

**EFFECT OF CAPITAL ADEQUACY ON THE FINANCIAL  
PERFORMANCE OF DEPOSIT TAKING SAVINGS AND CREDIT  
SOCIETIES IN MERU COUNTY, KENYA**

**BY  
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## DECLARATION

This research project is my original work and has never been presented in any other university/institution for examination.

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

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## **DEDICATION**

I would like to dedicate this research project to my family, siblings and friends who gave me tremendous financial and emotional support during the course of study.

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## ABSTRACT

Savings and Credit Cooperatives are financial institutions formed to enhance the economic well-being of their members by mobilising savings and granting loans. According to a report published by the World Cooperative Monitor by the year 2017, there were more than 1.2 billion persons globally who belonged to one of the 3 million co-operatives in the world. Kenya has one of the largest SACCO movements in the world with the members mobilising more than Kshs. 400billion in savings which are approximately 33% of the national savings. Over the years the Savings and Credit Cooperatives have expanded significantly and have even started offering front offices services. As the significance of the cooperatives has grown so have the risks associated with their failure. Due to the risk posed by the possible failure of these cooperatives to the economy, the government through the Savings and Cooperatives Act of 2008 and subsequent regulations have made an effort to regulate these cooperatives. The purpose of this research project was to investigate the effect of capital adequacy requirements on the financial performance of deposit-taking savings and credit cooperatives in Meru County, Kenya. The study was anchored on the propositions put forward in the Anticipated Income Hypothesis, Capital Buffer Theory, and Moral Hazards Theory. The study used non-experimental research design. The study used secondary data collected from the audited annual financial statements of the 14 deposit-taking savings and credit cooperatives in Meru County, Kenya. The study used panel data regression analysis to evaluate the effect of the dependent variables on the independent variables. The regression equation was estimated using STATA 14.0 software. The study established that the ratio of core capital to total assets had a negative and statistically significant effect on return on assets. The study determined that the ratio of core capital to total deposits had a negative but statistically insignificant effect on return on assets. The study established that the ratio of institutional capital to total assets and size had a positive and statistically significant effect on the return on assets. The study recommended that the statutory level of core capital required should be reduced as it was impairing the financial performance of the firms.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

According to the World Cooperative Monitor (2017), more than 1.2 billion persons globally belong to one of the 3 million co-operatives in the world. In 2017, the 300 largest cooperatives reported a total turnover of \$ 2.2 billion (International Cooperatives Alliance, 2018). Typically, SACCOs are constituted by a minimum of 10 persons and have no maximum number of members who are referred to as the shareholders. Membership is acquired through the purchase of shares (Empower, 2018). Aside from purchasing shares, the members save their money with the SACCO on which interests are earned and loans can be advanced. The Co-operatives are managed democratically, whereby each member has one vote regardless of the numbers of shares or value of savings (International Cooperatives Alliance, 2018). There are two broad categories of co-operatives firstly there are the non-financial co-operatives (members come together to pull their resources in certain areas for example agricultural cooperatives, workers cooperatives) and financial co-operatives (they are commonly referred to as credit unions or savings and credit cooperative societies depending on the region of the world they operate in).

Typically, SACCOs offer better and cheaper services to their members as compared to the conventional banks (Wanyama, Develtere, & Pollet, 2009). Kenya has one of the largest SACCO movements in the world with the members mobilising more than Kshs. 400 billion in savings which are approximately 33% of the national savings (Kenya Union of Savings and Credit Cooperatives (KUSCO), 2018). In its economic blueprint titled Kenya Vision

2030, the government of Kenya indicates that SACCOs are an engine to attaining economic success and sustained growth in the country (Republic of Kenya, 2007).

In Kenya, the SACCOs are divided into two categories namely Deposit Taking SACCOs (DTSS) and non-deposit taking SACCOs. In the SACCO Societies Act, DTSS are defined as businesses that hold and accept deposit on a day to day basis; and lend and/or extend credit at the risk of the entity accepting the deposit including the provision of short-term loans to members (Republic of Kenya, 2008). The non-deposit taking SACCOs do not accept handle demand deposits from its members (Republic of Kenya, 2008). The DTSS are supervised by SACCO Societies Regulatory Authority (SASRA) while the non-deposit taking SACCOs are supervised by the commissioner of cooperatives (SASRA, 2010).

In Kenya, the DTSS have shown robust performances over the years. In 2017, these SACCOs had a total asset base of Kshs 442.27 billion which was an increase of 11% of the value of 393.49 billion reported in 2016. Similarly, the deposits generated by members were Kshs 305.30 billion which was 12% increase from the Kshs. 272.57 billion reported in 2016 (SASRA, 2018). The total loan and advances were 320.49 billion in 2017 which was an increase of 10.93% from Kshs 288.92 billion registered in 2016 (SASRA, 2018).

### **1.1.1 Financial Performance**

Financial performance is a measure of how effectively and efficiently a firm is utilising its resources and assets (Okoye et al., 2017). The financial performance is usually evaluated using parameters such as profits, sales, return on assets, return on equity, ability to sustain previous period performance, extension of branches to the grass root, automation of services, net profits after tax ratios, percentage of credit in the credit market, return on

capital employed, share price, and enhancement of employee performance (Okoye et al., 2017).

Financial performance is important as it signals the efficient use of resources and the ability of the firm to make profits. Financial performance of financial institutions is important to depositors, creditors, shareholders, management, and the government (Aymen, 2013). For the depositors the financial performance indicates the returns generated from the funds deposited; for the creditors it is an indication of the firm's ability to meet its financial obligations as and when they fall due; for the government it is an indication of the firm's ability to pay taxes; and for the shareholders the financial performance is an indicator of the ability of their investment in the firm to bear return (Aymen, 2013). The financial performance as represented by profitability by financial institutions has effects on the macroeconomic and microeconomic levels. At the macroeconomic level the financial performance of the financial sector indicates prospects for economic growth while at the microeconomic level the financial performance is essential for the growth and expansion of all types of firms (Flamini, McDonald, & Schumacher, 2009).

### **1.1.2 Capital Adequacy**

Capital plays an important role in maintaining the safety and sustainability of the financial institutions and the financial sector as a whole (Almazari & Alamri, 2017). The capital base of a financial institution is the barrier that prevents any disruption in business due to losses that were not anticipated which would expose the depositors' money (Aymen, 2013). This is essential given that banks operate in an environment of high degree of uncertainty and risks. Financial institutions face expected losses whose frequency and timing of

occurrence can be determined thus have little effect as the institutions can mitigate against them. Financial institutions also face unexpected losses whose occurrence and frequency are not known but the impact is usually large (Almazari & Alamri, 2017). In order to mitigate against this losses, the regulatory authorities monitor capitaladequacy levels of financialinstitutions.

Capitaladequacy refers to the amount of capital held in reserve relative to the financial institution's loans and other assets (Federal Reserve Board, 2007). Capital adequacy is the most important element for the stability and sustainability of financial institutions (Ongore, 2012). When a deposit-taking institution lends more than the deposit held, the institution is said to be negatively capitalised. Such a situation can lead the deposit-taking institution to go into bankruptcy (Drumond, 2009). Capital adequacy is determined using different variables including the log of totalassets (LTA), loanlossprovisions to total loans, loans to total assets, tax to operating profit before tax, overhead expenses to total assets, non-interestincometotalassets, total revenue to totalnumberofemployees and shareholders' equity to total assets (Otwani, Namusonga, & Nambuswa, 2017).

