will aid investors as well as practitioners comprehend the link between the two variables, that is important for ensuring strong management team with diverse viewpoints and competences streamlining operations as well as managing risk management practices, as well as for building confidence among corporate stakeholders, which will ultimately optimize performance.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The theories that underpin risk management practices and financial performance are explained in this chapter. It also reviews the prior empirical research, identifies knowledge gaps, and summarizing with a conceptual framework and hypotheses illustrating the anticipated link between the variables under research.

2.2 Theoretical Framework

This section surveys the theories that underpin the study of risk management practices and financial performance. Theoretical reviews enclosed are financial intermediation theory, liquidity preference theory and operational risk theory.

2.2.1 Financial Intermediation Theory

This theory was proposed by Diamond (1984) and it is the anchor theory. The theory plays a central role in the financial intermediation process particularly among banks to moderate information asymmetry that lies between borrowers and lenders; hence their constant interaction assists lenders in producing credit worthy information to borrowers. Information that is provided gives creditors and loan officers a strong incentive in assessing and appraising credit to those that require it. Modern theories state that the business of financial intermediation is pegged on economic imperfections from 1970s with limited contributions (Jappelli & Pagano, 2006). The existence of the intermediaries is based on their ability to lower transaction and information costs from asymmetries (Tripe, 2003).

The biggest criticism of the financial intermediation theory is its inability to give recognition to the role of lenders in the process of risk management (Levine et al.,

2000). Scholtens and Van Wensveen (2000) stated that they do not recognize credit risk as an important factor in the financial industry and emphasizing the participation costs concept. They suggested future developments in the financial intermediation theory to understand challenges in the financial sector.

The theory is useful in examining the performance of DT-SACCOs as they take a number of risk measurements using modern technology in credit which involves the efficient collection of private details, treating, screening and monitoring borrowers (Jappelli & Pagano, 2006). Financial intermediaries are useful in lowering transactional costs brought about by information asymmetry. They hence play a central role in effective functioning of financial markets. The theory is useful in understanding how risk management practices and performance relate.

2.2.2 Liquidity Preference Theory

This theory was postulated by Keynes in 1936. This theory assumes that an investor demands high interest on investment that have long-term maturities with greater risk, all other factors constant, since investors have a preference for cash or other highly liquid investments. This theory references money demand as measured through liquidity. Liquidity is attached to liquidity risk since investors prefer liquidity, (Nikolaou, 2009). Keynes outlines the liquidity preference theory with respect to three motives that ascertain the demand for liquidity. These three motives are transactions motive, precautionary motive and speculative motive. The transactions motive states that investors have a high demand for liquidity to ensure they have enough cash at hand to cover their short term financial obligations; such that higher living costs lead to higher demand for liquidity to ensure seamless meeting of recurrent short term financial obligations (Edward & Turnbull, 2013).

The critique of the liquidity preference theory is that it assumes a constant employment rate yet in reality the rate of unemployment is always changing, that it assumes a specific income level, that it disregards the variability of interest rates in varying markets at the same time and it disregards individuals' savings (Horne, 2012). Further, Keynes states that according to the precautionary motive, investors have a preference for additional liquidity to act as a contingency to cater for unseen costs that require a substantial money outflow. The speculative motive on the other hand, assumes that investors tend to be reluctant to holding up investment capital in the present due to the fear of missing out on better opportunities in the future. For instance, in situations where there are low interest rates, the demand for cash tends to be relatively high and investors might tend to prefer to hold on investing till the interest rates rise to a level that they deem favourable (Moti et al., 2012).

This theory strives to explain the rationale for holding assets by investors. The theory implies that investors are likely to invest in highly liquid assets and in turn avoid banks with relatively high risk in liquidity by depositing their cash in banks that are highly liquid, which will in turn impact on the profitability of banks. In this study, the liquidity preference theory reinforces the liquidity risk variable.

2.2.3 Operational Risk Theory

This theory was hypothesized by Sparrow (2000). According to this theory, financial institutions adopt different investment models for projection of expected asset profitability and determination of viability of a given investment. Basak and Buffa (2015) define operational risk as the risk associated with implementation of an investment model containing operational errors. Operational risk is categorized into internal operational risk and external operational risk. Operational risk is deemed to

be internal if a financial entity has control over it and is considered external if it is as a result of uncontrollable events for instance, natural disasters and security breaches. In this study, the operational risk theory reinforces the operational risk variable (Ngwu, 2009).

This theory has been critiqued for its assumption that a financial institution can choose the sophistication of the investment model to be utilized, that the more sophisticated a model is the more prone it is to operational errors during implementation, that financial entities adopt the most sophisticated models for external operational risk, that an inverse relationship exists between optimal model sophistication and operational risk, that entities with relatively high internal operational risk are likely to have optimal operational exposure lower than the exposure of entities that have low internal operational risk, that volatility of market exposure is higher in absence of operational risk (Cai & Anjan, 2008).

For purposes of this study, this theory gives the importance of incorporation of operational risk into an ideal framework of decision-making and allocation of assets for banks. This is done by adoption of more sophisticated financial models and strategies that rely on high-tech computer systems by banks to ensure implementation of accurate and profitable investment strategies. However, despite the propositions formulated by the theory, it is worth noting that it does not address the role of agency conflicts in financial entities which might bring about operational risk. These agency conflicts refer to possible conflicts between shareholders and employees of financial entities.

2.3 Determinants of Financial Performance

There are numerous determinants affecting a firm's performance that can be discovered inside or outside the company. Firm-specific internal variables include credit risk management, liquidity risk management, market risk management, operating risk management, asset base and capital adequacy. External factors such as inflation, GDP, political stability, and interest rates might also affect company FP (Athanasoglou et al., 2005).

2.3.1 Credit Risk Management

This indicates a DT-SACCO's asset risk and stability. It estimates the asset quality magnitude among the characteristics that impact banks' health. The value of assets under the control of a DT-SACCO is heavily dependent on credit risk, and the quality of the assets owned by the DT-SACCO heavily relies on specific risks, level of NPLs, and debtors cost to the DT-SACCO. This ratio should be at the lowest level. If lending is susceptible to risk in a well-functioning bank, the indicator in this case would be the applied interest margins. A low ratio shows an insufficient risk cover by the margins (Athanasoglou et al., 2009).

A Sacco's assets primarily consist of a loan portfolio, current as well as fixed assets, and other investments. The quality of assets mostly improves with the age and bank size (Athanasoglou et al., 2005). The primary assets that generate income for Saccos' are loans. The loan portfolio quality hence determines bank performance. Good quality assets reduce losses arising from NPLs, and this subsequently impacts performance (Dang, 2011).

2.3.2 Liquidity Risk Management

Liquidity refers to a company's ability, in this case, a DT-SACCO, to pay its debts that are accrued in a year by using cash and quickly convertible short-lived assets into cash. Therefore, it happens in the event of the capacity to satisfy debt obligations to creditors without liquidating their other assets (Adam & Buckle, 2013).

