

FINANCIAL INVESTMENT ALLOCATION AND LIQUIDITY OF DEPOSIT TAKING SAVINGS AND CREDIT CO-OPERATIVES IN KENYA: MODERATING EFFECT OF CAPITAL ADEQUACY

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Abstract: Savings and Credit Co-operatives have significantly contributed to financial inclusion and savings mobilization in Kenya by providing accessible and attractive savings products tailored to the needs of low-income and informal sector populations. However, despite this major role of improving financial inclusion and financial outreach, liquidity remains a significant concern, with 39% of DT-SACCOs reported to be financially unstable, compared with 35% reported in 2023, with 62% reporting a write off of KSh 13 billion invested in Kenya union of savings and credit co-operatives liquidated on September, 2026. This situation is further aggravated by the fact that 13.5% of financial investments were channeled into pyramid schemes exposing members' deposits to significant risks, raising concerns about compliance with the SACCO Societies Act, which requires SACCOs to invest funds in safe and prudent financial instruments. This poses a threat to SACCO liquidity, as financial resources intended to support members' financial needs and generate sustainable returns are being allocated to high-risk investments, constraining SACCOs' ability to meet short-term obligations and maintain adequate liquidity. Thus, the persistence of liquidity challenges despite these regulatory efforts to improve liquidity has necessitated the current study to investigate the extent to which capital adequacy moderates the relationship between financial investment allocation and liquidity of DT-SACCOs in Kenya. Anchored on modern portfolio theory, the study employed longitudinal panel research design within a positivist research philosophy. The target population comprised 162 DT-SACCOs licensed between 2015 and 2024, of which 12 were excluded for being delicensed during the study period. Applying inclusion and exclusion criteria, 150 DT-SACCOs that remained licensed and active and had complete audited financial data for the study period were included. A census approach was adopted, with secondary data collected from all 150 DT-SACCOs using a data collection sheet and analyzed using STATA. Prior to panel regression analysis, the Hausman specification test confirmed that the random-effects model was appropriate for estimating the relationship among the study variables. The panel regression results established that financial investment allocation has a negative and statistically significant relationship with DT-SACCOs' liquidity in Kenya. The findings further revealed that capital adequacy significantly moderates this relationship, with the negative

interaction effect indicating that higher capital adequacy strengthens the adverse effect of financial investment allocation on liquidity. Thus, higher capital adequacy does not necessarily translate into greater liquidity recommending SACCOs to adopt a liquidity-sensitive financial investment allocation framework that considers the maturity, convertibility and liquidity characteristics of each investment before committing members' funds.

Keywords: Financial investment allocation; capital adequacy, liquidity, DT-SACCOs

1. Introduction

Liquidity refers to the ability of an institution to meet its financial obligations as they fall due without disrupting normal operations. It reflects the availability of sufficient cash and readily convertible assets to meet immediate financial demands. In DT-SACCOs, liquidity is reflected in the ability to honor members' withdrawals, satisfy loan demands and settle short-term obligations while sustaining financial intermediation. Liquidity management is particularly important in DT-SACCOs because, unlike commercial banks, they do not have access to lender-of-last-resort facilities, which places greater responsibility on SACCOs to maintain adequate liquid resources from their own funds (Gachenga, Muthoni & Metto, 2025a). To strengthen their liquidity position, they invest surplus funds in safe and highly liquid financial investment vehicles that can be converted into cash within a short period, providing an additional source of liquidity when immediate financial demands arise. The ability to convert these investments into cash enables them to meet members' withdrawals, loan demands, operational expenses and other short-term financial commitments without disrupting their normal operations and provision of financial services (Kibet & Odongo, 2020). Financial investment allocation is therefore important in ensuring that surplus resources are not left idle but are prudently invested in risk free financial instruments to safeguard members' funds, generate reasonable returns and strengthen the SACCO's liquidity position. Globally, SACCOs have mobilized \$3.8 trillion in assets, with 71% allocated to lending activities and the remaining 29% is allocated to financial investments in government securities, shares, stocks and other investment instruments (WOCCU, 2024). In Europe and South America, SACCOs are increasingly diversifying their investment portfolios to enhance returns through green bonds and socially responsible investments in Europe and investments in productive sectors such as agriculture and microfinance in South America (Wilkster, 2024). However, SACCOs involving volunteers in critical decision-making, has created opportunities for fraudsters leading to diversion of SACCO financial resources into personal investments and pyramid schemes exposing SACCOs to financial losses, with 35% reported to be experiencing liquidity challenges (WOCCU, 2024).

Africa accounts for 43% of SACCOs globally, serving 46.36 million members, with Kenya leading the continent and ranked seventh globally, with a penetration rate of 11.7% (WOCCU, 2024, Finaccess, 2024). This substantial presence demonstrates the growing significance of SACCOs within the Kenya's financial system, where they play an important role in savings mobilization, credit provision and financial inclusion, while the growth in their financial resources has increased the need for prudent financial investment decisions. However, despite government investment in the SACCO Societies Regulatory Authority (SASRA) to strengthen supervision, promote prudent financial management and safeguard members' funds, 39% of DT-SACCOs were reported to be financially unstable in 2024, compared with 35% in 2023, signaling increasing financial vulnerability within the sector (SASRA, 2024; 2023). The

concern is particularly significant because the SACCO Societies Act, 2008 provides a prudential framework intended to guide the management and investment of SACCO funds, including investment in relatively safe and liquid assets to enhance financial stability and protect members' savings (SACCO Societies Act, 2008). However, financial instability continues to emerge, suggesting that regulatory requirements alone may not fully prevent imprudent financial decisions. The liquidation of a major SACCO in September 2026 following reported imprudent financial decisions further illustrates the consequences that weaknesses in financial management can have on the safety of members' funds and institutional continuity. For DT-SACCOs, such developments are particularly relevant to liquidity because loss of member confidence can trigger withdrawals while poorly allocated financial resources may limit the availability of funds to meet these demands. The increasing financial vulnerability of DT-SACCOs despite strengthened regulatory oversight therefore underscores the importance of examining how financial investment allocation influences their ability to maintain adequate liquidity, protect members' funds and sustain uninterrupted financial intermediation.

1.1 Statement of the Problem

To improve liquidity, SACCOs have opened their common bond to non-members, enabling them to mobilize kshs 1.8 trillion in assets and achieve a financial inclusion of 11.7% in 2024. However, despite this growth in assets and financial outreach, liquidity remains a significant concern, with 39% of DT-SACCOs reported to be financially unstable, compared with 35% reported in 2023 (SASRA, 2024). This financial instability is concerning, with 62% of SACCOs reporting KSh 3.49 billion tied up in other investments, up from KSh 2.6 billion in 2023, alongside KSh 13 billion in SACCO funds written off following the liquidation of Kenya Union of Savings and Credit Co-operatives in September 2026 (Ministry of Co-operatives, 2026; Gachenga, et al., 2025b, c). This situation is further aggravated by the fact that 13.5% of financial investments were channeled into pyramid schemes exposing members' deposits to significant risks, raising concerns about compliance with the SACCO Societies Act, which requires SACCOs to invest funds in safe and prudent financial instruments (SACCO Act, 2008). This poses a threat to SACCO liquidity, as financial resources intended to support members' financial needs and generate sustainable returns are being allocated to high-risk investments, constraining SACCOs' ability to meet short-term obligations and maintain adequate liquidity. This has contributed to 52 SACCOs delisted over the last ten years and 69 reported illiquid (Muriithi, 2023). The situation becomes more critical because SACCOs rely on sound investment decisions to maintain liquidity buffers, support daily operations and sustain member confidence. Failure to effectively manage investment portfolios exposes DT-SACCOs to operational risks, threatening their ability to meet short-term obligations and maintain financial sustainability (Maina, Kiai and Kyalo, 2020). Although regulatory measures, including enhanced supervision by SASRA and liquidity support mechanisms, have been introduced, persistent instability indicates unresolved weaknesses in investment management and risk governance. Additionally, the strength of a SACCO's capital buffer (capital adequacy) is believed to moderate this relationship, as stronger capital reserves can help absorb liquidity shocks and reduce vulnerability during times of crisis. Therefore, there is a need to examine how financial investment decisions influence liquidity resilience among DT-SACCOs in Kenya. Understanding this relationship will support the development of strategies that promote prudent investments, strengthen liquidity management and enhance the long-term sustainability of the SACCO sector.

