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The Link between Capital Adequacy and Financial Stability: Evidence from Deposit Taking Savings and Credit Co-Operative Societies in Kenya

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Abstract

In Kenya, financial stability of Deposit Taking (DT) Savings and Credit Cooperative Societies (SACCOs) as evident in non-performing loans of DT SACCOS has been an issue of concern over the past few years due to evidence indication fluctuating trends. Consequently, should this continue then this sector's contribution to financial intermediation through provision of financial services will be negatively affected. Though DT SACCOS have sought to enhance their capital adequacy, its effect on enhancement of financial stability remains an issue for further empirical investigation. In view this, the study sought to investigate the effect of capital adequacy on financial stability of DT SACCOS in Kenya. The study was anchored on agency theory. Positivist research philosophy was adopted in this study. The study adopted explanatory research design. The target population for the study comprised 160 DT SACCOS which were fully operational in the period. A census approach was used for the study. This study utilized quantitative secondary data which was obtained from the society's financial statements and supervision reports from the savings and credit cooperatives regulatory authority. The study utilized annual panel data for the period of 2017 to 2021. Multicollinearity test, normality tests, autocorrelation test, homoscedasticity, stationarity test and model specification test were carried out prior to panel data analysis. Data was analyzed using descriptive statistics, Pearson's correlation analysis and panel regression analysis. STATA software was used for the analysis. Ethical standards and regulations were adhered to accordingly. The regression results revealed that capital adequacy had a significant negative effect on NPLs ($\beta=-0.3249614$, $p\text{-value}=0.000<0.05$). In view of the findings, the study

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recommends that regulatory authorities in Kenya should take a proactive response in establishing and enforcing robust capital adequacy standards for DT SACCOs. In addition, higher levels of capital adequacy and improved management efficiency are associated with reduced NPLs ratio among DT SACCOs in Kenya, hence improved financial stability.

Keywords: *Capital Adequacy, Financial Stability, Deposit Taking, Savings and Credit, Co-Operative Societies*

1.0 Introduction

Deposit taking SACCOs are the backbone for any economic development across the globe (World Bank, 2021). Deposit Taking SACCOs have been playing a significant role in the economic development of Kenya (Kenya Economic Survey, 2023). DT SACCOs have helped in promoting financial inclusion by providing access to financial services to individuals and communities who may not have had access to traditional banking (Fundi & Wamugo, 2023). This has empowered many Kenyans to save, invest, and access credit. In addition, DT SACCOs encourage a savings culture among their members (Akuku, Nyang'au & Maobe, 2023). By providing a safe and convenient place for people to save money, they contribute to increased savings rates in Kenya. Moreover, DT SACCOs provide affordable and accessible credit to their members (Millan, Kamau & Ibia, 2023). This has enabled small businesses, farmers, and individuals to access funds for various purposes, such as expanding businesses, education, and home improvements. This access to credit has been crucial for economic growth. Therefore, the importance of DT SACCOs revolves around their role as main channels of savings and allocators of credit in an economy. This is the intermediation process which they must achieve efficiently (Arora, 2014; Ndung'u, 2010).

Furthermore, they possess the capacity and potential to access customers in regions that are unappealing to financial institutions, such as rural or economically disadvantaged areas. The primary aim of cooperative societies is to empower their members by promoting savings and offering credit facilities (Khalayi, Ondiek, & Musiega, 2014). Digital transformation SACCOs facilitate intermediation by connecting savers and investors, directing funds towards investments that ensure a favourable return on investment. A stable and efficient financial system consolidates, transmits, and mitigates risks while simultaneously enhancing liquidity and information dissemination through the utilisation of advanced financial products and technology (ROK, 2012). Efficiency, as stated by Ndung'u (2010), is attained when there exist robust institutions that possess the necessary capability to meet market demands while adhering to legal and regulatory obligations such as maintaining sufficient capital, minimum liquid assets, and efficient management. The development of the SACCO Societies Regulatory Authority (SASRA) may have been influenced by the need to provide legal and financial rules for deposit-taking SACCOs, similar to the laws provided by the Central Bank of Kenya for commercial banks (Otwoko, 2023).

Financial stability for financial institutions such as deposit taking savings and credit co-operative societies is important since it determines the health of these institutions and gives investors and customers' confidence and trust. When SACCOs maintain a strong financial position, it provides assurance that they are capable of meeting their obligations, thereby attracting more investment and customer deposits. Asatiani, Basuki and Setiawan (2020) emphasizes the role of financial stability in building public trust, indicating that a stable financial status encourages customers to engage in more transactions and investments with these institutions. Moreover, financial stability ensures the longevity and growth of SACCOs. A stable institution is better equipped to weather economic downturns and offer competitive

interest rates to its members (Mwangi & Ombui, 2018). This in turn helps in community development, as many of these societies are designed to be community-based.

