



EFFECT OF INTEREST INCOME ON THE FINANCIAL PERFORMANCE OF TIER ONE DEPOSIT TAKING SAVINGS AND CREDIT CO-OPERATIVES SOCIETIES IN KENYA

Mercy Chepkorir*¹, Dr. Penina C. Lang'at², Dr. Kemboi Raymond³

Department of Finance, Accounting and Economics, University of Kabianga

*Corresponding Author

Article DOI: <https://doi.org/10.36713/epra29025>

DOI No: 10.36713/epra29025

ABSTRACT

Savings and Credit Co-operative Societies (SACCOs) are key contributors to Kenya's financial sector, promoting financial inclusion by mobilizing savings and providing affordable credit to their members. This dependence on traditional lending leaves them vulnerable to shocks such as rising loan defaults, economic downturns, and inefficiencies in management. This competitive environment has exerted pressure on their market share, profitability, and long-term financial sustainability, necessitating the adoption of income diversification strategies. Although income diversification has been widely recognized as a strategic approach to enhancing financial performance, empirical evidence on the effect of specific income sources on the financial performance of Tier One Deposit-Taking SACCOs in Kenya remains limited and inconclusive. The objective of this study was to examine the effect of income diversification on the financial performance of Tier One Deposit-Taking SACCOs in Kenya. Specifically, the study investigated the effects of interest income, service charge income. The study was anchored on Modern Portfolio Theory. The study adopted a longitudinal research design and utilized secondary panel data extracted from the audited financial statements of all 42 Tier One Deposit-Taking SACCOs licensed by the Sacco Societies Regulatory Authority (SASRA). The study covered a five-year period from 2019 to 2023. Descriptive statistics were used to summarize the data, while simple and multiple linear regression analyses were employed to test the study hypotheses and determine the effect of each income diversification component on financial performance. The findings revealed that interest income had a positive and statistically significant effect on financial performance ($\beta = 1.14$, $t = 11.20$, $p < .001$). Overall, the findings demonstrate that income diversification significantly contributed to 51.6% variation in the financial performance of Tier One Deposit-Taking SACCOs in Kenya ($R^2=0.51$). The study concludes that interest income significantly enhances the financial performance of Tier One Deposit-Taking SACCOs in Kenya. Income diversification explained 51.6% of variations in financial performance, demonstrating its substantial contribution to SACCO financial sustainability. The study recommend that Tier One Deposit-Taking SACCOs in Kenya should strengthen income diversification strategies, particularly by expanding interest-generating financial products and services. Management should optimize lending activities, improve credit risk management, and identify profitable investment opportunities to increase interest income and enhance overall financial performance.

KEYWORDS: Interest Income; Financial Performance; Income Diversification; Deposit-Taking SACCOs; Kenya.

INTRODUCTION

The global financial landscape has undergone significant changes, with financial institutions worldwide facing increasing challenges in balancing risk and return within dynamic market environments. As financial systems become more interconnected, the issue of income diversification has gained prominence as a strategy for ensuring stability and resilience. By spreading revenue sources, institutions are able to reduce volatility and foster sustainable growth, although this approach presents both opportunities and risks. The central concern lies in understanding how varying revenue streams influence the financial performance of these institutions, particularly in mitigating risks associated with market volatility and ensuring sustainable growth (Kahihu et al, 2021).

In advanced economies, diversification is shaped by regulatory and economic contexts. In United States of America (USA), Asia and Europe financial sector operate within distinct financial environment, each shaped by its unique economic conditions, regulatory environments and market dynamics (Larsen, 2023). Savings and Credit Cooperative Societies (SACCOs) in the USA, commonly known as credit unions, have embraced income streams diversification to improve their financial performance and sustainability (Van-Rijn, 2022). In USA credit unions plays a critical role in a capitalist society of providing credit facilities to general public without class, race or place discrimination (Pavlovskaya & Eletto, 2021). The credit union have diversified their membership and expand operation in order



to increase the pool deposit. This assist in giving loan to their members and diversification of income to other investment (Peng, 2022). Similarly, in Canada, credit union performance largely depends on member deposit which are subsequently re-invested according to Khan (2021). Therefore, income diversification is essential for long term sustainability of credit unions.

In Asian countries, credit union and cooperative institutions have improved their income through income diversification generating sufficient revenue for their operation and growth (Malik, Qadeer, & Imam, 2024). China have recognized SACCOs as cooperative financial institutions that play a significant role in improving access to capital, particularly for farmers (Yu, Nilsson, Zhan, & Cheng, 2023). Another study done in South Asian indicated that India and Pakistan have offered diversified production in their credit unions and cooperative societies that have enable the financial institution to diversify their sources of revenue (Afzal, 2023). These have not only given growth to credit unions but also enable small businesses and farmers to access credit, insurance among other products for sustainable economic growth.

In Kenya, Deposit-Taking SACCOs (DTS) serve as vital institutions designed to uplift the financial livelihoods of their members. Members contribute shares and deposits, with the expectation of receiving dividends from shares, interest on deposits and access to loans based on their savings (Thiong'o & Nyaga, 2019). As reported by the SASRA Annual Supervisory Reports, loans and advances account for approximately 70% of SACCOs' total assets, generating more than 80% of their revenue. This over-reliance on loan-based income exposes SACCOs to risks particularly when non-performing loans increase. This means that with high non-performing loans it could impact financial performance negatively. The overreliance on few sources of finance exposes SACCOs to credit risk, highlighting the need to diversify income sources in order to strengthen financial resilience and profitability.

Income diversification is a strategy employed by individuals, businesses and investors to mitigate risk and enhance financial stability by generating income from multiple sources. Income diversification according to Ndirangu and Muturi (2019) can be conceptualized as investment in mobile banking, trade finance and real estate among SACCOs. This income diversification significantly improves the performance of the SACCOs. SACCOs need to diversify their income generating portfolio to remain viable and financially sound (Ndungu, 2023). Income diversification is affected by capital adequacy, asset quality, liquidity management and earnings performance regulations according to Mafuno (2021). Therefore, these income diversification are namely; interest income, service charges, investment income and income from technology adoption and service automation.

