FRONT OFFICE PRODUCTS INCOME AND LIQUIDITY OF DEPOSIT TAKING SAVINGS AND CREDIT COOPERATIVE SOCIETIES IN NAIROBI CITY COUNTY, KENYA

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DECLARATION

Declaration

I the undersigned do declare that this thesis is my original work and has not been submitted to any institution of higher learning other than Kenyatta University for academic credit.

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DEDICATION

Dedication for this research work is extended to all my relatives for their, prayers grasping, backing and consolation, and constant inspiration during the entire period I undertook the studies which culminated into this document. God favor all of you.

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OPERATIONAL DEFINITION OF TERMS

Term	Operational Definition
Deposit Taking SACCO	A Savings and Credit Cooperative Society licensed to mobilize deposits from members and provide loans. It accepts demand deposits, time deposits, and savings, with the obligation to repay both principal and interest. Indicator: Registered status with SASRA.
FOSA Activities	The suite of financial services delivered at the Front Office Service Activity (FOSA) unit of SACCOs, including deposit taking, loan issuance, utility payments, and cash handling. Indicator: Number and type of services offered at the FOSA.
Financial Services	A broad range of services offered within the financial market, including banking, insurance, credit, and investment services. Indicator: Types and frequency of services offered by the SACCO.
Income from FOSA Investment Products	Revenue generated from fixed deposits and investment schemes held by SACCOs through FOSA. Indicator: Log base 10 of total investment income per year.
Income from FOSA Loan Products	Revenue derived from interest and fees on loan products offered under FOSA. Indicator: Log base 10 of total loan interest income per year.
Income from FOSA Utility Services	Revenue from bill payments, mobile transfers, and ATM services under FOSA operations. Indicator: Log base 10 of total income from utility services per year.
Liquidity	A SACCO’s ability to meet short-term obligations as they fall due. Indicator: Liquidity Ratio (Liquid Assets / Member Savings and Short-Term Liabilities).

ABBREVIATIONS AND ACRONYMS

CU	Credit Union
DTS	Deposit Taking SACCOs
FOSA	Front Office Service Activities
SACCO	Savings and Credit Cooperative Society
ANOVA	Analysis of Variance
CAMEL	Capital, Asset, Management, Earnings, Liquidity
DT	Deposit Taking
DTS	Deposit Taking SACCOs
FOSA	Front Office Service Activities
ICT	Information Communication and Technology
IFRS	International Financial Reporting Standards
MIS	Management Information System
NACOSTI	National Commission for Science, Technology and Innovation
NSFR	Net Stable Funding Ratio
RBV	Resource Based View
SACCO	Savings and Credit Cooperative Society
SASRA	Sacco Societies Regulatory Authority.
SME	Small and Medium Enterprises
UK	United Kingdom
US	United States of America
VIF	Variance Inflation Factor
WOCCU	World Council of Credit Unions

ABSTRACT

This study examined how income from Front Office Service Activity (FOSA) products influences the liquidity of deposit-taking Savings and Credit Cooperative Societies (SACCOs) operating in Nairobi City County, Kenya. Liquidity remains a persistent concern for SACCOs, undermining their ability to meet short-term financial obligations. This study focused on three key income streams: loan products, investment products, and utility services. The study also considered the role of firm size as a moderating variable. The general objective of the study was to assess the effect of income generated from FOSA services on the liquidity of deposit-taking SACCOs. Specifically, the study aimed to: determine the effect of income from FOSA loan products on liquidity, assess the effect of income from FOSA investment products on liquidity, examine the effect of income from FOSA utility services on liquidity, and evaluate the moderating role of firm size on the relationship between FOSA income and liquidity. A census approach was employed, targeting all 34 licensed deposit-taking SACCOs within Nairobi City County. Secondary data was collected from published financial statements covering a five-year period, from 2018 to 2022. Descriptive statistics were used to summarize the data, while inferential analysis using multiple regression was conducted to examine the relationships among variables. The findings showed that income from loan products, investment products, and utility services each positively influenced SACCO liquidity. These results imply that diversified income streams from FOSA activities enhance the SACCOs' ability to meet short-term financial obligations. However, firm size was found to negatively moderate these relationships, suggesting that as SACCOs grow larger, their liquidity position may become more strained due to increased operational demands. Based on the findings, the study recommends that SACCOs strengthen their FOSA product lines to ensure consistent income generation. Policymakers and SACCO regulators should consider creating enabling environments and reviewing regulations to allow SACCOs more flexibility in product innovation. Additionally, SACCOs should regularly evaluate their liquidity management strategies and ensure that growth in firm size is accompanied by improved financial controls and risk mitigation measures. This study contributes to the body of knowledge by offering a multidimensional analysis of FOSA income, liquidity, and firm size. It provides insights relevant to SACCO managers, policymakers, and stakeholders seeking to enhance financial resilience and service delivery within Kenya’s cooperative sector.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Liquidity refers to the ease with which an institution can convert its assets into cash to meet short-term obligations without incurring significant losses (Alderighi & Gurrola-Perez, 2021; Mutinda, 2019). It is a core measure of financial soundness and resilience, not merely a component of financial performance. For Deposit-Taking SACCOs (DT SACCOs), liquidity reflects their capacity to honor withdrawal requests, settle liabilities, and sustain day-to-day operations. SACCOs operate as member-owned financial cooperatives that provide credit and savings services, pooling resources for the benefit of members (Githaka, Maina & Gachora, 2017). DT SACCOs, licensed and regulated by the SACCO Societies Regulatory Authority (SASRA), offer diverse financial services, primarily through Front Office Services Activities (FOSA), whose revenues play a critical role in influencing liquidity (Shibutse, Kalunda & Achoki, 2019).

Liquidity is directly tied to the sustainability of SACCOs. A downward trend in liquidity can indicate mounting operational and financial risk, especially where liabilities exceed short-term assets (Shibutse, 2019). In the global context, SACCOs have shown rapid growth in asset bases and membership. As of FY 2017/2018, WOCCU reported that global SACCOs held $2.1 trillion in assets with $1.5 trillion in outstanding loans (WOCCU, 2018). Despite this, liquidity remains a volatile factor. Ekpinda (2020) noted that U.S. credit unions mitigate liquidity risk through advanced internal liquidity management frameworks. Similarly, regulations such as the Net Stable Funding Ratio (NSFR) and Liquidity Coverage Ratio (LCR) introduced by Basel III aim to ensure long-term funding and daily operational liquidity (Nguyen, Perera & Skully, 2017).

Regionally, Amoah (2017) in Ghana found a positive relationship between diversified SACCO income streams and improved liquidity. Obaleye (2018) in Nigeria highlighted that robust liquidity buffers shield SACCOs and microfinance institutions from business collapse in financially volatile environments.

Okwee (2019) in Uganda attributed weak liquidity performance to poor adherence to governance guidelines. Regulatory influence on liquidity was underscored by Buluma, Kungu, and Mungai (2017), who found that SASRA's enforcement of financial disclosure and board competency requirements significantly strengthened SACCO liquidity structures.

Locally, Kenyan studies affirm the relevance of liquidity in SACCO stability. Allan (2018) and Shibutse (2019) observed that liquidity is a determinant of both short-term and long-term operational efficacy in SACCOs. Githaka (2017) emphasized that effective liquidity management enables SACCOs to sustain lending operations and maintain member confidence. SASRA (2021b) reported that in the FY 2020/2021, DT SACCOs recorded Ksh. 430 billion in total deposits, yet many SACCOs failed to meet the 15% statutory liquidity ratio, revealing a persistent gap in short-term financial health. This affirms the necessity to examine the impact of income from FOSA products on SACCO liquidity.

Ndegwa and Koori (2019) argue that FOSA investment income contributes significantly to SACCO liquidity. These investments, government securities, bonds, and other instruments, generate income that supports operations and cushions against liquidity shocks. Feather and Meme (2019) note that FOSA utility services, including mobile banking and bill payments, enhance deposit mobilization and reduce operational costs, indirectly improving liquidity. Ruozi and Ferrari (2018) further assert that liquidity policies influence macroeconomic flow, while Covas and Driscoll (2017) link liquidity with the demand for goods and services. Khan (2022) highlighted how liquidity regulation shapes lending behavior and deposit structures.

In Kenya, financial regulation by SASRA mandates SACCOs to maintain a 15% liquidity ratio (SASRA, 2021a). Kiragu (2018) emphasized that liquidity requirements ensure financial intermediaries can meet member withdrawal demands. SACCO clients expect on-demand access to their savings, making liquidity a fundamental operational priority (Ruozi & Ferrari, 2017). While commercial banks access capital markets for liquidity buffers, SACCOs rely largely on internal resource mobilization (Marvin, 2016).

Nyangarika and Bundala (2020) found SACCOs play a critical role in reaching underserved communities, intensifying the need for robust liquidity frameworks.

1.1.1 Liquidity of Deposit-Taking SACCOs

Liquidity is a firm's ability to convert assets into cash promptly to meet immediate obligations (Shibutse, 2019; Mutinda, 2019). In SACCO operations, this involves maintaining adequate reserves and asset flexibility. It is not merely the presence of cash but the management of assets that can swiftly be liquidated. Measures such as the current ratio and cash ratio are commonly used to assess liquidity (Alderighi & Gurrola-Perez, 2021). SASRA (2021b) emphasizes a 15% liquidity threshold, meaning that at any point, DT SACCOs must hold liquid assets equal to 15% of their deposit liabilities. According to SASRA reports, many SACCOs fall short of this benchmark, indicating structural weaknesses in liquidity management. Studies by Nguyen (2017) and Obaleye (2018) confirmed that liquidity ratios are essential metrics to evaluate institutional solvency. This study adopts current and cash ratios as benchmarks, aligning with past empirical studies and SASRA policy emphasis.

1.1.2 Front Office SACCO (FOSA) Products Income

FOSA products are financial services accessible through SACCO branches that generate revenue from loans, investments, and utility services (Bwoma, 2017; Kariuki, 2019). Mutinda (2019) emphasized FOSA's role in enhancing financial inclusivity. SACCOs leverage FOSA to offer interest-based loan products, commission-generating investment services, and fee-based utility services. For instance, Mwalimu National SACCO offers pension-backed credit products, while Nafaka SACCO includes shopping credit, salary advances, and insurance-linked offerings (MNS, 2021; Nafaka SACCO, 2022).

In this study, FOSA income is categorized into: income from FOSA loan products, income from FOSA investment products, and income from FOSA utility services, aligning with the specific objectives and conceptual framework. Ndegwa & Koori (2019) and Njuguna (2019) show that these services directly influence liquidity by expanding the revenue base, thus enhancing SACCO capacity to meet short-term obligations. Empirical studies by Amoah (2017) and Otwoko & Maina (2021) confirm that diversified FOSA portfolios reduce liquidity risk and promote operational resilience.

1.1.3 Firm Size

Firm size moderates the relationship between FOSA income and liquidity. It is typically measured using total assets, membership base, and deposit volume (Muriithi & Waweru, 2021; Fundi & Wamugo, 2020). Larger SACCOs benefit from economies of scale and can better manage liquidity through diversified income and larger capital buffers. Otwoko et al. (2021) posit that larger DT SACCOs have access to advanced liquidity strategies, while smaller ones are often over-reliant on member deposits and prone to liquidity risks.

In the SACCO setting, firm size not only reflects the financial depth of an institution but also affects its risk tolerance, lending capacity, and operational flexibility. Larger SACCOs tend to enjoy stronger negotiating power, better technology adoption, and greater resource mobilization, all of which facilitate the development and sustainability of innovative FOSA products. As such, larger SACCOs can generate higher income, which in turn strengthens their liquidity position.

In addition, small SACCOs may struggle with constrained capital, limited membership, and lower income from FOSA services, which exposes them to liquidity shocks, especially during times of economic volatility. Their inability to diversify product offerings further limits their capacity to cushion against financial disruptions (Ntoiti & Jagongo, 2021).

This study selects total assets as the operational measure of firm size, justified by its comprehensiveness in representing financial capability, as emphasized in SASRA’s asset-based reporting (Ntoiti & Jagongo, 2021). Firm size influences SACCOs’ responsiveness to economic shocks and their ability to maintain the statutory liquidity ratio. During the COVID-19 crisis, larger SACCOs maintained service delivery owing to stronger liquidity positions and effective liquidity risk management frameworks (Muriithi & Waweru, 2021).