In order to address challenges of banking supervision around the world, the Basel Committee on Banking Supervision (BCBS) was founded in 1974 (Bank of International Settlements (BIS), 2018). The BCBS monitors the strength of banking institutions across the globe in order to assess their risk management status (BIS, 2018). In order to standardise banking operations and ensure stability, the BCBS formulated various accord Basel I in 1988; Basel II in 2004; and Basel III in 2010 (Slovik & Cournéde, 2011). The Basel accords were developed with banks in mind but have been applied when forming capital standards for SACCO industry (Sant & Schroeder, 2011). Specifically, the accords

are applied when establishing the minimum capital standards based on risk-weighted capital (Sant & Schroeder, 2011).

In 2008, the SACCO Societies Act was enacted and auxiliary legislation The SACCO Societies and Deposit Taking SACCO Business Regulation was enacted in 2010 (Republic of Kenya, 2008; 2010). Section 9 of the SACCO Societies (Deposit Taking SACCO Business) Regulations 2010 requires that DTSS should maintain capital adequacy that consists of core capital of not less than ten millions shillings; core capital of not less than ten percent of total assets; institutional capital of not less than eight percent of total assets; and core capital of not less than eight percent of total deposits (Republic of Kenya, 2010). The aim of the regulations is to address four key issues that face the DTSS including access, efficiency, stability, and consumer protection (SASRA, 2013). These four factors are crucial for the development and expansion of the SACCOs and for ensuring that they meet the needs of their individual members.

According to the SACCO Societies Act of 2008, the capital of SACCOs consists of members' shares, capital issued, disclosed reserves, retained earnings, grants and donation (Republic of Kenya, 2008). The capital of a SACCO can only be used when the society is being wound-up (Republic of Kenya, 2008). The requirement for capital adequacy for DTSS is to ensure that they maintain levels of capital which are sufficient to protect or cushion the deposits of the members and creditors due to risks associated with their everyday business (Barus, Muturi, Kibati, & Koima, 2017). When determining the soundness of DTSS in Kenya, the regulatory authority SASRA takes into consideration the capital adequacy, liquidity, earnings levels, asset quality (SASRA, 2018).

In 2010 the government introduced legislation to regulate SACCO because the organisations had grown significantly, were handling a significant portion of savings and credit in the country, and were significant contributors to the economy of Kenya (Njeri, 2017). Additionally, the SACCOs began to expand their services and started providing banking like services through Front Office Service Activity (FOSA). The aim of FOSAs was to increase efficiency and access but instead lead to liquidity challenges, inappropriate credit management, and mismatch of capital reserves and assets (Kioko, 2016). As the SACCOs increased their business profiles they began to take up risks which were traditionally associated with conventional banks (Saunders & Cornett, 2011). The SACCOs like commercial banks are susceptible to credit risks, liquidity risk, investment risk, systematic risks, legal risks, strategic risks, and reputational risks (Saunders & Cornett, 2011). However, the most significant risk faced by SACCOs is credit risk because of the model of doing business. The SACCOs advance loans based on the individual member's guarantees or guarantees by other members (Kahuthu, 2016).

In 2015, there were 181 SACCOs licensed to conduct deposit-taking SACCO business in Kenya. However, five of these DTSSs were under restricted licenses (SASRA, 2016). In 2017 176 SACCOs were licensed to conduct deposit-taking Sacco business in Kenya of which twelve of these were under restricted licenses (SASRA 2018). This decline was attributed to non-compliance with SASRA regulations. Data published by SASRA (2017) indicated that the number of DTSSs that had a core capital of less than Kshs 5 million had increased by four from the previous level in 2015. The inability to maintain the stipulated level of core capital is considered to be an increase in the level of weakness in the sub-



sector. In order to protect the shareholders, SASRA subjects the non-compliant DTSs to stringent conditional licensing restrictions (SASRA, 2018).

### **1.1.3 Capital Adequacy and Financial Performance**

Numerous studies have been conducted to establish the relationship between capital adequacy and financial performance of financial institutions in different countries. Vong and Chan (2009) found that the capital strength of a bank is the main determinant of a bank's profitability. The findings of Scott and Arias (2011) established that capital to asset ratio has a significant impact on the profitability of banks in the United States. Similarly, Kosmidou (2008), Saona (2011), and Rahman and Farati (2012) found that capital adequacy has a positive effect on the profitability of financial institutions. Ali (2016) established that in Jordanian commercial banks there was a positive association between capital adequacy and profitability.

The empirical findings of Dore (2013) indicate that capital adequacy has a negative effect on the profitability of banks. The findings of Dore (2013) were collaborated by Rufo and John (2017). The study by Rufo and John (2017) in the Philippines found that capital adequacy had no significant impact on bank profitability. Similarly, Somoye (2008) and Osuka and Richard (2013) found that assets quality which are components of capital adequacy have no link with financial performance. In Kenya, the results of studies of the effect of capital adequacy requirements have been mixed. Odunga et al., (2013) established that capital adequacy had a negative effect on the financial performance on DTSs in Kenya. However, these findings were contradicted by Barus, Muturi, Kibati, and Koima (2017)

who found that capital adequacy had a positive effect on the financial performance of DTSSs.

#### **1.1.4 Deposit Taking SACCOs in Meru County**

According to SASRA (2018), there are fourteen deposit-taking SACCOs in Meru County. They include Capital Sacco Society Ltd, Centenary Sacco Society Ltd, Imenti Sacco Society Ltd, Dhabiti Sacco Society Ltd, MMH Sacco Society Ltd, Nexus Sacco Society Ltd, Nyambere Arimi Sacco Society Ltd, Smart Champions Sacco Society Ltd, Solutions Sacco Society Ltd, Southern Star Sacco Society Ltd, Times U Sacco Society Ltd, Ndosha Sacco Society, Siraji Sacco Society, and Yetu Sacco Society Ltd. In previous years, DTSSs were formed along common bond from where they drew their names (farmers, teachers, police service, and port workers amongst others) (SASRA, 2012). However, over the years the membership of the DTSSs has been opened up in order to allow for members from all walks of life. This had led SACCOs to change their names, for example, Diocese of Meru Sacco, Meru Farmers Sacco, Meru Mwalimu Sacco, Meru North Farmers Sacco, and Meru.. South.. Farmers Sacco opened their membership to all people and thus changed their names to Centenary Sacco, Capital Sacco, Solution Sacco, Dhabiti Sacco, and Southern Sacco respectively (SASRA, 2017).

During the period 2010-2017 the DTSSs in Meru County, showed significant growth. The total assets, deposits, net loans, and turnover grew from Kshs 7.6 billion, Kshs. 5.0 billion, Kshs 4.7 billion, and Kshs 1.2 billion in 2012 to Kshs 9.0 billion, Kshs. 6.1 billion, Kshs. 6.1 billion and Kshs. 1.5 billion in the year 2016 respectively. These represented growth rates of 19% for total assets, 22% for deposits, 30% for net loans, and 25% for turnover.

The growth of the DTSSs was also seen in the rise in the physical concentration. In 2012, the county had 14 head offices with 34 branches (SASRA, 2012). In 2016, the county registered 51 physical delivery channels that consist of 14 head offices and 37 branch networks (SASRA, 2017). However, despite the impressive growth seen the number of registered DTSSs declined to twelve in 2018 following the deregistering of two Saccos due to failure to comply with statutory requirements (SASRA, 2018(b)).