The existing body of literature examining the relationship between financial investment allocation, capital adequacy and liquidity in financial institutions, empirical findings remain inconclusive, particularly within the Savings and Credit Cooperative Society sector. Existing studies suggest that prudent allocation of financial investments enhances liquidity management and financial resilience by ensuring that institutional funds are invested in assets that generate returns while remaining sufficiently liquid to meet short-term obligations (Mwanzia & Makori, 2023; Gathigia & Karanja, 2020). However, Ben et al. (2024) contend that financial investment allocation does not necessarily translate into improved liquidity outcomes, particularly where investments are concentrated in illiquid or high-risk instruments and are not supported by adequate capital buffers. Similarly, the literature presents conflicting evidence regarding the influence of capital adequacy on liquidity, with Muriithi et al. (2022) and Karanja et al. (2023) reporting a significant positive relationship, while Ndubiri et al. (2021) found no statistically significant effect. These inconsistencies reveal an empirical gap regarding the relationship between financial investment allocation, capital adequacy and liquidity, particularly within deposit-taking SACCOs. Furthermore, a conceptual gap exists because prior studies have largely examined financial investment allocation and capital adequacy as separate determinants of liquidity, with limited attention to how capital adequacy may moderate the effect of financial investment allocation on liquidity. A contextual gap is also evident, as relatively few studies have specifically examined deposit-taking SACCOs in Kenya despite their reliance on financial investments as an important mechanism for liquidity management and financial sustainability. In addition, existing studies have paid limited attention to how the allocation of SACCO funds into financial investments influences their ability to maintain adequate liquidity while meeting members' withdrawal and lending obligations. Consequently, insufficient evidence exists on whether adequate capital buffers strengthen or weaken the effect of financial investment allocation on the liquidity of DT-SACCOs. This gap is particularly important given the increasing concerns regarding imprudent investment decisions and liquidity challenges within the Kenyan SACCO sector. Therefore, this study seeks to examine the effect of financial investment allocation on liquidity of deposit-taking SACCOs in Kenya and to determine the moderating influence of capital adequacy on this relationship, with a view to generating context-specific evidence that can inform regulatory policy, investment decision-making, liquidity risk management and the financial sustainability of the SACCO sector.

1.2 Objectives of the Study

The general objective of this study was to examine the effect of financial investment allocation on the liquidity of deposit-taking SACCOs in Kenya, and to establish the moderating effect of capital adequacy on this relationship. Specifically, the study sought to:

- i. Determine the effect of financial investment allocation on the liquidity of deposit-taking SACCOs in Kenya.
- ii. Establish the moderating effect of capital adequacy on the relationship between financial investment allocation and the liquidity of deposit-taking SACCOs in Kenya.

1.3 Research Hypotheses

The study tested the following null hypotheses at the 95% confidence level:

H01: Financial investment allocation has no statistically significant effect on the liquidity of deposit-taking SACCOs in Kenya.

H02: Capital adequacy has no statistically significant moderating effect on the relationship between financial investment allocation and the liquidity of deposit-taking SACCOs in Kenya.

2. Literature Review

The modern portfolio theory was pioneered by Harry Markowitz in his seminal paper, portfolio selection in 1952 further advancing through his book portfolio selection: efficient diversification of investments (1959). The theory posits that investors can maximize expected returns for a given level of risk by holding a diversified portfolio of assets rather than concentrating investments in a single asset (Markowitz, 1952, 1959). The theory is based on assumption that investors are rational and risk-averse, preferring portfolios that offer the highest expected return for the lowest possible risk. additionally, the theory assumes that portfolio risk depends not only on the individual risks of assets but also on the correlation among them; therefore, combining assets with low or negative correlations reduces overall portfolio risk without necessarily sacrificing returns (Nderitu, 2018).

Despite its significant contribution to investment theory, modern portfolio theory has been criticized for relying on assumptions that are difficult to satisfy in real-world financial markets. One major criticism concerns its assumption that investors possess perfect information and make rational investment decisions based solely on the risk-return trade-off (Markowitz, 1952). Akerlof (1970) challenged this assumption through the Information Asymmetry Theory, arguing that markets are characterized by unequal access to information, leading to adverse selection and inefficient investment decisions. Similarly, Fama (1970) acknowledged that although markets are expected to reflect available information, information dissemination is not always instantaneous or equally accessible to all investors. Furthermore, the theory assumes that diversification consistently reduces portfolio risk through imperfectly correlated assets; however, Mandelbrot (1963) demonstrated that financial asset returns exhibit fat tails and extreme price movements, while the 2007–2009 global financial crisis showed that asset correlations increase during periods of market distress, thereby diminishing the benefits of diversification, revealing that diversification alone cannot eliminate all forms of investment risk, particularly during systemic shocks (Ozili, 2024).

Despite the theoretical and empirical criticisms, modern portfolio theory remains one of the most influential frameworks guiding investment management and risk diversification, particularly to financial institutions seeking to optimize the trade-off between risk, return and liquidity (Nderitu, 2018). Financial institutions allocate their assets across loans, government securities, money market instruments and other investments to optimize returns while maintaining adequate liquidity and solvency. Since loans generally generate higher returns but are relatively illiquid and exposed to credit risk, institutions complement them with low-risk liquid investments such as treasury bills, government bonds and interbank deposits to cushion against liquidity shortages (Mutuma, 2013). MPT therefore supports strategic asset allocation by emphasizing that financial institutions should not concentrate resources in a single asset class but instead develop diversified portfolios capable of enhancing returns while minimizing overall portfolio risk (Elton, Gruber, Brown, & Goetzmann, 2014).

The theory is particularly relevant to SACCOs due to their unique nature of their business model. SACCOs primarily mobilize savings from members, who are simultaneously the owners and borrowers of the institution. Consequently, the largest proportion of SACCO assets is typically allocated to member loans,

which constitute the primary source of income (SASRA, 2023). However, regulatory requirements imposed by the Sacco Societies Regulatory Authority require SACCOs to maintain minimum liquidity levels by investing part of their resources in relatively risk-free and highly liquid assets such as cash balances, treasury bills, fixed deposits and government securities (The 2008 SACCOs Act). Modern portfolio theory supports this practice by advocating diversification between higher-return but relatively illiquid assets and lower-risk liquid investments that safeguard the institution's ability to meet withdrawal demands and other short-term obligations. Although member lending remains the core objective of SACCOs, MPT depicts that an appropriate balance between loan investments and liquid assets enhances financial stability, reduces liquidity and improves long-term sustainability.

In the context of this study, modern portfolio theory provides the theoretical foundation for explaining how financial investment allocation influences the financial performance of deposit-taking SACCOs. The theory posits that financial institutions can optimize performance by allocating available financial resources across different asset classes in a manner that achieves an optimal balance between expected returns, liquidity and risk (Markowitz, 1952). For DT-SACCOs, financial investment allocation involves determining the proportion of funds committed to member loans, government securities, fixed deposits, cash and cash equivalents and other income-generating investments. Since member loans constitute the primary source of income but are relatively illiquid and exposed to credit risk, while liquid investments generate lower returns but enhance the institution's ability to meet short-term obligations, modern portfolio theory provides a framework for evaluating investment trade-offs. Accordingly, the theory suggests that liquidity is enhanced when SACCOs allocate their investment portfolios efficiently by balancing high-yield but less liquid assets with low-risk, highly liquid investments. This theoretical perspective therefore underpins the study by explaining how financial investment allocation decisions affect liquidity of Deposit-Taking SACCOs in Kenya.

