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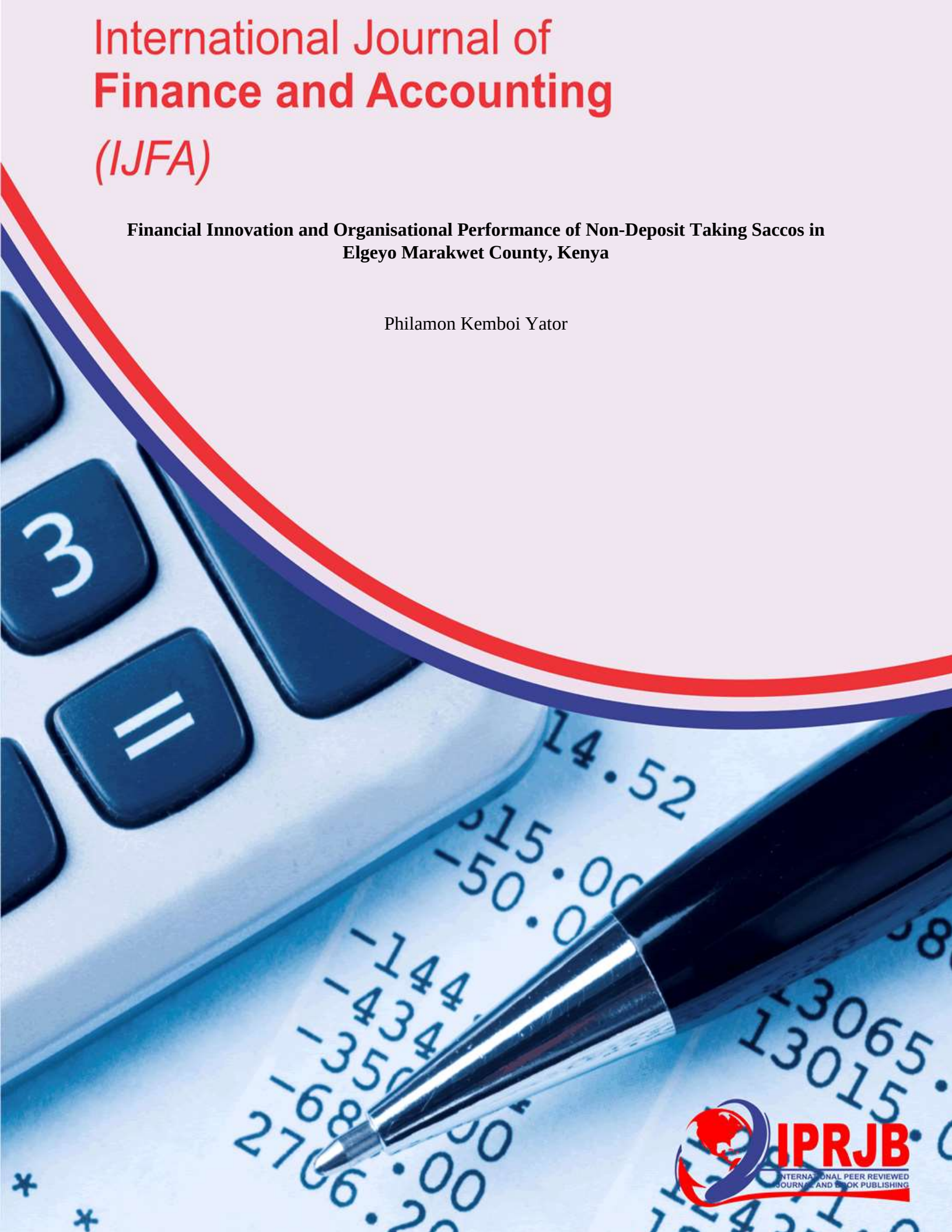

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# Financial Innovation and Organisational Performance of Non-Deposit Taking Saccos in Elgeyo Marakwet County, Kenya

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**Abstract**

**Purpose:** To examine the effect of financial innovation on the organisational performance of non-deposit-taking SACCOs in Elgeyo-Marakwet County, Kenya. Specifically, the study assessed the individual and combined effects of product, process, market, and technological innovations on organisational performance, addressing the limited evidence on disaggregated innovation effects in rural and resource-constrained contexts.