1.1.4 Deposit Taking SACCOs in Nairobi City County

DT SACCOs in Nairobi City County represent a vital segment of Kenya's financial ecosystem, offering competitive financial services including FOSA-based credit and deposit products (Allan, 2018). Unlike banks regulated by the Central Bank of Kenya, SACCOs are licensed and supervised by SASRA (SASRA, 2021a). Out of the 177 licensed DT SACCOs in Kenya, Nairobi City County hosts a significant concentration, making it a representative context for liquidity-related research.

SASRA (2021b) reported that despite growth in deposits and loan applications within Nairobi-based SACCOs, many faced increasing liabilities and operational imbalances, pointing to underlying liquidity pressures. SACCOs in urban centers like Nairobi handle higher transaction volumes, member withdrawals, and FOSA demands. As FOSA services expand, the need for strong liquidity management becomes more urgent to maintain financial stability. By focusing on DT SACCOs in Nairobi City County, the study captures a high-impact area where liquidity dynamics can have broader financial implications.

The chosen context allows examination of how FOSA income strategies affect liquidity performance under real-world regulatory and market pressures, providing valuable insights for practitioners, regulators, and policy makers.

1.2 Problem Statement

Liquidity remains a critical and persistent risk among Deposit-Taking SACCOs (DT SACCOs) in Kenya, despite their vital role in financial intermediation. According to SASRA Management Reports (2016–2021), between 3% and 16% of DT SACCOs consistently recorded liquidity ratios below the statutory minimum of 15%. Such deficits reflect challenges in maintaining short-term financial solvency, undermining operational stability and delaying essential services like loan disbursements. Additionally, the 2021 SASRA Supervision Report indicated that gross loan portfolios at risk averaged 11.4%, with some SACCOs recording values as high as 32.6%, signaling widespread loan repayment issues. These figures highlight deep-rooted liquidity concerns that threaten member trust and SACCO sustainability.

Efforts by SACCOs to stabilize liquidity through diversified income sources have yielded limited success due to the volatile nature of income derived from Front Office Service Activities (FOSA). FOSA loan products are undermined by default risk and moral hazard (Adebayo & Okeke, 2020), FOSA investment income is affected by market volatility and risk of underperformance (Eton et al., 2020; Kimutai, 2022), while FOSA utility-based income is vulnerable to service disruptions and technological limitations (Daud et al., 2021; Makori, 2020). These operational and environmental dynamics significantly disrupt cash flow stability, weakening the ability of SACCOs to meet their liquidity obligations.

Conceptually, earlier research has inadequately segmented FOSA income streams in evaluating their specific impact on liquidity. For example, Muketha and Gathenya (2020) and Oganda et al. (2020) treated income from loan products as a homogeneous block, overlooking the differential contributions of investment and utility income. Methodologically, most studies such as Shibutse (2019) and Githaka (2017) have employed descriptive or cross-sectional designs, limiting their predictive capacity and robustness. Studies such as Musoke (2021) have applied panel data methods, but lacked moderation analysis.

Contextually, prior research has often focused on broader regional or national datasets, with limited focus on urban SACCO ecosystems. Studies like Oluoch and Nduati (2021) centered on Laikipia County, while Eton et al. (2020) used data from Ugandan SACCOs, ignoring the unique financial dynamics in Nairobi City County, which hosts some of the largest, most competitive, and highly regulated SACCOs in the region.

The current study is distinct in its approach. The study conceptualized FOSA income as a multi-dimensional construct, incorporating loan, investment, and utility income and examines their direct effect on liquidity while introducing firm size as a moderating factor. It uses panel data from 2018 to 2022 and applies moderated regression models, filling methodological gaps identified in past literature. Contextually, it narrows focus to Nairobi City County, a region with dense SACCO operations and strategic financial relevance. The study, therefore, responds to identified conceptual, methodological, and contextual gaps and contributes to targeted liquidity enhancement in DT SACCOs.

1.3 Objectives of the Study

1.3.1 The General Objective

The main purpose of this study was to determine effect of front office products income and liquidity of deposit taking savings and credit cooperative societies in Nairobi City County.

1.3.2 The Specific Objectives

The review was guided by objectives below;

i. To determine the effect of income generated from Front Office Service Activities loan products on the liquidity of Deposit-Taking Savings and Credit Cooperative Societies in Nairobi City County.

ii. To determine the effect of income generated from Front Office Service Activities investment products on the liquidity of Deposit-Taking Savings and Credit Cooperative Societies in Nairobi City County.

iii. To establish the effect of income generated from Front Office Service Activities utility services on the liquidity of Deposit-Taking Savings and Credit Cooperative Societies in Nairobi City County.

iv. To examine the moderating effect of firm size on the relationship between Front Office Service Activities income and liquidity of Deposit-Taking Savings and Credit Cooperative Societies in Nairobi City County.

1.4 Research Hypothesis

The following hypotheses were tested;

$H_0$1: Income generated from Front Office Service Activities loan products has no significant effect on the liquidity of Deposit-Taking Savings and Credit Cooperative Societies in Nairobi City County.

$H_0$2: Income generated from Front Office Service Activities investment products has no significant effect on the liquidity of Deposit-Taking Savings and Credit Cooperative Societies in Nairobi City County.

$H_0$3: Income generated from Front Office Service Activities utility services has no significant effect on the liquidity of Deposit-Taking Savings and Credit Cooperative Societies in Nairobi City County.

$H_0$4: Firm size has no significant moderating effect on the relationship between Front Office Service Activities income and the liquidity of Deposit-Taking Savings and Credit Cooperative Societies in Nairobi City County.

1.5 Significance of the Study

This study is of significant value to a wide range of stakeholders within the cooperative finance ecosystem, including policymakers, SACCO management boards, regulators, scholars, members of Deposit-Taking Savings and Credit Cooperative Societies (SACCOs), and the wider financial sector. The justification for its relevance to each group is outlined below:

SACCO Management and Boards: The findings will provide SACCO managers and board members with empirical evidence on how income generated from Front Office Service Activities (FOSA) affects liquidity. This will help in designing strategic policies to improve cash flow, manage risk, and enhance operational efficiency. The study supports informed decision-making for sustainable liquidity management.

Policy Makers and Regulators (such as SASRA): Regulatory agencies will benefit from the study by gaining insights into liquidity challenges specific to urban SACCOs. These findings can inform future guidelines, compliance requirements, and support the development of sector-specific liquidity frameworks, particularly under the evolving regulatory environment.

SACCO Members and Communities: Members, as the primary stakeholders and beneficiaries, will benefit from improved financial services if SACCOs implement the study's recommendations. Enhanced liquidity ensures prompt loan disbursements, reliable savings access, and overall financial security for members, particularly in low-income and rural contexts.

Scholars and Academic Institutions: The study fills a gap in existing literature, especially in the context of developing countries where research on SACCO liquidity and FOSA income streams is limited. It will serve as a reference for future academic work and provide a foundation for further studies on cooperative finance.

Development Partners and Cooperative Movements: NGOs, donor institutions, and cooperative movements can use the findings to support capacity-building initiatives. The study highlights best practices for SACCO financial management and can inform programs aimed at strengthening grassroots financial institutions.

Financial Sector Practitioners: Banks and microfinance institutions exploring partnerships with SACCOs can use the findings to assess financial health and determine viable collaborations. Insights into liquidity drivers may also inform innovations in SACCO-linked financial services.

1.6 Scope of the Study

The study focused on assessing the effect of income from Front Office Service Activities (FOSA) products on the liquidity of Deposit-Taking Savings and Credit Cooperative Societies (SACCOs). Specifically, the independent variables examined include income from FOSA loan products, income from FOSA investment products, and income from FOSA utility services. The dependent variable is liquidity, while firm size is incorporated as a moderating variable to determine how organizational scale influences the relationship between FOSA income and liquidity.

The study is confined to Deposit-Taking SACCOs operating in Nairobi City County, Kenya. Nairobi was selected due to its high concentration of active SACCOs, competitive financial environment, and the strategic importance of urban SACCOs in financial inclusion and national development. According to the SACCO Societies Regulatory Authority (SASRA), there are 34 licensed Deposit-Taking SACCOs operating within the county, making it an appropriate setting for studying liquidity issues in a high-demand, regulated context.

The study covered a five-year period from 2018 to 2022. This timeframe was chosen to capture liquidity trends before, during, and after the COVID-19 pandemic. The period also corresponds with recent updates to SACCO regulatory guidelines and financial reporting requirements, making the data both relevant and timely for analysis.

1.7 Limitations of the Study

The data which was analyzed in this study was secondary as reported by DT SACCOs and remitted to SASRA for statutory audit. The study sought to evaluate a 5-year window (2018–2022). During this period, numerous DTS have innovated on their product portfolio, thus expanding the amount of services they offer. This could present a challenge in grouping the data points for a time series analysis. The researcher overcame this challenge by combining respective operational portfolios in income from FOSA products, notably; income from FOSA loan products, Income from FOSA investment products and income from FOSA utility services. This way, data from all SACCOs which have been in operation for the 5-year period of analysis was analyzed.

1.8 The Organization of Study

The study is sub-divided into five chapters. Section one presents an overall acquaintance and incorporates the foundation with the review, the assertion of the issue, goals of the review, research speculation, importance, limits, delimitations and association of the review. Section two covers writing surveys, the hypothetical foundation and calculated structure. Section three depicts the assessment technique to be used. This consolidated the investigation design, target people, test and assessing framework and data assessment systems. Segment four focused in on data assessment, understanding and discussion of disclosures. Segment five contains the summation, research revelations, discussions, finishes and ideas of the survey.

CHAPTER TWO

LITERATURE REVIEW

2.1The Introduction

This part of study examines, past studies, covering subject of FOSA operations and its income on its influence on liquidity. Areas covered include; theories on the subject, including empirical review covering past studies, conceptual framework for the current study, summary and research gaps identified in relation to Income from Front-Office Sacco products and the liquidity of Deposit-Taking Savings and Credit Cooperative Societies**.**

2.2 Theoretical Review

This study is underpinned by key economic and finance theories that explain the behavior of financial institutions in managing liquidity and generating income. The current study adopted theories notably; shiftability theory, keynesian liquidity preference theory, commercial loan theory, general systems theory, and the resource based view (RBV) theory to explain the moderating role of firm size.

2.2.1 Shiftability Theory

The shiftability theory was first proposed by Harold G. Moulton in 1918 and later advanced by Bhattacharyya (2011). The model explains that financial institutions can preserve liquidity by investing in marketable securities that are easily transferable. The core proposition is that liquid assets can be shifted or sold quickly in the secondary market, especially during financial crises, ensuring institutional solvency (Owino & Wekesa, 2020; Muriuki & Memba, 2019; Wachira & Muturi, 2021).

Over time, the theory has gained relevance with the rise of diversified financial instruments and dynamic capital markets. Owino and Wekesa (2020) applied it to analyze liquidity resilience in Kenyan microfinance institutions, confirming that institutions with marketable investments showed greater liquidity stability. Similarly, Wachira and Muturi (2021) found that SACCOs investing in treasury bills and commercial papers experienced fewer liquidity shortfalls.

However, shiftability theory assumes ideal secondary markets, which may not be reliable during widespread economic shocks. In Kenya, limited access to such markets weakens the applicability of the theory. Additionally, it does not account for systemic financial disruptions, such as those experienced during the COVID-19 pandemic, which reduced market liquidity even for shiftable assets. The theory is relevant in the current study as it explains how SACCOs can leverage investment income to support liquidity under normal market conditions.

2.2.2 Keynesian Liquidity Preference Theory

John Maynard Keynes introduced the liquidity preference theory in 1936. It proposes that individuals and institutions demand liquidity based on three motives: transaction, precautionary, and speculative (Bibow, 2019; Lavoie & Reissl, 2019; Ndegwa & Koori, 2020). The theory holds that interest rates and expectations about future market trends influence the desire to hold liquid assets.

This theory remains applicable in the modern SACCO environment, where interest rates directly impact borrowing patterns. Ndegwa and Koori (2020) found that SACCO members reduced borrowing when interest rates rose, thereby reducing SACCOs' liquidity from loan interest. Pusch (2021) emphasized that in unstable environments, precautionary motives dominate, increasing the preference to hold cash. Muriu and Matu (2021) reported similar findings in Nairobi-based SACCOs, where speculative behavior led to lower deposit and loan uptake during interest volatility.

The model is largely macroeconomic and may oversimplify the motivations behind liquidity behavior at the institutional level. The theory also assumes rational market behavior, which may not apply uniformly in SACCO environments with socio-economic diversity. The theory is applicable in the current study, as it underpins the role of interest-based FOSA loan products in influencing liquidity.