While modern portfolio theory explains why institutions diversify across asset classes to balance risk and return, it does not on its own predict the direction of the relationship between the proportion of funds allocated to financial investments and an institution's liquidity position. This study therefore also draws on Keynes's (1936) liquidity preference theory, later extended by Hicks (1937), Baumol (1952) and Tobin (1956), which holds that economic agents demand liquidity as a distinct preference separate from the return-seeking motive, and that committing resources to less liquid assets - even when those assets are well-diversified and prudently selected under a portfolio approach - reduces the funds immediately available to meet short-term obligations. Read alongside modern portfolio theory, liquidity preference theory suggests that the liquidity effect of financial investment allocation depends on the convertibility and maturity profile of the specific instruments chosen, rather than on diversification or portfolio optimisation alone: a well-diversified portfolio can still be liquidity-reducing if a meaningful share of it is held in instruments that cannot be readily converted to cash when members' withdrawal or lending demands arise. This combined theoretical lens is used in the discussion of findings to interpret the direction of the relationship between financial investment allocation and DT-SACCO liquidity.

The study's objective was examined through an empirical review. Asuma (2022) focused on the effect of non-core business investments on the financial performance of DT-SACCOs in Kenya. The study employed investments in FOSA products, treasury bills, shares and fixed deposits as study predictors. The study was anchored on portfolio diversification theory emphasizing how diversifying assets can reduce risk and improve liquidity. Using a descriptive research design, secondary data from 162 SACCOs' annual

reports was analyzed through correlation analysis, descriptive statistics and panel data regression. The findings established that investments in FOSA products, treasury bills, shares and fixed deposits has a significant effect on financial performance. The study concluded that fixed deposits were the most rewarding investment for SACCOs, providing stable returns that can offset inflation recommending SACCOs to diversify their investments, especially into low-risk assets, to strengthen liquidity. However, the critique lies in its focus solely on financial assets, neglecting other diversification avenues like real assets, which could lead to an incomplete picture of overall investment strategies.

Komen, Ngali and Matanda, (2024) did a study on the effect of investment structure on the financial performance of tier one DT-SACCOs in Kenya. The investment structure was measured through interest on loan portfolio, accounts income, unit trust investment and stocks investment. The study was anchored on Ansoff diversification matrix, financial theory of investment, pecking order theory and resource-based view theory. Descriptive research design was considered with data collected from 42 tier one DT-SACCOs for five years and analyzed through regression models. The regression model revealed that interest on loan portfolio, accounts income, unit trust investment and stocks investment significantly influenced financial performance. The study recommended SACCOs to diversify their investment portfolio beyond traditional loans into low-risk financial instruments. The study focused mainly on financial investments, ignoring other diversification forms and did not explore the capital adequacy's moderating role, which could improve the understanding of liquidity management.

Njoroge, Matanda and Otinga, (2023) carried out a study with aim to investigate the relationship between investment decisions and financial performance of DT-SACCOs. Control variables employed in the study comprised of capital expansion decision, asset renewal decisions, earnings replacement decision and research and development decision. The study was anchored on accelerator model of investment, modern portfolio theory, behavioral finance theory and the transaction cost theory. The study employed descriptive research design with study population comprising of eleven tier DT-SACCOs for a duration of five years. Data was collected through secondary data collection sheet and analyzed by the help of a STATA. The regression model established that there exists a positive relationship between capital expansion decision, asset renewal decisions, earnings replacement decision, research and development decision and financial performance of DT-SACCOs. The study concluded that diversification into assets enhances financial stability and liquidity.

Ngware (2025) examined the effect of investment diversification on the financial performance of commercial banks in Kenya, with investment diversification as the independent variable and bank size as the controlling variable. The study was grounded in portfolio theory. The study employed an analysis of unbalanced secondary panel data obtained from 38 licensed commercial banks in Kenya over the period 2013–2023, with data sourced from the Central Bank of Kenya, Kenya National Bureau of Statistics, the World Bank and published financial statements. The data were analyzed using panel data techniques to establish the relationship between the study variables. The findings revealed a positive and statistically significant relationship between investment diversification and the financial performance of commercial banks, indicating that a well-diversified investment portfolio contributes to improved profitability. The study concluded that investment diversification is a critical strategic driver of financial performance in the Kenyan banking sector recommending commercial banks to broaden their investment portfolios by allocating resources across diverse asset categories to strengthen returns, minimize investment risk and enhance overall financial performance.

Mukola and Matanda (2026) carried out a study on investment in financial assets and financial performance of commercial banks listed at the Nairobi Securities Exchange, Kenya. Investment in financial assets was measured through financial assets ratio while financial performance represented the dependent variable. The study was guided by the asset quality theory and adopted a descriptive research design. A census survey of 11 listed commercial banks was carried out using secondary data obtained from annual reports from regulatory institutions covering 2020–2024. The analysis established a positive relationship between investment in financial assets and the financial performance of listed commercial banks, indicating that increased investment in financial assets contributes to improved bank performance. The study further revealed that financial asset investments significantly explain variations in the performance outcomes of commercial banks, although other external factors also influence performance. The study concluded that strategic investment in financial assets enhances financial position of commercial banks recommending banks to strengthen their financial asset investment strategies to improve returns while maintaining effective asset management practices.

Musyoka and Nyagilo (2026) examined the effect investment in equity and financial performance of Tier Three commercial banks in Kenya. Investment in equity was measured through share investment ratio and return on assets measuring financial performance. The study was anchored on capital asset pricing model to explain the relationship between equity investment decisions and bank performance. Descriptive research design was adopted, targeting 22 tier three commercial banks, with census sampling and secondary data covering the period 2015–2024. The study employed correlation analysis and panel regression techniques to determine the effect of equity investment on financial performance. The findings established a positive and statistically significant relationship between equity investment and financial performance, indicating that increased equity investments contributed to improved profitability. The study concluded that equity investment is an important strategic component in strengthening financial performance recommending banks to enhance their equity investment strategies and ensure effective management of investment decisions to support long-term institutional stability.

Muthangya, Otinga and Nyagilo, (2026) did a study with an aim to establish the relationship between investment in government securities and stock returns of investment firms listed at the Nairobi Securities Exchange, Kenya. Government securities investment was measured through treasury bills and treasury bonds with stock returns of investment firms was measured through dividend yield, share beginning price and share ending price. The research was anchored on Q theory of investment where descriptive research design and census method was considered. A quantitative research methodology was adopted, involving analysis of secondary data collected from investment firms listed at the Nairobi Securities Exchange. The findings established a positive relationship between investment in government securities and stock returns, indicating that increased allocation to government securities contributes to improved investment performance. The study concluded that government securities form an important component in enhancing the financial performance of investment firms recommending them to strategically increase their engagement in government securities to strengthen portfolio performance while maintaining effective investment management practices.