Capital adequacy is a critical factor that contributes to the financial stability of Savings and Credit Co-operative Societies (SACCOs) (Ndung'u & Mutinda, 2022). Having a strong capital base allows these institutions to absorb potential losses, thus safeguarding depositor and investor funds. Adequate capital also enables SACCOs to take calculated risks that can lead to growth and profitability. Smith and Johnson (2020) underlines the role of capital adequacy in building a financially stable environment, emphasizing that well-capitalized SACCOs are more resilient against economic shocks.

On the global stage, the financial stability of SACCOs varies widely across countries. In Haiti, SACCOs have been instrumental in driving financial inclusion, particularly in rural areas (Messabia, Beauvoir & Kooli, 2023). However, they face challenges relating to stringent regulations and lack of technological advancements. Despite their crucial role in the economy, SACCOs in Haiti often struggle with financial stability due to undercapitalization and poor governance structures (Messabia, Beauvoir & Kooli, 2022). In contrast, credit unions as they are called in the United States are generally considered to be more stable, benefiting from a robust regulatory framework and a more advanced banking infrastructure. However, they face competition from commercial banks and fintech companies, which affect their market share and financial stability (Ahmed & Yusof, 2022). The co-operative movement in South Africa has made significant progress, but the outcomes of this extensive revolution are still awaited, despite the presence of favorable laws and government incentives. These factors have led to a substantial growth in the number of co-operatives, from 4,000 in 2004 to 132,000 in 2019 (Mushonga, Arun & Marwa, 2019). The long-term viability of these cooperatives, independent of government funding, is highly questionable, as many of them exist just in theory without any substantial economic activity taking place in practice. In order for cooperatives to achieve long-term viability, it is crucial that they strive for complete adherence to the principles and ideals of the cooperative movement.

In Kenya, the fluctuation in number of deposits taking SACCOs as occasioned by increase in non-performing loans between the year 2017 and 2021 (SASRA, 2020), clearly shows an element of instability in this subsector. This issue of non-performing loans (NPL) is the major source of financial instability risk that threatens the survival of DTS in Kenya. Statistics indicate that Non-performing Loans have been on the rise as evidenced by the increase in percentage of Non-Performing Loans (NPLs) to Gross Loans (GLs) from 5.23% in 2016 to 6.14% in 2017, 6.3% in 2018, 6.15% in 2019 and 8.39% in 2020 (SASRA, 2020). If this trend is allowed to continue, then this sector's contribution to financial intermediation will be adversely affected. It is on this basis that the study seeks to establish the effects of firm characteristics and financial stability of deposit taking SACCOS in Kenya. This study used Non-Performing Loans to measure financial stability of SACCOs.

In Kenya, the issue of non-performing loans (NPL) has become an increasing problem that threatens the financial stability of SACCOs. Non-performing Loans have been on the rise as evidenced by the increase in percentage of Non-Performing Loans (NPLs) to Gross Loans (GLs) from 5.23% in 2016 to 6.14% in 2017, 6.3% in 2018, 6.15% in 2019 and 8.39% in 2020 (SASRA, 2020). This trend threatens the ability of this sector's contribution to financial intermediary adversely. This informs this study which seeks to investigate the effects of firm characteristics and financial stability of deposit taking savings and credit co-operatives societies in Kenya. NPLs analyzes a firm's income as well as the values on its balance sheet to determine the overall financial health. Moreover, existing statistics shows that financial stability of DT SACCOs in Kenya has not been stable as it has been erratic.

Capital adequacy extends to money required by an institution to hold or have in order to facilitate sound and smooth business operations over a period of time (Olalekan & Adeyinka, 2013). In this regard, availability of adequate capital is necessary to prevent a firm from failure by absorbing any possible losses. Capital adequacy denotes the ability and competence of a firm to determine how well it addresses the risks it is faced with and relates to what way the firm is capable of making decisions founded on the corporate strategy (Andekina & Aimagambetova, 2015). According to Almazari and Alamri (2017), Capital adequacy ratio serves as an important pointer towards a firm's management competence especially in deploying financial assets with the aim of optimizing shareholder returns. It denotes whether a company has adequate capital to address its customer's needs.