**Methodology:** The study adopted a cross-sectional correlational design, drawing on Schumpeter's Theory of Innovation, the Resource-Based View, and the Technology Acceptance Model. Data were collected from 89 respondents across 34 audited non-deposit-taking SACCOs using structured questionnaires and triangulated with secondary data from audited financial statements for 2021–2023. Descriptive statistics, Pearson correlation, and multiple linear regression were employed for data analysis.

**Findings:** All four innovation dimensions had positive and statistically significant effects on organisational performance. Technological innovation had the strongest effect ($\beta = 0.354$, $p < 0.001$), followed by process innovation ($\beta = 0.268$, $p = 0.001$), product innovation ($\beta = 0.231$, $p = 0.005$), and market innovation ($\beta = 0.156$, $p = 0.043$). Collectively, the four dimensions explained 63.2% of the variance in organisational performance ($R^2 = 0.632$, $F(4, 84) = 36.47$, $p < 0.001$). Secondary data revealed positive trends between 2021 and 2023, with net income increasing by 55.6%, the loan portfolio by 41.7%, and active membership by 22.6%. However, loan default rates remained above the prudential guideline, indicating persistent credit risk management challenges.

**Unique Contribution to Theory, Practice and Policy:** Innovation should be complemented by strengthened credit risk management practices. SACCO managers should prioritise investments in technological and process innovations while maintaining effective risk controls. Policymakers and regulators should also support innovation-oriented strategies that enhance the organisational performance and sustainability of rural non-deposit-taking SACCOs.

**Keywords:** *Financial Innovation, Organisational Performance, Non-Deposit-Taking SACCOs*

**JEL Classification Codes:** *G21, O33, P13, O16*

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## INTRODUCTION

Globally, Savings and Credit Cooperative Societies (SACCOs) have emerged as critical instruments for financial inclusion, particularly in low- and middle-income economies where formal banking infrastructure remains limited (World Bank, 2020; Birchall, 2023). With a membership base exceeding one billion and collective turnover of $2.5 trillion among the top 300 cooperatives as of 2017 (International Cooperative Alliance, 2017), the cooperative financial sector represents a significant force in global finance. In Kenya, the SACCO subsector has grown substantially, with total assets exceeding KSh 1.21 trillion and membership surpassing 7 million by 2025 (SASRA, 2025). This growth underscores the centrality of SACCOs to Kenya's financial inclusion agenda, particularly in rural and underserved areas where commercial banking presence is limited.

Despite this growth, the performance of Kenyan SACCOs remains a source of concern. Recent sector data reveal that account dormancy rose by 7.9% to 1.7 million inactive accounts in 2024, while non-performing loan ratios averaged 8.4% in 2025, well above the Sacco Societies Regulatory Authority's (SASRA) 5% prudential guideline. Regulated SACCOs were collectively owed KSh 3.49 billion in unremitted funds, affecting 55,603 members (KUSCCO, 2025). It is important to note, however, that SASRA's primary regulatory oversight applies to Deposit-Taking (DT) SACCOs and specified non-deposit taking SACCOs. While these macro-level statistics signal systemic governance and credit management weaknesses across the regulated subsector, they may not fully reflect the operational realities of purely non-deposit taking (NDT) SACCOs in rural counties, which operate under different capital constraints, service scopes, and member profiles. Nevertheless, these indicators point to persistent weaknesses in member engagement, credit risk management, and operational efficiency across the cooperative movement, raising fundamental questions about how SACCOs particularly NDT SACCOs can enhance their performance.