Interest income is one of the primary sources of income diversification strategy that plays a fundamental role on revenue generation in SACCOs. Li (2022) while evaluating China's banking sector, revealed that internet finance reshapes interest income by diverting depositors to third-party platforms offering competitive rates and borrowers to peer to peer lending platforms with streamlined processes. This shift diminishes banks' interest income but fosters diversification, hence boosting non-interest revenue in the banking sector. Conversely, Ajigo et al. (2021) reported interest income's significant positive impact on financial performance, especially augmented by virtual banking for Kenyan banks. Meanwhile, Obadiaru and Ayobami (2024) highlighting interest income's pivotal role in profitability of Nigerian banks, urging strategies to enhance both interest and non-interest income. In the U.S., Koapaha (2023) integrates ESG factors into the discourse, revealing their substantial influence alongside net interest income on bank performance, highlighting the imperative need for effective risk management for sustained profitability. Notably, many studies on interest income were done in commercial banks which are different from SACCOs in terms of structure, objectives and capabilities (Ajigo, Baraza & Wuádongo, 2021; Li, 2022; Obadiaru & Ayobami, 2024; Koapaha, 2023).

According to Hussein (2017) investment income plays a very important role among commercial banks in Kenya. Commercial banks have a range of investment vehicles to choose from stocks, investing in other companies, corporate bonds, government securities among others. Investment income from financial securities can take various forms, including dividends from stocks, interest payments from bonds, rental income from real estate properties and capital gains from the sale of assets at a higher price than their purchase price (Koumou, 2020). Diversification across different asset classes is often recommended to mitigate risk and enhance overall returns. Additionally, investors may employ strategies such as dollar-cost averaging and reinvestment of dividends to maximize the compounding effect over time. Kinyua (2022) found that investment in long-term, medium-term and alternative assets significantly influenced financial performance among pension funds. However, there is need to examine the influence of income from investments, assets and real estates on the performance of Tier One Deposit Taking SACCOs in Kenya. Additionally, the studies were done on commercial banks and pension firms to address this gap (Quyen, Ha, Darsono, & Minh, 2021; Hussein, 2017; Kinyua, 2022; Muli & Jangogo, 2019). There was need to assess investment income on financial performance of tier one SACCOs in Kenya.

Financial performance refers to the evaluation of how effectively a company utilizes its resources to generate profits and create value for its stakeholders. It encompasses various dimensions of a company's financial health, including profitability, liquidity, solvency and



efficiency in resource management (Diana, 2020). This evaluation is crucial for investors, creditors and management alike, as it offers insights into the company's capacity to generate sustainable earnings and manage risks efficiently.

Measuring financial performance involves the use of both quantitative and qualitative metrics. Quantitative metrics typically include profitability ratios, liquidity ratios and solvency ratios (Rashid, 2021). According to Choiriyah et al. (2020), profitability ratios assess the company's ability to generate profits relative to revenue, assets, or equity this includes return on assets, operating profit margin, earning per share, return on equity and net profit margin. Liquidity ratios evaluate its capability to meet short-term financial obligations, while solvency ratios gauge its ability to fulfill long-term financial commitments and maintain stability (Larasati & Purwanto, 2022). Meanwhile, qualitative factors such as market positioning, brand reputation, and management competence complement quantitative metrics in providing a comprehensive assessment (Al-Mamary, et al., 2020).

Among the most widely used measures of financial performance is Return on Assets (ROA). ROA is a significant measure of financial performance that assesses how well a company employs its assets to create profits (Puspitasari et al., 2021). It is calculated by dividing net income by average total assets, and it offers insights into the productivity and profitability of a company's assets, independent of its capital structure. A higher ROA generally indicates better utilization of assets and stronger profitability, while a lower ROA suggests inefficiencies in asset management (Puspitasari et al., 2021). Otwoko (2023) measured finance performance of SACCOs using ROA in relation to interest income. Therefore, ROA is a useful metric for assessing the financial performance of SACCOs, especially in relation to interest income, which plays a significant role in SACCOs' revenue generation. However, it is essential to analyze ROA in conjunction with other financial indicators to gain deep understanding of a company's overall financial performance and prospects. Another important measure of financial performance is Return on Equity (ROE). ROE is adopted in majority of the firms based on its effectiveness in representing net profit to shareholder's equity.

It is calculated by dividing net income by shareholder equity, and a higher ROE indicates that the company is effectively using shareholder funds to generate profits. For SACCOs, ROE is an important metric to evaluate how well member contributions (in the form of equity) are being utilized to generate financial returns. A higher ROE suggests better returns for shareholders, while a lower ROE may indicate underperformance relative to shareholder expectations (Larasati & Purwanto, 2022).

In the context of SACCOs, ROE are valuable for assessing financial performance. SACCOs rely on member savings and loans for revenue generation, making it crucial to evaluate how efficiently these resources are being used to create value for members. The adoption of interest income, as well as other sources of income like service charges and investments, can significantly influence ROE (Otwoko, 2023). Moreover, the financial performance of SACCOs can be influenced by factors such as liquidity management, asset quality, and capital adequacy (Mafuno, 2021). The current study therefore, was adopt ROE in examining the financial performance of tier one SACCOs.