## **1.2 Statement of the Problem**

Kenya has one of the largest SACCO movements in the world with the members mobilising more than Kshs. 400 billion in savings which are approximately 33% of the national savings (Kenya Union of Savings and Credit Cooperatives (KSCO), 2018). In 2017, the asset base of DTSSs in Kenya stood at Kshs 442.2 billion, the deposits generated stood at Kshs. 305.3 billion, and total loans and advances were Kshs 320.49 billion (SASRA, 2018). In its economic blueprint titled Kenya Vision 2030, the government of Kenya indicates that SACCOs are an engine to attaining economic success and sustained growth in the country (Republic of Kenya, 2007).

The government of Kenya enacted the SACCO Societies Act of 2008 and subsidiary regulations in 2010. These pieces of legislation were put in place to regulate the SACCO industries specifically the DTSSs. The legislation put in place capital adequacy procedures for DTSSs. The requirement for capital adequacy for DTSSs is to ensure that they maintain levels of capital which are sufficient to protect or cushion the deposits of the members and creditors due to risks associated with their everyday business (Barus, Muturi, Kibati, & Koima, 2017). According to industry players, the capital adequacy requirements have an effect on the performance of firms.

Numerous studies have been done to establish the effect of capital adequacy requirements on the financial performance of firms. The findings of the study have been found to be contradicting. Some researchers established that capital adequacy has positive effect on firm financial performance (Vong & Chan, 2009; Kosmidou, 2008; Saona, 2011; Rahman & Farati, 2012). However, other researchers found that the capital adequacy requirements have a negative effect on firm performance (Dore, 2013; Rufo & John 2017). Additionally, other studies have found that capital adequacy requirements do not have a significant effect on the financial performance of the firm (Somoye, 2008; Osuka & Riccard, 2013). According to Aymen (2013), the differences in the study results could be attributed to various factors key amongst them are the context in which the study was conducted; the methodology used to collect and analyse the data, and; the concepts applied particularly when measure capital adequacy and firm performance.

A number of studies have been conducted in Kenya on various aspects of SACCOs in terms of capital structure, capital adequacy, and performance. This study reviewed the studies in Kenya and identified numerous gaps. The studies that have been conducted include, factors affecting financial performance of savings and credit cooperatives societies, a case study of Kiambu (Njihia, & Muturi, 2016) but the variables used were not exhaustive. Makori, Munene, and Muturi, (2013), evaluated the challenges facing deposit taking savings and credit cooperatives societies regulatory compliance, a case study of Gusi region. Makori et al., (2013) focused on non-separation of shares from deposits, high dependence on short-term external borrowing, lack of liquidity monitoring systems, high investment in non-earning assets, inadequate systems and management, and political interference. Makori et al., (2013) did not include high interest rates and taxation as a deterrent to regulatory

compliance. Chahayo, Bureti, and Juma (2013), study was on the financial mismatch in cooperative societies, a case study of Kakamega county Kenya a title that was not clear until the objectives are provided. Barus et al., (2017) investigated the effect of capital adequacy on the financial performance of savings and credit societies in Kenya – the study used qualitative techniques. Barus et al., (2017) did not give the quantitative direction and magnitude of the capital adequacy requirements on the financial performance of DTSSs.

Given the significance of the cooperative sector to economies in and outside of Kenya, more studies need to be conducted to evaluate the effect of capital adequacy requirements on the performance of cooperatives particularly deposit-taking SACCOs. These study set out to fill the contextual, conceptual, and methodological research gaps left by the foregoing studies. This study intended to answer the following research question what is the effect of capital adequacy on the financial performance of deposit-taking Sacco's in Meru County, Kenya.

### **1.3 Research Objective**

The general objective of this study was to establish the effect of capital adequacy on the financial performance of DTSSs in Meru County, Kenya.

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

The findings of this study are expected to have contributions in various areas and to numerous stakeholders. In the school of finance and economics, different theories have been developed to explain the nature, size, and the magnitude of the relationship between capital adequacy and financial performance. Most of the theories are anchored on the capital structure theories of the firm that analyse the preference between debt and equity for firms and how these decisions affect the performance of firms. This study reviews

various theories in an attempt to critique them, enrich them, and fill gaps in the postulations put forward in the theories.

One of the major concerns of the management of DTSSs is the maintenance of sufficient capital in order to fulfil the statutory requirements and to support their day to day business operations. The findings of the study will provide a framework for the management to ensure compliance with the statutory compliance limits as well as the internal limits. The management will be able to make decisions that ensure that the capital holdings ensure maximum financial performance. It is expected that the findings of this study will inform the process of policy making by regulatory authorities such as the Central Bank of Kenya, SASRA, and the Ministry of Finance. The findings will help the policymakers to identify the specific impact of given level of capital adequacy on the financial performance of DTSSs in Meru County, Kenya. This insight will be useful in ensuring that the DTSSs play the required role in achieving Kenya Vision 2030. The study will be useful to scholars who are interested in the topic of this study both within Kenya and outside. The findings will act as a foundation upon which further research studies will be anchored on given that the notion of capital and capital adequacy are very broad.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents the theoretical and empirical literature related to capital structure and financial performance. This section also identifies the research gaps and develops the conceptual framework of the study.

#### **2.2 Theoretical Literature**

A review of empirical literature shows that there are numerous theories that show the need for capital adequacy. These theories show the effect of the capital adequacy requirements on the performance of the firm. This study reviewed the Anticipated Income Theory, Capital Buffer Theory, and Moral Hazard Theory.

##### **2.2.1 Anticipated Income Theory**

This theory was developed by Prochanow (1944) but gained prominence and relevance following the financial crisis of 2007/08 (Yusuf, 2015). According to this theory, the liquidity levels of banks are related to the schedule of loan payments which are determined by the future income streams of borrowers at a given point in time. The maturity structure of the loan and investment portfolio determines the liquidity position of the bank (Abdul, 2017). However, this theory suffers from a major flaw given that although the loan repayments provide a regular stream of liquidity, they may not be sufficient to cater for unstructured emergencies in terms of cash requirements in the banking sector (Abdul, 2017). As such, the management of banks need to retain sufficient levels of capital to cushion them from uncertainties both in their internal and external environment (Bosede, Olowe, & Uwuigbe, 2013). These capital reserves have the effect of reducing the profits

that could have been realised from the loan funds. This theory is relevant to this study as it shows the relationship between the loan portfolio, capital reserves, and the financial performance of the firm.

### **2.2.2 Capital Buffer Theory**

In their course of business, most financial institutions maintain levels of capital ratios above the minimum levels required by the regulatory authorities (Lotto, 2016). This excess capital is referred to as buffer capital. According to Milne and Whalley (2001) due to the severe penalties imposed by regulatory authorities for institutions that fail to maintain the minimum stipulated amount financial institutions may increase their capital holdings in order to reduce risk. According to Noreen, Alamdar, and Tariq (2016) there are other reasons for banks to hold excess capital: firstly the excess reserves acts as insurance especially for undercapitalised banks where the buffer funds are used as insurance against the cost of unexpected loan losses occasioned by random shocks or asymmetric information between the debtors and creditors. However, these undercapitalised banks may be incentivised to take more risks in order to enhance reputation through higher expected rate of return.