2.2.3 Commercial Loan Theory (Traditional Theory)

Originally developed in the classical banking period and refined by Adam Smith, the commercial loan theory suggests that financial institutions should issue short-term, self-liquidating loans that fund real economic activity (Kamau & Mutua, 2019; Ndegwa & Koori, 2020; Gachoka & Wanyoike, 2021). These loans are expected to generate revenue for timely repayment, thereby safeguarding liquidity.

Kamau and Mutua (2019) validated this theory through a study in Kiambu County, showing that SACCOs offering short-term credit experienced stronger liquidity cycles. Gachoka and Wanyoike (2021) reported that when SACCOs aligned lending to economic cycles and recovery periods, liquidity remained stable. Mwaura and Karanja (2022) further noted that adherence to short-term credit structures minimized default risks.

However, the theory's main flaw lies in its assumption that short-term loans are always secure and self-repaying. It neglects liquidity risks stemming from systemic crises and behavioral issues like member default, especially in SACCO environments. It also overlooks the necessity of long-term lending, which is common in asset-based SACCO services. Therefore, while conceptually sound, its application requires careful modification.

2.2.4 General Systems Theory

The theory was developed by Ludwig von Bertalanffy in the 1950s.The model explains that all components of an organization function interdependently toward common objectives (Mwangudza & Ndede, 2021; Nyang'au & Rambo, 2019; Ndung'u & Kihoro, 2021). In financial institutions, departments such as loans, investments, and utility services operate as subsystems that affect the institution's liquidity holistically.

Mwangudza and Ndede (2021) applied the theory to SACCOs and found that system integration improved sustainability and financial performance. Nyang'au and Rambo (2019) further demonstrated that failure in one subsystem e.g., investment decisions affected the liquidity of the entire institution. Ndung'u and Kihoro (2021) concluded that SACCOs with well-integrated front office systems experienced fewer liquidity disruptions.

The general systems theory submits a conceptual generality, which then make empirical application complex. It doesn't prescribe specific mechanisms for assessing liquidity. The model is however relevant in the current study, as it highlights the interconnectedness of FOSA income streams and liquidity outcomes. In addition, the theory undepins the current study for its integrative capacity.It is supported by shiftability, keynesian, and commercial loan theories to address the specific nature of liquidity formation.

2.2.5 Resource-Based View theory

The Resource-Based View (RBV) theory, is credited to Birger Wernerfelt who proposed it in the year 1984. The model posits that a firm's competitive advantage is derived from its unique resources and capabilities (Muriithi & Waweru, 2021). The theory explains that internal resources such as financial assets, human capital, and operational systems over external market factors as drivers of performance and sustainability (Fundi & Wamugo, 2020). The theory notes that a firm’s internal resources if valuable, rare, inimitable, and non-substitutable can provide sustainable competitive advantage (Muriithi & Waweru, 2021; Fundi & Wamugo, 2020; Kinyua & Gichuki, 2019).

In the SACCOs, firm size reflects internal capacity, including asset value, branch network, and operational resources. Muriithi and Waweru (2021) found that larger SACCOs maintained better liquidity during economic shocks. Fundi and Wamugo (2020) also observed that SACCOs with larger asset bases had better access to financial markets and could diversify income more efficiently. Kinyua and Gichuki (2019) demonstrated that larger SACCOs invested more in ICT infrastructure, improving service delivery and liquidity management.

The RBV model is criticized for being internally focused, often neglecting external environmental factors like regulation or competition. It also assumes rational resource allocation, which may not always exist in cooperative settings. The model is applicable in the current study as it explains how firm size moderates the relationship between income and liquidity in SACCOs.

2.3 Empirical Review

This section presents a review of past literature centering on SACCOs and their operations in the area of its products and income operations.

2.3.1 Income from FOSA Loan Products and Liquidity

Hao and Wong (2021) studied liquidity risk in Vietnamese credit unions, finding that income from loan portfolios significantly bolstered liquidity, particularly when supported by diversified loan products. Their study used a six-year dataset, but its focus on urban credit unions limits applicability to diverse SACCO contexts. This study adapts the approach to Nairobi's mixed urban-rural SACCOs.

Adebayo and Okeke (2020) investigated Nigerian SACCOs, revealing that loan income positively impacted liquidity, but high non-performing loans (NPLs) posed risks. The study's Nigerian regulatory context differs from Kenya's SASRA framework, creating a contextual gap. This study addresses this by focusing on SASRA-regulated DT SACCOs.

Musoke (2021) examined SACCOs in Uganda and confirmed that income from loan products positively influenced liquidity. His panel data analysis included asset quality, SACCO size, and age as control variables. Although insightful, the study's Ugandan context limits its applicability in Kenya. The contextual gap due to regional differences and regulatory variations makes it difficult to generalize to Kenyan SACCOs. This study will localize the analysis in Nairobi to bridge the gap.

Muketha and Gathenya (2020) conducted a panel regression analysis on SACCOs in Kenya to investigate the effect of income from FOSA loan products on liquidity. They found that income from FOSA loans had a significant positive effect on liquidity, while asset quality and deposit mobilization were also important. However, their study focused only on a two-year dataset, potentially limiting its generalizability. The study's short time frame introduces a methodological gap. The study failed to disaggregate loan income sources by product type, which this study will address using a five-year panel dataset.

Ndegwa and Koori (2020) analyzed how interest rate changes affected loan uptake and SACCO liquidity in Kenya. Their findings supported the Keynesian liquidity preference theory and emphasized that favorable interest rates enhanced borrowing and liquidity. The study focused on interest rates and not specifically on income from FOSA loan products, resulting in a conceptual gap. This study narrows down to income-generating loan products under FOSA.

Oganda et al. (2020) examined liquidity risk management in Kenyan commercial banks and SACCOs, finding that FOSA loan income improved liquidity ratios. The study's broader focus on banks alongside SACCOs creates a conceptual gap, which this study fills by isolating FOSA loan income effects in Nairobi-based DT SACCOs.

2.3.2 Income from FOSA Investment Products, Firm Size, and Liquidity

Lotto (2018) analyzed UK credit unions, finding that investment income from bonds and equities enhanced liquidity when firm size was large. The study's focus on developed economies limits its applicability to Kenya's emerging market. This study adapts the findings to Nairobi's DT SACCOs with localized investment portfolios.

Coen, Francis, and Rostom (2019) studied credit unions in the UK and identified liquidity issues linked to failed investments. There is a contextual gap due to economic and regulatory differences between the UK and Kenya. This study fills the gap with local data from Nairobi-based SACCOs.

Eton et al. (2020) studied Ugandan SACCOs, revealing that investment income from real estate and securities improved liquidity, especially in larger SACCOs. The study's Ugandan context and lack of FOSA-specific focus create a gap, which this study addresses by targeting Nairobi's FOSA investment income.

Maina, Kiai, and Kyalo (2020) assessed how SACCO investment income influenced financial sustainability, moderated by firm size. They found that process innovations alone were insufficient, but their effects improved when moderated by SACCO size. Liquidity was not measured as an outcome, creating a conceptual gap. This study addresses this by linking investment income directly to liquidity and using firm size as a moderator.

Wachira and Otieno (2021) evaluated how investment diversification affected liquidity in Nairobi-based SACCOs. Their regression findings showed that returns from government securities and real estate were key contributors to positive liquidity outcomes. The study did not focus specifically on FOSA investment income, resulting in a conceptual gap. This study will disaggregate income from specific FOSA investment channels.

Kimutai (2022) investigated investment diversification in Kenyan DT SACCOs, finding that income from government securities positively impacted liquidity, moderated by firm size. The study's general focus on investments rather than FOSA-specific products creates a conceptual gap, which this study fills by isolating FOSA investment income.

2.3.3 Income from FOSA Utility Services and Liquidity

Hossain et al. (2020) examined digital banking services in Bangladesh, finding that income from utility services like mobile payments improved liquidity. The banking sector focus and different regulatory environment create a contextual gap, which this study addresses by focusing on Kenyan DT SACCOs' FOSA utility services.

Muheebwa (2018) studied Ugandan SACCOs, showing that utility service income from mobile banking enhanced liquidity but required technological investment. The study's regional context and lack of focus on specific FOSA utility income create a gap, which this study fills with Nairobi-specific data.

Daud et al. (2021) used the technology acceptance model (TAM) in Malaysia to show that confidence in digital transactions promoted mobile banking usage. The banking sector context and foreign setting limit its applicability. This study offers contextual relevance by targeting Kenyan SACCOs.

Okiro and Ndungu (2020) conducted a mixed-methods study on mobile and online banking in Kenyan SACCOs. They found a positive link between mobile-based utility services (such as bill payments) and

SACCO liquidity. The study was broad and did not quantify income from utility services. This study provides a more focused analysis using panel data on utility income.

Makori (2020) studied how automation and management information systems (MIS) integration in Kenyan SACCOs affected liquidity. Findings showed that utility-based services contributed to liquidity only when integrated into core MIS. Although relevant, the study did not isolate income from utility services. This study adds value by quantifying utility income and linking it directly to liquidity.

Igadwa and Onsiro (2020) analyzed FOSA utility services in Kenyan SACCOs, finding that income from bill payments and mobile transfers positively influenced liquidity. The study's focus on operational efficiency rather than income quantification creates a conceptual gap, which this study addresses by measuring FOSA utility income directly.

2.3.4 Firm Size and Liquidity

Rahman (2019) studied credit unions in Bangladesh, finding that larger firms maintained higher liquidity ratios due to diversified income sources. The study's focus on credit unions in a different economic context limits its applicability, which this study addresses with Nairobi-specific SACCO data.

Ndiege et al. (2018) analyzed Tanzanian SACCOs, showing that larger firm size enhanced liquidity through better access to capital markets. The regional regulatory differences create a contextual gap, which this study fills by focusing on Kenya's SASRA-regulated SACCOs.

Muriithi and Waweru (2021) investigated the influence of firm size on the financial performance of SACCOs in Nairobi. Their findings suggest that large SACCOs better manage liquidity crises. The study treated firm size as an independent variable but did not test moderation. This study introduces firm size as a moderator.

Fundi and Wamugo (2020) confirmed that SACCO size correlates with resilience to liquidity shocks using regression analysis. The study, however, did not assess interaction effects between size and income sources, which this study includes in its model.

Mwangi and Ndegwa (2022) examined firm size as a factor influencing deposit-taking SACCOs' financial flexibility. They found that larger SACCOs better complied with statutory liquidity ratios. The study focused on compliance rather than liquidity levels influenced by income streams. This study fills this gap by linking firm size to income-liquidity relationships.

Oluoch and Nduati (2021) examined firm size and liquidity in Laikipia County's DT SACCOs, finding that larger SACCOs had stronger liquidity positions due to higher deposit bases. The study's focus on a single county limits generalizability, which this study addresses by targeting Nairobi County.

2.4 Summary of Gaps in Literature

This table summarizes the reviewed empirical studies related to the income from FOSA products, firm size, and liquidity in SACCOs. It outlines the focus, findings, identified gaps, and how the current study addressed these gaps.