Njangiru, Miroga and Nyagilo (2026) conducted a study with an aim to assess the effect of government securities investment and financial performance of DT-SACCOs in Kenya. Government securities investment was measured through treasury bills and treasury bonds, while financial performance measured through return on assets. The research was anchored on modern portfolio theory and Q theory of

investment. Descriptive research design was employed with data collected from 44 licensed DT-SACCOs in Kenya. Secondary panel data was considered for six-year period 2018–2023, with data analyzed through a fixed-effects. Panel regression model was considered where Hausman specification test determined the effect. The study established a positive and statistically significant relationship between government securities investment and the financial performance of DT-SACCOs, indicating that increased investment in government instruments contributes to improved asset utilization and profitability. The study concluded that government securities provide SACCOs with stable returns and portfolio security, enhancing their overall financial sustainability. The study recommended SACCOs to strategically increase their investment allocations in government securities and policymakers to develop supportive mechanisms that would encourage SACCO participation in government investment instruments and promote diversification across different security maturities.

2.1 Conceptual Framework

The conceptual framework illustrated in Figure 1 presents the hypothesized nexus between financial investment allocation and the liquidity of deposit-taking SACCOs in Kenya. Financial investment allocation, measured through the investment allocation ratio, forms the independent variable and is expected to significantly influence the liquidity of DT-SACCOs, which in this study is captured through the liquidity ratio as the dependent variable. In addition, the framework introduces capital adequacy, measured through the core capital to total assets ratio, as a moderating variable that may either strengthen or weaken the influence of financial investment allocation on SACCO liquidity. The framework is anchored on the Modern Portfolio Theory, which posits that institutions can optimize risk and returns by appropriately allocating investments across different asset classes, thereby supporting effective liquidity management. This nexus highlights how the allocation of financial resources across investment portfolios, moderated by the capital adequacy of SACCOs, determines the ability of DT-SACCOs to maintain adequate liquidity while balancing investment returns and financial risk.

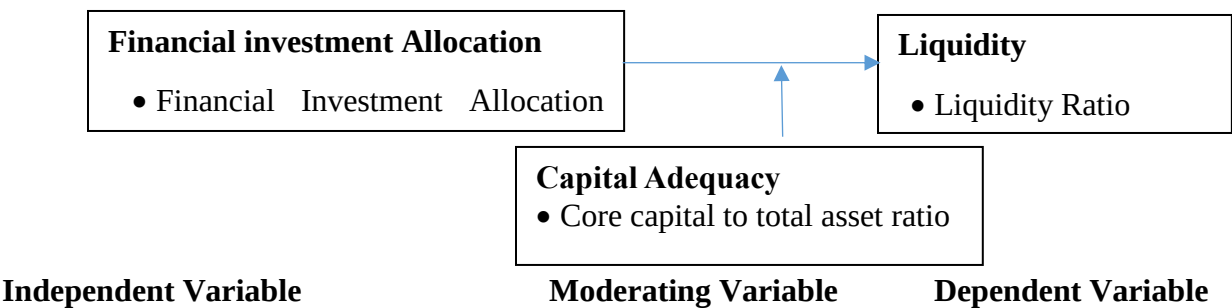


Figure 1: Conceptual Framework

3. Research Methodology

The study adopted a longitudinal panel research design guided by a positivist philosophical paradigm. The target population comprised 162 DT-SACCOs licensed between 2015 and 2024. Inclusion and exclusion criteria were applied, whereby only DT-SACCOs that remained licensed and active throughout the study period and had complete audited financial data for all study years were included. Twelve DT-SACCOs

that were delicensed during the period were excluded, resulting in 150 eligible DT-SACCOs. A census approach was therefore adopted, with secondary data obtained from audited annual financial reports covering the ten-year period (2015–2024) and collected using a data collection sheet. The data were analyzed using STATA and presented through descriptive and inferential statistics. Prior to panel regression analysis, the Hausman specification test was conducted to determine the appropriate panel-data model and established that the random-effects model was suitable for estimation. Panel regression models were used to test the moderation effect, where equation (1) examined the direct nexus between financial investment allocation and liquidity Equation. (2) and (3) explored the moderation and interaction effect:

$$L = \beta_0 + \beta_1LFA + \varepsilon..... Equation 1$$

$$L = \beta_0 + \beta_1FIA + \beta_2CA + \varepsilon.....Equation 2$$

$$L = \beta_0 + \beta_1FIA + \beta_2CA + \beta_3FIA * CA + \varepsilon \dots \dots \dots Equation 3$$

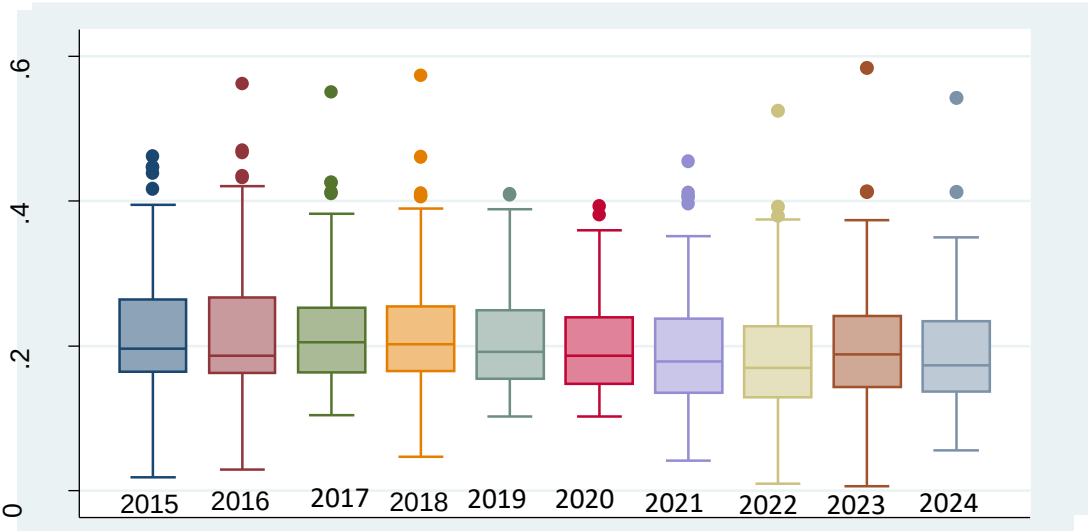
Where: L = represents Liquidity of deposit-taking SACCOs; FIA = Financial Investment allocation, CA= Capital Adequacy (moderating variable); FCA* CA = Financial Investment allocation * Capital Adequacy; $\beta_1, \beta_2, \beta_3$ = the Coefficient

4. Results and Discussion

4.1 Liquidity Descriptive statistics

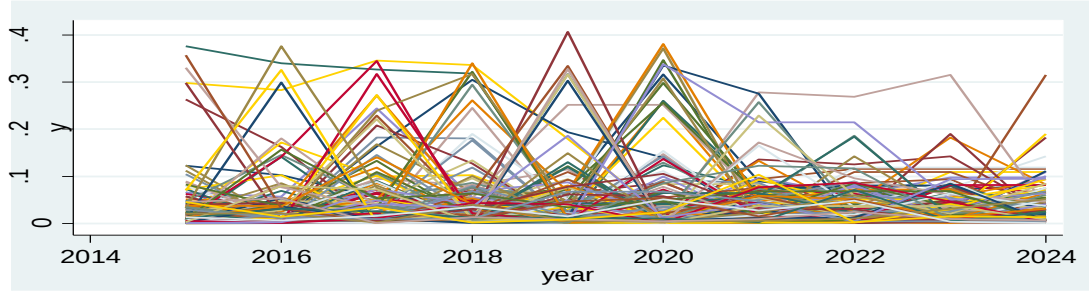
To determine the liquidity position of the DT-SACCOs, the study employed the liquid assets-to-short-term liabilities ratio. SASRA requires DT-SACCOs to maintain a minimum liquidity ratio of 15% to cushion against liquidity shocks, safeguard members’ deposits and promote financial stability. As shown in figure 1, liquidity ratios remained above the statutory minimum throughout 2015-2024, generally ranging between approximately 17% and 21 % indicating adequate liquidity buffers and prudent liquidity management. However, several SACCOs recorded exceptionally high ratios, with upper outliers exceeding 40% and approaching 60% suggesting conservative liquidity strategies aimed at mitigating risks arising from member withdrawals, loan defaults and macroeconomic shocks. This is particularly important because, unlike commercial banks, SACCOs lack a central liquidity facility and a lender-of-last-resort mechanism to provide emergency liquidity support during financial crises. The finding is consistent with SASRA (2024), which reported that 61.34% of DT-SACCOs maintained liquidity levels above the statutory requirement. However, the 38.66% that remained below the threshold point to continuing liquidity pressures within part of the sector, which may constrain the affected SACCOs’ ability to meet short-term obligations and withstand financial shocks. These vulnerabilities are further reflected in the delicensing of three SACCOs and the reported exit of 131,347 members to more stable financial institutions.