Secondly, holding buffer capital is associated with the financial institutions asset risk profile, buffer capital determines the risk-taking behaviour of the bank. The regulators would prefer for banks holding risky portfolios to maintain capital levels in excess of the minimum requirements. Thirdly, banks holding buffer capital are considered by other financial institutions and stakeholders to be financially healthy and hence profitable (immune from failure). Therefore, buffer capital is a mechanism to rescue banks facing



failure due to competitions for unsecured deposits and //money market ;funding. For this reason, banks take into consideration their capitalisation relative to that of their competitors (Noreen, Alamdar, & Tariq, 2016). According to Volkov (2010) the banks may use the excess capital to undertake unforeseen investments. This theory is relevant to this study as it highlights the relationship between capital levels and financial performance.

### **2.2.3 Moral Hazards Theory**

This theory is associated with the works of Bhattacharya (1982), Rochet (1992), and Dewatripont and Tirole (1993). Situations of moral hazard occur whereby decisions that are taken are not the optimal ones. Moral hazards tend to occur where the full cost of the decision is not borne by the decision maker but by other parties (Noreen, Alamdar, & Tariq, 2016). In this context in situations where banks (particularly their management) do not have adequate equity “at stake” when they are making their investment decisions, they make decisions which, although are optimal for the equity-holders, are sub-optimal to the consumers and society. For instance, the banks may take up projects with negative net present values (NPV) or excessive risk which have the effect of maximising return to equity putting the depositors, debt holders, and deposit insurance funds at risk. The moral hazards mostly arise out of agency problems.

According to Duran and Lozano-Vivas (2015) the regulation of bank capital is a key aspect of modern banking regulations. Where the management of banks are left to their own devices, they would prefer riskier projects that promise higher return at the expense of the depositors. The regulations reduce the financial performance of banks. However, the regulations are very important particularly in times of economic downturns. During

economic downturns, the value of assets held by banks falls resulting in a fall in the capital level.

### **2.3 Determinants of Capital Adequacy of Deposit Taking SACCOs**

Determinants of capital adequacy in deposit-taking SACCOs are factors that influence the level of capital a Sacco holds which will inform members about its going concern state and the safety of their deposits. Basel standards are not directly applicable to credit unions but they are important as the capital standards creation process for the SACCO industry is influenced by them. As a result of the three Basel accords (I, II, III), an industry shift occurred in regards to the minimum capital standards that are based on risk-weighted capital (Sant, & Schroeder, 2011). However, policymakers at the WOCCU (2008), contend that the risk-weighted capital ratio approach proposed in Basel II should only be applied to credit unions in the following circumstances: where the credit unions have a strong prudential supervision mechanism in place; the credit unions are in direct competition with commercial banks which are subjected to the regulations of Basel II; and the regulatory authorities and the credit unions are conversant with the process of calculating capital ratios as specified under Pillar I of the Basel II Accord.

In addition, the WOCCU (2008), proposes additional factors that should be taken into consideration when determining the capital adequacy of credit unions. The first factor is capital which is associated with the size of the credit union and is measured in form of regulatory reserves, special reserves, undivided earnings, and net income. The second factor is growth which encompasses the level of capital versus the level of assets, the total non-performing loans versus the total loan portfolio. The third factor is solvency which is evaluated on the basis of the balance of the allowance for loan loss.

## 2.4 Empirical Literature

Studies on the effect of capital adequacy requirements on financial performance were conducted on commercial banks first. However, as the roles of SACCOs have changed over time the need for capital adequacy requirements became necessary. The results of the empirical studies on the effect of capital adequacy on firm performance are presented below.

Hoffman (2010) conducted a study to evaluate the effect of capital on the financial performance in the US banking industry during the period 1995–2007. The study used both bank based and industry-specific variables. The dependent variable of the study, financial performance was measured using the efficiency in the return on equity (EFCROE) which was computed using the capital ratio (measured by the ratio of equity capital to total assets). The independent variables of the study included variables that have an impact on profit efficiency. They included bank size, market concentration, loan capacity, the demand for deposits, interest expenses, investment in securities, bank risk, and control variables (the Federal Reserve Bank Discount rate, NASDAQ Bank Index, and Bank Reputation). The study used the Generalised Methods of Moments (GMM) to estimate the equation. The regression results showed that loan capacity, interest expense, investment in securities, and the Federal Reserve Bank Discount rate had a negative correlation with EFCROE. The study found that demand deposits, bank risk, bank size, NASDAQ Bank Index, bank reputation, and market concentration had a positive correlation with EFCROE.

Okwee (2012) sought to establish the effect of corporate governance and risk on the financial performance of SACCOs in Lango sub-region, Northern Uganda. Okwee (2012) was motivated to conduct the study by the fact that a significant number of SACCOs had

been closed down. The study population consisted of 75 SACCOs in Lango, whereby the researcher only sampled 63. The data for the study was collected using questionnaires. The study established that on average SACCOs in Lango sub-region, Northern Uganda operated for approximately four years and had on average less than 5 branches. Further, the study established that the SACCOs in Lango sub-region, Northern Uganda had relatively poor performance. The study found that most of the SACCOs did not comply with corporate governance guidelines. However, the respondents indicated that corporate governance was significantly and strongly correlated to financial performance. The study found that risk was weakly and negatively correlated to the financial performance of SACCOs in Lango sub-region, Northern Uganda. The study concluded that poor risk management was responsible for the poor financial performance of the SACCOs.

Odunga, Nyangweso, Carter, and Mwarumba (2013) conducted a study to determine the effect of credit risk and capital adequacy on operating efficiency of commercial banks in Kenya. The study was anchored on the theory of operational efficiency. Credit risk was measured using four ratios which included net-charge off to gross loans, loan loss provision to total loans ratio, loan loss provision to equity, and loan loss reserves to equity ratio. Capital adequacy was measured using core capital ratio, risk-based capital ratio, total capital ratio, and equity to total assets ratio. Operational efficiency was measured using the operational efficiency ratio  $(\text{Interest income} - \text{non-interest income} - \text{securities gains}) / (\text{Interest expense} - \text{non-interest expense} - \text{provision for loan losses} + \text{taxes})$ . The study used the explanatory research design. The study used fixed effects regression model to analyse panel data. The study established that 41.35% of the variation in operational efficiency of commercial banks in Kenya was occasioned by credit risk and capital

adequacy variables. The study found that credit risk and capital adequacy measures have a positive and statistically significant effect on the operational efficiency of commercial banks in Kenya.

Olalekan and Adeyinka (2013) investigated the impact of capital adequacy on Nigerian banks' performance. The study sampled both foreign and domestic banks. The study collected both primary data and secondary data. The primary data was collected using questionnaires. The secondary data was collected from published financial statements and analysed using a linear regression equation. From the responses given by the respondents, the study established that capital adequacy had a positive effect on the profitability of foreign and domestic commercial banks in Nigeria. However, the results of the regression analysis indicated that capital adequacy had a negative impact on the financial performance of the commercial banks.

Ikepefan (2013) conducted a study to investigate the impact of capital adequacy ratios and management on the performance of Nigerian commercial banks. Capital adequacy ratios included the ratio of bank loans to total assets; the ratio of bank loans and advances to bank deposits; liquid assets to deposit ratio; and the ratio of shareholder's funds to total assets. Management efficiency was measured using the ratio of operating expenses to total assets. The performance was measured using ROA. The study used panel data regression model. The regression model was estimated using ordinary least squares. The study found that all the capital adequacy ratios had a negative impact on the financial performance of commercial banks in Nigeria. The efficiency of management was found to be negatively related to financial performance.