Insufficient liquid assets, as per Liargovas and Skandalis (2008), make it difficult for businesses to finance their operations and make investments. Companies having this level of liquidity are able to cover unforeseen liabilities and commitments that must be paid. According to Almajali et al. (2012), a bank's liquidity has a significant impact on the loan amounts it can afford to make to customers; as a result, saccos should maintain more liquid assets and less short-term liabilities. A rise in DT-SACCO liquidity, according to Jovanovic (1982), may be detrimental to the companies.

2.3.3 Operating Risk Management

The operating risks facing a firm influence its efficiency. An increase in operating risk which is often assessed as operating expenses to income ratio implies a decline in efficiency as more expenses are being incurred relative to the revenues generated. Management of operating risk is a critical requirement in all firms as failure to address this might lead to bankruptcy as uncontrolled expenses might exceed the revenues generated (Ongore & Kusa, 2013).

Operating risk need to be effectively managed for a firm to achieve the desired level of efficiency as there is a substantial negative impact of the risk on efficiency of firms (Athanasoglou, Sophocles & Matthaois, 2009). Failure to manage operating risk leads to a reduction in gross profit margin which essentially leads to losses. These losses are attributed to low efficiency in converting inputs to outputs (Ongore & Kusa, 2013).

2.3.4 Market Risk Management

Market risk is the risk that is intrinsic to a whole market or portion of the market, (Lelgo & Obwogi, 2018). In this study, market risk was assessed using interest rate gap. Market risk has been informed by Muriithi (2016) in the study that reviewed effect of financial risk on financial performance of listed Kenyan commercial banks. As per Barnor (2014), an unexpected shift in interest rate increases the default rate.

According to Khan and Sattar (2014), depending on how it moves, the interest rate has a positive or negative effect on NPLs. A decrease in depositor interest rates and an increase in spread deter saving. The investment is negatively impacted by a rise in the depositor's interest rate. Because the majority of bank revenues come from interest rate differentials that banks charge and reimburse to depositors, the banking sector is more susceptible to interest rate swings than other industries.

2.3.5 Firm Size

Firm size determines by how much legal as well as financial elements affect a DT-SACCO. Since large companies collect cheap capital and produce huge income, DT-SACCO size is closely linked to capital adequacy (Amato & Burson, 2007). The book value of the bank's total assets is usually used to determine its size. Additionally ROA is positively associated with bank size showing that huge banks can accumulate economies of scale hence reducing operating costs while increasing loan volumes (Amato & Burson, 2007). DT-SACCO size is related to capital rations, according to Magweva and Marime (2016), and profitability rises with size.

Amato and Burson (2007) mentioned that a firm’s size is dependent on the assets owned by the organization. It can be argued that the more the assets owned by a DT-SACCO the more the investments it can make which generate bigger returns

compared to smaller firms with less assets. Additionally, a larger firm can have more collateral which can be used as security for more credit facilities related to smaller ones (Njoroge, 2014). Lee (2009) argued that the assets under control of an entity impacts profitability level of the firm from one period to another.

2.3.6 Capital Adequacy

Also called the capitalization ratio, the adequacy ratio shows how equity and total assets are related. It shows the ability of a bank to remain solvent by regulating risks. Berger and DeYoung (1997) in an investigation showed a negative relation between capital adequacy and performance. In imperfect capital markets, institutions with sufficient capital ought to reduce borrowing to back a specific asset class, hence lowering the predicted bankruptcy costs hence incur less financing costs.

A financial institution with sufficient capital signals the market that a superior performance is to be anticipated. According to the findings of Athanasoglou et al. (2005), capital holdings are positively correlated with bank profitability, demonstrating the financial stability of Greek banks. Berger et al. (1987) a positive causal relationship between capital contributions and profitability was also demonstrated.

2.4 Empirical Review

The link between risk management practices and financial success has been established by local and international studies; the objectives, methods, and results of these earlier studies are examined in this segment.

2.4.1 Global Studies

Al-Rdaydeh, Matar and Alghzwai (2017) examined the impact that credit risk and liquidity risk has on profitability of both conventional and Islamic banks in Jordan.

The proxies for profitability in the study were ROA and ROE whereas liquidity risk and credit risk were the proxies of financial risks. For hypotheses testing, the study used panel data regression. The findings of the study showed that liquidity risk had an insignificant influence on ROE and ROA for both the conventional and Islamic banks in Jordan. The study recommended that banks exercise caution when funding risky ventures so as to losses leading to depletion of resources. The study presents a contextual gap as it was conducted in Jordan. Further some risks such as operating risk and market risk were not considered.

Mogga et al. (2018) examined how CRM utilized by banks in Sudan influenced performance. The context of the study was in Juba on a total of six. The investigation involved the uses of questionnaires in collecting data which was further analyzed via descriptive statistics as well as linear regression. The conclusion was that many of the banks identified with risk identification as a credit risk management process that impacted performance, risk identification has had a minimal impact on performance, while risk analysis and appraisal did not significantly impact bank performance, risk monitoring significantly affected financial showed a substantial impact on performance, and credit approval was also a significant factor. This study focused on only one type of risk.

Gadzo et al. (2019) did an examination of how credit and operational risk impact the performance of Ghanaian banks. Data was obtained from 24 universal banks with no missing variables. Findings demonstrated credit risk is negatively linked to performance compared to prior studies following the information asymmetry assumption of lemon theory. Additionally, operational risk had a negative relation to

performance of the banks. Although the study took into account credit risk, how the risk was managed and its effect on efficiency was not investigated.

Dayasagar (2019) analyzed credit risk practices impact on performance of mahila cooperative banks in Kalaburagi district, India. The objectives were establishing how credit risk identification, analysis, monitoring and reduction impacted the performance of women cooperative banks. Based on the results, credit analysis, mitigation and identification had substantial positive impact on performance. It was hence recommended that women cooperative banks should implement stricter credit analysis techniques and adopt credit-monitoring practices. The research was performed in India whose economic as well as social cultural environment is diverse from Kenya where the current study will be conducted.

Rifqah and Hafinaz (2019) analyzed the connection between a bank's credit risk management (CRM), liquidity, and capital sufficiency concerning its performance in Indonesia. Primary indicators included NIM, ROA, Non-Performing Loan Ratio (NPLR), Loan to Deposit Ratio (LDR), and Capital Adequacy Ratio (CAR). Data from publicly available annual reports of four state-owned banks in the country from 2007 to 2016 was obtained. The analysis was done to find the existence of a relation between the variables. Findings depicted the presence of a significant negative link between the conditional variable (NIM, ROA) and independent variables (NPLR, LDR, CAR). This study operationalized financial risk management as just credit risk without looking at other financial risks.