Statement of the Problem

Savings and Credit Cooperative Societies (SACCOs) form an essential pillar of Kenya's financial system, particularly in mobilizing resources for investment and advancing financial inclusion. They are estimated to contribute nearly 45 percent of the country's GDP, highlighting their importance in supporting economic growth. Through services such as loans, dividends, and savings schemes, SACCOs enable members to accumulate wealth and improve their economic well-being. However, most SACCOs rely heavily on member funds that are primarily invested in loans and a narrow range of financial products. As a result, concerns have been raised regarding the sustainability and long-term resilience of SACCOs, pointing to the need for diversification of income streams as a strategy to reduce financial vulnerability. Although income diversification is widely recognized as a mechanism for enhancing stability, SACCOs in Kenya remain significantly reliant on loan interest income, which constitutes the majority of their revenues. While some SACCOs have initiated diversification efforts, the extent to which these strategies improve financial performance is not well documented. Unlike banks, SACCOs operate under cooperative principles and distinct regulatory frameworks, with the primary objective of serving members rather than maximizing profits. These differences justify the need for a focused investigation into how diversification affects their performance. The situation is particularly pressing for Tier One DT SACCOs, which hold assets exceeding KSh 4.5 billion. Their larger financial capacity positions them to invest in diverse income-generating activities such as service charges, real estate, and technology-driven innovations, including service automation and digital banking. However, empirical evidence on the outcomes of such strategies within this category of SACCOs is scarce. The absence of clear insights makes it difficult for SACCO leaders to design effective approaches to diversification. This study therefore aims to bridge this knowledge gap by analyzing the effect of income diversification on the financial performance of Tier One DT SACCOs in Kenya. Specifically, it focused on four key revenue streams: interest income, service charges, investment income, and technology-driven revenues. The findings are expected to provide practical insights for SACCO managers, regulators such as the Sacco Societies Regulatory Authority (SASRA), investors, and policymakers. By doing so, the study



was not only support the financial sustainability of Tier One SACCOs but also reinforce their contribution to financial inclusion and national economic development.

Theoretical Review

The study was guided by Modern Portfolio Theory (MPT) as presented Modern Portfolio Theory (MPT), first introduced by Harry Markowitz in 1952, revolutionized investment strategies by emphasizing the importance of diversification in optimizing risk-adjusted returns (Ou, 2023). At its core, MPT proposes that investors can construct portfolios that maximize returns for a given level of risk or minimize risk for a given level of return through strategic diversification. This proposition challenges the traditional approach of evaluating individual assets in isolation and instead emphasizes the importance of considering the collective behaviour of assets within a portfolio. Jones and Trevillion (2022) pointed that spreading investments across various asset classes, MPT aims to achieve the optimal balance between risk and return, ultimately leading to more stable and efficient investment outcomes.

Modern Portfolio Theory (MPT) recognized that different assets exhibit varying degrees of risk and return potential, and these characteristics are interconnected through their correlations. The theory posits that by combining assets with low or negative correlations, investors can reduce the overall risk of the portfolio without sacrificing returns (Surtee & Alagidede, 2023). Moreover, MPT introduces the notion of the efficient frontier, which represents the set of portfolios that offer the highest expected return for a given level of risk or the lowest level of risk for a given level of return. The efficient frontier provides investors with a roadmap for constructing diversified portfolios that optimize risk-adjusted returns.

Despite its significant contributions to investment strategy, Modern Portfolio Theory (MPT) has faced criticism over the years. One major criticism is its reliance on historical data to estimate returns, risks, and correlations, which may not accurately predict future market conditions (Mir, Azizyan, Bavani, & Gohari, 2022). This limitation can result in suboptimal portfolio allocations, especially in volatile or rapidly changing financial environments. According to Akkaya (2021), MPT assumes that investors are rational and risk-averse, always seeking to maximize returns for a given level of risk. However, behavioral finance research suggests that investors' decisions are often influenced by cognitive biases and emotional factors, leading to irrational investment choices.

Modern Portfolio Theory offers valuable insights into optimizing the allocation of income-generating assets within a portfolio (Sewando, 2022). As organizations, including SACCOs, increasingly seek to diversify their revenue sources, MPT principles support the notion that organizations should invest in a mix of income streams to reduce risk. This theory supports the need for organizations to invest income diversification in order to reduce risk. Hence, MPT principles support the income diversification through fee and charge income, technology and automation initiatives, and investment income. SACCOs can reduce reliance on any single revenue source and mitigate the impact of economic volatility or industry-specific challenges.

Modern Portfolio Theory provides a comprehensive framework for organizations to strategically diversify their income streams and enhance financial performance. The SACCOs can leverage on MPT principles in constructing portfolios that balance the trade-off between risk and return, capitalize on income-generating opportunities, and navigate challenges effectively. As SACCOs continue to adapt to evolving market dynamics and technological advancements, MPT remains a valuable and adaptable tool for organizations seeking to optimize their financial strategies in an increasingly complex market environment and achieving long-term financial sustainability.

Review of Related Literature

The review of income diversification and financial performance. Income diversification literature was reviewed in terms of interest income, service charges income, investment income and technology and automation.

Interest Income and Financial Performance

Particularly for Savings and Credit Cooperative Organizations (SACCOs), interest income is a critical component in evaluating an organization's financial performance. Otworko (2023). It describes the profits made from investments in assets that bear interest, including bonds, loans, or savings accounts (Alafif, 2023). The revenue and profitability of a SACCO are directly impacted by this income. Generally speaking, a greater interest income shows that the organization has significant assets that are producing returns, which can improve overall profitability. On the other hand, less investment activity or a less favorable interest rate environment could be the cause of decreasing interest income (Mongelli, Pointner, & Van-Den-End, 2024).

Koapaha (2023) investigated the impact of net interest income and economic, social, and governance (ESG) aspects on bank performance in the United States. The study discovered that net interest income, ESG performance, firm size, and bank loan characteristics collectively explained 40.78% of the variance in Tobin's Q, a measure of company performance, using a panel dataset of publicly traded



banks and multiple regression analysis. Although there was a mixed relationship between net interest income and bank performance, profitability was shown to be strongly predicted by ESG performance. Despite these revelations, the current study ignored ESG considerations in favor of concentrating only on interest revenue and its connection to SACCO financial success. Instead of focusing on ESG, interest income, and bank performance, the current study looked at interest income in connection to financial performance. Since the majority of research was conducted on commercial banks, it was necessary to evaluate the impact of interest income on the financial performance of Kenya's Tier One DT SACCOs.

Li (2022) studied how internet financing affected the interest and non-interest revenue of Chinese commercial banks. An empirical analysis utilizing data from 115 Chinese commercial banks between 2011 and 2018 was carried out using a longitudinal research approach to investigate the impact of online financing on the banking industry. According to the report, a lot of depositors transfer their funds to the third-party platform since it provides a higher interest rate and is just as flexible and secure as bank accounts. Because P2P lending platforms provide quicker processing periods and lower collateral requirements than bank loans, some borrowers are turning to them. As a result, internet finance negatively impacted the banks' credit operations, which reduced interest income. On the other hand, as it promotes financial market variety and speeds up the flow of money, the expansion of internet finance has a positive knock-on effect for banks' non-interest earnings. Despite this, Chinese banks' main source of profit remained the difference between deposits and loans, which eventually reduced their return on assets. Internet finance, non-interest, and interest income were the subjects of the study. The present study only examined interest income in connection to financial performance in Kenyan Tier One DT SACCOs.