SASRA (2010) mandated that all DT-SACCOs must always maintain a minimum core capital of at least Kshs 10 million. Additionally, they must maintain minimum capital adequacy ratios of 10% for core capital to total assets, 8% for core capital to total deposits, and 8% for institutional capital to total assets. The core capital, as specified in the Act, consists of fully paid-up members' shares, issued capital, disclosed reserves, retained earnings, grants, and gifts. These funds are not intended to be used unless the SACCOs are liquidated. Thus, their core capital may only be built through recruitment of new members to contribute additional share capital, or through retention of surplus to increase the reserves and retained earnings, or through receipt of grants and donations (SASRA, 2020). In this study, the core capital to total assets ratios was used to measure capital adequacy as recommended by (Mohanty & Mahakud, 2019).

1.1 Statement of the Problem

Deposit Taking (DT) Savings and Credit Cooperative Societies play a vital role in strengthening the economy by encouraging savings and providing accessible credit. The Kenyan economy is heavily dependent on the Co-operative sector and over 80% of the population derive their livelihood directly or indirectly from the Co-operative sector (Kagiri, 2023). These financial institutions offer a trusted, community-based platform for individuals to save, often at higher interest rates than traditional banks, which helps build a pool of available funds (SASRA, 2017). They collect and organize deposits from micro-savers and channel them to investors. This is the intermediation process which they must achieve efficiently (Arora, 2014; Ndung'u, 2010). However, most of these SACCOs are struggling with financial stability issues and one of the key issues has been inadequate capital to meet operational costs and loan demands (SASRA, 2021). According to SASRA (2021), a considerable number of SACCOs in Kenya fail to meet the minimum capital requirements. Moreover, poor governance, such as lack of risk management practices and insufficient financial oversight, has added to their instability (Wangechi & Irungu, 2023).

The SACCO sector in Kenya has experienced significant challenges in recent years, as elucidated in reports by the Sacco Societies Regulatory Authority (SASRA). These challenges encompass a spectrum of issues, ranging from regulatory compliance to financial management shortcomings. According to SASRA (2017) report, the approval process for new SACCO registrations was stagnant, with none gaining approval during that period. Out of the seven applications pending at the beginning of the year, the majority were rejected due to their failure to meet the minimum legal requirements. This inability to adhere to regulatory standards not only hindered the growth of new SACCOs but also posed risks to existing ones. Furthermore, the report highlighted that despite 176 Deposit Taking SACCOs (DT-SACCOs) being operational, two had their licenses revoked due to financial insolvency, signaling underlying issues within the sector. Moreover, the inability of certain SACCOs, including prominent ones like Moi University, Nitunze and Uchongaji, to provide satisfactory financial

accounts for the year ending December 2017 due to non-compliance with accounting standards further exacerbated the risk exposure of the DT-SACCO industry (SASRA, 2017, 2019,2020).

Despite regulatory efforts, challenges persisted, as evidenced by subsequent reports. The 2019 SASRA report shed light on the pressing issue of delayed payments within the sector, which amounted to approximately Kshs 3.86 billion owed collectively to organizations employing SACCO members. This delay not only affected the liquidity and core capital of DT-SACCOs but also impeded their ability to provide timely loans and credit services to their members (Opala, 2014; Kiragu, 2014). Moreover, instances of financial mismanagement and dishonest practices by leadership figures within DT-SACCOs have exacerbated the sector's woes, leading to license revocations and closures in severe cases. The increase of non-performing loans (NPLs) further compounded the situation, with the percentage of NPLs to Gross Loans (GLs) rising from 5.23% in 2016 to 8.39% in 2020, posing a significant threat to the financial stability of SACCOs in Kenya (SASRA, 2019, 2020). While existing studies have highlighted the importance of factors such as liquidity, capital adequacy, and management quality in preserving SACCO financial stability, there remains a need for further research to comprehensively understand the intricate relationship between firm characteristics and financial stability within the SACCO context, bridging the conceptual and contextual gaps to inform more effective regulatory interventions.

1.2 Research Objective

To evaluate the effect of capital adequacy on financial stability of deposit taking Savings and Credit Co-operative societies in Kenya.

1.3 Research Hypothesis

H₀: Capital Adequacy has no significant effect on financial stability of deposit taking Savings and Credit Co-operative Societies in Kenya.

1.4 Scope of the Study

The conceptual focus of the study was on capital adequacy and how it affect financial stability which was measured using Non-Performing Loans. The study was anchored on agency theory and relied largely on the data from the SACCOs published financial statements (secondary data) collected with the help of a data review guide. This study took into consideration a population of 160-deposit taking SACCOs in Kenya (SASRA, 2021). The (2021) SASRA Supervision Report indicates that as of December 2021 a total of 175 Deposit taking SACCOs were in operation and 15 of the SACCOs were unable to meet their financial obligations forcing the regulator to revoke their full licenses for the year 2022. A census approach was used for the study. The study time scope was from the year 2017 to 2021 as it coincided with implementation and post implementation period of the SASRA prudential guidelines. The study adopted panel data and utilized panel regression analysis. The selection of panel data was motivated by its capability to enable a researcher to examine the actions of each individual entity across several locations and across a period of time.