Figure 2: Box Plot for Liquidity



The study further examined the stability and variation in DT-SACCOs’ liquidity performance over 2015–2024 using a spaghetti plot, as presented in figure 2. The close clustering of the trend lines and limited divergence across SACCOs indicate a high degree of homogeneity in liquidity performance over the study period. This suggests that liquidity management practices across the sector followed broadly similar patterns, potentially reflecting the influence of standardized prudential requirements and supervisory oversight by SASRA. The mildly right-skewed distribution indicates that while liquidity performance was concentrated within a relatively narrow range, a small number of SACCOs consistently maintained comparatively larger liquidity buffers. This finding is consistent with Wambua and Kiprop (2022), who attributed relatively homogeneous liquidity trends among DT-SACCOs to SASRA’s standardized prudential requirements, which encourage institutions to maintain sufficient liquid assets relative to members’ deposits and short-term liabilities.

Figure 3: Liquidity Spaghetti Plot



Financial Investment Allocation Descriptive statistics

Financial investment allocation was measured using the financial investment allocation ratio, representing the proportion of SACCO assets allocated to financial investments. As presented in table 1, the mean ratio declined from 0.0375 in 2015 to 0.0333 in 2024, indicating that DT-SACCOs allocated approximately

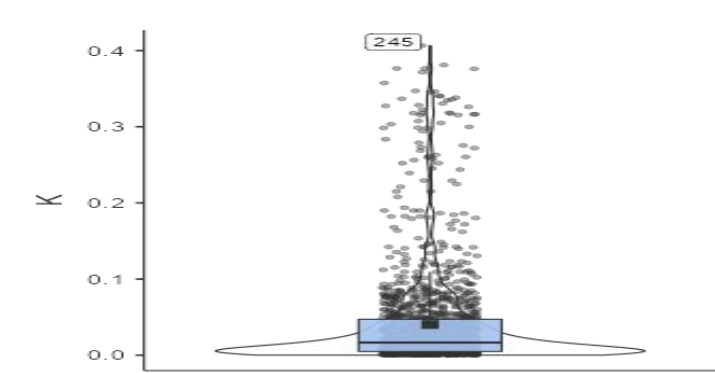
3.3%–3.8% of their total assets to financial investments. The ratio remained stable in 2015–2016, increased to 0.0489 in 2017 and peaked at 0.0598 in 2020, suggesting a temporary increase in portfolio diversification and alternative income generation. It subsequently declined to 0.0333 in 2024, indicating a renewed focus on core lending activities. The peak in financial investment allocation recorded in 2020 suggests that DT-SACCOs adjusted their asset allocation in response to the financial disruptions and uncertainty associated with the COVID-19 pandemic. The increase may have resulted from reduced demand for loans and increased liquidity, prompting SACCOs to channel a larger proportion of available funds into financial investments as an alternative means of preserving liquidity and generating returns. This interpretation is supported by SASRA (2020), which reported increased liquidity and financial investments among DT-SACCOs during the COVID-19 period. The standard deviation increased from 0.07224 in 2015 to 0.08496 in 2020, indicating substantial variation in investment allocation across SACCOs, before declining to 0.04211 in 2024, suggesting greater convergence in investment practices. The minimum value of zero and maximum values ranging from 0.27 to 0.41 further demonstrate considerable differences in investment strategies across institutions. These findings are consistent with Muriithi, Nasieku and Memba (2022), who reported significant variation in investment management practices among Kenyan DT-SACCOs.

Table 1: Financial Investment Allocation Ratio

Year	Obs	Mean	Std. Deviation	Minimum	Maximum
2015	150	.0375	.07224	.00	.38
2016	150	.0375	.07084	.00	.41
2017	150	.0489	.07415	.00	.35
2018	150	.0482	.07693	.00	.38
2019	150	.0413	.07264	.00	.33
2020	150	.0598	.08496	.00	.38
2021	150	.0363	.04516	.00	.28
2022	150	.0364	.04277	.00	.27
2023	150	.0336	.04188	.00	.32
2024	150	.0333	.04211	.00	.32

The violin plot further illustrates the distribution of financial investment allocation among the 150 DT-SACCOs in the balanced panel for 2015–2024. Most observations are concentrated between 0.00 and 0.05, with the median close to zero, indicating that financial investment allocation remained low for the majority of SACCOs. The narrow concentration at the lower end, together with the long upper tail extending to approximately 0.40, indicates positive skewness, with a small number of SACCOs maintaining substantially higher investment allocations than the sector majority. This distribution demonstrates heterogeneity in investment practices while confirming that financial investments remained a relatively small component of DT-SACCOs’ asset portfolios. This finding is consistent with Gachenga, (2022) and Muratenyi and Olando (2022), who found that members’ loans constitute the principal earning assets of DT-SACCOs.

Figure 4: Violin Plot for Financial Investment Allocation



Levin–Lin–Chu (LLC) panel unit root test was conducted to assess the stationarity of the financial investment allocation ratio across the DT-SACCOs over the study period. As presented in Table 2, the analysis established adjusted t-statistic value of -19.4233 with a corresponding p-value of 0.000 . Thus, the alternative hypothesis was accepted depicting that the financial investment allocation ratio was stationary over the study period and did not exhibit a unit-root process. The variable was therefore suitable for subsequent panel-data regression analysis, providing a reliable basis for model estimation and specification.

Table 2: Unit-root test for Panel Stationarity of Financial Investment Allocation Ratio

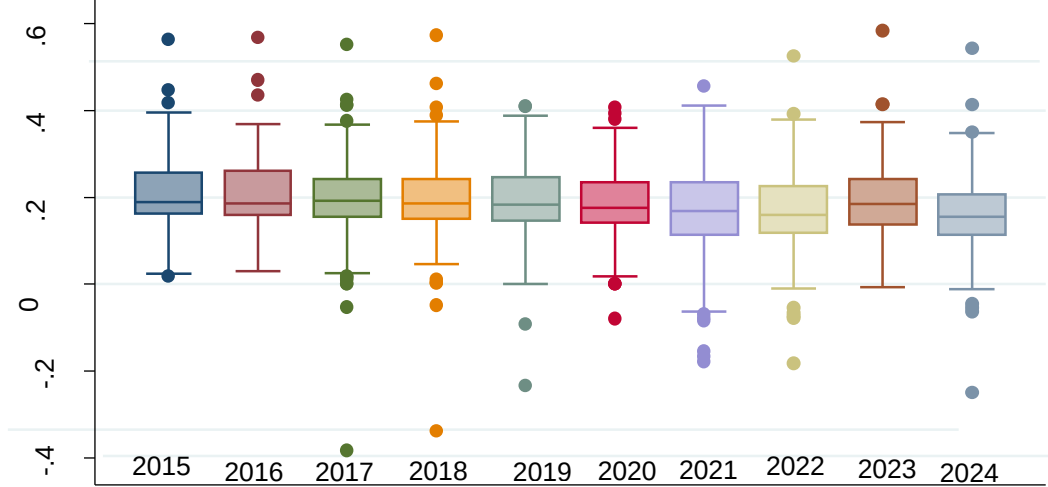
	Statistic	p-value
Unadjusted t	-32.1627	
Adjusted t	-19.4233	0.000 **