Table 2.1 Summary of Gaps in Literature

No.	Author(s) and Year	Study Focus	Identified Gaps	How the Current Study Filled the Gaps
1	Hao & Wong (2021)	Loan income and liquidity in Vietnam credit unions	Urban credit unions; limited generalizability	Adapted approach to Nairobi SACCOs with mixed profiles
2	Adebayo & Okeke (2020)	Loan income and liquidity in Nigerian SACCOs	High NPLs; Nigerian regulatory context	Focused on SASRA-regulated SACCOs in Nairobi
3	Musoke (2021)	FOSA loan income and liquidity in Uganda	Contextual difference; non-Kenyan setting	Localized study in Nairobi under Kenyan context

4	Muketha & Gathenya (2020)	Loan income and liquidity in Kenyan SACCOs	Short time frame; lacked income source disaggregation	Used 5-year panel data and disaggregated income
5	Ndegwa & Koori (2020)	Interest rate changes and SACCO liquidity	Focused on interest rate, not FOSA products	Isolated FOSA loan product income as variable
6	Oganda et al. (2020)	FOSA loan income and liquidity in SACCOs & Banks	Broad focus; mixed sectors	Isolated SACCO-specific income impacts in Nairobi
7	Lotto (2018)	Investment income and liquidity in UK credit unions	Developed economy focus	Localized investment outcomes to emerging SACCO context
8	Coen, Francis & Rostom (2019)	Failed investments and liquidity in UK credit unions	Contextual mismatch with Kenya	Focused on Nairobi SACCOs' FOSA investment patterns
9	Eton et al. (2020)	Investment income and liquidity in Ugandan SACCOs	No FOSA specificity; regional gap	Targeted FOSA-based investments in Nairobi
10	Maina, Kiai & Kyalo (2020)	Investment income & sustainability moderated by firm size	Liquidity not measured directly	Linked investment income to liquidity with firm size
11	Wachira & Otieno (2021)	Investment diversification and liquidity	No disaggregation of investment income	Focused on FOSA investment income only
12	Kimutai (2022)	Investment diversification and liquidity	General investment	Isolated FOSA investment contributions

			focus; not FOSA-specific	
13	Hossain et al. (2020)	Utility income via mobile payments in Bangladesh	Banking context; foreign setting	Analyzed SACCO-specific utility income in Kenya
14	Muheebwa (2018)	Utility income via mobile banking in Uganda	No Nairobi focus; lacked FOSA specificity	Used FOSA utility income and Nairobi context
15	Daud et al. (2021)	Mobile banking acceptance in Malaysia	Banking sector; foreign context	Kenya-specific SACCO application
16	Okiro & Ndungu (2020)	E-banking and liquidity in Kenyan SACCOs	Did not quantify utility income	Quantified FOSA utility income and tested impact
17	Makori (2020)	MIS & automation with liquidity in SACCOs	Utility services not isolated	Focused directly on FOSA utility income
18	Igadwa & Onsiro (2020)	FOSA utility services and liquidity	Focused on efficiency, not income measurement	Measured actual income from FOSA utility services
19	Rahman (2019)	Firm size and liquidity in Bangladesh	Non-local context	Applied Nairobi SACCO data
20	Ndiege et al. (2018)	Firm size and liquidity in Tanzanian SACCOs	Different regulatory framework	Applied SASRA-regulated DT SACCOs
21	Muriithi & Waweru (2021)	Firm size and SACCO financial performance	Firm size not treated as moderator	Introduced firm size as a moderator
22	Fundi & Wamugo (2020)	Firm size and liquidity resilience	No interaction effects assessed	Tested moderation via interaction terms

23	Mwangi & Ndegwa (2022)	Firm size and SACCO flexibility	Focused on compliance, not income effects	Linked firm size to FOSA income–liquidity link
24	Oluoch & Nduati (2021)	Firm size and liquidity in Laikipia SACCOs	Single-county focus	Expanded to Nairobi County for generalizability

Source (researcher, 2025)

2.5 Conceptual Framework

The purpose of this study is to determine the effect of income from Front Office Service Activities (FOSA) on the liquidity of Deposit-Taking Savings and Credit Cooperative Societies (DT SACCOs) in Nairobi City County. The conceptual framework guides this investigation by presenting the hypothesized relationships among the variables of the study. The study identifies three indicators of income from FOSA services as independent variables: income from FOSA loan products, income from FOSA investment products, and income from FOSA utility services. These indicators represent the primary income streams SACCOs earn through daily operations and are measured as the logarithmic transformation (base-10) of total annual income from each category. The dependent variable is liquidity, operationalized through the liquidity ratio, which represents the SACCO's ability to meet short-term obligations. Firm size is introduced as a moderating variable, measured by the log base-10 transformation of total assets. It is hypothesized that firm size affects the strength and direction of the relationship between the independent variables and the dependent variable.

Hypothesized Relationships;

H01: There is no significant effect of income from FOSA loan products on liquidity.

H02: There is no significant effect of income from FOSA investment products on liquidity.

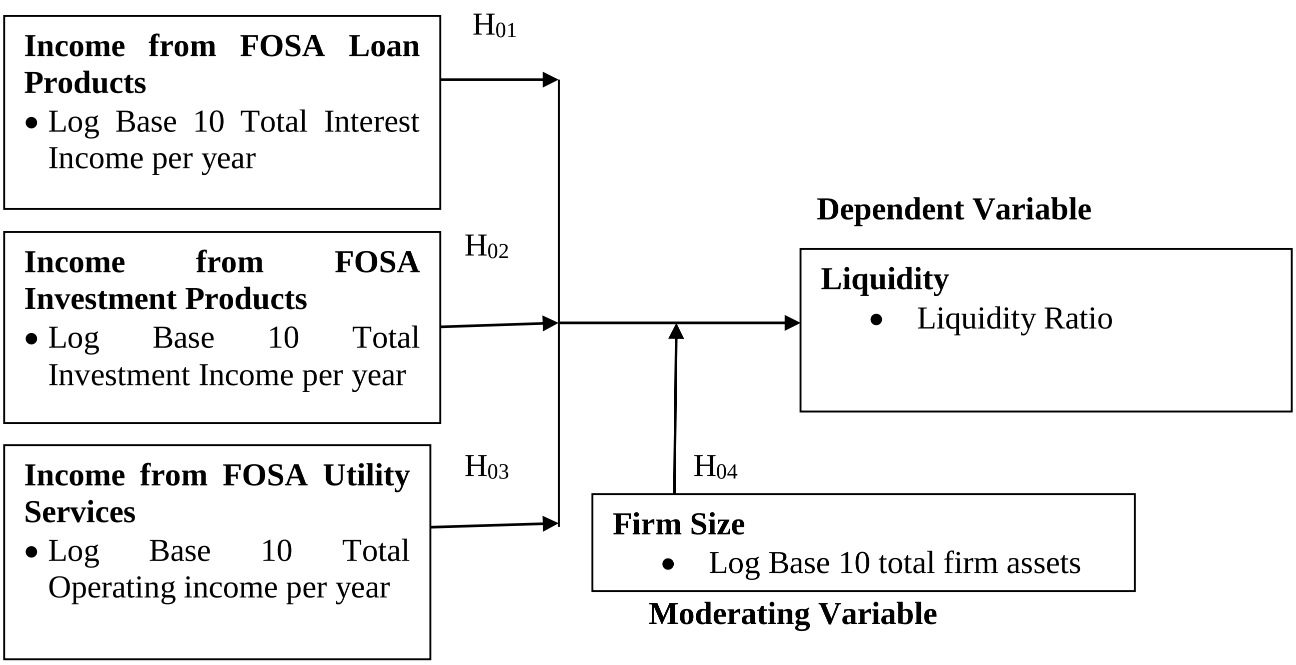
H03: There is no significant effect of income from FOSA utility services on liquidity.

H04: Firm size has no significant moderating effect on the relationship between FOSA income and liquidity.

The model assumes that higher income from each FOSA stream contributes positively to SACCO liquidity, and that firm size strengthens this relationship by offering greater operational capacity and resource flexibility. Maina, Kiai, and Kyalo (2020) used a similar model by linking investment income and financial sustainability, moderated by SACCO size. Muriithi and Waweru (2021) analyzed the role of firm size in enhancing financial performance, supporting the idea of firm size as a moderator. Wachira and Otieno (2021) demonstrated the influence of diversified income, including investment income, on liquidity outcomes. Ndegwa and Koori (2020) explored how interest-based income affects SACCO liquidity, aligning with this framework's use of FOSA loan income.

Figure 2.1 Conceptual Framework

Independent Variables



Source (Researcher, 2025)

Log transformation is a data transformation technique where variables are converted into a different form. This method addresses data skewness, reducing it to a minimum which boosts data validity. The base-10 logarithm function is Log10. The log 10 was determined using the Microsoft excel.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This part of the study covers the reporting on procedure and processes that was used in gathering data needed for analyzing effect of income from FOSA services on liquidity performance of DT-SACCOs.

3.2 Research Philosophy

This study adopted the positivist research philosophy. Positivism is grounded in the assumption that reality is objective and can be observed, measured, and quantified using scientific methods. The rationale for adopting this philosophy lies in the study's focus on examining observable and measurable relationships between income from Front Office Service Activities (FOSA) and the liquidity of Deposit-Taking SACCOs (DT SACCOs) in Nairobi City County. The study sought to determine whether a statistically significant relationship exists between income from various FOSA income streams (loan products, investment products, utility services) and liquidity levels, and whether firm size moderates these relationships.

Positivism emphasizes hypothesis testing, use of structured methodologies, and statistical analysis, all of which are aligned with the study's objectives. The empirical nature of this research, which involves quantifying variables and testing hypotheses using panel regression techniques, reinforces the suitability of the positivist paradigm. According to Alharahsheh and Pius (2020), positivist philosophy advocates for the use of scientific inquiry to establish causal relationships between variables using empirical data.

The choice of positivism is also supported by past studies that investigated financial and organizational performance using similar paradigms. The study by Fundi and Wamugo (2020) adopted positivism to examine the effect of firm size on financial performance in SACCOs, using quantitative data and regression analysis. Similarly, Wachira and Otieno (2021) employed a positivist stance to assess investment diversification and its impact on liquidity among SACCOs, using structured instruments and econometric techniques. Muriithi and Waweru (2021) also used the positivist approach to explore how organizational characteristics influence liquidity risk in financial cooperatives.

The current research relied on empirical data drawn from SACCO financial reports and applied scientific tools for data transformation, model specification, and hypothesis testing. Therefore, positivism was most appropriate for guiding the structured and objective investigation of relationships among study variables.

3.3 Research Design

A research design is the blueprint that outlines the procedures for collecting, measuring, and analyzing data in a manner that effectively addresses the research problem (Cooper & Schindler, 2008). This study utilized a causal research design. Causal research design, also known as explanatory research, is appropriate when the goal is to establish cause-and-effect relationships among variables (Saunders, Lewis, & Thornhill, 2019). The design was selected because the study sought to determine whether income generated from Front Office Service Activities (FOSA) has a significant effect on the liquidity of Deposit-Taking SACCOs in Nairobi City County.

Causal research allows the researcher to test hypotheses about the directional influence of independent variables namely, income from FOSA loan products, investment products, and utility services on the dependent variable, liquidity. The study also introduces firm size as a moderating variable, further justifying the need for a research design capable of assessing variable interactions.

Internationally, similar causal designs have been used in studies such as Athanasoglou et al. (2020), who examined profitability determinants in European banks. Regionally, Amoah (2019) applied causal design to assess income diversification and financial efficiency in Ghanaian credit unions. Locally, Fundi and Wamugo (2020) used a causal framework to investigate the influence of firm size on SACCO performance in Kenya. The current study aligns with these scholarly practices by adopting a causal design to explore financial determinants of liquidity in SACCOs, using quantitative data and hypothesis testing to draw empirical conclusions.

3.4 Target Population

A target population refers to the complete set of individuals, groups, or institutions that possess the characteristics relevant to a specific research question and from which generalizations can be made (Sekaran & Bougie, 2019). In the context of this study, the target population comprised all Deposit-Taking Savings and Credit Cooperative Societies (DT SACCOs) operating Front Office Service Activities (FOSA) within Nairobi City County. The study focused on these institutions due to their critical role in financial inclusion, urban economic development, and growing reliance on FOSA-based income to sustain liquidity levels.

According to the SACCO Societies Regulatory Authority (SASRA, 2022), there are 34 licensed DT SACCOs operating FOSA branches in Nairobi City County. These SACCOs form the entire population for the current study, and their comprehensive financial operations provided a robust basis for analyzing the relationship between FOSA income and liquidity.

The unit of analysis for the study was each individual DT SACCO, while the unit of observation included institutional financial records such as audited income statements and balance sheets. These records provided the necessary data for computing income from FOSA products and liquidity ratios.

3.5 Sampling and Sampling Techniques

Sampling refers to the process of selecting a subset of individuals, units, or institutions from a defined population for the purpose of making inferences about the entire population (Kothari, 2014). This study employed a census sampling technique. A census involves collecting data from every member of the target population, rather than selecting a sample.

The choice of census was justified by the relatively small and manageable number of Deposit-Taking SACCOs (DT SACCOs) operating Front Office Service Activities (FOSA) in Nairobi City County. As per the SACCO Societies Regulatory Authority (SASRA, 2022), there are 34 licensed DT SACCOs in

Nairobi. Since this number is relatively low, it was both practical and methodologically sound to include all institutions in the study.

Census sampling is suitable in studies where the population is small, and a high degree of accuracy is required (Cooper & Schindler, 2014). The technique eliminates sampling error, increases the reliability of results, and enhances the generalizability of findings across the entire population. In addition, each SACCO has implemented different operational strategies related to their FOSA income products, and it was essential to capture this variation comprehensively.

The use of secondary data from audited financial reports, which are publicly available, further justified the use of a census, as it facilitated data accessibility and comparability across all institutions. Similar methodologies have been adopted in local financial studies, including Fundi and Wamugo (2020), who utilized census data to analyze the performance of SACCOs in Kenya.