Financial innovation has been widely recognised as a strategic driver of institutional efficiency, profitability, and sustainability (OECD, 2020; World Bank, 2020). In cooperative financial institutions, innovation encompasses the introduction of new products, improvements in internal processes, expansion into new markets, and the adoption of digital technologies. Evidence from diverse contexts demonstrates that financial institutions that embrace innovation tend to achieve superior outcomes. Brazilian credit unions that invested in digital technologies experienced significant improvements in return on assets and return on equity, though these benefits became visible only after a lag of approximately three quarters (Lana et al., 2021). In the United States, credit union members' adoption of digital payment systems depended critically on perceived usefulness and ease of use, with actual usage rather than availability driving performance improvements (DeLance, 2024). Similarly, in Italy, cooperative banks that partnered with fintech start-ups gained access to innovation while the fintechs gained institutional credibility and member bases, though such partnerships required aligned goals and mutual trust (Bartolacci et al., 2022).

In Sub-Saharan Africa, the relationship between financial innovation and SACCO performance has attracted growing scholarly attention. Studies from Tanzania show that digital alternative delivery channels including mobile banking, ATMs, and internet banking are associated with improved operational efficiency and overall performance (Mmari, 2023; Kisinga & Gomera,

2024). However, research on mobile banking adoption among rural smallholder farmers in Tanzania found that education level, income stability, and trust in financial institutions were the strongest determinants of adoption (Ndazi, 2025). This suggests that simply providing digital services does not guarantee uptake; member readiness and contextual conditions matter substantially. In Malawi, infrastructure, institutional support, and peer influence emerged as the most important drivers of technology adoption (Chipeta & Lipunga, 2025). Across these studies, a consistent pattern emerges: financial innovation works best when members trust it, can afford it, understand it, and receive institutional support.

The Kenyan literature provides further evidence of the innovation-performance link. Studies conducted in Nairobi, Kakamega, Kisii, and Laikipia counties have consistently found that digital tools such as mobile banking, internet banking, core banking systems, and ICT infrastructure improve service delivery, operational efficiency, and financial returns (Ndung'u & Mutinda, 2022; Wanyonyi & Ngaba, 2021; Kangangi & Mang'ana, 2024; Oenga & Obuba, 2024). Research on teacher-based SACCOs demonstrates that electronic banking has a significant positive effect on profitability (Atieno, 2025). Similarly, combining ICT adoption with strategic fintech partnerships has been shown to strengthen both operational capacity and member service quality (Kerre & Mwanzia, 2025).

However, the existing evidence base is constrained by several limitations. First, most Kenyan studies have concentrated on deposit-taking SACCOs or microfinance institutions, leaving non-deposit taking SACCOs—which operate under different regulatory frameworks, have more limited-service offerings, and face weaker technological capacity significantly under-researched (Ndung'u & Mutinda, 2022; Gatimu et al., 2025). Second, many studies treat financial innovation as a single broad construct rather than examining its constituent dimensions. This makes it difficult to determine which specific forms of innovation influence which performance outcomes (Jillo, 2023; Kihuha & Mungai, 2023). Third, performance measurement has tended to be narrow, with most studies focusing on profitability while giving less attention to loan portfolio growth, member retention, service delivery effectiveness, and loan repayment performance outcomes that are equally important for member-owned cooperative institutions (Atieno, 2025; Kangangi & Mang'ana, 2024). To move beyond narrow financial proxies, this study conceptualises organisational performance through a multidimensional lens, integrating financial sustainability (profitability, return on assets) with operational effectiveness (service speed, efficiency) and member-oriented outcomes (loan portfolio growth, retention, and repayment rates). This approach aligns with the balanced scorecard perspective adapted for cooperative institutions (Kaplan & Norton, 1996; Moumin, 2024), recognising that SACCO success cannot be captured by profitability alone. Fourth, the geographical scope of existing research is heavily skewed toward urban and peri-urban counties, particularly Nairobi. Rural counties such as Elgeyo Marakwet characterised by semi-arid terrain, dispersed agro-pastoral populations, variable mobile network coverage, and limited digital literacy remain under-investigated (Magale, 2026; Wanyonyi & Ngaba, 2021).