1.5 Value of the Study

This study holds immense importance for diverse stakeholders in the business. The findings of this study may offer the essential information to the SACCOs and other stakeholders, enabling them to meet their immediate and future regulatory requirements. Managers and stakeholders in this sector should be made aware of the impact of business characteristics and financial stability of DTS in Kenya. This would greatly aid in the development of policies to improve the financial stability of deposit-taking SACCOs in Kenya. The results of this study

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may also have significant implications for the policy formulation process. The findings of this study can be utilized by stakeholders such as SASRA, National Treasury, and other relevant entities to develop policies that will bolster the economic impact of deposit taking SACCOs. The study may contribute to the existing literature by addressing the information gap and expanding the understanding of the impact of business characteristics and financial stability on DTS in Kenya. This study may establish a fundamental framework for future scholars and researchers, offering a base and suggestions for further investigation in related fields worldwide.

2.0 Literature Review

2.1 Theoretical Review

This part provides major models which anchored the study. The study was informed by Agency Theory. The prepositions of this theory support the relationship between the research variables that is, capital adequacy and financial stability of Deposit taking SACCOs in Kenya.

2.1.1 Agency Theory

Postulated by Jensen and Meckling (1976), the theory extensively talks about the relationship existing between two parties: the principal and the agent. It addresses scenarios where one party is employed to safeguard the interests of another, acknowledging the potential for conflicts of interest driven by differing motivations and asymmetric information. This theory emphasizes individuals' pursuit of self-interest, often at the expense of others, within the context of corporations where management serves as agents hired by shareholders to maximize the firm's value and wealth. Despite initial mechanisms aimed at aligning the interests of principals and agents, such relationships can vary in nature, ranging from cooperative to coercive, across different levels of organizational interaction. Agency Theory plays a pivotal role in implementing governance mechanisms to oversee and regulate the actions of agents in jointly held organizations, with its relevance extending to studies on financial stability. In the case of Deposit Taking SACCOs, shareholders entrust management with the task of ensuring financial stability, yet recent concerns over financial stability highlight the need for effective managerial execution. Shareholders, acting as both principals and agents, bear the responsibility of safeguarding entrusted resources, underscoring the importance of Agency Theory in evaluating managerial efficiency and its impact on financial stability within SACCOs.

2.1.2 Market Power Theory

As postulated by Bhagwati, (1965), the market power theory was later advanced by Berger and Hannan (1998); Shepherd (1986) and Schmalensee (1987). The theory rests on the assertion that market concentration is the most efficient proxy for assessing market power. Companies in such markets can influence prices by controlling both demand and supply, driven by the imperfect competition paradigm where entities possess varying degrees of market influence. This theory underscores the link between competitiveness, efficiency, and profitability, with greater competitiveness fostering efficiency and ultimately enhancing profitability. The theory's premises, including the relative market power and structure-conduct-performance (SCP) premises, highlight the influence of market concentration on pricing strategies and profitability, with more competitive environments favoring efficient firms. In the context of Kenya's deposit-taking SACCOs, intense market competition drives individual SACCOs to differentiate their products and strive for profitability, underscoring the importance of market competitiveness in shaping the relationship between firm characteristics and financial stability.

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2.2 Empirical Review

Several studies have been carried out in this area. This section therefore tried to look at the different past studies that have been undertaken in this field to bring out the various study gaps this study sought to fill.

2.2.1 Capital adequacy and financial stability

In a study, Nasieku (2014) examined the impact of the Basel capital adequacy framework on the economic efficiency of banks in Kenya from 2001 to 2011. The study utilised data envelopment analysis (DEA) to assess the economic efficiency of banks. The study revealed that the allocation and utilisation of resources (efficiency) in the Kenyan banking sector were influenced by the bank's capital level and the economic conditions of the country. The study determined that the presence of voluntary capital cushions, as indicated by the leverage ratio, did not have any impact on the effectiveness of banks in Kenya. However, risk-based capital cushions had a positive influence on bank efficiency. The study's primary focus was on the economic efficiency of banks in Kenya, revealing noticeable gaps in both conceptual and contextual understanding. This study primarily examines the financial stability of deposit-taking Savings and Credit Cooperative Organisations (SACCOs) in Kenya. The analysis will specifically cover the period from 2017 to 2021.