Mokua (2015) conducted a study to determine the factors influencing the financial performance of DTSSs in Kisii County, Kenya. In the study, Mokua (2015) evaluated the effect of capital adequacy, asset quality, management ability, earnings, and liquidity on the financial performance of DTSSs. The study used the descriptive research design and analysed both qualitative and quantitative data. The study sampled 110 SACCO managers working in 5 licensed DTSSs. The study covered the period 2010 to 2014. The study established that capital adequacy, asset quality management capability and earning quality had a significant impact on DTSSs in Kisii, County. Comparative analysis showed that there was significant variation in financial performance of agricultural based DTSSs and their urban-civil servant based counterparts. The study noted that high performance was greatly associated with the ability to control credit risk.

Wang et al., (2016), sought to evaluate the relationship between capital adequacy and financial performance of deposit taking savings and credit cooperative societies in Kenya. The study used a sample of 103 DTSSs that were randomly chosen and data collected from their financial statements. The results revealed that there exists a positive relationship between capital adequacy and financial performance. Thus as the capital adequacy increases so does the financial performance. The study recommended that the regulator continues to enforce capital adequacy requirements.

Buluma and Kung'u (2017) conducted a study to investigate the effect of SASRA regulations on the financial performance of DTSSs in Nyandarua County, Kenya. The study was grounded on Agency theory, Trade-Off Theory, and Stakeholder Theory. The study used census design to collect data from five DTSSs that were licensed by SASRA. In the study, SASRA regulations were measured using capital adequacy (core capital), liquidity,

and asset quality. Financial performance was measured using ROA. The study data was collected using questionnaires and from the annual financial statements of the DTSSs. The study used data covering the period three years prior to the formulation of the regulation in the SACCO Act of 2008 and three years after. The study established that the DTSSs sampled fully complied with the SASRA regulations. The study found that SASRA regulations had a positive and significant effect on the financial performance of DTSSs in Nyandarua County, Kenya. Overall, the study found that only 15.9% of the variation in the financial performance of the DTSSs in Nyandarua County was occasioned by SASRA regulations. Implying that 84.1% of performance was not explained by the study variables.

## **2.5 Summary of Literature Review**

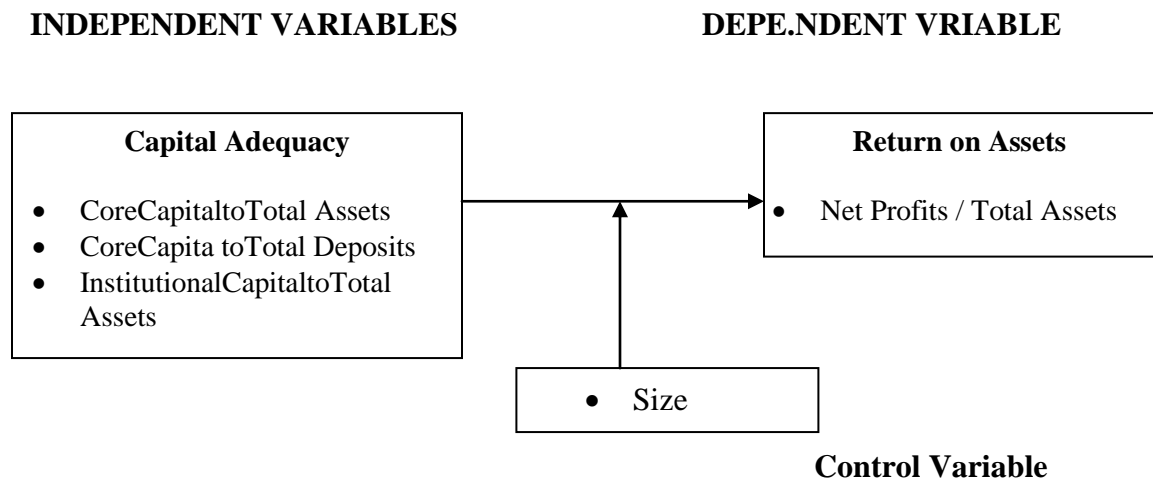
This chapter reviews the existing theories relevant to the study. The study reviewed the Anticipated Income Theory which indicates the loan portfolio held by financial intermediaries and the need for capital reserves to cater for delays in payment streams. The Capital Buffer Theory indicates why banks prefer to hold capital stocks equivalent to or greater than the amount stipulated by the regulatory authorities. The Moral Hazards Theory provides the arguments in favour of government regulation of banks and financial institutions. These three theories relate the independent variables to the dependent variables. The theories show why the financial institutions hold reserves determined by their loan portfolio, liquidity levels, and asset value.

The empirical literature provides the framework under which the study will be conducted. Hoffman (2010), provides the relationship between performance and various measures of capital adequacy. The study by Okwee (2012), shows how the relationship between the dependent variable and independent variable are affected by other factors such as risk

management. Odunga, Nyangweso, Carter, and Mwarumba (2013), Ikepefan (2013), Mokua (2015), Wang et al., (2016), and Bulum and Kung'u (2017) show how capital adequacy affects financial performance of various institutions in Kenya.

## 2.6 Conceptual Framework

The conceptual framework provides a graphical representation of the interactions between the predictor and the explanatory variables. Figure 2.1 presents the conceptualisation of the relationship between the study variables.



**Figure 2:1: Conceptual Framework**

Source: Researcher, (2018)



## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.1 Introduction

This chapter provides the research methods that was used in the study. In this chapter the research design, the study population and sampling design are specified. The data collection methods and the techniques used to analyse the study data are also identified in this chapter.

#### 3.2 Research Design

The research design refers to the plan that the researcher follows in order to answer the research questions (Saunders, Lewis, & Thornhill, 2012). The research design is important in any study as it specifies the strategies and methods to be used to connect and analyse the study data (Dudpvskiy, 2018). The study adopted an explanatory non-experimental research design to investigate the effect of capital adequacy on the financial performance on DTSs in Meru County, Kenya. This design was considered appropriate for this study as it sought to determine the causal relationship between the dependent variables and the independent variables (Saunders et al., 2012).

In non-experimental research design, the researcher does not have control of the explanatory variables as their manifestations occurred in a previous period (Ellis & Levy, 2008). According to Bonds-Raacke and Raacke (2014) the explanatory research design is appropriate in studies where the researcher is trying to explain how an identified phenomenon behaves by focusing on the underlying factors that cause alterations in the phenomenon where there is no manipulation. This approach is appropriate for this study as the researcher did not manipulate any of the study variables.

### 3.3 Target Population

The target population of the study comprised of all DTSSs registered and licensed by SASRA to conduct business in Meru County Kenya. According to the supervisory report published by SASRA in 2017, there were 14 SACCOs registered and licensed to carry out deposit taking in Meru Country. These 14 DTSSs were be screened against various factors, specifically the availability of data, and integrity of data. Table 3.1 presents the list of DTSSs operating in Meru County.

**Table 3.1: Deposit Taking Saccos in Meru County, Kenya**

1	Capital SaccoSocietyLtd
2	Centenary SaccoSocietyLtd
3	Imenti SaccoSocietyLtd
4	MMH SaccoSocietyLtd
5	Nexus SaccoSocietyLtd
6	Nyambere Arimi SaccoSocietyLtd
7	Siraji SaccoSocietyLtd
8	Smart Champions SaccoSocietyLtd
9	Solution SaccoSocietyLtd
10	Southern Star SaccoSocietyLtd
11	Times U SaccoSocietyLtd
12	Yetu SaccoSocietyLtd
13	Ndosha SaccoSocietyLtd
14	Dhabiti SaccoSocietyLtd

Source: SASRA, (2017)

### 3.4 Data Collection

The study utilised secondary quantitative data covering the period 2010-2017. The data was collected from financial statements of all the DTSSs in Meru County. The study data was panel in nature given that it consisted of time-series and cross-sectional data. The cross-sectional data relates to the individual Saccos sampled in the study while time-series is 2010-2017. The use of panel approach allows for the combination of time-series and cross-

sectionaal data which enhances the quality and quantity of the data collected (Torres-Reyna, 2007). The data was collected using the data collection sheet in appendix II.