These gaps are particularly consequential in rural contexts where structural barriers moderate the adoption and effectiveness of financial innovations. In Elgeyo Marakwet County, the agro-pastoral economy creates irregular income cycles tied to unpredictable rainfall and harvest patterns, directly

affecting members' ability to save and repay loans consistently. The rugged Kerio Valley escarpment and dispersed settlement patterns with large distances between population centres in Keiyo North, Keiyo South, Marakwet East, and Marakwet West increase physical travel costs to SACCO branches and limit the reliability of digital infrastructure, as mobile network coverage varies significantly across these sub-counties. These contextual factors mean that innovations that succeed in urban Nairobi may fail or yield lower returns in Elgeyo Marakwet if not adapted to local realities. Without context-specific evidence that accounts for these contingencies, SACCO managers and policymakers cannot make informed decisions about where to direct scarce innovation investments. Moreover, the differential effects of product, process, market, and technological innovations if left unexamined may lead to suboptimal resource allocation, with SACCOs investing in sophisticated core banking systems that falter in low-connectivity zones while neglecting simpler process innovations or product adaptations (such as flexible agricultural loan cycles) that would more directly address member needs.

**Statement of the Problem**

Non-deposit taking SACCOs in Elgeyo Marakwet County face a pronounced operational paradox: they are vital financial lifelines for agro-pastoral communities, yet they suffer from persistently low digital service uptake, high loan default rates, and stagnant member engagement, raising critical questions about their long-term sustainability and competitiveness.

The specific practical problem is threefold. First, the dispersed settlement patterns, rugged Kerio Valley terrain, and irregular agricultural income cycles in Elgeyo Marakwet physically and economically isolate members, leading to high transaction costs, delayed loan repayments, and a continued reliance on inefficient manual processes that erode member trust and institutional profitability. Second, while many SACCOs have introduced basic digital tools, adoption remains low due to limited member digital literacy, unreliable network infrastructure in remote sub-counties, and product designs that do not align with the irregular cash flows of smallholder farmers and pastoralists. Third, these operational inefficiencies manifest in tangible performance challenges: loan default rates in the county's NDT-SACCOs averaged 7.4% in 2023 well above SASRA's 5% prudential guideline and member attrition remains a persistent concern, limiting the capital base available for on-lending and institutional growth.

The theoretical and knowledge gap is equally significant. While financial innovation is widely promoted as a universal remedy for institutional underperformance, the disaggregated effects of product, process, market, and technological innovations remain largely unexamined specifically for non-deposit taking SACCOs in rural Kenyan counties. Existing literature conflates these four dimensions into a single "innovation" construct or generalises findings from urban, deposit-taking institutions, ignoring how contextual contingencies such as terrain, agro-pastoral income volatility, and infrastructure deficits—moderate the efficacy of each innovation type. Without disaggregated analysis, it remains unclear which specific innovations yield the greatest performance returns in resource-constrained rural settings, and which are likely to underperform despite significant investment.

The consequences of leaving this problem unaddressed are severe. SACCO managers, lacking evidence-based prioritisation, risk misallocating scarce capital towards generic, high-cost

technologies (such as complex core banking systems or mobile apps) that fail in low-connectivity zones or are poorly utilised by members with limited digital skills. Simultaneously, they may neglect process or product adaptations such as flexible repayment scheduling aligned with harvest cycles, mobile money integration for remote contributions, or community-based outreach models that would directly address member realities and yield higher performance gains. This misalignment perpetuates operational inefficiencies, weakens member loyalty, undermines financial sustainability, and ultimately limits the developmental impact of SACCOs in one of Kenya's most economically vulnerable regions.

This study addresses these interconnected practical, theoretical, and consequential gaps by examining the individual and combined effects of product, process, market, and technological innovations on the organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County, Kenya.

## LITERATURE REVIEW

### Theoretical Foundations

This study is underpinned by an integrated theoretical framework that operates across three analytical levels macro, meso, and microto explain how financial innovation translates into organisational performance in non-deposit taking SACCOs. Rather than treating theories in isolation, we synthesise five complementary perspectives into a coherent model.