Kimutai (2019) examined the impact of financial stability on debt-to-equity ratios in Kenya. Data from 110 SACCOs was collected and examined for the period between 2012 and 2016. The study employed capital adequacy as a metric to assess the financial stability of SACCOs. Additional metrics encompassed in the analysis were profitability, solvency, and asset quality. The study determined that Capital adequacy, asset quality, and liquidity all had a statistically significant impact on the efficiency of the DTSSs. The study revealed that size had a statistically significant moderating impact on the correlation between financial soundness and efficiency. Hence, the study indicated that implementing more stringent restrictions on Capital adequacy is necessary to enhance the effectiveness of deposit taking SACCOs. The study focused on assessing the efficiency of deposit taking savings and credit cooperatives (SACCOs) in Kenya. It targeted a total of 110 SACCOs and identified both conceptual and methodological weaknesses in the research. This study aimed to fill the existing gap by specifically examining the financial stability of deposit-taking Savings and Credit Cooperative Organisations (SACCOs) in Kenya. The study will analyse a combined total of 160 Savings and Credit Cooperative Organisations (SACCOs) across the time span from 2017 to 2021.

Ochola (2021) studied SASRA prudential standards and performance of deposit taking SACCOs in Nairobi City County, Kenya. Specific objectives included: to examine the effect of minimum capital adequacy, assets, assets quality and liquidity requirements on the performance of deposit taking SACCOs in Kenya. A cross sectional analysis and descriptive research design based on primary and secondary data was employed. The findings of the research confirmed that the prudential standards of SARSA had significantly influenced the performance of the SACCOs both in terms of the regulatory standards instituted for membership and their sustainability. A considerable number of SACCOs also demonstrated improvement in how they performed concerning general efficiency, loan cycle, portfolio, and membership. Since the study focused on SASRA prudential standards as independent variable and performance as dependent variable, hence conceptual gap is presented. In addition, the study used a mixture of both primary and secondary data, hence methodological is presented. This study delved in assessing effect of capital adequacy, liquidity, and management efficiency on stability of deposit taking SACCOs, not only in Nairobi City County but in Kenya as a whole, which totals to 160 SACCOs that were fully licensed.

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2.3 Conceptual Framework

The conceptual framework is the researcher’s conceptualization of the relationship between the variables under study. The conceptual framework in Figure 1 shows the relationship between capital adequacy and stability of DTS in Kenya.

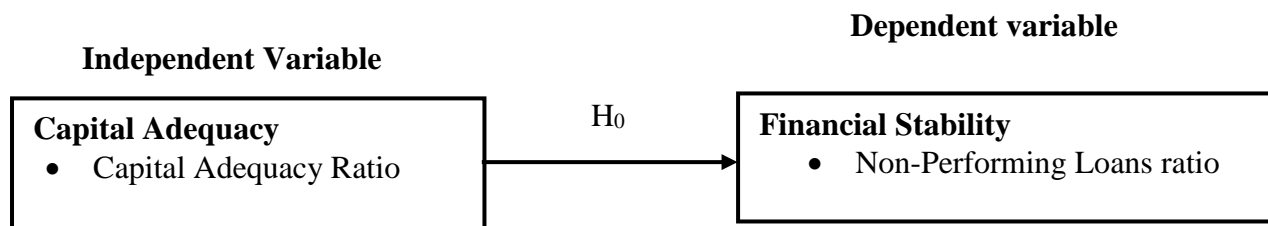


Figure 1: Conceptual Framework

Source: Researcher, 2023

3.0 Methodology

The section highlights various methodology adopted for the study

3.1 Research Philosophy

The phenomenological and positivist approaches to study are the two sorts of research paradigms. Instead of focusing on testing theories, phenomenology encourages the development of new theories. This research philosophy operates under the assumption that the environment and events being studied are highly objective, external, and largely unaffected by the research and the researcher. In contrast, the philosophy of social constructivism posits that knowledge about the environment and events is socially produced and completely subjective to the researcher's perspective (Bell & Bryman, 2007). The positivist research perspective is commonly used for studying visible social reality (Cohen & Crabtree, 2006; Saunders *et al.*, 2009). Below are few instances of positivist research. The researcher gathered quantitative data and conducted statistical analysis to test hypotheses. The hypotheses were either rejected or not rejected based on the results (Nickerson, 2022). This was done in accordance with the research methodology employed by the study.

3.2 Research Design

A well-structured research design is important for ensuring the reliability and validity of research findings. An explanatory research design was therefore employed by the researcher in this study. The choice of explanatory research design was supported by Kerlinger and Lee (2000) who anchored that the design can be adopted mainly when e study variables were not be manipulated throughout the study. Therefore, the choice of the design was justifiable since the study sought to establish the effect of capital adequacy and financial stability of DTSs in Kenya.