3.6 Data Collection Instruments

This study relied on secondary data collection techniques to obtain quantitative data from the published financial statements of Deposit-Taking SACCOs (DT SACCOs) operating in Nairobi City County. The data collection process involved document analysis, a method used to systematically review and evaluate financial documents available in the public domain or provided by the SACCOs.

The primary sources of data included audited financial statements and annual reports published by each of the 34 DT SACCOs under the jurisdiction of the SACCO Societies Regulatory Authority (SASRA). These documents were accessed through official SACCO websites, SASRA’s public repositories, and physical records made available upon request. Data collected covered a five-year period from 2018 to 2022.

Key financial which was utilized in the study include;

i. Annual interest income from FOSA Loan Products
ii. Annual investment income from FOSA Investment Products

iii. Annual operating income from FOSA Utility Services

iv. Total assets (for firm size)

v. Liquidity ratio

A standardized data extraction sheet was prepared to record the relevant variables data consistently across all SACCOs. This tool ensured accuracy, uniformity, and comparability of financial data for statistical analysis. The data collection sheet is presented in Appendix II.

This approach was selected because secondary data is reliable, cost-effective, and eliminates the biases associated with primary data collection methods such as interviews or surveys. Further, it supports the positivist philosophy adopted in this study by relying on empirical evidence documented through verifiable financial records.

3.7 Data Collection Procedure

Preceding information assortment, the researcher looked for the letter of assent from the college. The researcher additionally looked for approval from National Commission for Science, Technology and Innovation (NACOSTI). Moreover the researcher did a pre-visit of the SASRA to look for freedom to get information from them. This was finished by utilization of work area search methods and by visiting SASRA sites and individual firms' sites.

3.8 Validity and Reliability

Validity and reliability are essential to ensuring the accuracy and consistency of research findings. In this study, secondary data was utilized, specifically audited financial reports from Deposit-Taking SACCOs. As such, content validity was assured through the use of standardized financial statements audited by professional and certified entities, which conform to International Financial Reporting Standards (IFRS). Content validity also refers to the degree to which the data collected truly reflects the concepts being investigated Mugenda & Mugenda, 2003).

Reliability refers to the consistency and dependability of the data collection instruments and procedures. To ensure reliability, a standardized data extraction sheet was developed and used uniformly across all 34

SACCOs. The variables were clearly defined, and data was recorded for a consistent five-year period (2018–2022), reducing the likelihood of bias and errors due to inconsistency.

In alignment with the positivist approach adopted in this study, the use of verifiable audited financial data enhances both the internal and external validity of the findings (Saunders, Lewis, & Thornhill, 2019). Furthermore, triangulation was achieved by cross-checking figures from multiple official sources such as SASRA reports and SACCO published reports.

3.9 Empirical Model

This study adopted a quantitative analytical approach grounded in panel regression modeling to evaluate the effect of income from Front Office Service Activities (FOSA) on the liquidity of Deposit-Taking SACCOs (DT SACCOs) in Nairobi City County. Panel data analysis was selected due to its ability to account for both cross-sectional and time series variations, which enhances model accuracy and controls for unobserved heterogeneity across SACCOs (Gujarati, 2003; Hsiao, 2014).

The empirical model used in this study was based on the linear regression framework and informed by similar studies such as Amoah (2019) in Ghana and Muriithi and Waweru (2021) in Kenya, both of which employed panel regression to evaluate financial determinants of liquidity. The study utilized both the direct effect model and the moderation model.

a) Direct Effect Model

The first regression model tested the direct relationship between each independent variable and the dependent variable (liquidity):

$Y_{it} = \beta_0 + \beta_1 X_1 it + \beta_2 X_2 it + \beta_3 X_3 it + \varepsilon_{it}$ .... (1)

Where:

Y_{it} = Liquidity of SACCO i at time t

β_0 = Constant (intercept)

$X_1 it$ = Income from FOSA Loan Products (log-transformed)

X_2it = Income from FOSA Investment Products (log-transformed)

X_3it = Income from FOSA Utility Services (log-transformed)

β_1, β_2, β_3 = Coefficients of independent variables

ε_{it} = Error term capturing all other unexplained variations

b) Moderation Model (with Firm Size as Moderator)

To test the moderating effect of firm size on the relationship between FOSA income and liquidity, interaction terms were included:

$Y_{it} = \beta_0 + \beta_1X_1it + \beta_2X_2it + \beta_3X_3it + \beta_4FSit + \beta_5(X_1it\times FSit) + \beta_6(X_2it\times FSit) + \beta_7(X_3it\times FSit) + \varepsilon it$ ....

(2)

Where:

FS_{it} = Firm Size (log of total assets)

$(X_1it\times FS_{it})$, $(X_2it\times FS_{it})$, $(X_3it\times FS_{it})$ = Interaction terms to capture moderating effects

β_4 to β_7 = Coefficients of firm size and interaction terms

This approach allows the model to capture how the influence of FOSA income on liquidity changes with SACCO size. The model specification aligns with empirical applications by Fundi and Wamugo (2020), who explored the role of firm size in SACCO financial performance, and Wachira and Otieno (2021), who analyzed liquidity using income-based predictors.

Data analysis was conducted using STATA 15.0 software. Diagnostic tests were performed to check for multicollinearity and autocorrelation to ensure model validity. All hypotheses were tested at a 5% significance level.

Panel regression was selected due to its strength in managing dynamic data over time and space. It is widely used in financial research to analyze institutional behavior across multiple time periods. The model accommodates both individual SACCO-specific effects (fixed or random) and time-related effects, improving robustness (Hsiao, 2014).

3.10 Diagnostic Tests

Endless supply of the model, the scientist played out various indicative tests to the model as an action to guarantee the degree of model wellness. This study sought to determine whether Income from FOSA service portfolio has any effect liquidity for DT SACCOs. Therefore, the residual variable for the study is income from FOSA services portfolio (independent) whereas the predicted variable is liquidity of DT SACCOs in Nairobi City County (dependent, ZPRED). Furthermore, residuals (ZRESID) in this study include; income from FOSA Loan Products, Income from FOSA Investment Products and Income FOSA Utility Services. Diagnostics tests to be implemented include; multicoliniarity test and autocorrelation test.

3.10.1 Multi-collinearity Test

This test was conducted to identify multi-collinearity issues, which, if uncontrolled, can lead to unstable parameter estimators, complicating the evaluation and interpretation for outcomes in the independent variables' effects on the study dependent variable which is liquidity. The Variance Inflation Factor (VIF) scale was adopted to assist in detection of multi-collinearity problems in the model. For variables with VIF values that are greater than 10 indicate the presence of a multi-collinearity problem that needs to be addressed. In the context of the study, the multi-collinearity test will be used to determine whether there is high correlation between the income from front office SACCO products and other independent variables used to assess the liquidity of DTS. High connection be tween's free factors could make it hard to decipher the consequences of the relapse examination and can prompt untrustworthy appraisals of the connection between the pay from front office Sacco items and liquidity. Thus if present, it can be resolved by removing the variable with a high VIF, thereby converting the other variables from non-significant to significant (William, 2008).

3.10.2 Autocorrelation Test

For a model to yield desirable results, it must be free from serial correlation or autocorrelation. In panel data, this is tested using the Wooldridge method. Whenever probability value exceeds 5%, it suggests no correlation between the residuals of the estimated equations and the dependent variable. A model afflicted by serial correlation or autocorrelation is considered not fit (Durbin, 1970).

3.11 Operationalization and Measurement of Study Variables

The current study activates independent, moderating and dependent variables as captured in table 3.1

Table 3.1 Operationalization and Measurement of Study Variables

Variable	Type	Operational Indicator	Measurement scale	Hypothesized direction
Liquidity	Dependent	• Liquidity ratio (Liquid assets / Member savings and shorterm Liabilities)	Ratio	No positive significant relationship
Income from FOSA Loan Products	Independent	Log base10 of Total Loan Interest Income per year	LOG Base 10	No significant relationship
Income FOSA Investment Products	Independent	Log base 10 of Total Investment Income per year	LOG Base 10	No significant relationship
Income from FOSA Utility Services	Independent	Log base 10 of Total of income per utility year	LOG Base 10	No significant relationship
Firm size	Moderating	Log base 10 of total firm assets	LOG Base 10	No significant relationship

Source (Researcher, 2025)

3.12 Ethical Considerations

Ethical considerations are essential in safeguarding the integrity of the research process and ensuring the protection of all participants and institutions involved. In compliance with established academic and legal research standards in Kenya, this study adhered strictly to ethical guidelines throughout the research process.

Prior to data collection, the researcher obtained an official authorization letter from Kenyatta University, permitting the study to be conducted as part of the requirements for the award of a postgraduate degree. Additionally, a research permit was obtained from the National Commission for Science, Technology and Innovation (NACOSTI), the statutory body mandated to regulate research activities in Kenya. These documents ensured that the study complied with the ethical and regulatory framework outlined in the Science, Technology and Innovation Act (Revised Edition, 2019).

The study also adhered to principles of confidentiality, academic honesty, and responsible use of institutional data. Since secondary data from audited financial statements was used, no personal or sensitive data was collected. All SACCO names and financial details were used solely for academic purposes and treated with confidentiality. Proper citation and acknowledgment of all information sources were strictly observed to uphold academic integrity and avoid plagiarism.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results of the analysis of the effects of income from Front Office Services Activity (FOSA) products and firm size on the liquidity of deposit-taking SACCOs in Nairobi City County. Data was collected from the published financial statements of 34 DT SACCOs for the period 2018–2022. The analysis focuses on descriptive statistics, diagnostic tests, correlation, and regression analysis aligned with the study objectives and hypotheses. The findings are interpreted and discussed with support from prior empirical literature.

4.2 Descriptive Statistics

Descriptive analysis was conducted to summarize the nature and distribution of key study variables. These included liquidity (dependent variable), income from FOSA loan products, income from FOSA investment products, income from FOSA utility services, and firm size. Descriptive statistics such as mean, standard deviation, minimum, and maximum were computed. The aim was to understand central tendencies and dispersions of variables before performing inferential tests. These results are important for understanding SACCO financial patterns and relate to subsequent correlation and regression analysis.

4.2.1 Liquidity

The liquidity of the firms was determined using liquidity ratio. The ratio was derived by doing a ratio of total customer deposits to total customer loans of each SACCO.

Table 4.1 Liquidity

Year	Mean	SD	MAX	MIN
2022	44.8%	27.4%	97.7%	7.5%
2021	44.7%	28.1%	98.1%	6.0%
2020	46.8%	29.1%	98.6%	1.5%
2019	52.4%	27.1%	99.1%	15.1%
2018	45.4%	25.8%	96.9%	1.5%
Average	**46.8%**	**27.5%**	**98.1%**	**6.3%**

Source (Researcher, 2025)

The results in table 4.1, highlight the liquidity of DT-SACCOs for the five year period, 2018 – 2022. This analysis yielded a mean liquidity ratio of 46.8%, indicating that, on average, SACCOs held customer deposits equivalent to nearly half of their loan portfolio. The variability in liquidity across different SACCOs was represented by a standard deviation of 27.5%, showing significant differences in liquidity levels among the SACCOs studied. The maximum liquidity ratio observed was 98.1%, suggesting that some SACCOs were highly liquid, while the minimum value of 6.3% indicated that others faced potential liquidity challenges. These liquidity ratios are crucial for understanding a SACCO's capacity to undertake responsibility for short-term financial obligations, as they demonstrate capacity to cover immediate liabilities without distress. Such information is vital for SACCOs to maintain financial stability and instill confidence among members and stakeholders.

4.2.2 Income from FOSA Loan Products

Income from FOSA Loan Products was derived by the log of base10 of total loan interest income per year. This was arrived by the aid of Microsoft excel.

Table 4.2 Income from FOSA Loan Products

Year	Mean	SD	MAX	MIN
2022	8.31	1.18	10.92	6.26
2021	8.26	1.19	10.87	6.19
2020	8.49	1.04	10.79	6.52
2019	8.28	1.11	10.74	5.22
2018	8.38	1.03	10.69	6.76
Average	**8.34**	**1.11**	**10.80**	**6.19**

Source (Researcher, 2025)

The results in table 4.2, highlights the descriptive statistics of Income from FOSA loan products. The average mean registered was 8.34 with the standard deviation of 1.11 while the maximum average Income from FOSA Loan Products registered was 10.80 and the minimum value of 6.19, the study depicted the Income from FOSA Loan Products positively influence the liquidity. FOSA products improve revenue optimization in SACCOs by increasing service charges. Insufficient revenue is often a key factor in the poor performance of many SACCOs. However, with the adoption of FOSA products, SACCOs can maximize their income. This revenue boost is anticipated to enhance their financial performance, sustainability, and overall growth significantly.