Obadiaru and Ayobami (2024) examined the profitability of Nigerian banks with respect to interest and non-interest income. This study examines the profitability of Nigerian money deposit banks with respect to interest and non-interest revenue. Secondary data from the selected banks' annual reports was used in the study. The study spans twelve years, from 2010 to 2021. Both descriptive and inferential statistics were used in the data analysis process. The generalized linear model (GLM) was utilized. According to the study, there is a substantial relationship between interest income and profitability but not between non-interest income and profitability. According to the study, banks in Nigeria's banking industry should use both interest and non-interest revenue techniques. The current study, however, concentrated on interest income in connection to the financial performance of Kenyan deposit-taking SACCOs.

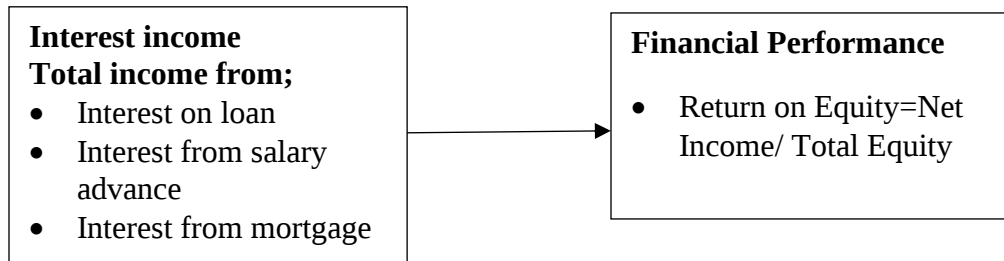
In a similar vein, Ajigo, Baraza, and Wuñongo (2021) looked at how interest income affected Kenyan commercial banks' financial results. The moderating effect of virtual banking in this association was also taken into account in their analysis. Between 2013 and 2017, 40 commercial banks and top management staff were the subject of the study, which used a quantitative paradigm. According to the study, interest income had a major effect on financial performance, and virtual banking strengthened this connection. This study was based on the Resource-Based Theory, Market Power Theory, Adoption, Diffusion and Usage of Innovations Theory (ADUI), and Transactional Cost Innovative (TCI) theory. However, the current study provided a unique analysis of SACCOs' financial performance by concentrating on Tier One DT-SACCOs in Kenya rather than commercial banks. The results demonstrated that the interaction effect of virtual banking had a considerable favorable impact on the relationship between interest income and financial performance. Instead of looking at Kenyan commercial banks, the current study looked at Tier One DT-SACCOs.

Otwoko (2023) investigated the interest rates and financial performance of SACCOs in Kenya, focusing on the effects of interest rate changes on these organizations. Using a descriptive survey approach, 528 senior managers from 176 deposit-taking SACCOs in Kenya participated in this study. According to the study, monetary policy and inflation had little positive impact on financial performance, but credit and liquidity concerns had a substantial negative impact. Additionally, it was discovered that the relationship between interest rate parameters and financial success was moderated by SACCO size. The analysis by Otworko highlights how crucial risk management is to SACCO sustainability. Both descriptive statistics, like frequency tables, means, variances, and standard deviations, and inferential statistics, such multiple regression analysis and the product moment correlation coefficient, were used in the data analysis process. The findings showed that financial performance was significantly impacted negatively by credit risk and liquidity risk, positively by monetary policy, and significantly impacted by inflation. The study also discovered that the association between interest rate parameters and the financial performance of deposit-taking SACCOs was tempered by their size. In order to ensure sustainability, the research advises policy makers at deposit-taking SACCOs to establish effective ways to control credit and liquidity risk. On the other hand, the current study examined the impact of revenue diversification tactics on the financial performance of Tier One Deposit-Taking SACCOs in Kenya using secondary data.

Mathuva (2016) examined 212 deposit-taking SACCOs in Kenya from 2008 to 2013 and discovered that revenue diversification improves financial performance by increasing returns, especially through non-interest income. But he also warns that the benefits of diversification are tempered by institutional characteristics like size, capital sufficiency, and leverage, and that it increases profits volatility. In a similar vein, Jerono (2016) investigated the impact of income source diversification on SACCOs' financial performance and found that organizations with wider income bases demonstrated more sustainability and profitability than those that relied primarily

on interest income. When considered collectively, these studies highlight that although diversification can improve SACCO performance, it necessitates careful management to strike a balance between profitability and stability, particularly as institutions grow and encounter increasingly complex financial risks. A large number of the examined research focused on commercial banks. Some have assessed the impact of interest income on banks' financial performance using primary data. While some studies have employed market performance metrics, the current study used secondary data and concentrated on financial performance while focusing on deposit-taking SACCOS (Tier 1)

Figure 1: Conceptual Framework



Source: Researcher (2026)