3.3 Empirical Model

The study used panel data that encompassed both cross-sectional and time series aspects. Therefore, panel regression analysis was used to analyse the data. Panel data analysis offers greater advantages compared to both time series and cross-sectional analysis due to its ability to incorporate unobservable variation in a panel dataset. The general model of the study is adopted from Al-Khouri (2012) as follows:

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$$Y_{it} = \beta_0 + \beta X'_{it} + \varepsilon_{it} \dots\dots\dots 1$$

Where;

Y_{it} = Financial Stability of SACCO i at time t (Non-performing Loans)

X' = Vector of independent variables at time t (Capital Adequacy)

β_0 = Constant term

β = Coefficients

ε = Error term

Equation 1 was decomposed into 2 which was utilized for estimation.

$$NPL_{it} = \beta_0 + \beta CA_{it} + \varepsilon \dots\dots\dots 2$$

Where;

NPL_{it} = Non-Performing Loans for DTS i at time t

CA_{it} = Capital Adequacy of DTS i at time t

β = Coefficients

e = the error term assumed to be normal in distribution with zero mean and variance

3.4 Target Population and Sampling Design

SASRA (2020) indicates that as at the year 2020 Kenya’s DT-SACCOs sector comprised of 175 registered DT- SACCOs. However, out of these, only 160 had full licenses renewed for the period. The inclusion criteria for this study was based on fully registered SACCOs whose licenses have no restrictions for the ensuing year. Registered DT - SACCOs outside this category were thus excluded from the study. The study applied census approach for the sampling design. A census involves the study of all the firms within the population (Cooper & Schindler, 2014). The sampling frame for this study consisted of all the 160 Deposit Taking SACCOs that were fully licensed in Kenya (SASRA, 2020). The data was acquired from DTS financial statements and DTS oversight reports provided by SASRA. The study was conducted from 2017 to 2021, and the document review guidelines.

3.5 Data Analysis and Presentation

Data analysis was conducted to facilitate the presentation of data and draw conclusions. The data analysis used descriptive analysis as well as inferential analysis, specifically correlation and panel regression analysis. The descriptive analysis relied on statistical measures such as standard deviation, mean, number of observations, maximum and lowest values, as well as trend analysis of the study variables. Panel regression analysis-related diagnostic tests were administered. The study hypotheses were tested using the panel regression model once all the diagnostic test requirements were met. The study also used a significance level of 0.05 to test its hypotheses. In order to test hypotheses, the p-value approach was employed. Data for the study came from an Excel spreadsheet, which was imported into the STATA software version for analysis. Data presentation was in the form of Tables.

4.0 Results and Findings

This section presents descriptive statistics in the form of tables and figures; together with their respective interpretations and discussion. The second subsection presents inferential statistics comprising correlation analysis and panel regression analysis results.

4.1 Descriptive Statistics

This study conducted descriptive analysis on the study variables which included capital adequacy and financial stability which was measured using non-performing loans over the

study period of between 2017 and 2021. The descriptive statistics results are presented in table 1.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
NPLs	800	5.65000	21.7000	13.87186	4.62744400
Capital Adequacy	800	3.91220	21.5915	10.81161	3.804785405

Where: NPLs is Non-performing Loan Ratio

Source: Research Data, 2023

Descriptive results in Table 1 shows variation in NPLs ratio across the DT SACCOs studied. The NPLs ranged between a minimum of 5.6500 and maximum of 21.700 NPL, indicating that different SAC COs had significantly different levels of non-performing loans within the study period. Some DTS were clearly more successful in managing their loan portfolios than others. The results revealed a mean NPL value of 13.87186. This implies that DTS with NPLs higher than this mean may need to consider implementing measures to reduce their non-performing loans. In addition, the results revealed a standard deviation of 4.627444 indicating the extent of variability in NPLs around the mean. This variability is attributed to a range of factors, including differences in lending practices, economic conditions, or the effectiveness of loan recovery mechanisms in different regions. These results are in support of the assertions past researchers that, financial stability is important for financial institutions, including SACCOs, to fulfill their obligations and maintain public confidence, particularly during unexpected events like the 2007-2009 financial crisis. This concept, emphasized by Elsayed, Naifar and Nasreen (2023) highlights the importance of stability over growth, with institutions needing to manage both internal factors, as per Kalani and Wareru (2009), and external influences beyond their control, as noted by Ongore and Kusa (2013). The variation in Non-Performing Loans (NPLs) among DT SACCOs exemplifies these challenges, suggesting that those with higher NPLs may struggle with stability and public confidence.