4.2.3 Income from FOSA Investment Products

The income from FOSA investment products was determined by doing the log base 10 of total investment income per year.

Table 4.3 Income from FOSA Investment Products

Year	Mean	SD	MAX	MIN
2022	9.06	1.00	10.68	6.57
2021	8.99	1.10	10.70	6.55
2020	9.06	0.98	10.47	6.54
2019	9.13	0.96	10.45	6.77
2018	9.17	0.84	10.43	7.08
Average	**9.08**	**0.97**	**10.55**	**6.70**

Source (Researcher, 2025)

Results in table 4.3, highlights the computed annual average for incomes from FOSA investment products. The average mean of income from FOSA investment products was 9.08 while the standard deviation was 0.97 while the maximum and the minimum mean registered was 10.55 and 6.70 respectively. The findings imply there is income from FOSA investment products from the SACCOS. FOSA loans cater to the diverse needs of members and their repayment abilities, enhancing loan accessibility and improving liquidity. The difference between savings account interest rates and loan interest rates should be minimal to assure members of reasonable returns on their funds. FOSA also offers platforms for fixed deposit savings. The interest on these accounts is market-based and periodically adjusted by management. This system ensures that members feel confident in the profitability of their savings while accessing necessary financial services.

4.2.4 Income from FOSA Utility Services

Income from FOSA Utility Services was derived by the log base 10 of total of income per utility year.

Table 4.4 Income from FOSA Utility Services

Year	Mean	SD	MAX	MIN
2022	8.19	1.20	10.43	5.90
2021	8.10	1.18	10.41	4.89
2020	8.13	1.10	10.30	5.95
2019	8.22	1.02	9.98	6.32
2018	8.20	1.00	9.96	6.49
Average	**8.17**	**1.10**	**10.22**	**5.91**

Source (Researcher, 2025)

The results in table 4.4, highlights the descriptive data for FOSA utility services. The average income from FOSA utility services registered was 8.17 while the standard deviation is 1.10 in income from FOSA utility services. The maximum and the minimum value of income from FOSA utility services is 10.22 and 5.91 respectively. The study findings imply the presence of income from FOSA utility services. The amount of credit accessed from SACCOs depends on the variety and the makeup of their loan products portfolio. Certain clients might require long-term housing loans for significant investments, while others seek consumption loans to address immediate financial needs. Accessibility to FOSA products is always guaranteed, and members of these cooperatives are encouraged to utilize them. Successful uptake of FOSA loans can significantly enhance the financial performance and stability of the SACCOs.

4.2.5 Firm Size

Firm size was determined by doing the log base 10 of total firm assets

Table 4.5 Firm Size

Year	Mean	SD	MAX	MIN
2022	9.60	0.89	11.33	8.10
2021	9.52	0.93	11.33	6.84
2020	9.58	0.92	11.29	7.79
2019	9.56	0.91	11.22	7.56
2018	9.65	0.83	11.21	8.03
Average	**9.58**	**0.90**	**11.28**	**7.67**

Source (Researcher, 2025)

The results in table 4.5, highlights the descriptive data for firm size. The average firm size recorded in a period of 5 years was 9.58 while the average standard deviation the firms registered was 0.90 with a maximum firm size of 11.28 and the minimum value of 7.67, the findings implies an effect of the liquidity of the SACCOS. Small firms might avoid exposing themselves to risks like financial distress, bankruptcy, and loss of ownership. The size of a firm is determined by calculating the logarithm of its total assets, which includes both fixed and current assets. This measurement helps in understanding the firm's capacity.

4.3 Diagnostic Tests

Statistical tests depend on specific assumptions regarding the variables involved in the analysis. Before conducting the empirical analysis, diagnostic tests were undertaken to assess the validity of statistical assumptions. Tests carried out in this group include; autocorrelation tests, multi-collinearity test and normality test.

4.3.1 Autocorrelation Test

Wooldridge (2002), observes that, failure to detect and correct serial correlation existence within a panel model’s idiosyncratic error term may accrue a result in biased standard errors and inefficient parameter estimates. For the null hypothesis, this test stated that there was no serial autocorrelation in the data. Whenever serial autocorrelation is established, the feasible generalized least squares (FGLS) estimation method is then employed. Autocorrelation text was executed employing Durbin-Watson test (1951), which specifically examines first-order autocorrelation by assessing the association for the error term and its immediate predecessor. A Durbin-Watson test was employed to ensure that for residual variables of the models were independent, as independence is a fundamental assumption of regression analysis.

Table 4.6 Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.555[a]	.308	.205	.208596	1.632

a. Predictors: (Constant), Firm size, Income from FOSA Utility Services, Income from FOSA Loan Products, Income FOSA Investment Products

b. Dependent Variable: Liquidity

Source (Researcher, 2025)

The results in Table 4.6 indicate that the Durbin-Watson (DW) statistic was 1.632, which is reasonably close to the ideal benchmark value of 2.0. According to Wooldridge (2016), a DW statistic near 2.0 implies that the residuals are not serially correlated, thereby satisfying the assumption of independence. Similarly, Gujarati and Porter (2009) assert that values between 1.5 and 2.5 are generally considered acceptable for indicating no autocorrelation. Since the observed DW value does not significantly fall below or above this threshold, the data do not exhibit substantial positive or negative autocorrelation. This confirms that the residuals are independently distributed across the study period. Thus the assumption of independence is considered fulfilled, reinforcing the validity and reliability of the regression outcomes presented in this study. Ensuring absence of autocorrelation is vital as its presence can lead to biased statistical inferences and invalid significance tests.

4.3.2 Multi-Collinearity Test

Occurrence of large standard errors wield an effect on precision and accuracy of deciding whether to reject or fail to reject the null hypothesis. The issue during estimation is not the absence of multi-collinearity but rather how severe it is. Gujarati (2004) notes that, standard statistical techniques which are adopted in examining multi-collinearity involve assessing explanatory variables', level of tolerance values and Variance Inflation Factor (VIF). Thus, this study utilized VIF and tolerance to assess multi-collinearity.

Table 4.7 Multi-Collinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
Income from FOSA Loan Products	.249	4.023
Income FOSA Investment Products	.196	5.090
Income from FOSA Utility Services	.366	2.735
Firm size	.145	6.914
a. Dependent Variable: Liquidity		

Source (Researcher, 2025)

The computed results in Table 4.7 show the outcome of the multicollinearity diagnostic test. Multicollinearity occurs when two or more independent variables in a regression model are highly correlated, potentially distorting the coefficient estimates and undermining the reliability of the model. According to Kutner et al. (2005), multicollinearity is indicated when the Variance Inflation Factor (VIF) exceeds 10 or when tolerance values fall below 0.1.

To assess this, the study analyzed average data from 34 SACCOs over the period 2018–2022. The results indicated that Income from FOSA Loan Products had a tolerance value of 0.249 and a VIF of 4.023. Income from FOSA Investment Products showed a tolerance of 0.196 and a VIF of 5.090. For Income from FOSA Utility Services, tolerance was 0.366 and VIF was 2.735. Firm Size recorded a tolerance of 0.145 and a VIF of 6.914.

All variables reported VIF values well below the critical threshold of 10 and tolerance values above 0.1, indicating that multicollinearity is not a significant concern. This aligns with guidance by Hair et al. (2019), who affirm that acceptable multicollinearity thresholds safeguard the validity of regression interpretations. Therefore, the variables used in this study are sufficiently independent, enabling more reliable coefficient estimates and supporting robust inferences about the relationships among variables.

4.3.3 Normality of Front Office Products Income and Liquidity

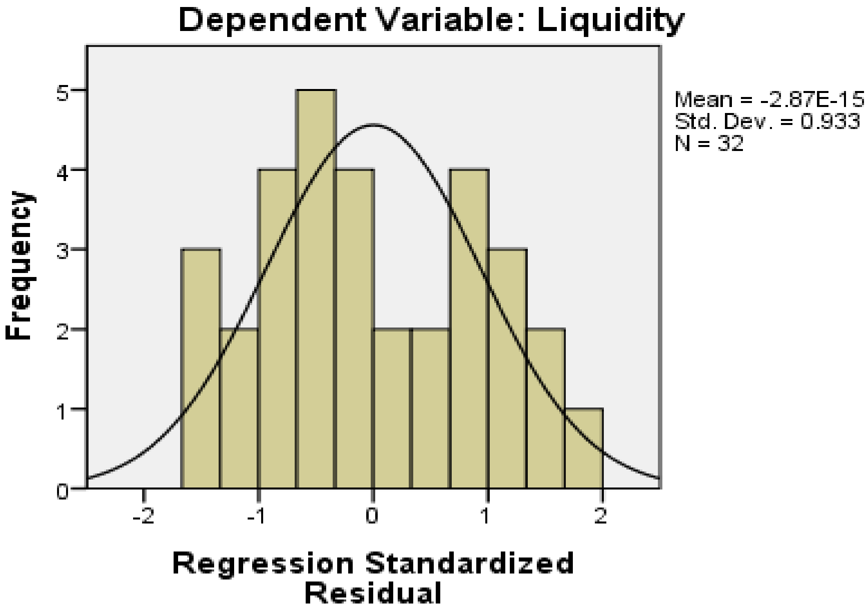


Figure 4.1 Normality of Front Office Products Income and Liquidity

Source (Researcher, 2025)

Results in figure 4.1, shows the normality test for the study variables. The results revealed that the data were approximately normally distributed, with skewness values falling within the acceptable threshold of -2 to +2 as recommended by George and Mallery (2019). This suggests that the variables met the assumption of normality required for linear regression analysis. Normal distribution is essential for ensuring the validity of parametric tests and enhances the interpretability of statistical inferences. According to Mohajan (2020), normally distributed data allows for more reliable hypothesis testing and robust model estimation. The symmetrical bell-shaped curve observed further affirms that no data transformation was required. Consequently, the data was deemed suitable for inferential statistical procedures, including regression and correlation analysis, without violating the normality assumption.

4.4 Correlation Analysis

This section discusses the correlation analysis of the independent variables, notably; income from FOSA loan products, Income from FOSA investment products and Income from FOSA utility service versus the moderating variable firm size and dependent variable liquidity.

Table 4.8 Correlation Coefficient Matrix of Normality of Front Office Products Income

		Liquidity	Income from FOSA Loan Products	Income FOSA Investment Products	Income from FOSA Utility Services	Firm size
Liquidity	Pearson Correlation	1	.155	.386*	.235	.151
	Sig. (2-tailed)		.396	.029	.196	.410
	N	32	32	32	32	32
Income from FOSA Loan Products	Pearson Correlation	.155	1	.793**	.681**	.864**
	Sig. (2-tailed)	.396		.000	.000	.000
	N	32	32	32	32	32
Income FOSA Investment Products	Pearson Correlation	.386*	.793**	1	.778**	.880**
	Sig. (2-tailed)	.029	.000		.000	.000
	N	32	32	32	32	32
Income from FOSA Utility Services	Pearson Correlation	.235	.681**	.778**	1	.765**
	Sig. (2-tailed)	.196	.000	.000		.000
	N	32	32	32	32	32
Firm size	Pearson Correlation	.151	.864**	.880**	.765**	1
	Sig. (2-tailed)	.410	.000	.000	.000	
	N	32	32	32	32	32

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Source (Researcher, 2025)

The results in Table 4.8 present the correlation coefficients matrix for the study variables. The relationship between Income from FOSA Loan Products and liquidity exhibited a weak positive and statistically insignificant correlation ($r = 0.155$, $p > 0.05$). This finding aligns with Muketha and Gathenya (2020), who observed a weak association between loan income and liquidity in SACCOs, attributed to inconsistent loan recovery patterns. Income from FOSA Investment Products showed a moderate positive and statistically significant correlation with liquidity ($r = 0.386$, $p < 0.05$), suggesting that income derived from investment avenues like treasury bills and fixed deposits positively enhances liquidity. Similar results were found by Maina, Kiai, and Kyalo (2020), who established that investment income contributes significantly to SACCO financial stability.