Descriptive Statistics for Capital Adequacy

Capital adequacy was measured using the core capital-to-total-assets ratio, representing the proportion of a SACCO’s total assets financed by core capital (fully paid-up members’ shares, capital issued, disclosed reserves, retained earnings, grants and donations all of which are not meant to be expended unless on liquidation of the SACCO society). The findings indicate that DT-SACCOs remained adequately capitalized on average throughout the study period, with the mean ratio consistently above the regulatory minimum of 10%. However, the decline from 0.2109 in 2015 to 0.1638 in 2024 indicates a gradual weakening of capital buffers and increasing pressure on the financial resilience of DT-SACCOs. The decline from 0.1930 in 2017 to 0.1696 in 2022, followed by a temporary recovery to 0.1956 in 2023 and a sharp decline in 2024, further suggests persistent capital adequacy pressures. Moreover, the negative minimum ratios recorded in the seven years indicate that some SACCOs experienced severe capital impairment, limiting their capacity to absorb losses and withstand financial shocks. This finding is consistent with SASRA (2024), which linked declining capital adequacy to rapid loan growth, rising non-performing loans and pressure on retained earnings, thereby weakening SACCOs’ financial resilience. It

also aligns with Birisi, Omagwa and Musau (2024), who found that adequate capitalization provides DT-SACCOs with a buffer against credit and other financial risks. These studies support the present finding that negative core capital is not merely an accounting deficiency; it can constrain a SACCO’s ability to absorb losses, increase dependence on available liquidity during periods of withdrawal pressure, weaken members’ confidence and ultimately threaten institutional stability.

Figure 5: Box Plot for Capital Adequacy



4.4 Inferential Statistics

To assess the relationship between financial investment allocation, capital adequacy and liquidity of DT-SACCOs in Kenya panel regression model was employed. Prior to panel regression model bivariate panel regression analysis was conducted to establish the relationship between the variables, followed by appropriate panel-data specification procedures to identify the most suitable estimation technique. The analysis was based on a balanced panel of 150 DT-SACCOs observed annually over the ten-year period from 2015 to 2024, yielding 1,500 observations. The fixed-effects and random-effects models were specified as follows:

$Y_{it} = \beta_0 + \beta_1 X_{it} + \varepsilon_{it}$ Fixed effect.....equation 4

$Y_{it} = \beta_0 + \beta_1 X_{it} + \mu_{it} + \varepsilon_{it}$ Random effect.....equation 5

Where Y_{it} present liquidity; X_{it} the predictor variable (financial investment allocation ratio)

4.5 Bivariate analysis of Financial Investment allocation and liquidity of DT-SACCOs

The Hausman specification test was first conducted to determine the appropriate panel-data model. Cognizant to table 3, the analysis yielded a chi-square value of 1.16 and a p-value of 0.2810, indicating no statistically significant difference between the fixed-effects and random-effects estimates. Consequently, the null hypothesis was not rejected and the random-effects model was selected over the fixed-effects model for the subsequent panel-data regression analysis.

Table 3: Haussmann specification; bivariate model with Financial Investment Allocation

		(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Financial allocation	Investment	- .0810075	-.0843847	.0033772	.0031328
$\chi^2(1) = (b-B)'[(V_b-V_B)^{-1}](b-B) = 1.16 \quad \text{Prob} > \chi^2 = 0.2810$					

Moderated Panel regression model for Financial Investment Allocation, Capital Adequacy and Liquidity

A moderated panel regression model was employed to examine the moderating effect of capital adequacy on the relationship between financial investment allocation and liquidity of deposit-taking SACCOs in Kenya. Specifically, the analysis sought to determine whether capital adequacy strengthens or weakens the effect of financial investment allocation on liquidity. The moderating effect was assessed by examining changes in the coefficient of determination (R^2) across the sequential regression models. Model I examined the direct effect of financial investment allocation on liquidity, while Model II introduced capital adequacy to assess its additional effect. Model III incorporated the interaction term between financial investment allocation and capital adequacy to establish the presence and direction of the moderating effect. The findings are presented in table 4.

Table 4: Model Summary of the Moderated Random-effects for Financial Investment Allocation

Model I	Model II	Model III	Panel Observations
R-sq.: within = 0.0555	R-sq.: within = 0.0579	R-sq.: within = 0.0613	Number of obs = 1500
Between = 0.1162	Between = 0.1035	Between = 0.1237	Number of groups = 150
Overall = 0.0644	Overall = 0.0647	Overall = 0.0707	
Wald chi = 79.21	Wald chi = 41.42	Wald chi = 29.31	Obs per group: min = 10
Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	avg = 10.0
corr(u_i, Xb) = 0.0404	corr(u_i, Xb) = 0.0322	corr(u_i, Xb) = 0.0376	Max = 10

Table 4 presents the results of the moderated random-effects panel regression analysis based on 1,500 observations obtained from 150 DT-SACCOs over the period 2015–2024. Model I examined the relationship between financial investment allocation and liquidity. The model established a statistically significant (Wald $\chi^2 = 79.21$, $p < 0.000$), indicating that financial investment allocation has a statistically significant association on DT-SACCOs liquidity. The model further recorded within, between and overall R^2 values of 0.0555, 0.1162, and 0.0644, respectively, indicating that financial investment allocation explained 6.4% of the variation in liquidity. In model II, the study introduced the moderator capital adequacy on the relationship to assess whether it strengthens, weakens or antagonizes the relationship between asset allocation and liquidity of the deposit taking savings and credit co-operatives in Kenya. The analysis established that the overall R^2 increased marginally by 0.0003 from 0.0644 to 0.0647, revealing that the inclusion of capital adequacy as a direct predictor added only a small amount of additional explanatory power for liquidity. This modest change, on its own, indicates a direct association between capital adequacy and liquidity rather than a moderating effect; moderation can only be established by

testing the statistical significance of the interaction term, which is examined next in Model III. In model III, the interaction term between financial investment allocation and capital adequacy was introduced to formally test whether the effect of financial investment allocation on liquidity depends on the level of capital adequacy. The overall R^2 improved from 0.0647 in model II to 0.0707, in model III revealing that inclusion of interaction term resulted to improved explanatory power of the model. This confirms that the model strengthened the relationship and enhanced the explanatory power of financial investment allocation and liquidity of DT-SACCOs. This led to rejection of null hypothesis that there is no moderating effect of capital adequacy on the relationship between financial investment allocation and liquidity of deposit-taking SACCOs in Kenya. These findings are consistent with Hajiyeve et al. (2026) and Linggadjaya et al. (2025), who found that capital adequacy plays a significant moderating role in strengthening the relationship between financial management practices and institutional sustainability. The findings are further supported by Jagirani, Ghee and Kosim, (2023), who established that capital adequacy strengthens the relationship between financial risk and firm value by enhancing an institution's capacity to absorb losses and withstand adverse economic conditions. Similarly, Hajiyeve et al. (2026) found that banks with higher capital adequacy ratios are more effective in converting sound liquidity management practices into increased firm value because adequate capital cushions, reduce liquidity-related risks and improve stakeholder confidence. In addition, Linggadjaya et al. (2025) observed that well-capitalized financial institutions tend to achieve sustainable growth due to their enhanced ability to support strategic investments, absorb financial shocks and maintain stable operations during periods of uncertainty.