The findings in Table 1 show that the DTSs recorded a minimum value of 3.9122 and a maximum value of 21.5915, with a mean value of 10.81161 and a standard deviation of 3.804785405. Capital adequacy is crucial for the financial health and long-term stability of DTSs. The mean value of 10.81161 suggests that, on average, these DTSs in Kenya had a moderate level of capital during the study period. However, the standard deviation indicates that there was a fair amount of variation in capital adequacy among these SACCOs. These findings show a moderate average level of capital with considerable variation, and are consistent with the existing literature emphasizing its importance for financial stability and efficiency. The results are consistent with the observation by Nasieku (2014) which showed how capital adequacy influences the economic growth of Kenyan banks, noting a positive effect of risk-based capital cushions on efficiency. Additionally, Amina (2016) indicated the significant impact of core capital on the financial performance of SACCOs in Nairobi, pointing out limitations in study scope. Similarly, Kimutai (2019) established that capital adequacy, along with asset quality and liquidity, significantly affects the efficiency of DTSs in Kenya, recommending stricter capital adequacy regulations to enhance efficiency.

4.3 Correlation Analysis

The study sought to assess the nature and the strength of the association between capital adequacy and financial stability. Table 2 shows the correlation matrix.

Table 2: Correlation Matrix

	NPLs	Capital Adequacy
NPLs	1.0000	
Capital Adequacy	-0.5336*	1.0000

Source: Research data, 2023

Table 2 shows the nature and the strength of the association between different firm characteristics and financial stability, as measured by NPLs, among DT SACCOs in Kenya. The results show that capital adequacy has a moderate negative and significant correlation with NPLs ($r=-0.5336^*$). This implies that higher levels of capital adequacy are associated with reduced NPLs thus greater financial stability among DTS in Kenya. This finding points to the critical role of maintaining sufficient capital reserves as a risk mitigation strategy for DTS in Kenya, as it appears to contribute to the reduction of non-performing loans and, consequently, enhances their overall financial stability. These findings are in line with the findings of a study that was conducted by Nasieku (2014). In that study, it was discovered that the behaviour of the Kenyan banking sector in terms of resource allocation and utilisation (efficiency) was affected by the level of capital held by the bank as well as the economic position of the country.

According to the findings of the study, the presence of risk-based capital cushions had a beneficial influence on the efficiency of banks in Kenya, whereas the presence of voluntary capital cushions, as assessed by the leverage ratio, did not have any impact on the effectiveness of banks in Kenya. The findings are in agreement with the conclusion that Amina (2016) came to, which said that the performance of SACCOs is highly influenced by the core capital within the organisation. Furthermore, the findings are in agreement with the observations made by Kimutai (2019), who investigated the impact of financial stability on DTSs in Kenya and discovered that capital adequacy, asset quality, and liquidity all had a statistically significant impact on the efficiency of the DTSs. Additionally, the findings on capital adequacy are consistent with the regulations set forth by SASRA. The SASRA Report (2020), for instance, emphasizes the need for SACCOs to maintain adequate capital buffers to mitigate risks and ensure financial stability.

4.5 Panel Regression Analysis

The study employed a panel regression analysis to ascertain the impact of capital adequacy on financial stability of DT SACCOs in Kenya. Table 3 show the panel regression analysis results. The panel regression analysis conducted to examine the relationship between Non-Performing Loans (NPLs) and Capital Adequacy reveals a statistically significant result. The model's goodness of fit, indicated by the R-squared value of 0.7196, suggests that approximately 71.96% of the variance in NPLs can be explained by the independent variable, Capital Adequacy. The high F-statistic of 2043.47 further confirms the overall significance of the model, with a p-value of 0.0000 indicating strong statistical significance. The coefficient estimate for Capital Adequacy is -0.3249614, with a standard error of 0.0309178, indicating a negative relationship between Capital Adequacy and NPLs. This coefficient is statistically significant at the 0.05 level, with a z-value of -10.51 and a p-value of 0.000. Additionally, the constant term has a coefficient of 1.547451 with a standard error of 0.2870911, indicating its significance in the model. Overall, the regression analysis suggests that Capital Adequacy significantly influences the level of Non-Performing Loans in the examined SACCOs.

Table 3: Panel Regression Analysis

Dep Var: NPLs	Coef. (β)	Std. Err.	z	P> z
Capital Adequacy	-0.3249614	0.0309178	-10.51	0.000
Constant	1.547451	0.2870911	5.39	0.000
R Squared	0.7196			
F statistic	2043.47			
P-value	0.0000			

Source: Research data, 2023

FS=1.547451-0.3249614X

Each of these coefficients shows how much the dependent variable financial stability is expected to change with a one-unit change in the respective independent variables, assuming all other variables in the model are held constant.