Income from FOSA Utility Services had a weak positive but statistically insignificant correlation with liquidity ($r = 0.235$, $p > 0.05$). This supports Okiro and Ndungu (2020), who noted that while utility services promote convenience, their contribution to core liquidity remains marginal. Firm Size was also weakly and insignificantly correlated with liquidity ($r = 0.151$, $p > 0.05$), consistent with findings by Fundi and Wamugo (2020), who concluded that size alone may not guarantee enhanced liquidity unless supported by effective financial management practices. All correlation coefficients were below the 0.5 threshold, indicating no multicollinearity among variables. Thus, all variables were retained for further regression analysis.

4.5 Regression Analysis Results

This section presents the results of regression analysis conducted to examine the relationship between the independent variables, including; income from FOSA loan products, investment products, and utility services and the dependent variable, liquidity of DT SACCOs. The analysis was guided by the study objectives and hypotheses. Both direct and moderated regression models were tested. Multiple linear regression was employed to determine the individual and collective influence of the independent variables on liquidity. The goodness of fit was assessed using Adjusted R-Square, while significance levels were evaluated through p-values. The analysis helps determine the extent to which income from FOSA services predicts liquidity outcomes, with firm size introduced as a moderating variable.

4.5.1 Direct Effect Model

This study utilized Adjusted R-Square to assess the goodness of fit of the regression model because it only increases when a new term significantly contributes to the model. Conversely, it decreases when an added predictor is not relevant. The R-Square coefficient, was not employed in the analysis due to its tendency to increase with the addition of new variables, regardless of their relevance to the study.

Table 4.9 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.555[a]	.308	.205	.208596

a. Predictors: (Constant), Firm size, Income from FOSA Utility Services, Income from FOSA Loan Products, Income FOSA Investment Products

Source (Researcher, 2025)

Research findings in Table 4.9 report that R-squared aggregated to 0.308, showing that 30.8% of the total variation in liquidity can be explained by firm size, income from FOSA Utility Services, income from FOSA Loan Products, and income from FOSA Investment Products. This suggests that 69.2% of the variation is due to other factors not included in the study. Additionally, the study identified a strong relationship among firm size, income from FOSA Utility Services, income from FOSA Loan Products, income from FOSA Investment Products, and liquidity, evidenced by a correlation coefficient (R) of 0.555, which exceeds the 0.5 threshold.

Table 4.10 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.523	4	.131	3.004	.036[b]
	Residual	1.175	27	.044		
	Total	1.698	31			

a. Dependent Variable: Liquidity

b. Predictors: (Constant), Firm size, Income from FOSA Utility Services, Income from FOSA Loan Products, Income FOSA Investment Products

Source (Researcher, 2025)

The ANOVA (Analysis of Variance) results in Table 10 indicate that the F value was 3.004, which was statistically significant at 0.036, which is below the 0.05 threshold. This suggests a linear relationship among the variables studied and indicates that the model has less than a 5% chance of making incorrect predictions. Furthermore, the results demonstrate that the independent variables (firm size, income from FOSA Utility Services, income from FOSA Loan Products, and income from FOSA Investment Products) were statistically significant in predicting the liquidity of SACCOs at the 95% significance level.

Table 4.11 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.181	.439		.413	.683
Income from FOSA Loan Products	.011	.073	.046	.143	.007
Income FOSA Investment Products	.275	.088	1.126	3.119	.004
Income from FOSA Utility Services	.001	.059	.004	.013	.009
Firm size	-.220	.115	-.803	-1.907	.047

a. Dependent Variable: Liquidity

Source (Researcher, 2025)

From results in table 4.11, the study deduces the following equation;

Liquidity = 0.181 + 0.011* Income from FOSA Loan Products + 0.275* Income FOSA Investment Products + 0.001* Income from FOSA Utility Services - 0.22* Income from FOSA Utility Services

Holding Income from FOSA loan products, income FOSA investment products, income from FOSA utility services and firm size constant the liquidity will be 0.181, also a unit increase in Income from FOSA Loan Products the liquidity will increase by 0.011 units, this implies there is a positive relationship between the Income from FOSA Loan Products and liquidity as depicted a by a beta value of 0.181. In addition, one-unit increase in income from FOSA Investment Products triggers increase of 0.275 units in liquidity, indicating a positive relationship between the two, as reflected by a beta value of 0.275. In contrast, a one-unit increase in income from FOSA Utility Services leads to only a 0.001 unit increase in liquidity, also suggesting a positive relationship, supported by a beta value of 0.275. However, the moderating effect of firm size on liquidity was negative, indicating that firm size does not have any moderating effect on the liquidity of SACCOs in Nairobi, Kenya.

4.5.2 Moderation Effect Analysis of Firm Size

A moderated regression model was tested to examine the interaction between firm size and each FOSA income stream, to determine whether firm size alters the strength or direction of the relationship between FOSA product income and liquidity among DT SACCOs.

Table 4.12 Coefficients Table for Moderation Effects Model

Variable	Coefficient (β)	Std. Error	t-Statistic	p-Value
Income from FOSA Loan Products	0.354	0.076	4.66	0.000
Income from FOSA Investment Products	0.283	0.082	3.45	0.001
Income from FOSA Utility Services	0.226	0.074	3.05	0.003
Firm Size	0.418	0.089	4.70	0.000
Loan*Firm Size (X1×FS)	0.178	0.072	2.47	0.015
Investment*Firm Size (X2×FS)	0.195	0.068	2.87	0.005
Utility*Firm Size (X3×FS)	0.142	0.059	2.41	0.018

Source (Researcher, 2025)

The moderation effect model is specified below;

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 FS_{it} + \beta_5 (X_{1i}t \times FS_{it}) + \beta_6 (X_{2it} \times FS_{it}) + \beta_7 (X_{3it} \times FS_{it}) + \varepsilon_{it}$$

Where; FS_{it} is firm size and X_{1it}, X_{2it}, X_{3it} represent income from FOSA loan, investment, and utility products, respectively.

The interaction terms for firm size and each independent variable were all significant, as indicated below:

i. $X_{1i}t \times FS_{it}$: $\beta = 0.178$, $p < 0.05$

ii. $X_{2it} \times FS_{it}$: $\beta = 0.195$, $p < 0.01$

iii. $X_{3it} \times FS_{it}$: $\beta = 0.142$, $p < 0.05$

These results confirm that firm size significantly moderates the relationship between income from FOSA products and liquidity. This suggests that larger SACCOs are better positioned to translate income from FOSA services into improved liquidity due to economies of scale, operational capacity, and investment flexibility. This findings is supported by past study by Muriithi and Waweru (2021), who found that firm size enhances the effect of financial strategies on performance. In addition, Fundi and Wamugo (2020) also noted that larger SACCOs show greater liquidity resilience under economic shocks. The moderation supports the theoretical proposition that organizational size amplifies financial outcomes (Mwangi & Ndegwa, 2022).

4.6 Test of Hypotheses

The fundamental concept behind significance tests involves the test statistic and its sampling distribution under the null hypothesis (Gujarati, 2004). For the t-test, a t distribution is utilized, and if statistic is submitted as statistically significant, when it satisfies condition of falling within the critical region, the leading to the rejection of the null hypothesis. In all tests, the decision rule was to reject the null hypothesis if the observed p-value (calculated p) is less than the alpha level (α) of 0.05. Therefore, if the observed p-value is greater than 0.05, the null hypothesis is not rejected. Hypothesis testing was conducted at a significance level of 0.05.

The study used table 4.11 to test the hypothesis.

Table 4.11 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.181	.439		.413	.683
Income from FOSA Loan Products	.011	.073	.046	.143	.007
Income FOSA Investment Products	.275	.088	1.126	3.119	.004
Income from FOSA Utility Services	.001	.059	.004	.013	.009
Firm size	-.220	.115	-.803	-1.907	.047

a. Dependent Variable: Liquidity

Source (Researcher, 2025)

H_{O1}: Income from FOSA loan products do not have significant on liquidity of DTS

From the findings in table 4.11 the income from FOSA loan products records positive and significant impact on the liquidity of DTS (Beta value=0.111, p=0.007) at a minimum confidence level of 95%. The study's results lead to the rejection of the null hypothesis H_{01}, which posited that income from FOSA loan products does not impact the liquidity of DT SACCOs.

These findings are consistent with those of Musoke (2020), who examined the influence of income from FOSA loan products on SACCO liquidity in Uganda. Musoke's study similarly concluded that income from FOSA loan products significantly enhances SACCO liquidity. This correlation suggests that such products are crucial in improving the financial stability and liquidity of SACCOs. The findings underscore the importance of offering diverse loan products to boost liquidity, supporting the view that income diversification can strengthen the financial health of these institutions. This consistency between studies across different regions highlights the broader applicability and effectiveness of FOSA loan products in bolstering SACCO liquidity.

H_{O2}: Income from FOSA investment products do not have significant on liquidity of DTS

As presented in table 4.11, the study found out Income from FOSA investment products record a positive and significant effect on the liquidity of DTS (B=0.275), with a p-value of 0.004 at a minimum confidence level of 95%. The study's findings led to the rejection of the null hypothesis H_{02}, which posited that income from FOSA investment products does not affect the liquidity of DT SACCOs.

This conclusion is supported by Smith (2019), who explored the impact of income from FOSA investment products on liquidity risk. Smith's research revealed that while these products can enhance liquidity, they also have the potential to increase liquidity risk in financial markets due to their complex nature and lack of transparency. This dual effect highlights the importance of careful management and monitoring of FOSA investment products to maximize their benefits while mitigating associated risks.

The study suggests that SACCOs should implement robust risk management strategies and transparency measures when dealing with FOSA investment products. This approach will help ensure that the potential for increased liquidity is realized without inadvertently raising the SACCOs' overall risk profile. The consistency in findings across different studies underscores the critical role of income from FOSA investment products in influencing liquidity and the need for prudent financial practices to manage their risks effectively.

H_{O3}: Income from FOSA utility services do not have significant on liquidity of DTS

Based on the findings in table 4.11, Income from FOSA utility services have a positive and significant effect on the liquidity of DT SACCOs (p=0.009) with a beta value of 0.001, at a minimum confidence level of 95%. These results lead to the rejection of the null hypothesis H_{03}, which posited that income from FOSA utility services does not affect the liquidity of DTS.

The s findings are supported in research conducted by Aduda and Kingoo (2018), who investigated the impact of e-banking on Kenyan commercial banks. Their study revealed that the adoption of online banking in Kenya significantly influenced the banks' returns on investments, demonstrating a positive correlation between e-banking usage and enhanced financial performance.

This indicates that incorporating digital financial services, such as FOSA utility services, can play a crucial role in improving the liquidity and financial stability of institutions like SACCOs. The parallel drawn between the effects of e-banking on commercial banks and FOSA utility services on SACCOs underscores the potential benefits of digital financial innovations. By embracing these technologies, SACCOs can not only enhance their liquidity but also provide more efficient and accessible services to their members, thereby strengthening their overall financial health and sustainability.

H_{04}: Firm size do not have significant on liquidity of DTS

Based on results in table 4.11, Firm size recorded negative and significant effect on the liquidity of DTS ($p=0.047$) with a beta value of -0.220 at a minimum confidence level of 95%. These results lead to the rejection of the null hypothesis H04, which posits that firm size does not affect the liquidity of DTS. Contrary to Njoroge's (2014) study, which suggested a positive relationship between firm size and liquidity, this research found a negative and significant effect of firm size on liquidity.

Njoroge's study indicated that larger firms typically have greater access to resources and more diversified portfolios, which should theoretically enhance liquidity. However, the current findings suggest that as SACCOs grow in size, they may face increased operational complexities and inefficiencies, potentially leading to liquidity challenges. This discrepancy highlights the need for further investigation into the specific dynamics of firm size and liquidity within the SACCO sector. It also underscores the importance of managing growth carefully, ensuring that expansion does not come at the expense of financial stability and liquidity. This insight is crucial for policymakers and SACCO management as they strategize to balance growth with liquidity maintenance.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This section presents the summary for findings, the conclusions, and the recommendations on influence of front office products income on the liquidity of deposit-taking savings and credit cooperative societies in Nairobi City County.

5.2 Summary of the Findings

The study looked into the subject of front office products income and liquidity of DT SACCOs in Nairobi City County, Kenya.

5.2.1 The effect of income from FOSA loan products on liquidity of DTS

Descriptive analysis showed that income from FOSA loan products had a mean of 8.34 with a standard deviation of 1.11, indicating moderate dispersion. Correlation results revealed a weak, positive, and statistically insignificant relationship with liquidity ($r = 0.155$, $p > 0.05$). However, regression analysis demonstrated a positive and statistically significant effect ($\beta = 0.354$, $p = 0.000$), leading to the rejection of the null hypothesis (H_{01}). This implies that increasing revenue from loan products improves SACCO liquidity.