Orichom and Omeke (2020) examined how capital adequacy, efficiency, CRM and performance of microfinance institutions (MFIs) in Uganda were related with a focus on the agency theory. A cross–sectional was used in examining 64 MFIs in the

country. Correlation and multiple regression were useful in the analysis of the data. Findings showed that CRM improves performance. Hence, credit risk appraisal, monitoring and mitigation were crucial in the achievement of performance of the institutions. The recommendation was that managers should institute risk preventive as well as control methods to lower credit risks and attain positive performance among DT-SACCOs.

Munangi and Sibindi (2020) undertook an empirical analysis on the impact of credit risk on financial performance of banks in South Africa for the period 2008 to 2018. The measure of credit risk for the study were non-performing loans, growth, capital adequacy, size and bank leverage. On the other hand, ROA and ROE were the proxies of financial performance of banks in South Africa. The overall results of the study indicated that credit risk had a negative relationship with financial performance. The study recommended adoption of stringent credit policies so as to reduce the occurrence of non-performing loans. Further, the study recommended enhanced supervision by regulators so as to ensure banks properly manage their credit risk and in turn reduce chances of bank failure due to credit risk.

Moslehpour et al. (2022) investigated impact of financial risks on international financial markets. In order to pinpoint systemic crises, the paper examines how the COVID-19 epidemic has affected both the international and Vietnamese stock markets. The empirical results show that the volatility transmission of systemic risks across the global stock market and different exchanges evolves and becomes more significant over time as the COVID-19's global spread deepens. The worldwide industrial market was broader than the Vietnamese stock market at the time of COVID-19, and the Vietnamese stock market constituted less of a threat to the

international market. A closer look at the relationship between the world stock index and the Vietnam value-at-risk range index sample reveals a significant level of downside risk integration in important monetary systems, especially during the COVID-19 era. The results of this study cannot be generalized because it was conducted in a place with a social and economic structure distinct from Kenya.

2.4.2 Local Studies

Wanjohi, Wanjohi and Ndambiri (2017) the connection between financial risk control and the financial performance of Kenyan banks. The research was based on five years from 2008 to 2012. Primary data were gathered from a variety of bank employees using questionnaires. The information was studied using considerable regression analysis to get results. The study conclusions demonstrated that financial risk management had a positive effect. This research made us of primary data which might not be as objective as secondary data.

Orang'i (2018) examined how CRM impacted the performance of banks in Kenya using a descriptive research design. The study utilized all banks operating between 2013 and 2017. Analysis of the data was done using descriptive statistics, correlation and regression since they are universally approved in descriptive studies. The examination showed that risk identification is insignificant to performance while risk monitoring is positive and significant to performance. This study utilized interval scale due to the nature of its independent variable operationalized while the current study will utilize ratio scale. Further, the study focused on only one aspect of financial risk.

Bwire and Omagwa (2019) scrutinized the association between credit risk and FP of DT SACCOs in Nairobi. The study followed a descriptive design in which data was

obtained from 40 deposit taking SACCOs. The researchers administered Questionnaires to 120 respondents in Nairobi City County using purposive sampling. Credit monitoring had a substantial impact on Sacco's performance. Additionally, it was determined that credit appraisal and credit risk control had a substantial impact on performance. Hence, the conclusion was that credit risk management is critical in the FP of DT SACCOs in Nairobi.

Otanga, Mule and Momanyi (2020) wanted to establish operational risk management effect on financial performance with a particular focus on DT-SACCOs in Western Kenya. A census of the 19 DTSACCOs for the years 2013 to 2017 was chosen using a correlational research design, producing 95 data points. Regression on hierarchical panel data was utilized to analyze the data. The outcomes demonstrate that operational risk management, as assessed by the cost income ratio, significantly negatively affects financial performance. This research just examined one dimension of financial risk, leaving out the other elements.

Gitau (2021) investigated the influence that financial risk had on FP of Dairy cooperatives in Kenya. The research adopted a descriptive panel design in which secondary data was utilized. Census sampling was chosen as a method of obtaining a sample and secondary data from a period spanning ten years from 2009 to2018 obtained. A secondary data collection sheet was used in collecting data that was analyzed via multiple panel regression models. Results depicted that credit management significantly impacted the return on investment, which measured performance of dairy marketing cooperatives tests for significance also indicated that the variables were statistically substantial.

Ochieng (2021) sought to establish financial risk management practices effect on ROA of deposit-taking SACCOs in Nairobi County, Kenya. The 43 DT-SACCOs in Nairobi County, Kenya as at December 2020 served as target population. The study collected secondary data for five years (2016-2020). The multivariate regression analysis revealed that individually, both credit risk and liquidity risk have a negative effect on ROA of DT-SACCOs. Operating risk and interest rate risk displayed non-statistically substantial influence on ROA. The study presents a conceptual gap as market risk management was not taken into account.

Otwoko and Maina (2021) studied the effect of liquidity risk on financial performance of deposit-taking savings and credit cooperative organizations in Kenya. The measures of liquidity risk used in the study were: total deposits ratio, cash position indicator, loans to deposits ratio and capacity ratio. Descriptive survey design was incorporated in the study. In addition, regression methods were employed to analyze the relationship between liquidity risk and financial performance. The findings of the study depicted a statistically significant relationship between liquidity risk and financial performance. Although this study was conducted in the same context like the proposed study, it focused on only one risk.

2.5 Summary of the Literature Review and Research Gaps

Theoretical analyses demonstrated the anticipated link between risk management practices and financial institution FP. Significant FP influencers have been examined. Various preceding research has been conducted on financial risk management and financial performance. However, a number of studies have only addressed the different components of financial risk on an individual basis. For instance, Munangi & Sibindi (2020) researched on credit risk and financial performance. Al-Rdaydeh,

Matar & Alghzwai (2017) researched on liquidity risk and financial performance. Kahihu, Wachira & Muathe (2021) researched on market risk and financial performance. Further, Simamora and Oswari, (2019) researched on operational risk and financial performance. By undertaking the studies of the risks individually, these studies do not recognize the effect that financial risk management has on FP.

Further, from the reviewed studies, it is evident that there exist conceptual, contextual and methodological gaps. Conceptually, prior studies have operationalized financial risk differently as majority have not considered market risk and operating risk which were considered in this study. Contextually, most of the available studies are on commercial banks and therefore need to investigate if similar findings hold for DT-SACCOs. Methodologically, most of the previous studies have employed ordinary least square to which has its shortcomings when dealing with panel data. The current study employed a panel regression model. The current research was founded on these gaps.

2.6 Conceptual Framework

The projected relationship between the variables is depicted in Figure 2.1. The predictor variable was risk management practices given by credit risk, liquidity risk, operating risk and market risk. It is theoretically expected that efficient management of credit risk, liquidity risk, operating risk and market risk will lead to a rise in financial performance of DT-SACCOs in Kenya holding other factors constant. The control variables are firm size and capital adequacy. Larger firms are expected to perform better than small firms due to their ability to utilize economies of scale. Firms with higher capital adequacy are also able to have a higher risk tolerance which can

translate to higher financial performance. Financial performance was the response variable given by ROA.