### 3.5 Data Analysis and Reporting

The data collected was analysed usingdescriptivestatistics, correlationanalysis, and panelmultipleregression. The data collected from the financial statements was input in Microsoft Excel, then coded and cleaned. The study then used STATA 14.0 to analyse the data collected. In order to establish the effectofcapital adequacy onthefinancial performance of DTSS in Meru County, the study used the model similar to that used by Okoye, Ikechukwu, Leonard, Chinyere, and Christian, (2017).

$$ROA_{it} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_{it} \dots \dots \dots 3.1$$

Where

$ROA_{it}$  = Return on Assets of Sacco i at time t

$X_1$  = The Ratio of Core Capital to Total Assets of Sacco i at time t

$X_2$  = The Ratio of Core Capital to Total Deposits of Sacco i at time t

$X_3$  = The Ratio of Institutional Capital to Total Assets of Sacco i at time t

$X_4$  = The Natural Logarithm of Total Assets

$\alpha$  = The Constant Term

$\beta$ 's = The coefficients of the independent variables

$\varepsilon_{it}$  = the Composite Error Term

### 3.6 Diagnostic Tests

In order to ensure that the multiple linear regression model is appropriate for analysis, the researcher has to ensure that all the four assumptions of the classical linear regression model are met. The first assumption is linearity whereby the model specified must state the linear relationship between the dependent and independent variables. The second assumption requires

that there is the model has full rank which entails ensuring that the explanatory variables of the study do not have a precise linear relationship. The third assumption requires that the independent variable be exogenous. The fourth assumption requires that the model be homoscedastic and have non-autocorrelation (Greene, 2008). Linear regression models that violate these assumptions often yield results that are unreliable (Gujarati & Porter, 2009). Therefore, the study conducted tests for heteroskedasticity, panel data unit root, multicollinearity, and autocorrelation.

### **3.6.1 Heteroskedasticity**

In regression analysis, it is required that the variance of the error term in the model is constant for all variables (Parker, 2016). When the variances of the error terms are constant the model is said to be homoscedastic. However, this is not realistic, particularly with cross-sectional data. Often, the variances of the error terms of the observations are different. This results in heteroskedasticity. When heteroskedasticity is present, the estimated standard errors are inefficient and provide incorrect test statistics (Parker, 2016). The study used the Modified Wald Test. The null hypothesis for the Modified Wald Test is that the data is homoscedastic. The FGLS model is used to correct for the presence of heteroskedasticity (Prabhakaran, 2016).

### **3.6.2 Auto-Correlation**

Autocorrelation occurs when the covariances and correlations between the different disturbances are not equivalent to zero (Asteriou & Hall, 2007). Consequently, the disturbances are not pairwise independent. Autocorrelation is often present in time series data. This results in the coefficient of determination ( $R^2$ ) being

overestimated and the t-statistics being significantly high (Asteriou & Hall, 2007). The Wooldridge Test was used to test for autocorrelation. The null hypothesis states that there is no serial correlation of any order up to rho ( $\rho$ ). Autocorrelation is remedied by using the feasible generalised least square (FGLS) (Wamugo, 2014).

### **3.6.3 Multicollinearity**

Multicollinearity arises where there is a perfect or precise linear relationship between two or more of the explanatory variables in the regression model (Gujarati, 2003). In the presence of multicollinearity, the regression coefficients are indeterminate and their subsequent standard errors are infinite. The correlation matrix is used to establish the degree of correlation amongst the study variables. The cut-off point for perfect multicollinearity is 0.8 (Gujarati, 2003). When multicollinearity is detected in study data, the data is transformed into log form.

### **3.6.4 Panel Unit Root Test**

The unit root test was used to test for stationarity of the study data. Data is said to be stationary when the mean and variance are constant over time and the value of the covariance between the two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which the covariance is computed (Gujarati, 2003). Non-stationary data gives results that are spurious (Gujarati, 2003). The study used the unit root test to determine if the data is stationary. Specifically, the Augmented Dickey-Fuller Test (ADF) was used to test for unit root. The null hypothesis states that there is unit root (Gujarati, 2003). If the data is not stationary it is normally differenced.

### 3.6.5 Testing for Fixed or Random Effects

According to Reyna (2007), there are two alternative methods to use when analysing panel data. These methods include fixed effects or random effect model. The researcher can determine which model to use for data analysis through the Hausman specification test. The p-value of the Hausman test is used to determine the presence of the random versus the fixed effect. Where the p-value is less than 0.05 then the random effects estimator is considered to be inconsistent while the fixed effect estimator is consistent (Antonakis, 2012). However, research has shown that the random-effects estimator is more appropriate than the fixed-effects estimator. Where, the p-value is found to be greater than 0.05 then the random effect model is considered appropriate.

Where the Hausman test indicates that the fixed effect model is the most suitable approach, the researcher has to check for time-fixed effects in the study estimation. This test checks if the dummies for all the years are equivalent to zero. Where the dummies are equivalent to zero, then no time fixed effects are needed (Torres-Reyna, 2007). The F test recommended by Gujarati (2003) is the most suitable method of testing if the dummies are equivalent to zero.

Where the Hausman test identifies the random effects model as the most appropriate approach, the data must be evaluated to check panel effects are present. This is done in order to determine if the OLS or random effects model is most appropriate (Torres-Reyna, 2007). The most commonly used test is the Breusch-Pagan Lagrange Multiplier Test.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS, AND DISCUSSION

#### 4.1 Introduction

This chapter provides the results of the data analysis, an interpretation of the results, and a discussion of the findings.

#### 4.2 Descriptive Statistics

Table 4.1 provides the descriptive statistics of the variables used in the study.

**Table 4.1: Descriptive Statistics**

<b>Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev</b>	<b>Min</b>	<b>Max</b>
Ratio of CoreCapital to Total Assets	89	0.1807	0.0948	0.017	0.7209
Ratio of Core Capital to Total Deposits	89	0.3074	0.2309	0.0259	1.4647
Ratio of Institutional Capital to Total Assets	89	0.0869	0.0643	0.0473	0.2197
Size	90	8.5507	0.4886	7.6773	9.5821
Return on Asset	90	0.0238	0.0265	0.0873	0.0918

Source: Study Data (2018)

The mean value for the ratio of core capital to total assets for 89 observations was computed as 0.1807 with a standard deviation of 0.0948, minimum of 0.017 and maximum of 0.7209. This indicates that on average the core capital held by the DTSs during the study period was 18% of the total assets. However, there was a Sacco which held core capital of 72%

of total assets. Given that all the mean values are positive then it can be concluded that the SACCOs are complying with the core capital requirements.

The mean value for core capital to total deposits for 89 observations was 0.3074 with a standard deviation of 0.2309 and minimum and maximum values of 0.0259 and 1.4647 respectively. These indicate that on average the value of core capital to total deposits was 30%. The output displayed in Table 4.1 indicates that the mean of the ratio of institutional capital to total assets is 0.0869. This indicates that during the period under review the SACCOs met the minimum institutional capital requirement of 8% set by SASRA. The standard deviation of 0.0643 indicates that the level of institutional capital to total assets was within the 8% level. The negative minimum value suggests that some of the SACCOs did not maintain the 8% level during the period under review. The maximum value of 21.97 is significantly above the stipulated level implying that the SACCOs at some points preferred to have high levels of capital.