Research Methodology

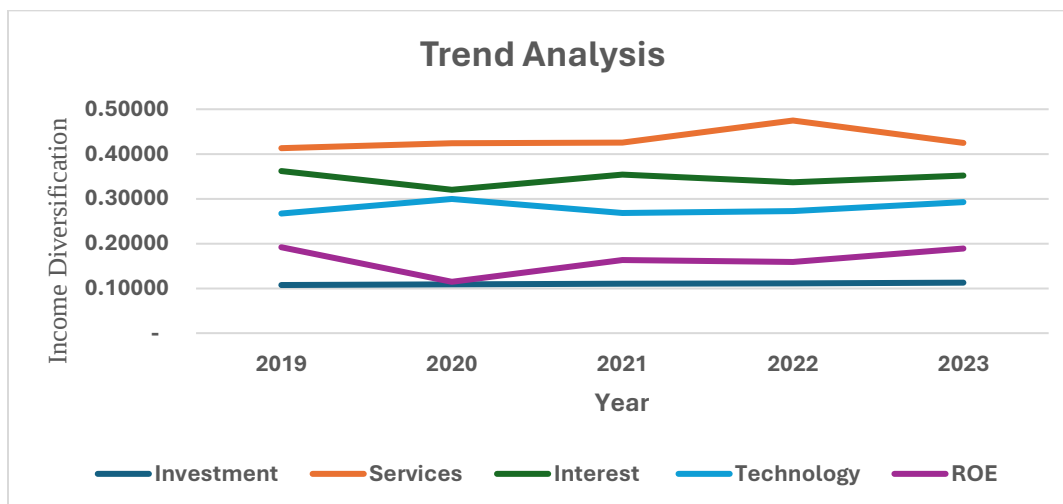
The study adopted a positivist research philosophy and a longitudinal research design to examine income diversification and financial performance among Tier One Deposit-Taking SACCOs in Kenya over the period 2019–2023. The study targeted 42 operational Tier One SACCOs and utilized secondary quantitative data extracted from audited financial records. Data were captured using a structured data capture form and analyzed using EViews 12. Descriptive statistics and panel regression analysis were applied to establish the relationship between income diversification and financial performance. Diagnostic tests were conducted to assess normality, stationarity, multicollinearity, homoscedasticity, and model specification. The study also employed the Hausman test to determine the appropriate panel estimation model. Ethical considerations, including authorization, confidentiality, data integrity, and responsible handling of financial information, were observed throughout the research process.

RESULTS AND DISCUSSIONS

Trend Analysis of Variables

Trend analysis was conducted to examine the year-to-year changes in the study variables and to identify patterns in the income diversification components and financial performance of Tier One Deposit-Taking SACCOs over the study period. This analysis provides a visual representation of the direction and magnitude of changes in the variables, thereby facilitating a better understanding of their temporal behaviour before undertaking inferential analysis. Figure 4.1 presents the trends in Investment Income, Service Income, Interest Income, Technology driven revenues, and Return on Equity (ROE) for Tier One Deposit-Taking SACCOs in Kenya from 2019 to 2023.

Trend Analysis



Source: Research Data, 2026



Figure shows that Service Income remained the largest source of revenue for Tier One SACCOs throughout the 2019–2023 period, increasing steadily until 2022 before recording a slight decline in 2023. Interest Income remained relatively stable, experiencing a modest decline in 2020 followed by a gradual recovery, reflecting the continued importance of lending activities. Technology driven revenues exhibited a consistent upward trend, indicating increasing adoption of digital financial services, although its contribution remained comparatively low. Return on Equity (ROE) fluctuated over the study period, declining in 2020 before recovering gradually, suggesting variations in profitability. In contrast, Investment Income remained relatively low and stable, indicating its limited contribution to SACCO income diversification. Overall, the trends suggest that Tier One SACCOs continue to rely primarily on service and interest income, while technology-based income is gradually gaining importance and investment income remains marginalization.

	ROE	Interest
Mean	0.163634	0.345076
Median	0.003800	0.320274
Maximum	0.267005	0.876956
Minimum	0.001000	0.033621
Std. Dev.	0.272100	0.143754
Skewness	1.681844	1.207609
Kurtosis	4.513662	5.767656
Jarque-Bera	119.0487	118.0655
Probability	0.000000	0.000000
Sum	34.36321	72.46598
Sum Sq. Dev.	15.47408	4.319043
Observations	210	210

Source: Research Data, 2026

Table presents the descriptive statistics for income diversification variables and financial performance among Tier One Deposit-Taking SACCOs in Kenya. The findings indicate that service charges income recorded the highest mean value ($M = 0.4325$, $SD = 0.2674$), suggesting that fee-based revenue streams constitute a significant component of income diversification among the sampled SACCOs. This finding demonstrates the growing importance of non-interest income sources such as transaction charges, commissions, account-related services, and digital financial services in supporting SACCO revenue generation. The increasing contribution of service-based income aligns with the argument by Ahannaya et al. (2021) and Shahab and Lades (2021) that service charges provide an avenue for financial institutions to diversify revenue beyond traditional lending activities. The relatively high variability ($SD = 0.2674$) further suggests that SACCOs differ considerably in their ability to develop and exploit fee-based services, possibly due to variations in technological capacity, product innovation, and member service strategies.

Interest income recorded the second-highest mean ($M = 0.3451$, $SD = 0.1438$), confirming that lending activities remain a dominant source of revenue among Tier One DT-SACCOs. This finding supports Otwoko (2023), who noted that interest-generating activities remain central to SACCO operations due to their credit-oriented business model. The relatively lower dispersion compared with service charges income indicates that interest income generation is more consistent across SACCOs, reflecting the established nature of lending activities within the cooperative sector. The prominence of interest income also supports previous studies such as Ajigo et al. (2021), which found that interest-related earnings significantly influence financial performance among financial institutions. However, continued reliance on interest income may expose SACCOs to credit-related risks, emphasizing the need for broader income diversification.

Technology-driven revenue recorded a mean value of 0.2801 ($SD = 0.1918$), indicating that technology-enabled services are becoming an increasingly relevant component of SACCO income diversification. Although lower than service and interest income, the finding suggests that Tier One DT-SACCOs are progressively benefiting from digital platforms, automated services, mobile banking, and other financial technologies. This observation is consistent with Wanalo et al. (2020) and Mokaya (2020), who established that technology adoption enhances financial performance through improved efficiency, expanded service accessibility, and additional revenue opportunities. The moderate variability indicates differences among SACCOs in technology adoption levels, digital infrastructure investment, and the ability to monetize technology-based services.

Regarding financial performance, Return on Equity (ROE) recorded a mean value of 0.1636 ($SD = 0.2721$), indicating differences in profitability levels among Tier One DT-SACCOs. The relatively high standard deviation suggests that some SACCOs achieved substantially higher returns than others, possibly due to differences in operational efficiency, income diversification strategies, asset quality, and management practices. This variation supports the need to examine how different income sources influence financial performance.