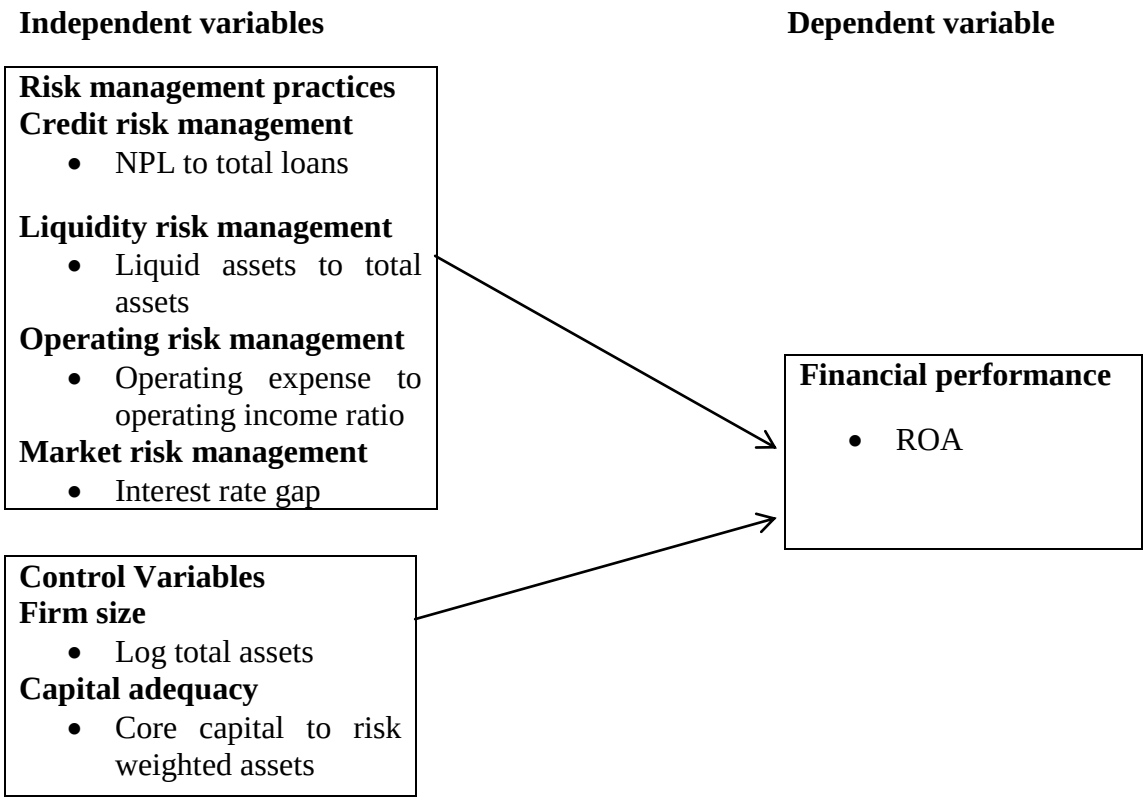

Figure 2.1: The Conceptual Model

Source: Researcher (2022)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter describes the approaches utilized in accomplishing the study objective which was to establish how risk management practices affect financial performance of DT-SACCOs in Kenya. Particularly, the chapter highlights; the design, data collection, as well as analysis.

3.2 Research Design

To ascertain the relationship between risk management practices and DT-SACCOs' financial performance, a descriptive approach was used. This design was suitable since the researcher was particularly interested in the phenomenon nature (Khan, 2008). Additionally, it was adequate for describing how the occurrences are related to one another. Additionally, this design validly and accurately represented the variables, providing satisfactory answers to the research questions (Cooper & Schindler, 2008).

3.3 Population

The study population was the 175 DT-SACCOs in Kenya that are regulated by SASRA as at December 2021 (see appendix I). Because of relatively small population, the study adopted a census technique where all the 175 DT-SACCOs in Kenya were taken into account.

3.4 Data Collection

Secondary data was relied on in this investigation which was extracted from published annual financial statements of the DT-SACCOs from 2017 to 2021 and captured in data collection forms. The five-year period was chosen since it offered the most recent market trends and sufficient data for reliable regression analysis. The reports were

extracted from the SASRA financial publications of the specific DT-SACCOs. The specific data collected included net income, total assets, interest income, other incomes, NPLs, gross outstanding loans, total loans, total assets, net operating income, operating expenses, interest rate sensitive assets, interest rate sensitive liabilities, liquid assets, core capital, risk weighted assets.

3.5 Diagnostic Tests

The linear regression is based on a number of assumptions including linearity, no auto-correlation, no or little multi-collinearity, homoscedasticity and multivariate normality. The diagnostic tests performed are outlined in Table 3.1

Table 3.1: Diagnostic Tests

Test	Meaning	Statistical method	Interpretation	Diagnosis
Autocorrelation	It is as a result of lack independence between residues.	Durbin-Watson statistic	When the test outcomes fall within critical values (1.5<d<2.5) there is no autocorrelation	Correlogram (Auto Correlation Function-ACF plot) Review model specifications
Multicollinearity	How closely related are the independent variables of the study	Variance Inflation Factors (VIF)	VIF less than 10 implies that there is no multicollnearity	Data that was causing Multicollinearity was adjusted using log transformation
Heteroscedasticity	When data lacks similar variance as assumed by standard linear regression model	Breusch Pagan Test Levene Test Normal P-P plots	Data split into high and low value. If data differ significantly, there is an element of heteroscedasticity	Non-linear transformation

Normality Test	When linear regression analysis for all variables is multivariate normal	Goodness of fit test Shapiro-Wilk test	Kolmogorov-Smirnov test prob.> 0.05. If the test is not substantial, the distribution is possibly normal.	Data that had an abnormal distribution was adjusted for using log transformation and non-linear log transformation.
Stationarity	a unit-root test to establish if the data was stationary	Levin-Lin Chu unit root test	A p value less than 0.05 implies that the data is stationary	Robust standard errors were used where data failed the test.

3.6 Data Analysis

To evaluate the data, STATA software version 16 was employed. The results were presented quantitatively in tables and graphs. Measures of central tendency and dispersion were calculated using descriptive statistics, and standard deviation was provided for each variable. Correlation and regression was used in inferential statistics. The size of the relationship between the research variables was determined by correlation, and cause and effect relationships between the variables were determined via regression. The link between the dependent and independent variables was established linearly via a multivariate regression.

3.6.1 Analytical Model

The equation shown below was appropriate:

$$Y= \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \varepsilon$$

Where: Y = Financial performance given by the ratio of net income to total assets on an annual basis

β_0 =y intercept of the regression equation.