As presented in Table 4.1, the mean of the Sacco size was 8.5307, the standard deviation 0.4886 indicating that there was little variation between the sizes of the Saccos in Meru County. The minimum value was 7.6773 and the maximum value was 9.582. As indicated in Table 4.1, the mean value of the return on assets for 90 observations was 0.0238 with a standard deviation of 0.0265 and minimum and maximum values of -0.0873 and 0.0918 respectively. The positive mean indicates that on average the SACCOs have been profitable. However, some SACCOs were operating at a loss during the period of the study as reflected in the negative minimum observed value of return on assets.



### 4.3 Diagnostic Test Results

As indicated in chapter three, the researcher conducted a number of diagnostic test to ensure that the regression model did not violate the assumptions of the classic linear regression model. This section presents the results of the diagnostic tests.

#### 4.3.1 Multicollinearity Test Results

Table 4.2 provides the results of the multicollinearity tests.

**Table 4.2: Results of Multicollinearity Test**

Variable	$X_1$	$X_2$	$X_3$	$X_4$	Return on Asset
$X_1$	1				
$X_2$	0.7993	1			
$X_3$	0.6179	0.4576	1		
$X_4$	-0.2779	-0.21222	0.0112	1	
Return on Asset	0.2917	0.1767	0.5237	-0.0416	1

Source: Study Data (2018)

The results presented in Table 4.2 indicate that the correlation coefficients for all the variables were less than 0.8. This indicates that the study data does not suffer from severe multicollinearity.

#### 4.3.2 Auto-Correlation Test

The results of the autocorrelation test are presented in Table 4.3.

**Table 4.3: Results of Autocorrelation Test**

H <sub>0</sub> : no first-order autocorrelation
F( 1, 13) = 179.797
Prob > F = 0.0000

Source: Study Data (2018)

The null hypothesis for the Wooldridge Test is that there is no first order autocorrelation in the data. The test statistic computed was F test with thirteen degrees of freedom and value of 179.797. The p-value of the F test was 0.000 indicating that the F test was statistically significant. Thus, it can be concluded that the study data had first order autocorrelation. Subsequently, the study corrected for this violation using the FGLS estimation approach.

### 4.3.3 Heteroskedasticity Test Results

The study tested the panel data for heteroskedasticity using the Likelihood Ratio (LR) Test. The results of the test are presented in Table 4.4

**Table 4.4: Results of Heteroskedasticity Test**

H <sub>0</sub> : $\sigma_i^2 = \sigma^2$ for all i
$\chi^2(8) = 212.0648$
Prob > $\chi^2 = 0.0000$

Source: Study Data (2018)

The computed chi-square was 212.0648 and the p-value was 0.000. These results indicated that the null hypothesis is rejected. From the results, it can be concluded that the study data is heteroskedastic.

#### 4.3.4 Panel Unit Root Test

Panel unit root tests were conducted in order to ensure that the study results were not spurious. The study used the Fisher-ADF and Fisher-PP tests, this approach is recommended by Gujarati (2003) when dealing with panel data. The null hypothesis for both the Fisher-ADF and Fisher-PP is that all panels contain unit root. The results of the panel unit root tests are presented in Table 4.5 and Table 4.6.

**Table 4.5: Results of Panel Philip-Peron Unit Root Test**

Total (balanced) observations: 89		
Series: ROA, $X_1$ $X_2$ $X_3$ $X_4$		
Exogenous variables: Individual effects		
Newey-West automatic bandwidth selection and Bartlett kernel		
Total (balanced) observations: 89		
Cross-sections included: 14		
Metho,d	Satistic	Proba.**
PP-Fisher Chi-square	43.9634	0.0000
PP-Choi Z-stat	-4.2256	0.0000
** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.		

Source: Study Data (2018)

**Table 4.6: Results of Augmented Dickey-Fuller Test**

Null Hypothesis: Unit root (individual unit root process)		
Series: ROA, $X_1$ $X_2$ $X_3$ $X_4$		
Exogenous variables: Individual effects		
Automatic selection of maximum lags		
Automatic lag length selection based on SIC: 0 to 7		
Total number of observations: 89		
Cross-sections included: 14		
Method	Statistic	Prob. **
ADF - Fisher Chi-square	39.3394	0.0000
ADF - Choi Z-stat	-3.5748	0.0002
** Probabilities for Fisher tests are computed using an asymptotic Chi		
-square distribution. All other tests assume asymptotic normality.		

Source: Study Data (2018)

The results presented in Table 4.5 and 4.6 indicate that the study data is not stationary. The study data was differenced in order to make it stationary.

### 4.3.5 Hausman Test

The Hausman test was performed in order to determine the most appropriate model (between the fixed effect and random effect model) to estimate the study equation. The null hypotheses for the Hausman test states that the random effects regression is preferred (Shahri, 2011). The results of the Hausman Test are presented in Table 4.7.

**Table 4.7: Results of Hausman Test**

	<b>Coefficients</b>			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fixed	Random	Difference	S.E.
$X_1$	-1.57792	-1.740567	.1626472	.2853758
$X_2$	-.3008843	-.9130082	.6121239	.3486722
$X_3$	-.9901775	-1.321453	.3312755	.3056586
$X_4$	.056671	.0393735	.0172975	.0406953
	b = consistent under Ho and Ha; obtained from xtreg			
B =	inconsistent under Ha, efficient under Ho; obtained from xtreg			
Test: Ho:	difference in coefficients not systematic $\chi^2(4) = (b-B)'[(V_b-V_B)^{-1}](b-B)$ 13.03 Prob>chi2 = 0.0111 (V_b-V_B is not positive definite)			

Source: studyData(2018)

The chi-square value was 13.03 with a p-value of 0.0111 which implies that the chi-square value was statistically insignificant at the 5% level of significance. Therefore, the null hypothesis is rejected. The results imply that the fixed effect estimation should be used.

The study evaluated the research data to check if the dummies for all years were equivalent to zero. The results of the analysis are presented in Table 4.8.

**Table 4.8: Results of Time Fixed Effect**

( 1) 2011.Year = 0
( 2) 2012.Year = 0
( 3) 2013.Year = 0
( 4) 2014.Year = 0
( 5) 2015.Year = 0
( 6) 2016.Year = 0
F( 6, 31) = 1.39
Prob > F = 0.2493

Source: Study Data (2018)

The F statistic was 6 with 31 degrees of freedom. The p.-value was 0.2493 which is greater than the critical value of 5%. This implies that the null hypothesis that states that the coefficients for all years are jointly equal to zero is not rejected. Therefore, there is no need for time fixed effects.