Table 5: Moderated Panel regression model Co-efficient Results

Predictors	Model I			Model II			Model III		
	Beta	t-value	P-value	Beta	t-value	P-value	Beta	t-value	P-value
Constant	0.094	15.25	0.000	0.099	14.39	0.000	-0.084	-0.09	0.000
FIA	-0.081	-8.90	0.000	-0.080	-8.79	0.000	-0.051	-3.15	0.002
CA				-0.035	-1.87	0.062	0.064	1.31	0.189
FIA*CA							-0.179	-2.2	0.028

The regression results presented in table 5, Model I, established a negative and statistically significant relationship between financial investment allocation and liquidity, with a statistically significant p-value of 0.000. This finding is further supported by a t-statistic of -8.90, whose absolute value exceeds the critical value of 1.96 at 95% confidence level, confirming that the significance relationship. This reveals that although financial investments may generate returns, committing a greater proportion of available funds to financial investments may reduce the resources immediately accessible to meet members' withdrawals, loan disbursements and other short-term obligations. The study finding is consistent with Gachenga (2022), who established that excessive allocation of funds to financial investments may expose SACCOs to liquidity pressure because resources that could otherwise be used to meet immediate obligations become committed to investments. This relationship is particularly relevant in the SACCO context, where liquidity requirements are largely member-driven and can be difficult to predict. Moreover, Maina, et al, (2022) depict that SACCOs experience fluctuations in deposits, withdrawals and loan demand, alongside seasonal income patterns and inconsistent loan repayments. Such variations complicate

the accurate forecasting of cash inflows and outflows which usually increase the risk associated with committing funds to investments with longer maturities. This is further supported by, liquidity preference theory developed by Keynes (1936) and subsequently advanced through the contributions of Hicks (1937), Baumol (1952) and James Tobin (1956) who established that the negative relationship is particularly pronounced where DT-SACCOs allocate substantial resources to long-term investments that cannot be readily converted into cash. In such circumstances, an unexpected increase in member withdrawals or loan demand may create a liquidity mismatch, requiring the SACCO to either liquidate investments prematurely or defer payments and loan disbursements. Premature liquidation may expose the institution to transaction costs, reduced investment returns or capital losses, depending on prevailing market conditions. Thus, the opportunity cost of allocating funds to less-liquid investments is not merely the loss of immediate cash availability but also the potential financial cost of converting investments back into liquid resources when the need arises. The study further established a coefficient of -0.0810 indicating that an increase in financial investment allocation is associated with a corresponding decline in the liquidity of DT-SACCOs with the model generating the equation:

$$L = .0937 - .081002FIA + \varepsilon \dots \dots \dots \text{Equation 6}$$

In Model II, financial investment allocation maintained a negative and statistically significant relationship with liquidity, with a p-value of 0.000, supported by a t-statistic of -8.79, whose absolute value exceeds 1.96. Capital adequacy, however, had a negative and statistically insignificant relationship with liquidity, with a p-value of 0.062 and a t-statistic of -1.87, which is below the critical value of 1.96. The inclusion of capital adequacy resulted in only a marginal change in the financial investment allocation coefficient from -0.0810 to -0.0800, indicating that capital adequacy did not materially alter the relationship between financial investment allocation and liquidity. The model generated the following equation.

$$L = 0.0998 - .0800FIA - .03521CA + \varepsilon \dots \dots \dots \text{Equation 7}$$

Model III introduced the interaction term between financial investment allocation and capital adequacy to determine whether capital adequacy moderated the relationship with liquidity. The analysis established that financial investment allocation remained negative and statistically significant after the interaction effect was introduced, with a p-value of 0.002, indicating a persistent adverse association with liquidity. The findings were further supported by a t-statistic of -3.15, whose absolute value exceeds the critical value of 1.96, confirming a negative and statistically significant relationship between financial investment allocation and liquidity even after accounting for capital adequacy and the interaction term. On the other hand, capital adequacy was found to have a positive but statistically insignificant relationship with liquidity in this model, with a p-value of 0.189 and a t-statistic of 1.31. However, the interaction between financial investment allocation and capital adequacy was found to be negative and statistically significant, with a p-value of 0.028, supported by a t-statistic of -2.20, whose absolute value exceeds 1.96. The significant negative interaction coefficient ($\beta = -0.179$) further confirms that capital adequacy significantly moderates the relationship between financial investment allocation and liquidity, insinuating that higher capital adequacy strengthened the adverse effect of financial investment allocation and liquidity, such that the investment allocation is associated with greater reduction in liquidity at higher levels of capital adequacy. The study findings align with Maina (2020) who established that investing surplus funds in

long-term investments can create liquidity challenges when unexpected cash requirements arise, necessitating the liquidation of investments. Moreover, when investments cannot be readily converted into cash or must be sold under unfavorable conditions, SACCOs may experience liquidity constraints. The findings are also consistent with the experience of the Metropolitan SACCO, where liquidity challenges and heightened regulatory scrutiny demonstrated the importance of maintaining adequate liquidity resources alongside sufficient capital. Although higher capital adequacy enhances the capacity of DT-SACCOs to absorb financial losses, it does not necessarily translate into greater availability of liquid funds. Consequently, as well-capitalized DT-SACCOs allocate more resources to financial investments, the funds available to meet immediate member withdrawals, loan disbursements and other short-term obligations may decline, thereby intensifying liquidity pressure when unexpected cash requirements arise. The model generated the following equation:

$$L = -.0840 - .0510FIA + .0637CA - .1795FIA * CA + \varepsilon \dots \dots \dots \text{Equation 8}$$

5. Conclusion and Recommendation

The study concludes that financial investment allocation has a negative and statistically significant relationship with the liquidity of DT-SACCOs in Kenya. The findings indicate that an increase in the proportion of funds allocated to financial investments is associated with a decline in liquidity. Although financial investments provide an avenue for generating returns and diversifying SACCO assets, excessive allocation of funds to investments, particularly those with limited convertibility into cash, can reduce the resources immediately available to meet members' withdrawals, loan disbursements and other short-term financial obligations. The negative coefficient of financial investment allocation therefore demonstrates the importance of balancing investment objectives with liquidity requirements. The study further concludes that capital adequacy significantly moderates the relationship between financial investment allocation and liquidity. The negative and statistically significant interaction effect indicates that higher levels of capital adequacy strengthen the adverse relationship between financial investment allocation and liquidity. This finding suggests that strong capital adequacy does not necessarily translate into greater liquidity. Well-capitalized DT-SACCOs may have greater capacity to absorb financial losses, but when a larger proportion of their resources is committed to financial investments, the funds readily available to meet immediate financial obligations may decline. Capital adequacy should therefore be considered alongside liquidity when making financial investment allocation decisions.

Based on the findings, the study recommends board of directors and management to strengthen investment governance and technical capacity by ensuring that individuals involved in investment and financial decision-making possess adequate knowledge of investment risk, liquidity management, asset-liability management and portfolio diversification. Regular monitoring of investment portfolios should also be undertaken to identify potential liquidity mismatches and ensure that investment decisions remain consistent with the SACCO's liquidity position and financial obligations. The study further recommends, SACCOs to adopt a liquidity-sensitive financial investment allocation framework that considers the maturity, convertibility and liquidity characteristics of each investment before committing members' funds. SACCOs should avoid excessive allocation of funds to investments that cannot be readily converted into cash, particularly where the investment maturity does not correspond with expected liquidity requirements. Investment decisions should therefore incorporate projected member withdrawals, loan demand, deposit movements and other short-term cash-flow requirements. Consequently, the study recommends SACCOs to undertake regular liquidity stress testing and cash-flow forecasting to assess

their capacity to withstand unexpected increases in member withdrawals, loan demand and other financial obligations. The results of these assessments should inform investment allocation decisions and determine the proportion of funds that can safely be committed to longer-term or less-liquid investments. This approach would enable DT-SACCOs to balance return generation with liquidity preservation and strengthen their overall financial sustainability.