At the **macro level**, Schumpeter's Theory of Innovation (1934/2011) provides the overarching economic rationale. Schumpeter posited that innovation defined as the introduction of new products, processes, markets, or organisational forms drives economic development through a process of "creative destruction," where innovative alternatives displace outdated practices and generate value. In the SACCO context, this theory explains why institutions that adopt new savings products, automate loan processing, or deploy mobile banking platforms disrupt inefficient manual legacy systems, thereby unlocking performance gains such as improved efficiency, expanded outreach, and enhanced profitability (Audretsch, 2021; Sundbo & Toivonen, 2011). Schumpeter establishes the *strategic imperative*: SACCOs must innovate to survive and thrive in a competitive financial landscape.

At the meso (organisational) level, the Resource-Based View (RBV) (Barney, 1991) explains *which* innovations confer sustained competitive advantage. RBV argues that performance differentials arise from heterogeneous organisational resources that are valuable, rare, inimitable, and non-substitutable (VRIN). Financial innovations such as core banking systems, mobile applications, and automated record management become VRIN resources when effectively embedded in organisational routines (Teece, 2018). They are *valuable* because they reduce transaction costs and improve service speed; *rare* because not all rural SACCOs have fully adopted them; *inimitable* due to the significant investments in infrastructure, training, and process redesign required; and *non-substitutable* because manual alternatives cannot match digital efficiency, particularly in geographically dispersed settings like Elgeyo Marakwet. RBV thus shifts the focus from external market positioning to internal capability development, explaining why some SACCOs outperform others despite similar environmental conditions.

However, possessing VRIN resources does not guarantee performance improvement they must be *used*. At the micro (individual) level, the Technology Acceptance Model (TAM) (Davis, 1989) addresses the adoption mechanism. TAM posits that user acceptance is determined by two core perceptions: perceived usefulness and perceived ease of use. These perceptions shape attitudes, behavioural intentions, and ultimately actual usage (Venkatesh & Davis, 2000; Venkatesh et al., 2022). In SACCOs, technological innovations only generate performance benefits when both employees and members perceive them as beneficial and straightforward. A mobile banking app, for instance, will not improve service delivery if members in rural Elgeyo Marakwet find it complex to navigate or unreliable on intermittent network connections.

To complete the framework, Diffusion of Innovation Theory (DOI) (Rogers, 2003) and Contingency Theory (Fiedler, 1964) provide essential boundary conditions. DOI explains the rate at which innovations spread through a social system, emphasising attributes such as relative advantage, compatibility, complexity, trialability, and observability factors that determine whether product, process, or technological innovations achieve critical mass among SACCO members. Contingency Theory, meanwhile, underscores that the effectiveness of any innovation strategy is contingent upon alignment with external environmental factors. In rural Kenya, these contingencies include infrastructure quality (mobile network coverage, electricity reliability), member digital literacy, agro-pastoral income cycles, and regulatory frameworks. The weaker effect of market innovations documented in this study, for example, is theorised as a contingency effect: group lending and outreach programs are less effective in sparsely populated, semi-arid regions compared to dense urban settings.

In summary, the integrated framework posits that: Schumpeter provides the *why* (innovation drives performance); RBV identifies the *what* (VRIN resources matter most); TAM explains the *how* (adoption depends on perceived usefulness and ease of use); while DOI and Contingency Theory define the *when and where* (diffusion rates and contextual fit moderate outcomes). This multi-level synthesis anchors the empirical investigation that follows.

**Financial Innovation: Conceptualization and Dimensions**

Financial innovation refers to the creation and application of new financial products, processes, market approaches, and technologies that enhance institutional efficiency, accessibility, and member welfare (OECD, 2020; World Bank, 2020). In cooperative financial institutions, innovation is multidimensional. Following the OECD's Oslo Manual framework and adapting it to the SACCO context, this study disaggregates financial innovation into four distinct, measurable dimensions:

Product innovations involve the introduction of new or improved financial products tailored to member needs, such as flexible loan products aligned with agricultural cycles, group savings schemes, investment-linked products, and diversified savings portfolios (Kariuki & Mangana, 2024; Mwaura & Waithaka, 2025). These innovations aim to enhance member enrolment, improve credit access, and diversify revenue streams.

Process innovations refer to improvements in internal workflows and service delivery methods, including mobile money integration (e.g., M-Pesa), digital loan application systems, automation of member records, and digital payment platforms (Mmari, 2023; Jillo et al., 2023). Such

innovations reduce transaction costs, accelerate processing times, and enhance accuracy and transparency.