#### **4.4 Inferential Analysis**

The study sought to establish the effect of capital adequacy on the financial performance of deposit-taking Saccos in Meru County. The study regressed return on assets on the ratio of core capital to total assets ( $X_1$ ), the ratio of core capital to total deposits ( $X_2$ ), the ratio of institutional capital to total assets ( $X_3$ ), and the natural logarithm of total assets ( $X_4$ ). The regression was conducted using the FGLS approach. The results of the regression are presented in Table 4.9

**Table 4.9: Results of the FGLS Estimation**

Coefficients: Generalised Least Squares	Number of obs=89			
Panels: Homoskedastic	Number of groups=14			
Correlations: No Autocorrelation	Obs per group:			
Estimated covariances = 1	min =4			
Estimated autocorrelations =0	avg=6.357143			
Estimated Coefficients=6	max=7			
Log Likelihood = 212.064	Waldchi2(.5) =35.25	Proba > chi.2=0.000		
<b>Variables</b>	<b>Coef</b>	<b>Std.Err</b>	<b>z</b>	<b>P&gt; z </b>
$X_1$	-0.0006592	0.04938	-0.01	0.009
$X_2$	-0.0111564	0.01722	-0.65	0.517
$X_3$	0.0235266	0.04868	4.83	0.000
$X_4$	0.0379534	0.00528	0.72	0.004
Constant	0.0395917	0.04668	0.85	0.396

Source: Study Data (2018)

With regard to the effect of the ratio of core capital to total assets ( $X_1$ ) on return on assets the results presented in Table 4.9 indicate that the coefficient was -0.0006592. The results were statistically significant at the 5% confidence level ( $p=0.009$ ). These results indicate that there is a negative significant relationship between the core capital and the profitability of SACCOs in Meru County, Kenya. A one unit increase in the amount of core capital will lead to a 0.000659 reduction in the ROA. These findings confirm the suppositions put forward in the Anticipated Income Theory. The theory maintains that capital reserves reduce the loanable funds on which the financial institutions earn income through interest, thus, reducing profits. Further, the results confirm the findings of Hoffman (2010) who established that capital reserves have a negative effect on financial performance.

The study evaluated the effect of the ratio of core capital to total deposits ( $X_2$ ) on the return on assets. The study established that the effect is negative and statistically insignificant at the 5% level ( $p=0.517$ ). The findings indicate that a unit increase in the level of core capital relative to deposits leads to a 0.01116 decrease in the financial performance measured by ROA. According to the buffer capital theory, the direction of buffer capital and financial performance is negative. These results contradict the findings of Hoffman (2010) who established that bank deposits reserves have a positive effect on performance. However, they confirm the findings of Ikepefan (2013) that these reserves affect financial performance negatively.

The results presented in Table 4.9 indicate that the ratio of institutional capital to total assets ( $X_3$ ) has a positive and statistically significant effect on ROA ( $\beta = 0.0235$ ,  $p=0.000$ ). These findings imply that a one percent increase in the level of institutional capital relative to the total assets will lead to 2.353 percent increase in the level of performance. These findings are contradictory to the Anticipated Income Theory, Buffer Capital Theory and Moral Hazards Theory which maintain that the relationship between reserves and financial performance is negative. However, they confirm the findings of Ondunga et al., (2013) that capital adequacy has a positive and statistically significant effect on financial performance.

The study introduced firm size as a control variable in the study. The results presented in Table 4 indicate that firm size has a positive and statistically significant effect on the financial performance of SACCOs in Meru County Kenya ( $\beta=0.0379534$ ,  $p=0.004$ ). The findings indicate that a one unit increase in firm size will result in a 0.0379534 increase in the ROA. These findings confirm the findings of Mokuia (2015), that performance was



positively related to the ability to control risks. The total assets act as a buffer against credit risks.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION, AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents a summary of the study; it presents the conclusions drawn from the data analysis, makes recommendations based on the study findings, and suggests areas for further research.

#### **5.2 Summary**

The study sought to empirically determine the effect of capital adequacy on the financial performance of deposit-taking SACCOs in Meru County, Kenya. The study used a non-experimental research design. A census of the 14 DTSSs was used in the study. Panel data of the SACCOs covering the period 2010 -2017 was used in the analysis. This section provides a summary of the findings of this study.

The first objective of the study was to determine the effect of the core capital on the financial performance. The core capital was given as a ratio of core capital to total assets and financial performance was indicated using return on assets. The study established that the ratio of core capital to total assets had a negative and statistically significant effect on return on assets.

The study sought to investigate the effect of the ratio of core capital to deposits on the return on assets. The study found that a unit increase in the level of core capital relative to deposits leads to a 0.0116 decrease in the ROA. However, this decrease was found to be statistically insignificant.

The study set out to assess the effect of institutional capital on the financial performance of SACCOs in Meru County Kenya. The study found that the ratio of institutional capital to total assets had a positive and statistically significant effect on the ROA. The study investigated the controlling effect of firm size on the effect of capital adequacy on the ROA. The study established that firm size had a positive and statistically significant effect on the ROA.

### **5.3 Conclusions of the Study**

Based on these findings the study concluded that the level of capital adequacy maintained by the DTSS in Meru County, Kenya was having a significant negative effect on financial performance. These conclusions are attributed to the fact that the funds held for capital adequacy reasons are not utilised for lending which is the core business of the Sacco. This means that the DTSS lose income that could have been generated from the use of the funds held as reserves.

The study determined that institutional capital reserves have a positive and significant effect on financial performance of DTSS in Meru County, Kenya. The study concluded that the SACCOs should be required to hold higher levels of institutional reserves.

The study concluded that the firm size of the SACCOs is important to their performance. This is because the assets are utilised to generate profits. Larger firms have higher levels of assets and as such can generate more income.

### **5.4 Implications of the Study**

The study established that some aspects that core capital relative to total assets have a negative and statistically significant effect on performance. Additionally, the study found that

the level of core capital relative to total deposits had a negative but statistically insignificant effect on return on assets. The study recommends that SASRA should reduce the level of mandatory core capital requirement for DTSs in Meru County. This will provide additional funds which can be given as loans which earn income for the SACCOs.

The study established that the ratio of institutional capital to total assets was positive and statistically significant. The study recommends that the regulatory body, SASRA should encourage the SACCOs to maintain the levels of institutional capital held during the study period. Further, the study recommends that the SACCOs maintain the requisite level of liquidity to meet the needs of their members.

### **5.5 Suggestions for Further Studies**

This study focused on deposit taking SACCOs in Meru County Kenya, as such the study findings can only be generalised to SACCOs in that County. The study recommends that further studies need to be conducted in the other 46 counties in Kenya. Additionally, the study only focused on the effect of capital adequacy on performance. The study recommends that future studies should include more variables such as risk management requirements, and liquidity requirements on the performance. Additionally, future studies should include qualitative data which will give more insight on the relationship between the dependent and independent variables.

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## APPENDICES

### Appendix I: Letter of Introduction

Collins Onyango  
P.O. Box 30197, GPO,  
**NAIROBI.**

27<sup>th</sup> October 2018.

To the Chief Executive Officer,  
Sacco Societies Regulatory Authority,  
P.O. Box 25089-00100,  
**NAIROBI**

Dear Sir,

#### **RE: RESEARCH PROJECT**

I am Collins Onyango of registration number D61/8170/2015 studying Master's in Business Administration at Nairobi University. I am conducting a study on '*Capital Adequacy and Financial Performance of Deposit Taking Saccos in Meru County, Kenya*' in fulfilment of the requirement for the award of a Master's degree in Business Administration at Nairobi University.

The purpose of this letter is to request your assistance in obtaining data from your institution to enable me conduct the study. Any information provided will be treated with utmost confidentiality and will be used solely for academic purposes. Your assistance will be highly appreciated.

Thank you in advance for your assistance.

Yours faithfully,

Collins Onyango,  
D61/81790/2015  
Email: conyango05@gmail.com  
Tel: 0728706234

## Appendix II: Data Collection Sheet

<b>Variable</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Core Capital								
Total Assets								
Total Deposits								
Institutional Capital								

Source: Researcher (2018)