β_1, β_2, β_3, β_4, β_5, β_6=are the regression coefficients

X_1 = Credit risk management as measured as the ratio of NPLs to total loans on an annual basis

X_2 = Liquidity risk management as measured by the ratio of liquid assets total assets on an annual basis

X_3 = Operating risk management as measured by the ratio of operating income to operating expenses on an annual basis

X_4 = Market risk management as measured by the ratio of interest rate sensitive assets to interest rate sensitive liabilities on an annual basis

X_5 = Firm size as measured by the natural logarithm of total assets

X_6 = Capital adequacy as given by the ratio of total core capital to risk weighted assets

ε =error term

3.6.2 Tests of Significance

Parametric tests established significance of the overall model and variables. ANOVA was used to do the F-test, which established the model's relevance, and a t-test determined the significance of each individual independent variable.

CHAPTER FOUR: DATA ANALYSIS RESULTS AND FINDINGS

4.1 Introduction

This chapter presents descriptive statistics and the results and interpretations of various tests namely; test of normality, Multicollinearity, heteroskedasticity tests, autocorrelation and stationarity test. The chapter also presents the results of Pearson correlation alongside regression analysis.

4.2 Descriptive Statistics

This section covers the descriptive findings from the collected data. The descriptive results include mean and standard deviation for all the survey variables. The analyzed data was obtained from SASRA also individual DT-SACCOs annual records covering 5 years period (2017 to 2021). The number of observations is 630 (126*5) as 126 DT-SACCOs provided complete data for the 5 year period. Table 4.1 depicts the outcomes

Table 4.1: Descriptive Results

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	630	.0015	.3650	.113229	.0879488
Credit risk	630	.0000	.5700	.090730	.0920292
Liquidity risk	630	1.0237	10.0893	2.272096	1.5307113
Operating risk	630	.0074	3.2957	1.068950	.5399054
market risk	630	.0246	1.1388	.453048	.2231003
Firm size	630	6.0724	8.7303	7.746346	.5724700
Capital adequacy	630	.0227	1.9617	.252046	.2166384
Valid N (listwise)	630				

Source: Field data (2022)

4.3 Diagnostic Tests

As rationalised in chapter three, the scholar undertook a diagnostic tests to ensure there are no violation of the Classic Linear Regression Model (CLRM) assumptions and to obtain the appropriate models for assessing infringement of CLRM hypotheses. Pre-approximation besides post-approximation analyses were carried out before processing regression model. Post-estimation tests incorporates; test for autocorrelation, normality test, test for heteroskedasticity whereas pre- approximation tests undertaken in scenarios like this entails; multicollinearity test plus unit root tests. To refrain from factitious regression results, the survey instituted these analyses.

4.3.1 Normality Test

The normality of data can be tested using a variety of methods. The most commonly relied upon mechanisms entail; skewness, histogram, Shapiro–Wilk test, Q–Q Plot, kurtosis, Kolmogorov–Smirnov test, P–P Plot, box plot, mean including standard deviation. The most extensively utilized normality tests are the Kolmogorov–Smirnov test plus the Shapiro–Wilk test. The Shapiro–Wilk test is better for small sample sizes ($n < 50$ samples), while it can also be used on more extensive samples selections, whereas the Kolmogorov–Smirnov test is better for $n > 50$ samples. As a result, the study used the Kolmogorov–Smirnov test as the numerical method of determining normality. For both of the above tests, the null hypothesis says that the data are obtained from a normally distributed population. The null hypothesis is not accepted if P-value is less than 0.05, and the data are said to be not normally distributed. If any violation of the assumption of normality was detected, necessary correction measures were applied.

Table 4.2: Test for Normality

	Kolmogorov-Smirnov	P-value
ROA	0.869	0.078
Credit risk management	0.918	0.102
Liquidity risk management	0.881	0.094
Operating risk management	0.874	0.091
Market risk management	0.892	0.101
Firm size	0.923	0.120
Capital adequacy	0.874	0.194

Source: Research Findings (2022)

From Table 4.2 results, all the study variables have a p value more than 0.05 and therefore were normally distributed.

4.3.2 Multicollinearity Test

Multicollinearity occurs when there is substantial linkage amidst independent variables in a regression model. Multicollinearity was assessed using the VIF and tolerance indices. When the VIF value is higher than ten and the tolerance score is less than 0.2, multicollinearity is present, and the assumption is broken. The VIF values are less than 10, indicating no problem with multicollinearity.

Table 4.3: Multicollinearity

	Collinearity Statistics	
Variable	**Tolerance**	**VIF**
Credit risk management	0.643	1.555
Liquidity risk management	0.726	1.377
Operating risk management	0.614	1.629
Market risk management	0.693	1.443
Firm size	0.702	1.425
Capital adequacy	0.653	1.531

Source: Research Findings (2022)

4.3.3 Heteroskedasticity Test

The residual variance from the model must be constant and unrelated to the independent variable in linear regression models calculated with the aid of Ordinary Least Squares (OLS) method(s). Homoskedasticity refers to constant variance, whereas heteroscedasticity refers to non-constant variance (Field, 2009). The study used the Breusch-Pagan/Cook-Weisberg test to check if the variation was heteroskedastic. The null hypothesis implies constant variance, indicating that the data is homoscedastic. Table 4.4 highlights the findings.

Table 4.4: Heteroskedasticity Results

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity		
chi2(1)	=	0.7714
Prob > chi2	=	0.5845

Source: Research Findings (2022)

Table 4.4 reveals that there was no rejection of the null hypothesis since the p-value was 0.5845, which was statistically significant (p>0.05). As a result, the dataset had homoskedastic variances. Since the P-values of Breusch-Pagan's test for homogeneity of variances were higher than 0.05. The appraisal thus confirmed homogeneity of variance. The data can therefore be used to conduct panel regression analysis.

4.3.4 Autocorrelation Test

Serial correlation, also known as autocorrelation, makes the standard errors of coefficients appear to be less than in linear panel data models, resulting in higher R-squared and erroneous hypothesis testing Autocorrelation was tested using Durbin-Watson test. Error terms of regression variables are uncorrelated if Durbin-Watson test is equivalent to 2 (i.e. between 1 and 3). The closer the value to 2 is; the better. The outcomes are displayed in Table 4.5.

Table 4.5: Test of Autocorrelation

Durbin Watson Statistic
2.342

Source: Research Findings (2022)

The findings depicted in Table 4.7 prove that the Durbin-Watson statistic was 2.342. This shows that the error terms of regression variables are uncorrelated as the Durbin-Watson statistic was close to 2.

4.3.5 Stationarity Test

The research variables were subjected to a panel data unit-root test aiming at identifying any stationarity in the datum. Levin-Lin Chu unit root test was utilized. At a standard statistical significance level of 5%, the test was compared to their corresponding p-values. In this test, the null hypothesis shows every panel has a unit root, and the alternative hypothesis is that at least one panel is stationary. The outcomes of Levin-Lin Chu unit root test are presented in Table 4.6.