The distributional characteristics indicate that most variables were positively skewed, implying that a few SACCOs recorded considerably higher values than the majority. ROE showed strong positive skewness (1.6818), suggesting the presence of highly profitable SACCOs within the sample. Similarly, interest income (skewness = 1.2076) showed that some institutions generated substantially higher lending returns compared with others. The positive skewness observed in service charges, technology, and investment income indicates differences in the extent to which SACCOs have embraced alternative income-generating strategies.

The kurtosis results further reveal differences in the concentration and distribution of the variables. Interest income (kurtosis = 5.7677) and ROE (kurtosis = 4.5137) were leptokurtic, indicating that these variables contained more extreme observations and higher concentration around the mean. This suggests that a small number of SACCOs may have significantly stronger lending performance and profitability compared with others. Technology driven revenues was approximately normally distributed (kurtosis = 3.1401), while investment income (2.1264) and service charges income (2.1497) were platykurtic, indicating relatively dispersed distributions with fewer extreme values.

Overall, the descriptive findings demonstrate that Tier One DT-SACCOs continue to rely substantially on traditional revenue sources, particularly interest income and service charges, while emerging streams such as technology-driven revenue and investment income are gradually gaining importance. These findings justify the need for further empirical investigation into how different income diversification strategies influence SACCO financial performance.

The Jarque–Bera test results show that all variables are statistically significant at the 5% level ($p < 0.05$), indicating rejection of the null hypothesis of normality. This suggests that the variables are not normally distributed. However, given the relatively large sample size of 210 observations and the use of panel data techniques, this does not undermine the validity of subsequent econometric analysis, as panel regression estimators are generally robust to deviations from normality when appropriate diagnostic tests are satisfied (Wooldridge, 2021; Gujarati & Porter, 2009).

Overall, the descriptive results suggest that Tier One DT-SACCOs in Kenya rely more heavily on traditional income sources such as interest and service charges, while investment and technology-based income streams remain comparatively lower. The observed variability and non-normality also highlight differences in financial performance and diversification strategies across SACCOs, thereby justifying further inferential analysis to determine the impact of income diversification on financial performance

Diagnostic Test Results

Prior to estimating the regression models, several diagnostic tests were conducted to assess whether the data satisfied the underlying assumptions of linear regression and panel data analysis. These tests help ensure that the estimated coefficients are unbiased, efficient, and reliable. Specifically, the study examined the normality of the data, multicollinearity among the independent variables, panel unit root (stationarity), heteroscedasticity, autocorrelation, and model specification through the Hausman test.

Panel data Model Specification Test

The Hausman specification test was conducted to determine the appropriate panel data estimation technique between the fixed effects model and the random effects model. The null hypothesis states that the random effects model is appropriate because the individual effects are uncorrelated with the explanatory variables, while the alternative hypothesis supports the fixed effects model. The Hausman test compares the fixed effects and random effects estimators. A statistically significant result ($p < .05$) indicates that the fixed effects model is preferred over the random effects model. Table 4.3 shows the results of the Hausman test indicated that the model was statistically significant, $\chi^2(4) = 28.83$, $p < .001$.

Correlated Random Effects - Hausman Test				
Test cross-section random effects				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		28.831985	4	0.0000
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
INTEREST	1.238106	1.173732	0.001090	0.0512
Source: Research Data, 2026				

The Hausman specification test was conducted to determine the most appropriate panel regression model for the study. The test was based on the null hypothesis (H_0) that the random effects model is appropriate because there is no correlation between the unobserved individual effects and the explanatory variables, against the alternative hypothesis (H_1) that the fixed effects model is appropriate because such correlation exists. The coefficient comparison between the fixed and random effects models showed noticeable differences for several explanatory variables. Specifically, Service Charges Income ($p < .001$) and Technology Adoption and Service Automation Income ($p = .001$) exhibited statistically significant differences in their coefficient estimates across the two models, suggesting that the assumptions underlying the random effects model were violated for these variables. Although Interest Income showed a marginally significant difference ($p = .051$), Investment Income did not differ significantly ($p = .796$). However, because the overall Hausman test was statistically significant ($p < .05$), the null hypothesis was rejected in favor of the alternative hypothesis. This indicates that the fixed effects model is more appropriate than the random effects model for estimating the relationship between income diversification and the financial performance of Tier One Deposit-Taking SACCOs in Kenya. Consequently, the fixed effects estimator was adopted for the subsequent regression analysis because it provides consistent and unbiased estimates when unobserved individual effects are correlated with the explanatory variables.

Collinearity Statistics Coefficients		
Model	Collinearity Statistics	
	Tolerance	VIF
INTEREST	.990	1.010
a. Dependent Variable: ROE		

Multicollinearity was assessed using tolerance and variance inflation factor (VIF) statistics. The results indicated that all tolerance values exceeded the recommended threshold of 0.10 (0.989–0.997), while all VIF values were close to 1 (1.003–1.011), well below the recommended maximum value of 10. These findings suggest that multicollinearity was not present among the predictor variables. Therefore, the independent variables met the multicollinearity assumption required for multiple regression and panel data analysis.

Autocorrelation (Serial Correlation) Test

The presence of autocorrelation was assessed using the VAR Residual Serial Correlation Lagrange Multiplier (LM) test. The null hypothesis of the test states that there is no serial correlation at the specified lag. A p -value greater than .05 indicates that the null hypothesis cannot be rejected. The null hypothesis states that there is no serial correlation at the specified lag. A p -value greater than .05 indicates that the residuals are free from serial correlation.

VAR Residual Serial Correlation LM Tests						
Included observations: 126						
Null hypothesis: No serial correlation at lag h						
Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	6.890510	1	0.0087	7.126755	(1, 118.0)	0.0087
2	1.402303	1	0.2363	1.416707	(1, 118.0)	0.2363
3	1.094507	1	0.2955	1.104299	(1, 118.0)	0.2955

As presented in Table, the LM test results indicated that there was no evidence of serial correlation at any of the tested lags. Specifically, the test results for lag 1 ($LRE = 6.89$, $p = .087$), lag 2 ($LRE = 1.40$, $p = .236$), and lag 3 ($LRE = 1.09$, $p = .296$) were all statistically non-significant. Similarly, the Rao F-statistics for all three lags were also not statistically significant ($p > .05$). Therefore, the null hypothesis of no serial correlation was retained, indicating that the residuals satisfy the assumption of independence. These findings indicate that the residuals are free from serial correlation, suggesting that the assumption of independent errors was satisfied.