Market innovations encompass strategies to expand outreach and deepen market penetration, including group lending models, strategic partnerships, expansion into new member segments (e.g., smallholder farmers, micro-entrepreneurs), and community outreach programs (Ekwueme et al., 2023; Ng'wasa & Kipangula, 2024). These innovations aim to increase membership and improve financial inclusion.

Technological innovations involve the adoption of digital infrastructure, including core banking systems, mobile banking applications, digital credit scoring, and ICT-enabled service delivery (Kangangi & Mang'ana, 2024; Kihuha & Mungai, 2023). These tools enable real-time data processing, informed decision-making, and remote service access critical in rural contexts where physical branch presence is limited.

**Empirical Evidence and Hypothesis Development**

**Product Innovations and Organisational Performance**

Product innovation the introduction of new or improved financial products such as flexible loans, group savings schemes, and investment-linked products has received considerable empirical attention. Evidence from Kenya demonstrates a consistent positive relationship with organisational performance. Kariuki and Mangana (2024) found that product innovation significantly influenced microfinance institution performance ($\beta = 0.47$, $p < 0.05$), while Mwaura and Waithaka (2025) reported an even stronger effect in Nairobi-based microfinance institutions ($\beta = 0.65$, $p < 0.05$). In Nigeria, Ogunnaike, Oke, and Alabi (2022) confirmed significant positive links between innovation and cooperative performance, though notably, they treated innovation as a single aggregate construct rather than isolating product innovation's independent contribution. Internationally, Rahmah et al. (2020) found that a bundle of organisational innovations—including product innovations positively impacted performance in a logistics firm, explaining 38% of variance in organisational innovation.

While these findings are broadly consistent, several methodological limitations warrant critical attention. First, the effect sizes vary considerably across studies ($\beta$ ranging from 0.47 to 0.65), likely reflecting differences in institutional context microfinance institutions in urban Nairobi may have greater product development capabilities and face more intense competitive pressures than rural SACCOs. Second, studies that treat innovation as a unidimensional construct obscure the distinct contribution of product innovations relative to process, market, and technological dimensions. This conceptual aggregation limits practical guidance: if product innovations are bundled with other forms of innovation, managers cannot determine whether to invest in new loan products, process automation, or market expansion. Third, the majority of these studies rely on cross-sectional survey designs with limited diagnostic testing (e.g., few report variance inflation factors, Durbin-Watson statistics, or common method variance tests), raising concerns about omitted variable bias and inflated correlations due to single-source data. The current study addresses these limitations by disaggregating product innovation, employing rigorous diagnostic testing (including VIF, Durbin-Watson, and Harman's single-factor test), and situating the

investigation in a rural, non-deposit taking SACCO context where product innovation's effects remain unexplored.

From a theoretical standpoint, the Resource-Based View (Barney, 1991) explains these findings: product innovations tailored to member needs such as flexible agricultural loans aligned with harvest cycles are valuable, rare, and difficult to replicate, constituting VRIN resources that enhance member retention and revenue diversification. Diffusion of Innovation Theory (Rogers, 2003) adds that products with clear relative advantage and compatibility with member livelihoods diffuse more rapidly, translating into measurable performance gains. This theorised mechanism is expected to hold in non-deposit taking SACCOs, where product diversification can address the limited service offerings characteristic of BOSA-based institutions. Therefore, we hypothesise:

*$H_1$: Product innovations have a significant positive effect on the organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County.*

**Process Innovations and Organisational Performance**

Process innovations improvements in internal workflows such as mobile money integration, digital loan applications, and automation of member records have demonstrated robust performance effects across sectors. In Kenya, Jillo et al. (2023) found that process innovation positively affected SACCO performance in Laikipia County, though insufficient ICT infrastructure and limited staff skills reduced its effectiveness a finding that underscores the importance of contextual enabling conditions. Christopher et al. (2021) reported a significant effect on manufacturing enterprise performance in Nairobi ($\beta = 0.558$, $p < 0.05$), while Kimani and Kipkorir (2023) confirmed similar findings in oil marketing firms in Uasin Gishu County. Internationally, Migdadi (2022) demonstrated that knowledge management processes positively influenced innovation capability and organisational performance in Jordanian firms, and Mikalef and Krogstie (2020) showed that big data analytics capabilities enhanced process innovation in Norwegian firms.