Table 4.6: Levin-Lin Chu unit-root test

Levin-Lin Chu unit-root test			
Variable	**Statistic**	**p value**	**Verdict**
ROA	6.4296	0.0000	Stationary
Credit risk management	6.3653	0.0000	Stationary
Liquidity risk management	6.8914	0.0000	Stationary
Operating risk management	7.3857	0.0000	Stationary
Market risk management	6.9164	0.0000	Stationary
Firm size	8.0266	0.0000	Stationary
Capital adequacy	6.4806	0.0000	Stationary

Source: Research Findings (2022)

As demonstrated in Table 4.6, this test concludes that there stationarity of data at a 5% level of statistical substantiality since the p-values all fall below 0.05.

4.4 Correlation Results

The strength besides direction of correlation amidst each predictor variable as well as the response variable was assessed via correlation analysis. Summary of the findings are in Table 4.7.

Table 4.7: Correlation Results

	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
ROA	1						
Credit risk	-.582** .000	1					
Liquidity risk	-.596** .000	-.140 .057	1				
Operating risk	.036 .092	-.234** .001	-.146* .048	1			
Market risk	.085 .421	-.057 .441	.046 .534	.184* .012	1		
Firm size	.585** .000	-.049 .508	.114 .124	-.113 .126	.155* .036	1	
Capital adequacy	.498** .000	-.147* .046	-.545** .000	.268** .000	-.034 .643	-.174* .018	1

Source: Research Findings (2022)

The conclusions relating to the nature of correlation amidst the survey variables in regarding the strength plus direction are highlighted in Table 4.7. The outcomes disclose that credit risk and ROA have an adverse as well as substantial correlation (r=-0.582) at 5 % significance level. Liquidity risk alongside ROA were notably and adversely correlated (r=-0.596) with a significance level of 5%. The results also reveal that operating risk and interest rate risk have insignificant but positive linkage to ROA with a significance level of 5%. Both capital adequacy and size showed positivity as well as significant relation with ROA as depicted by p values below 0.05.

4.5 Regression Results

To determine the extent to which ROA is described by the chosen variables, regression analysis was used. In Table 4.9, the regression's findings were displayed. From the conclusions as epitomized by the adjusted R^2, the studied independent variables explained variations of 0.5304 in ROA among DT-SACCOs in Kenya. This suggests that other factors account for 46.96% of the variability in ROA among DT-SACCOs in Kenya, while the six variables account for 53.04% of those variations.

The data had a 0.000 significance level, according to Table 4.8 ANOVA results, which suggests that the model is the best choice for drawing conclusions about the variables.

Table 4.8: Regression Results

ROA	Coef.	Std. Err.	P>t
Credit risk management	-0.1596*	0.011	0.0000
Liquidity risk management	-0.1632*	0.025	0.0000
Operating risk management	0.0213	0.037	0.2371
Market risk management	-0.0283	0.036	0.2154
Firm size	0.6852*	0.031	0.0000
Capital adequacy	0.8561*	0.014	0.0000
_cons	0.4701*	0.027	0.0000
Model Summary			
R-squared	0.5304		
F(6, 623)	62.90		
Prob > F	0.0000		
Observations	630		
ID	126		

* $p<0.05$

Source: Research Findings (2022)

The coefficient of regression model was as below;

$$\mathbf{Y = 0.4701 - 0.1596X_1 - 0.1632X_2 + 0.6852X_3 + 0.8561X_4}$$

Where:

Y = ROA X_1 = Credit risk; X_2=Liquidity risk X_3= Capital adequacy; X_4 = MFI size

4.6 Discussion of Research Findings

This research's agenda was to determine the influence of financial risk on ROA of Kenya's DT-SACCOs. A descriptive design was utilized during the survey and a population of 175 DT-SACCOs in Kenya. Complete data was obtained from 126 DT-SACCOs in Kenya and which were considered adequate for regression analysis. The research utilized secondary data retrieved from SASRA as well as individual MFI yearly records. The particular variables of financial risk under consideration entailed; credit risk, liquidity risk, operating risk plus market risk. The control variables were firm size and capital adequacy. Both descriptive along with inferential statistics were useful during data analyses. The outcomes are expounded in this section.

Multivariate regression outcomes revealed that the R square was 0.5304 implying 53.04% of changes in ROA of DT-SACCOs are due to the six variables alterations selected for this study. This means that variables not considered explain 46.96% of changes in ROA. The entire model was also statistically notable since the p value was 0.000 which is less than the significance level of 0.05. This implies that the overall model had the required goodness of fit.

The multivariate regression analysis further revealed that individually, both the liquidity risk management plus credit risk management have an adverse influence towards ROA of DT-SACCOs as shown by (β=-0.1632, p=0.000) and (β=-0.1596, p=0.000) respectively. Operating risk and interest rate risk showed non statistical significance although positive effect on ROA. The control variables which were

capital adequacy and entity size exhibited a notable positive ROA impact as shown by (β=0.6852, p=0.000) and (β=0.8561, p=0.000) respectively.

The outcomes agree with those of Ochieng (2021) who sought to establish financial risk management practices effect on ROA of DT-SACCOs in Nairobi County, Kenya. The 43 DT-SACCOs in Kenya as at December 2020 served as target population. The study collected secondary data for five years (2016-2020). The multivariate regression analysis revealed that individually, both credit in addition to liquidity risk are negatively affecting the ROA of DT-SACCOs. Operating risk and interest rate risk displayed non-statistically substantial influence on ROA.

The research findings also concur with Gadzo et al. (2019) who did an examination of how the performance of Ghanaian banks is influenced by credit besides operational risk. The source of data was 24 universal banks with no missing attributes. Results demonstrated presence of adverse nexus amid credit risk and performance in comparison with previous surveys following the information asymmetry assumption of lemon theory. Furthermore, there was an adverse correlation among operational risk and banks performance.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The core agenda of conducting this survey was to determine how financial risk influences the financial performance of Kenyan DT-SACCOs. The summary of the findings from the prior chapter is in this section, including the conclusions also limitations of the research. Also, it recommends policies which could be useful to policymakers. Additionally, the chapter highlights recommendations applicable in future researches.

5.2 Summary of Findings

The objective of this survey was evaluating how ROA of Kenyan DT-SACCOs is influenced by risk management practices. Market risk, liquidity risk, capital adequacy, credit risk, company size and operating risk are the opted attributes under probe. The survey made use of a descriptive research model. SASRA reports were the source of secondary data which was analyzed via STATA. A five year (2017-2021) data was collated from annual reports of 126 DT-SACCOs.

The correlation results disclose that credit risk and ROA have an adverse as well as substantial correlation at 5 % significance level. Liquidity risk alongside ROA was notably and adversely correlated with a significance level of 5%. The results also reveal that operating risk and interest rate risk have insignificant but positive linkage to ROA with a significance level of 5%. Both capital adequacy and size showed positivity as well as significant relation with ROA as depicted by p values below 0.05.