References

- Akerlof, G. (1970). The Market for "Lemons": Quality Uncertainty and the Market Mechanism, . *The Quarterly Journal of Economics*, Vol. 84(3), 488-500.
- Asuma, B. (2022). Effect Of Non-core Business Investments On Financial Performance Of Deposit-taking Saving And Credit Co-operative Societies In Kenya PhD Thesis, KCA University.
- Baumol, W. J. (1952). The transactions demand for cash: An inventory theoretic approach. *The Quarterly Journal of Economics*, 66(4), 545-556.
- Birisi, H. B., Omagwa, J., & Musau, S. (2024). The Link between Capital Adequacy and Financial Stability: Evidence from Deposit Taking Savings and Credit Co-Operative Societies in Kenya. *Journal of Finance and Accounting*, 8(6) pp.1-15. <https://doi.org/10.53819/81018102t4268>.
- Elton, E. J., Gruber, M. J., Brown, S. J., & Goetzmann, W. N. (2014). *Modern portfolio theory and investment analysis* (9th ed.). John Wiley & Sons.
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2), 383-417.
- Finaccess. (2024). *2024 Finaccess Household Survey*. Nairobi, Kenya: Financial Sector Deepening, Kenya National Bureau of Statistics, Central Bank <https://www.centralbank.go.ke/2024/12/2024-FINACCESS-HOUSEHOLD-SURVEY-MAIN-REPORT.pdf&ved=2a>.
- FSD. (2020). Financial Sector Deepening Annual Report 2020. *Creating Value through Inclusive Finance*.
- Gachenga, J. N. (2022). Relationship between Investment Decision and Liquidity of Farmers based Deposit-Taking Savings and Credit Cooperative Societies in Kenya. Master's Thesis, The Co-operative University of Kenya.
- Gachenga, J., Muthoni, K., & Metto, W. (2025a). Cash Management practices, Firm size and financial sustainability of deposit-taking savings and credit co-operative societies in Kenya. *Oppor Chall. Sustain.*, 4(2), 70-81. <https://doi.org/10.56578/ocs040201>
- Gachenga, J. N., Muthoni, D. K., & Metto, W. K. (2025b). Credit Management Practices, Firm Size and Financial Sustainability of Deposit-Taking Savings and Credit Cooperative Societies in Kenya. *Financial Studies*.
- Gachenga, J., Muthoni, K., & Metto, W. (2025c). Financing decision practices, size of Savings and Credit Cooperative Organization (SACCO) and financial sustainability of deposit-taking savings and

- credit co-operative societies in Kenya. *J. Account. Fin. Audit. Stud.*, 11(3), 130–139. <https://doi.org/10.56578/jafas110301>.
- Hicks, J. R. (1937). Mr. Keynes and the "classics": A suggested interpretation. *Econometrica*, 5(2), 147-159.
- Hajiyeva, S., Ibrahimov, Z., Nasirli, N., Pashaza, N., & Afkhan, M. B. (2026). Ensuring the balance between sustainability and profitability in the corporate financial management system: Capital adequacy, asset quality, and bank performance. *Banks and Bank Systems*, 21(1), 16-30. doi: 10.21511/bbs.21(1).2026.02.
- Jagirani, T. S., Ghee, L. C., & Kosim, Z. B. (2023). Relationship between financial risks and firm value: A moderating role of capital adequacy. *Investment Management and Financial Innovations*, 20(1), 293-303. doi:10.21511/imfi.20(1).2023.25.
- Keynes, J. M. (1936). *The general theory of employment, interest and money*. Macmillan.
- Komen, A. K., Ngali, R., & Matanda, J. (2024). Investment structure and financial performance of tier one deposit taking savings and credit co-operatives in Kenya. *International Academic Journal of Economics and Finance*, 4(2), 1-58.
- Linggadjaya, L. T., Atahau, A. D., Ugut, G. S., & Suk, K. S. (2025). The Moderating Role of Capital Adequacy on Bank Specific Characteristics to Sustainable Growth: Evidence From Commercial Banks in Indonesia. *Sage Journal* <https://doi.org/10.1177/21582440251353042>.
- Mandelbrot, B. (1963). The variation of certain speculative prices. *The Journal of Business*, 36(4), 394-419.
- Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, 7(1), 77-91.
- Mukola, M. M., & Matanda, J. (2026). Investment in Financial Assets and Financial Performance of Commercial Banks Listed at Nairobi Securities Exchange, Kenya. *International Journal of Finance and Accounting*, 11(3), 47–63. <https://doi.org/10.47604/ijfa.3746>.
- Muriithi, P., Nasieku, T., & Memba, F. (2022). Investment Management and Financial Intermediation Efficiency of Deposit Taking Saccos's in Kenya. *International Journal of Finance* ISSN 2520-0852.
- Mutai, G. K. (2023). Treasury Management Practices and Financial Performance of Deposit Taking Savings Credit Cooperative Societies in Kericho County, Kenya. *Kenyatta University*.
- Muthangya, M. F., Otinga, H. O., & Nyagilo, V. (2026). Investment in Government Securities and Stock Return of Investment Firms Listed at Nairobi Securities Exchange, Kenya. *International Accounting Journals*.
- N Musyoka, & Nyagilo, V. (2026). Investment in Equity and Financial Performance of Tier Three Commercial Banks in Kenya. *International Journal of Finance and Accounting*, 11(4), 1–14. <https://doi.org/10.47604/ijfa.3755>.

- Ngware, S. G. (2025). Investment Diversification and Financial Performance of Commercial Banks in Kenya: Controlling Role of Bank Size. *International Journal of Accounting & Finance Review*, 16(1), 33-46.<https://doi.org/10.46281/ijafr.v16i1.2512>.
- Njangiru, S. K., Miroga, J., & Nyagilo, V. (2026). Government Securities Investment and Financial Performance of Deposit-Taking Savings and Credit Co-Operative Societies in Kenya. *International Research Journal Publishers ISSN 2710-2742*.
- Njoroge, T. K., Matanda, J. W., & Otinga, H. N. (2023). Investment Decisions And Financial Performance Of Deposit Taking Saccos In Kenya. *IOSR Journal of Economics and Finance (IOSR-JEF)* DOI: 10.9790/5933-1402051728 .
- Ozili, P. K. (2024). Causes and consequences of the 2023 banking crisis.
- SACCOSocietiesACT. (2008). *THE SACCO SOCIETIES ACT NO. 14 OF 2008*. Nairobi, Kenya: the National Council for Law Reporting with the Authority of the Attorney-General <https://www.sasra.go.ke/download/the-sacco-societies-act/>.
- SASRA. (2022). *The SACCO Supervision Annual Report, 2023; The Annual Statutory Report on the operations and performance of Regulated SACCO Societies in Kenya*. Nairobi, Kenya: The SACCO Societies Regulatory Authority.
- SASRA. (2024). *The SACCO Supervision Annual Report, 2024; The Annual Statutory Report on the operations and performance of Regulated SACCO Societies in Kenya*. Nairobi, Kenya: The SACCO Societies Regulatory Authority.
- Tobin, J. (1956). The interest-elasticity of transactions demand for cash. *The Review of Economics and Statistics*, 38(3), 241-247.
- Wilkister, B. L. (2024). Effect of Investment Decisions on the Financial Performance of Saccos in Bungoma County, Kenya. *Masters Thesis, Masinde Muliro University of Science and Technology*.
- WOCCU. (2023). *World Council of Credit Co-operatives Statistical Report*. WOCCU.
- WOCCU. (2024). *World Council of Credit Co-operatives Statistical Report*. WOCCU.