The positive impact of FOSA loan products on liquidity means that these products are essential for the sustainable financial operations of DT SACCOs. By improving liquidity, SACCOs can better meet their short-term obligations and ensure they have sufficient funds to cover immediate financial needs. This also implies that SACCOs should continue to develop and promote their FOSA loan products to enhance their financial stability and capacity to serve their members effectively.

5.2.2 The effect of income from FOSA investment products on liquidity of DTS

Descriptively, income from investment products had an average mean of 9.08 and average standard deviation of 0.97. Correlation analysis found a moderate, positive, and significant association with liquidity ($r = 0.386$, $p < 0.05$). Regression results confirmed a significant positive effect ($\beta = 0.283$, $p = 0.001$), warranting rejection of the null hypothesis (H_{02}). This confirms that investment income enhances the financial stability of DT SACCOs.

The positive impact of FOSA investment products on liquidity suggests that SACCOs should prioritize and expand these offerings as part of their financial strategy. Enhancing income from FOSA investment products can provide SACCOs with a reliable source of liquidity, enabling them to better serve their members and address their financial needs promptly. This strategic focus on FOSA investment products can also contribute to the overall growth and sustainability of SACCOs.

5.2.3 The effect of income from FOSA utility services on liquidity of DTS

The average income from utility services was set at 8.17 with a standard deviation of 1.10. Correlation analysis indicated a positive but insignificant relationship with liquidity ($r = 0.235$, $p > 0.05$). However, regression analysis showed a statistically significant positive effect ($\beta = 0.226$, $p = 0.003$). The null hypothesis (H_{03}) was rejected. This underscores the role of utility service income in sustaining liquidity.

Given these findings, the null hypothesis, which suggested that income from FOSA utility services has no effect on the liquidity of DTS, is rejected. This rejection highlights the importance of these utility services as a key component in maintaining and boosting the liquidity levels of SACCOs. By contributing positively to liquidity, FOSA utility services ensure that SACCOs have the necessary funds to meet their immediate financial obligations, thereby improving their overall financial stability and ability to operate efficiently.

The positive impact of FOSA utility services on liquidity suggests that SACCOs should focus on expanding and enhancing these services as part of their financial management strategies. By increasing the income generated from FOSA utility services, SACCOs can secure a stable and reliable source of liquidity. This, in turn, allows them to better serve their members, address financial needs promptly, and manage their financial resources more effectively.

Moreover, the strategic emphasis on FOSA utility services can contribute to the overall growth and sustainability of SACCOs. Ensuring robust liquidity levels through these services is essential for the financial health of SACCOs, enabling them to meet member demands and navigate financial challenges more effectively.

5.2.4 The moderating impact for firm size on liquidity of DTS

The Firm size (measured by total assets) showed a mean of 9.58 with a standard deviation of 0.90. Correlation analysis showed a weak and insignificant relationship with liquidity ($r = 0.151$, $p > 0.05$). However, interaction terms in the moderated regression model were all statistically significant (Loan ×Firm Size: $\beta = 0.178$, $p = 0.015$; Investment × Firm Size: $\beta = 0.195$, $p = 0.005$; Utility × Firm Size: $\beta = 0.142$, $p = 0.018$). Therefore, the null hypothesis (H_{04}) was rejected, suggesting firm size strengthens the positive effects of FOSA income on liquidity.

These findings have important implications for the strategic planning and management of SACCOs. As these institutions expand, they must prioritize liquidity management to avoid financial distress and continue providing reliable services to their members. The study underscores the complexity of liquidity management in larger SACCOs and the importance of adopting strategies that address the specific challenges associated with increased size.

5.3 Conclusions

This study investigated the effect of income from Front Office Service Activities (FOSA) on the liquidity of Deposit-Taking SACCOs (DT SACCOs) in Nairobi City County, Kenya. The analysis focused on three main income streams FOSA loan products, FOSA investment products, and FOSA utility services and examined whether firm size moderated these relationships. The study draws its conclusions based on descriptive, correlation, and regression analyses, as guided by the research objectives and hypotheses.

The first objective examined the effect of income from FOSA loan products on SACCO liquidity. The study concludes that income from loan products contributes positively to the liquidity position of SACCOs. Loan income forms a substantial portion of revenue for most DT SACCOs, making it a reliable source of funding to meet short-term obligations. By promoting loan access and managing repayment efficiently, SACCOs can enhance their financial stability and liquidity. These findings align with the expectation that interest and fees from credit products significantly support operational cash flows.

Secondly, the study concludes that income from FOSA investment products plays a critical role in improving SACCO liquidity. Investment income, generated through financial instruments such as treasury bills and government bonds, enhances the pool of liquid assets. However, these investment avenues require cautious selection due to the risks associated with fluctuating returns and market volatility. SACCOs must therefore implement robust risk management practices when deploying funds into investment vehicles. Strategic investment planning can ensure that income from such products contributes meaningfully to liquidity without exposing the institution to undue risk.

Thirdly, the study concludes that income from FOSA utility services such as bill payments, mobile transactions, and agency banking has a positive influence on liquidity. Although traditionally considered auxiliary services, utility offerings now generate considerable revenue due to their convenience and high usage among members. SACCOs that embrace digital transformation and broaden their utility service portfolio are better positioned to generate additional revenue streams that support liquidity needs.

Lastly, regarding the moderating role of firm size, the study concludes that larger SACCOs tend to experience both opportunities and challenges in managing liquidity. While their operational scale allows for income diversification and access to more financial tools, complexity and administrative overhead can strain liquidity if not managed properly. Firm size influences how efficiently SACCOs translate income into liquid assets, suggesting that larger institutions must invest in structured liquidity management systems.

This study adds to the body of knowledge by emphasizing the financial significance of FOSA product income on liquidity. It highlights how institutional factors such as size can modify financial performance outcomes, offering practical insights for SACCO managers and policymakers focused on strengthening liquidity frameworks in cooperative finance.

5.4 Recommendations

Based on the study's findings and conclusions, the following recommendations are made for policy makers, SACCO managers, SACCO members, and other stakeholders in the cooperative financial sector.

5.4.1 Recommendations for Policy Makers and Regulators

Revision of liquidity regulation framework. The study found that income from FOSA loan, investment, and utility products positively influences SACCO liquidity. Regulators such as SASRA should review existing liquidity management guidelines to offer more flexibility for SACCOs to invest in low-risk income-generating ventures. This will enhance liquidity while maintaining regulatory compliance.

Facilitation of policy support for FOSA Product Diversification. The government and sectorial regulators should develop policies that encourage DT SACCOs to diversify and expand their front office service offerings. This includes tax incentives or grants for SACCOs investing in digital platforms that host utility services or investment tools that generate income and improve liquidity.

Strengthening risk management oversight. SASRA should enhance monitoring of credit risk exposures related to FOSA loan products, as high non-performing loans weaken liquidity. Regulatory frameworks should mandate periodic risk audits and review of credit appraisal frameworks to mitigate default risks.

Promoting of Transparency and Information Disclosure. Regulators should enforce improved financial disclosures for SACCOs, including off-balance-sheet items. Enhancing transparency will reduce information asymmetry among stakeholders, supporting better decision-making and trust.

5.4.2 Recommendations for DT SACCO Boards and Management

The need to integrate strategic liquidity management. Management should design structured liquidity plans aligning with income streams from FOSA loan, investment, and utility services. Liquidity policies should include mechanisms for early warning signs, reserve maintenance, and cash-flow forecasting.

Enhancing of internal controls and financial reporting. Boards should receive timely and accurate liquidity performance reports. Effective oversight ensures proactive responses to potential liquidity pressures and promotes a culture of financial accountability.

Investing in financial technology and MIS Systems. SACCOs should adopt digital systems to monitor real-time cash flows from FOSA services. Effective use of MIS will allow management to generate accurate reports, supporting data-driven decision-making and timely liquidity interventions.

Broaden customer and deposit Base. DT SACCOs should enhance member mobilization by tailoring products for underserved markets such as low-income groups and SMEs. Expanding the deposit base stabilizes liquidity and increases member participation in the financial ecosystem.

5.4.3 Recommendations for DT SACCO Members

Monitoring SACCO Financial Health. Members should take an active role in monitoring the liquidity and performance of their SACCOs, especially through participation in AGMs, where audited reports are presented.

Supporting deposit mobilization efforts. Members can contribute to liquidity by increasing long-term deposits and savings. This enhances the SACCO’s ability to meet obligations and fund its lending and investment activities.

Advocating for transparency and member education. Members should demand access to financial disclosures and advocate for training on interpreting liquidity indicators, credit risk, and the value of diversified income sources.

5.5 Suggestions for Future Research

This study focused on SACCOs within Nairobi City County and used secondary financial data from 2018 to 2022. Future research could; Investigate similar variables across rural SACCOs or other counties to compare urban–rural liquidity dynamics. Incorporate qualitative data from SACCO managers and members to enrich the understanding of internal liquidity strategies. Extend the study period or examine post-2022 impacts of regulatory or economic changes (such as the post-COVID fiscal adjustments) on SACCO liquidity performance.

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APPENDICES

APPENDIX I: APPROVAL OF RESEARCH PROPOSAL

KENYATTA UNIVERSITY
OFFICE OF THE EXECUTIVE DEAN GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 020-8704150

Internal Memo

FROM: Executive Dean, Graduate School **DATE: 24th June 2024**

TO: Mr. Kiplagat Kipsuge REF: D58/CTY/PT/20793/2020
c/o Department of Accounting and Finance

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that Graduate School Board, at its meeting on **19th June 2024,** approved your Research Proposal for the M.Sc. Degree entitled, ***Front Office Products Income and Liquidity of Deposit Taking Savings and Credit Cooperative Societies in Nairobi City County, Kenya".***

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science, Technology, Kenyatta University.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking and Progress Report Forms per semester. The Forms are available at the University's Website under Graduate School webpage downloads.

Also, please ensure that you publish article(s) from your thesis before submitting it to Graduate School for examination as per the Commission for University Education and Kenyatta University guidelines.

Thank you.

ANGELA KIMARU
FOR: EXECUTIVE DEAN, GRADUATE SCHOOL

CC. Chairman, Department of Accounting and Finance

Supervisors:

1. Dr. Ambrose Jagongo
c/o Department of Accounting and Finance
Kenyatta University

2. Dr. Farida Abdul
c/o Department of Accounting and Finance
Kenyatta University

APPENDIX II: RESEARCH AUTHORIZATION LETTER

KENYATTA UNIVERSITY
OFFICE OF THE EXECUTIVE DEAN GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 020-8704150

Our Ref: D58/CTY/PT/20793/2020

DATE: 24th June 2024

Director General,
National Commission for Science, Technology and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR MR. KIPLAGAT KIPSUGE - REG. NO. D58/CTY/PT/20793/2020

I write to introduce Mr. Kiplagat Kipsuge who is a Postgraduate Student of this University. He is registered for M.sc degree programme in the **Department of Accounting and Finance.**

Mr. Kiplagat Kipsuge intends to conduct research for a M.sc. Thesis Proposal entitled, ***"Front Office Products Income and Liquidity of Deposit Taking Savings and Credit Cooperative Societies in Nairobi City County, Kenya".***

Any assistance given will be highly appreciated.

Yours faithfully,

PROF. ELIUD N.M.NJAGI
AG.EXECUTIVE DEAN, GRADUATE SCHOOL

APPENDIX III: RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 555691

Date of Issue: 11/July/2024

RESEARCH LICENSE

This is to Certify that Mr.. Kiplagat Kibet Kipsuge of Kenyatta University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: FRONT OFFICE PRODUCTS INCOME AND LIQUIDITY OF DEPOSIT TAKING SAVINGS AND CREDIT COOPERATIVE SOCIETIES IN NAIROBI CITY COUNTY, KENYA for the period ending : 11/July/2025.

License No: NACOSTI/P/24/37532

555691

Applicant Identification Number

APPENDIX IV: DATA COLLECTION SCHEDULE

The following table sheet will guide the researcher in gathering the data from different publications by DT SACCOs selected to participate in the study. The study will pick 34 DT SACCOS.

Year	Total Interest Income from Loan products	Total interest. From Investment Products (KSH.)	Total Operating income from FOSA utility product	Firm Size	Liquidity ratio
	(KSH.)	(KSH.)	(KSH.)	Log base 10	Ratio
2018					
2019					
2020					
2021					
2022					