Multivariate regression outcomes revealed that the R square was 0.5304 implying 53.04% of changes in ROA of DT-SACCOs are due to the six variables alterations

selected for this study. This means that variables not considered explain 46.96% of changes in ROA. The entire model was also statistically notable since the p value was 0.000 which is less than the significance level of 0.05. This implies that the overall model had the required goodness of fit.

The multivariate regression analysis further revealed that individually, both the liquidity risk management plus credit risk management have an adverse influence towards ROA of DT-SACCOs as shown by (β=-0.1632, p=0.000) and (β=-0.1596, p=0.000) respectively. Operating risk and interest rate risk showed non statistical significance although positive effect on ROA. The control variables which were capital adequacy and entity size exhibited a notable positive ROA impact as shown by (β=0.6852, p=0.000) and (β=0.8561, p=0.000) respectively.

5.3 Conclusions

The intention of the research was in identifying the correlation among risk management practices and ROA of DT-SACCOs in Kenya. The findings indicated that credit risk showed an adverse in addition to substantial effect on ROA. This may imply that DT-SACCOs with high credit risk have low levels of ROA. Credit risk management is therefore necessarily to achieve the targeted performance.

Additionally, the outcomes unveiled that liquidity risk and ROA are negatively and significantly linked. This suggests that entities with low levels of liquid assets compared to their assets end up having a lower ROA. This can be explained by the inability of illiquid firms to benefit from investment opportunities when they occur. Additionally, the survey unveiled that operating risk and market risk positively affects the ROA although not substantially.

The study conclusions revealed that capital adequacy and ROA are significantly and positively correlated. This may mean that the DT-SACCOs that have adequate capital are capable of paying their financial liabilities when they fall due and are also capable of benefitting from investment opportunities that might arise in the course of doing business and therefore high levels of ROA compared with firms that has less capital adequacy.

The research outcomes further depicted that firm size had a notable positive correlation with ROA which might mean that an increase in asset base of a DT-SACCO leads to enhanced ROA. This is explainable by the fact that bigger DT-SACCOs are likely to have developed structures to monitor the internal operations of a firm leading to better ROA. Bigger DT-SACCOs are also likely to have better governance structure which can also explain the high ROA associated with firm size.

5.4 Recommendations for Policy and Practice

According to the results of the survey, the ROA is negatively and significantly affected by financial risk. Thus, the survey suggests to managers of DT-SACCOs to minimize the levels of NPLs. This is attainable by inventing suitable credit risk management techniques which will help the DT-SACCOs distinguish good borrowers from bad borrowers.

Moreover, liquidity risk was discovered to possess a negative and notable impact on ROA. Henceforth, the research commends that management of DT-SACCOs in Kenya ought to ensure that they do not over commit their assets by giving excess loans as this will likely lead to reduced ROA. The DT-SACCOs should come up with effective liquidity risk management strategies. Regulators should ensure that the DT-SACCOs do not led beyond a certain set limit of their asset base.

From the study findings, capital adequacy was found to enhance ROA of DT-SACCOs, this study recommends that DT-SACCOs should keep adequate capital levels to sustain their obligations when they fall due whereas simultaneously time enjoying short term investment chances which may arise. The policy makers should set a limit of the capital adequacy level that DT-SACCOs should have as too much capital adequacy is also disadvantageous as it comes with opportunity costs.

5.5 Limitations of the Study

The focus was on various attributes which are considered to influence ROA of Kenya's DT-SACCOs. Particularly, the survey paid attention to six explanatory attributes. Although, in certainty, there is presence of other variables probable to influence ROA of firms including internal ones like corporate governance attributes and internal controls whereas others are beyond the control of the firm like interest rates as well as political stability.

The research covered duration of 5 years, that is, from 2017 to 2021. The findings of a longer duration have not been proved to remain the same. Moreover, beyond 2021 the same findings cannot be proved whether it will hold. The longer the duration covered the more reliable the results are due to inclusion of circumstances of vital economic shifts for instance recessions in addition to booming.

The data quality was the main restriction for this research. It is impossible to conclusively conclude that the study's findings accurately reflect the current reality. It was presumed that figures utilized in the research are accurate. Due to the current conditions, there has also been a great deal of incoherence in the data measurement. The research used secondary data rather than primary data. Due to the limited availability of data, only some of the performance drivers have been considered.

The data analysis was performed using regression models. Due to restrictions associated with using the model, like inaccurate findings resultant from changes from the varying value, the researchers are not be able to generalize the conclusions precisely. A regression model cannot be performed using the prior model after data is added to it.

5.6 Suggestions for Further Research

This survey paid attention to DT-SACCOs in Kenya. More researches can focus on a wide scope by covering other SACCOs in Kenya to back or criticize the results of the current study. Further, this study focused on four measures namely; operating risk, liquidity risk, market risk together with credit risk. Future studies should focus on other risk management measures that were not considered in this study.

The research only used secondary data; alternate research may use primary data sources such in-depth questionnaires and structured interviews given to practitioners and stakeholders. These can then affirm or criticize the results of the current research. The research used multiple linear regression and correlation study; future research could use other analytic techniques such factor analysis, cluster analysis, granger causality, discriminant analysis, and descriptive statistics, among others.

The availability of data was a limiting factor forcing the investigation to focus on the last five years. Moreover, in order to be able to validate the additional data, the investigation ought to use a broader range of data. Also, it was restricted to only DT-SACCOs instituted in Kenya. Further investigations should be conducted involving other establishments.

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APPENDICES

Appendix I: DT-SACCOs in Kenya

1) NK Sacco Society Ltd
2) Acumen Sacco Society Ltd
3) Afya Sacco Society Ltd
4) Agro-Chem Sacco Society Ltd
5) Ainabkoi Sacco Society Ltd
6) Airports Sacco Society Ltd
7) Amica Sacco Society Ltd
8) Ammar Sacco Society Ltd
9) Ardhi Sacco Society Ltd
10) Asili Sacco Society Ltd
11) Azima Sacco Society Ltd
12) Bandari Sacco Society Ltd
13) Baraka Sacco Society Ltd
14) Baraton University Sacco Society Ltd
15) Biashara Sacco Society Ltd
16) Biashara Tosha Sacco Society Ltd
17) Bi-High Sacco Society Ltd
18) Bingwa Sacco Society Ltd
19) Boresha Sacco Society Ltd
20) Capital Sacco Society Ltd
21) Centenary Sacco Society Ltd
22) Chai Sacco Society Ltd
23) Chuna Sacco Society Ltd