**Correlation Analysis**

		Return on Equity	Interest Income
N		210	210
Return on Equity	Pearson Correlation	1	.604**
	Sig. (2-tailed)		.000
Investment Income	Pearson Correlation	.395**	.363**
	Sig. (2-tailed)	.000	.000
Service Charge	Pearson Correlation	.422**	.187**
	Sig. (2-tailed)	.000	.007
Interest Income	Pearson Correlation	.604**	1
	Sig. (2-tailed)	.000	
Technology driven revenues	Pearson Correlation	.516**	.363**
	Sig. (2-tailed)	.000	.000

The Pearson correlation results presented in Table indicate that income diversification variables were significantly associated with the financial performance of Tier One Deposit-Taking SACCOs in Kenya, measured using Return on Equity (ROE). The findings revealed that interest income had a strong and statistically significant positive correlation with ROE ($r = .604$, $p < .001$). This indicates that SACCOs generating higher interest income from lending activities tend to achieve better financial performance. The finding confirms the continued importance of lending operations as the primary revenue source for SACCOs, where interest earned from loans directly contributes to profitability. This is consistent with Otworko (2023), who emphasized the importance of interest-related earnings in sustaining SACCO operations, and Ajigo, Baraza, and Wuádongo (2021), who established that interest income significantly influences the financial performance of financial institutions. However, continued dependence on interest income may expose SACCOs to credit and liquidity risks, highlighting the importance of complementary income diversification strategies.

Table: Regression results for Income diversification and financial performance				
Dependent Variable: Return On Equity (ROE)				
Method: Panel Least Squares				
Sample: 2019 2023				
Periods included: 5				
Cross-sections included: 42				
Total panel (balanced) observations: 210				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.314138	0.039853	-7.882329	0.0000
INTEREST	1.143483	0.102045	11.20565	0.0000
R-squared	0.516303	Mean dependent var		0.163634
Adjusted R-squared	0.506865	S.D. dependent var		0.272100
S.E. of regression	0.191079	Akaike info criterion		-0.448742
Sum squared resid	7.484761	Schwarz criterion		-0.369049
Log likelihood	52.11795	Hannan-Quinn criter.		-0.416525
F-statistic	54.70482	Durbin-Watson stat		1.540871
Prob(F-statistic)	0.000000			

The results indicate that interest income has a statistically significant positive effect on ROE ($\beta = 1.143$, $t = 11.21$, $p < .001$), suggesting that higher interest income is associated with improved financial performance. Service income also exhibits a positive and statistically significant relationship with ROE ($\beta = 0.335$, $t = 6.53$, $p < .001$), implying that revenue generated from fees and commissions enhances SACCO profitability. Similarly, investment income is positively and significantly associated with financial performance ($\beta = 0.737$, $t = 2.29$, $p = .023$), indicating that investment activities contribute meaningfully to ROE.



Summary of the Findings

The findings revealed that interest income had a positive and statistically significant effect on financial performance ($\beta = 1.143$, $p < .001$). This indicates that SACCOs generating higher interest income from lending activities achieve improved financial performance as measured by Return on Equity (ROE). Similarly, service charges income positively and significantly influenced financial performance ($\beta = 0.335$, $p < .001$), implying that revenue generated from fees, commissions, and transactional services contributes to enhanced profitability and financial sustainability.

Conclusions

The study concludes that interest income remains the most influential contributor to financial performance, indicating that lending activities continue to be a fundamental source of revenue for Tier One SACCOs. Similarly, service charges income significantly enhances financial performance, demonstrating the importance of expanding non-interest revenue streams through fees, commissions, and other member-based services to complement lending activities.

Recommendations

Based on the findings, the study proposes several recommendations for SACCO management, policymakers, and other stakeholders involved in strengthening the financial sustainability of Tier One Deposit-Taking SACCOs in Kenya.

First, SACCO management should continue strengthening interest income generation by enhancing credit risk management frameworks, improving loan appraisal procedures, expanding quality lending portfolios, and introducing innovative credit products that respond to members' financial needs. Given its strong contribution to financial performance, interest income should remain a key strategic pillar while ensuring prudent lending practices to minimize credit risks.