However, critical evaluation reveals several unresolved issues. First, there is significant sectoral heterogeneity process innovations in manufacturing (Christopher et al., 2021) and logistics may produce different effects than in financial cooperatives, where service delivery speed rather than production efficiency is the primary mechanism. Second, Jillo's (2023) finding that infrastructure deficits moderate the relationship is rarely incorporated into the analytical models of other studies, leading to potential omitted variable bias. Third, most studies fail to disaggregate *which specific process innovations* (e.g., mobile money vs. digital loan processing) generate the strongest effects, treating process innovation monolithically. Fourth, sample sizes across these studies vary widely, with some (e.g., Kimani & Kipkorir, 2023) relying on relatively small samples that limit statistical power.

Theoretically, Diffusion of Innovation Theory (Rogers, 2003) explains that process innovations particularly digital loan applications and mobile money integration exhibit relative advantage (speed, convenience), compatibility with existing member practices (mobile phone usage), and observable benefits (faster disbursements), facilitating rapid adoption. The Resource-Based View (Barney, 1991) complements this: when process improvements become embedded in organisational routines and supported by trained staff, they evolve into socially complex, causally ambiguous capabilities that are extremely difficult for competitors to imitate (Teece, 2018). In the

context of non-deposit taking SACCOs in Elgeyo Marakwet, where manual processes are still prevalent, automation and digital payment integration are theorised to yield particularly strong efficiency gains, provided infrastructure and capacity constraints are adequately addressed. Consequently:

*$H_2$: Process innovations have a significant positive effect on the organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County.*

**Market Innovations and Organisational Performance**

Market innovations strategies to expand outreach such as group lending models, partnerships, and entry into new member segments show positive but context-dependent effects. In Tanzania, Ng'wasa and Kipangula (2024) found that digital marketing, packaging, and promotion significantly enhanced SME performance in Dar es Salaam. In Kenya, Aliong'o and Waithaka (2024) reported that market innovations positively influenced microfinance bank performance in Nairobi, with product packaging and promotion having the greatest impact, while Githui and Waswa (2023) found similar effects in public universities. In Nigeria, Ekwueme et al. (2023) demonstrated that market innovation significantly affected organisational performance in a manufacturing company.

Critically, however, the magnitude and significance of these effects vary considerably, and the reasons for this variability are rarely investigated. Studies that report strong effects (e.g., Ng'wasa & Kipangula, 2024) are typically conducted in urban, high-density settings where outreach costs are low and marketing messages can reach large audiences efficiently. Studies in rural or less densely populated contexts are largely absent. Moreover, the mechanisms through which market innovations generate performance improvements are underspecified is it membership growth, improved repayment through group social collateral, or revenue diversification through partnerships? Existing research seldom tests these mediating pathways. Furthermore, most studies focus on SMEs or manufacturing firms rather than member-owned cooperatives, where market innovations must align with cooperative principles and member governance structures.

Contingency Theory (Fiedler, 1964) provides the most compelling explanation for this variability. The effectiveness of market expansion strategies such as partnerships, outreach programs, and new member segmentation is contingent upon alignment with environmental conditions. In Elgeyo Marakwet County, the semi-arid terrain, low population density, irregular agro-pastoral income cycles, and limited infrastructure create significant barriers. Reaching new members in Keiyo South or Marakwet West incurs high transport costs, while collective financing mechanisms may falter in communities with low financial literacy. These contingencies are expected to moderate the impact of market innovations, likely resulting in a positive but weaker effect compared to other innovation dimensions. Therefore:

*$H_3$: Market innovations have a significant positive effect on the organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County.*