24) Comoco Sacco Society Ltd

25) Cosmopolitan Sacco Society Ltd

26) County Sacco Society Ltd

27) Daima Sacco Society Ltd

28) Dhabiti Sacco Society Ltd

29) Dimkes Sacco Society Ltd

30) Dumisha Sacco Society Ltd

31) Eco-Pillar Sacco Society Ltd

32) Egerton Sacco Society Ltd

33) Elimu Sacco Society Ltd

34) Enea Sacco Society Ltd

35) Faridi Sacco Society Ltd

36) Fariji Sacco Society Ltd

37) Fortitude Sacco Society Ltd

38) Fortune Sacco Society Ltd

39) Fundilima Sacco Society Ltd

40) GDC Sacco Society Ltd

41) Golden Pillar Sacco Society Ltd

42) Good Faith Sacco Society Ltd

43) Goodhope Sacco Society Ltd

44) Goodway Sacco Society Ltd

45) Gusii Mwalimu Sacco Society Ltd

46) Harambee Sacco Society Ltd

47) Hazina Sacco Society Ltd

48) Ilkisonko Sacco Society Ltd

49) Imarika Sacco Society Ltd

50) Imarisha Sacco Society Ltd

51) Invest and Grow (IG) Sacco Society Ltd

52) Jacaranda Sacco Society Ltd

53) Jamii Sacco Society Ltd

54) Jitegemee Sacco Society Ltd

55) Joinas Sacco Society Ltd

56) Jumuika Sacco Society Ltd

57) Kencream Sacco Society Ltd

58) Kenpipe Sacco Society Ltd

59) Kenversity Sacco Society Ltd

60) Kenya Achievas Sacco Society Ltd

61) Kenya Bankers Sacco Society Ltd

62) Kenya Highlands Sacco Society Ltd

63) Kenya Midland Sacco Society Ltd

64) Kenya Police Sacco Society Ltd

65) Kimbilio Daima Sacco Society Ltd

66) Kimisitu Sacco Society Ltd

67) Kingdom Sacco Society Ltd

68) Kipsigis Edis Sacco Society Ltd

69) Kite Sacco Society Ltd

70) Kitui Teachers Sacco Society Ltd

71) Kolenge Tea Sacco Society Ltd

72) Koru Sacco Society Ltd

73) K-Pillar Sacco Society Ltd

74) K -Unity Sacco Society Ltd

75) Kwetu Sacco Society Ltd

76) Lainisha Sacco Society Ltd

77) Lamu Teachers Sacco Society Ltd

78) Lengo Sacco Society Ltd

79) Mafanikio Sacco Society Ltd

80) Magadi Sacco Society Ltd

81) Magereza Sacco Society Ltd

82) Maisha Bora Sacco Society Ltd

83) Mentor Sacco Society Ltd

84) Metropolitan National Sacco Society Ltd

85) MMH Sacco Society Ltd

86) Mombasa Port Sacco Society Ltd

87) Mudete Factory Tea Growers Sacco Society Ltd

88) Muki Sacco Society Ltd

89) Mwalimu National Sacco Society Ltd

90) Mwietheri Sacco Society Ltd

91) Mwito Sacco Society Ltd

92) Nacico Sacco Society Ltd

93) Nafaka Sacco Society Ltd

94) Nandi Farmers Sacco

95) Nanyuki Equator Sacco Society Ltd

96) Nation Sacco Society Ltd

97) Nawiri Sacco Society Ltd

98) Ndege Chai Sacco Society Ltd

99) Ndosha Sacco Society Ltd

100) New Forties Sacco Society Ltd

101) Nexus Sacco Society Ltd

102) Ng'arisha Sacco Society Ltd

103) Noble Sacco Society Ltd

104) NRS Sacco Society Ltd

105) NSSF Sacco Society Ltd

106) Nufaika Sacco Society Ltd

107) Nyala Vision Sacco Society Ltd

108) Nyambene Arimi Sacco Society Ltd

109) Nyamira Tea Farmers Sacco Society Ltd

110) Nyati Sacco Society Ltd

111) Ollin Sacco Society Ltd

112) Orient Sacco Society Ltd

113) Patnas Sacco Society Ltd

114) Prime Time Sacco

115) PUAN Sacco Society Ltd

116) Qwetu Sacco Society Ltd

117) Rachuonyo Teachers Sacco Society Ltd

118) Safaricom Sacco Society Ltd

119) Sheria Sacco Society Ltd

120) Shirika Deposit Taking Sacco Society Ltd

121) Shoppers Sacco Society Ltd

122) Simba Chai Sacco Society Ltd

123) Siraji Sacco Society Ltd

124) Skyline Sacco Society Ltd

125) Smart Champions Sacco Society Ltd

126) Smart - Life Sacco Society Ltd

127) Solution Sacco Society Ltd

128) Sotico Sacco Society Ltd

129) Southern Star Sacco Society Ltd

130) Stake Kenya Sacco Society Ltd

131) Stawisha Sacco Society Ltd

132) Stima Sacco Society Ltd

133) Suluhu Sacco Society Ltd

134) Supa Sacco Society Ltd

135) Tabasamu Sacco Society Ltd

136) Tabasuri Sacco Society Ltd

137) Tai Sacco Society Ltd

138) Taifa Sacco Society Ltd

139) Taqwa Sacco Society Ltd

140) Taraji Sacco Society Ltd

141) Telepost Sacco Society Ltd

142) Tembo Sacco Society Ltd

143) Tenhos Sacco Society Ltd

144) Thamani Sacco Society Ltd

145) The Apple Sacco Society Ltd

146) Times-U Sacco Society Ltd

147) Tower Sacco Society Ltd

148) Trans-Elite County Sacco Society Ltd

149) Trans Nation Sacco Society Ltd

150) Trans-Counties Sacco Society Ltd

151) Trans-National Times Sacco Society Ltd

152) Uchongaji Sacco Society Ltd

153) Ufanisi Sacco Society Ltd

154) Ukristo na Ufanisi wa Anglican Sacco Society Ltd

155) Ukulima Sacco Society Ltd

156) Unaitas Sacco Society Ltd

157) Uni-County Sacco Society Ltd

158) Unison Sacco Society Ltd

159) United Nations Sacco Society Ltd

160) Universal Traders Sacco Society Ltd

161) Ushuru Sacco Society Ltd

162) Vihiga County Farmers Sacco Society Ltd

163) Viktas Sacco Society Ltd

164) Vision Africa Sacco Society Ltd

165) Vision Point Sacco Society Ltd

166) Wakenya Pamoja Sacco Society Ltd

167) Wakulima Commercial Sacco Society Ltd

168) Wana-anga Sacco Society Ltd

169) Wananchi Sacco Society Ltd

170) Wanandege Sacco Society Ltd

171) Washa Sacco Society Ltd

172) Waumini Sacco Society Ltd

173) Wevarsity Sacco Society Ltd

174) Winas Sacco Society Ltd

175) Yetu Sacco Society Ltd

Source: SASRA (2021)

Appendix II: Data Collection Instrument

Year	Net income	Total assets	Total loans	NPL	Operating income	Operating expense	Interest sensitive assets	Interest sensitive liabilities	Liquid assets	Core capital	Risk weighted assets
2017											
2018											
2019											
2020											
2021											