REFERENCES

1. Afzal, N. &. (2023). *Understanding the Impacts of Diversification on Financial Performance and Sustainability: A Case of South Asian Microfinance Institutions*. *Al-Qanṭara*, 9(4), 42-59
2. Ajigo, T., Baraza, E., & Wuádongo, J. (2021). *The effect of commissions and fees on the financial performance of commercial banks in Kenya: The moderating role of virtual banking*. *International Journal of Education and Research*, 9(12), 1-16
3. Akkaya, M. (2021). *Behavioral portfolio theory*. In *Applying Particle Swarm Optimization: New Solutions and Cases for Optimized Portfolios* (pp. 29-48). Cham: Springer International Publishing.
4. Alafif, H. (2023). *Interest Rate and Some of Its Applications*. *Journal of Applied Mathematics and Physics*, 11(6), 1557-1569
5. Al-Mamary, Y., Alwaheeb, M., Alshammari, N., Abdulrab, M., Balhareth, H., & Soltane, H. (2020). *The effect of entrepreneurial orientation on financial and non-financial performance in Saudi SMEs: a review*. *Journal of Critical Reviews*, 7(14), 270-278
6. Choiriyah, C., Fatimah, F., Agustina, S., & Ulfa, U. (2020). *The effect of return on assets, return on equity, net profit margin, earning per share, and operating profit margin on stock prices of banking companies in Indonesia Stock Exchange*. *International Journal of Finance Research*, 1(2), 103-123
7. Hussein, A. (2017). *The relationship between investment and financial performance of commercial banks in Kenya*. Kenya: Dissertation, University of Nairobi
8. Jerono, J. (2016). *Effect of income source diversification on financial performance of deposit taking savings and credit cooperative societies in Kenya [Master's thesis, University of Nairobi]*. University of Nairobi Repository. <http://hdl.handle.net/11295/98973>
9. Jones, C., & Trevillion, E. (2022). *Portfolio Theory and Property in a Multi-Asset Portfolio*. *Real Estate Investment: Theory and Practice* (pp. 129-155). Cham: Springer International Publishing
10. Kahihu, P., Wachira, D., & Muathe, S. (2021). *Managing market risk for financial performance: experience from micro finance institution in Kenya*. *Journal of Financial Regulation and Compliance*, 29(5), 561-579
11. Khan, T. (2021). *Effect of income diversification on Canadian credit union performance*. Canada: Doctoral dissertation, University of Saskatchewan
12. Kinyua, M. (2022). *Investment Strategy and Financial Performance of Defines Contribution Pension Funds in Kenya*. Kenya: Dissertation, Kenyatta University
13. Koapaha, H. (2023). *The Impact of Net Interest Income and ESG on Bank Performance*. *Indonesian Journal of Business Analytics*, 3(2), 503-512
14. Koumou, G. (2020). *Diversification and portfolio theory: a review*. *Financial Markets and Portfolio Management, Financial Markets and Portfolio Management*.
15. Larasati, C., & Purwanto, P. (2022). *How financial ratios and firm size affect profitability: Evidence from food and beverages industry in Indonesia*. *The Winners*, 23(1), 43-50
16. Larsen, M. (2023). *Bottom-up market-facilitation and top-down market-steering: comparing and conceptualizing green finance approaches in the EU and China*. *Asia Europe Journal*, 21(1), 61-80.
17. Li, W. (2022). *Impact of Internet Finance on Interest Income and non-interest Income of Commercial Banks: Empirical Evidence from China*. *Advances in Economics, Business and Management Research*, 219, 384-391.



18. Li, W. (2022). *Impact of Internet Finance on Interest Income and non-interest Income of Commercial Banks: Empirical Evidence from China*. *Advances in Economics, Business and Management Research*, 219, 384-391
19. Mafuno, J. (2021). *Impact of SACCO Societies Regulatory Authority Regulations on the Financial Performance of Savings and Credit Co-operative Societies in Kenya*. Nairobi: University of Nairobi.
20. Malik, M., Qadeer, N., & Imam, M. (2024). *Role of Diversification on Financial Sustainability and Credit Risk of Asian Microfinance Institutions*. *Annals of Social Sciences and Perspective*, 5(1), 245-260
21. Mathuva, D. (2016). *Revenue diversification and financial performance of savings and credit co-operatives in Kenya*. *Journal of Co-operative Organization and Management*, 4(1), 1-12. <https://doi.org/10.1016/j.jcom.2015.11.001>
22. Mir, R., Azizyan, G., Bavani, A., & Gohari, A. (2022). *A framework for drought adaption under deep uncertainties: Application of Portfolio theory (Markowitz 2.0)*. *Journal of Cleaner Production*, 369, 133386
23. Mongelli, F., Pointner, W., & Van-Den-End, J. (2024). *The effects of climate change on the natural rate of interest: A critical survey*. *Wiley Interdisciplinary Reviews: Climate Change*, 15(2), e873
24. Muli, A., & Jangogo, A. (2019). *Investment Strategies, Fund Size and Financial Performance of Defined Contribution Schemes in Kenya: Theoretical Review*. *International Academic Journal of Economics and Finance*, 3(3), 253-266
25. Ndirangu, N., & Muturi, W. (2019). *Effect of diversification of revenue sources on the financial performance of SACCOs in Kenya*. *International Journal of Recent Research in Commerce Economics and Management (IJRRCEM)*, 6(2), 196-203
26. Ndungu, P. (2023). *Effect of Revenue Diversification on Financial Performance of Deposit-taking Saving and Credit Cooperative Organisations in Mombasa*. Nairobi: Doctoral dissertation, University of Nairobi
27. Obadiaru, D., & Ayobami, E. (2024). *The Effect of Interest and Non-Interest Income on the Profitability of Banks in Nigeria*. *International Journal of Research Publication and Reviews*, 5(2), 317-322
28. Otworko, B. (2023). *Interest Rate Drivers and Financial Performance of Deposit Taking Savings and Credit Co-operative Societies in Kenya*. Nairobi: Doctoral dissertation, JKUAT-COHRED
29. Pavlovskaya, M., & Eletto, R. (2021). *Credit unions, class, race, and place in New York City*. *Geoforum*, 127, 335-348
30. Peng, Q. (2022). *US Credit Unions: Mergers and Failures*. USA: Doctoral dissertation, Queen's University Belfast
31. Puspitasari, E., Sudiyatno, B., Hartoto, W., & Widati, L. (2021). *Net interest margin and return on assets: A Case Study in Indonesia*. *The Journal of Asian Finance, Economics and Business*, 8(4), 727-734
32. Rashid, C. (2021). *The efficiency of financial ratios analysis to evaluate company's profitability*. *Journal of Global Economics and Business*, 2(4), 119-132
33. Sewando, P. (2022). *Efficacy of risk reducing diversification portfolio strategies among agro-pastoralists in semi-arid area: A modern portfolio theory approach*. *Journal of Agriculture and Food Research*, 7, 100262
34. Surtee, T., & Alagidede, I. (2023). *A novel approach to using Modern Portfolio Theory*. *Borsa Istanbul Review*, 23(3), 527-540
35. Thiongó, S., & Nyaga, G. (2019). *Leadership Style, Government Regulations and Sustainability of Sacco Societies in Kenya. A case study of Harambee Sacco*. *International Journal of Business and Social Science*, 10(4), 93-100.
36. Van-Rijn, J. (2022). *The cooperative identity at US credit unions*. *Journal of Co-Operative Organization and Management*, 10(1), 100152
37. Yu, L., Nilsson, J., Zhan, F., & Cheng, S. (2023). *Social Capital in Cooperative Memberships and Farmers' Access to Bank Credit-Evidence from Fujian, China*. *Agriculture*, 13(2), 418