Where:

FS = Dependent variable (Financial Stability measured by Non-Performing Loans Ratio)

X = Capital Adequacy

The analysis revealed that capital sufficiency had a notable and adverse impact on non-performing loans (NPLs), with a beta coefficient of -0.3249614 and a p-value of 0.000, which is less than the significance level of 0.05. Consequently, raising the level of capital adequacy would lead to a drop of around 0.3249614 units in non-performing loans (NPLs), which signifies an enhancement in financial stability. The results align with a study conducted by Nasieku (2014), which revealed that the performance of the Kenyan banking industry, in terms of resource allocation and efficiency, was influenced by the bank's capital holdings and the economic conditions of the country. The study concluded that the presence of voluntary capital cushions, as indicated by the leverage ratio, did not have any impact on the effectiveness of banks in Kenya. However, risk-based capital cushions had a favourable effect on bank efficiency. The findings are in agreement with the conclusion made by Amina, (2016) that, SACCOs performance are significantly influenced by its core capital. Moreover, the results agrees with the observations by Kimutai, (2019) who studied the effect of financial soundness on DTSS in Kenya and found that, capital adequacy, asset quality and liquidity all had a statistically significant effect on efficiency of the DTSSs.

4.6 Hypothesis Testing

Panel regression analysis was followed by hypothesis testing at 0.05 significance level. The following null hypothesis was tested:

H₀: Capital Adequacy has no significant effect on financial stability of deposit taking Savings and Credit Co-operative Societies in Kenya

The study sought to evaluate the effect of capital adequacy on financial stability of deposit taking Savings and Credit Co-operative societies in Kenya. Consequently, the null hypothesis that capital adequacy has no significant effect on financial stability of deposit taking Savings and Credit Co-operative Societies in Kenya was formulated to address this objective at 95 percent confidence level. Table 3 indicates that capital adequacy had a coefficient of -0.3249614 with a p-value of 0.000 which is less than the significance level of 0.05 hence a rejection of the null hypothesis. The study consequently finds that capital adequacy has a statistically significant effect on financial stability of deposit taking Savings and Credit Co-

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operative Societies in Kenya. These results corroborate those of a study by Nasieku (2014) that indicated that the amount of capital a bank possessed and the state of the economy in Kenya influenced the sector's actions with regard to the allocation and use of resources (efficiency). According to the research, Kenyan banks' efficiency was unaffected by the presence of voluntary capital cushions as evaluated by the leverage ratio.

5.0 Conclusion

The study concludes that capital adequacy is a crucial determinant of financial stability in Deposit Taking Savings and Credit Co-operative Societies (DT SACCOs) in Kenya. The research revealed a strong correlation between higher levels of capital adequacy and lower non-performing loans (NPLs), suggesting that adequate capital reserves are vital for mitigating risk and ensuring financial stability. This conclusion aligns with previous studies, emphasizing the significant role of capital in maintaining the financial health and stability of these institutions. The findings underscore the importance of SACCOs maintaining sufficient capital to manage risks effectively and ensure long-term sustainability.

6.0 Recommendations of the Study

Based on the findings and the conclusions, this study recommends that DT SACCOs should prioritize maintaining sufficient capital reserves as a fundamental strategy for mitigating financial risks. Regular assessments of capital adequacy should be conducted to ensure compliance with regulatory requirements. Additionally, the management of these SACCOs should consider exploring opportunities to strengthen their capital base through prudent financial management and strategic partnerships. Regulatory authorities like SASRA should establish and enforce stringent capital adequacy requirements for DT SACCOs, aligning capital reserves with risk profiles and size. The study highlights the importance of capital adequacy in maintaining financial stability. It is thus recommended that, DT SACCOs should prioritize maintaining sufficient capital reserves as a risk mitigation strategy. This includes developing robust capital management plans that ensure adequacy under various scenarios.

The study also recommends that incentive structures should be designed to align the interests of managers with those of the SACCOs' members. Performance-based incentives that are tied to long-term financial stability and efficiency can motivate managers to make decisions that are in the best interest of the SACCO and its members. Effective risk management controls are essential to mitigate agency problems. DT SACCOs should establish comprehensive risk management frameworks that monitor and control risks associated with lending, investments, and operational activities. This includes setting risk limits, regular risk assessments, and implementing internal controls to prevent mismanagement or unethical behaviors. Finally, the study recommends that there is need for DT SACCOs to enhance their market power. This should be achieved by offering unique products and services, leveraging technology to improve service delivery, and implementing effective marketing strategies to increase market share and member base.

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