**Technological Innovations and Organisational Performance**

Technological innovations the adoption of core banking systems, mobile applications, digital credit scoring, and ICT-enabled service delivery consistently emerge as the strongest performance

driver in financial institutions. In Kenya, Kangangi and Mang'ana (2024) found that financial information systems and communication technologies significantly enhanced deposit-taking SACCO performance in Nairobi, with an 81.7% response rate and rigorous diagnostic testing (including VIF and Durbin-Watson). Kihuha and Mungai (2023) reported positive effects of digital knowledge management and e-procurement. Kipchirchir (2024) found that effective credit scoring and robust credit policies significantly enhanced financial performance of deposit-taking SACCOs nationally. Across East Africa, Kisinga (2024) confirmed that mobile banking adoption positively related to SACCO performance in Tanzania, while Yirgalem (2024) demonstrated positive effects of mobile banking and POS terminals on commercial bank performance in Ethiopia.

Several methodological strengths and limitations are worth noting. Kangangi and Mang'ana (2024) employed a relatively rigorous approach with comprehensive diagnostic testing, strengthening confidence in their findings. However, their focus on deposit-taking SACCOs in urban Nairobi limits generalisability to non-deposit taking SACCOs in rural counties. Yirgalem's (2024) longitudinal design (2014–2023) provides stronger causal evidence than cross-sectional studies, yet it focused on commercial banks rather than cooperative institutions. Notably, Malambo (2022) identified that network problems and system timeouts negatively affected customer satisfaction in Zambian banks, underscoring that *unreliable* technology can harm performance a nuance often overlooked in studies that assume any technology adoption is beneficial. This suggests that the relationship between technological innovation and performance is conditional on implementation quality, reliability, and user support factors rarely measured in existing research.

The Technology Acceptance Model (Davis, 1989) robustly explains the strong positive effect. In rural Elgeyo Marakwet, core banking systems and mobile applications are perceived as highly useful they allow members to transact, check balances, and apply for loans without travelling significant distances on poor roads. They are also perceived as easy to use relative to manual alternatives, particularly with the proliferation of mobile phone usage across rural Kenya. When perceived usefulness and ease of use are high, adoption accelerates (Venkatesh et al., 2022). Diffusion of Innovation Theory (Rogers, 2003) reinforces this: technological innovations exhibit clear relative advantage, compatibility with existing digital behaviours, and observable efficiency gains, driving rapid diffusion. The Resource-Based View (Barney, 1991) positions core banking systems and digital credit scoring as VRIN resources costly to acquire, difficult to replicate, and non-substitutable in a low-infrastructure setting. Consequently, technological innovations are theorised to exert the strongest influence on performance in non-deposit taking SACCOs, provided infrastructure reliability and user training are adequately addressed. Thus:

*$H_4$: Technological innovations have a significant positive effect on the organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County.*

**Combined Effect of Financial Innovation**

While each dimension exerts independent effects, financial innovation is fundamentally a multidimensional construct. Schumpeter's creative destruction suggests that sustained organisational transformation requires simultaneous action across multiple fronts new products, improved processes, expanded markets, and digital infrastructure. SACCOs that adopt a comprehensive innovation portfolio are likely to achieve superior outcomes compared to those that

focus on isolated dimensions, as synergies emerge (e.g., a new loan product becomes more effective when supported by digital processing and mobile delivery channels). However, the combined effect is rarely tested in existing research; most studies examine single dimensions in isolation, and those that include multiple dimensions (e.g., Rahmah et al., 2020) often treat them as an aggregate rather than testing their independent and joint contributions. The current study addresses this by entering all four dimensions simultaneously into the regression model, allowing assessment of both individual and combined effects. Therefore:

*$H_5$: The combined effect of product, process, market, and technological innovations has a significant positive effect on organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County.*

**Research Gaps and Contribution**

Synthesis of the empirical literature reveals four interconnected gaps that justify the current study. First, **institutional focus**: the vast majority of Kenyan studies concentrate on deposit-taking SACCOs or microfinance institutions, leaving non-deposit taking SACCOs which operate under distinct regulatory frameworks, capital constraints, and service models significantly under-researched (Ndung'u & Mutinda, 2022; Gatimu et al., 2025). Second, conceptual disaggregation: most studies treat financial innovation as a unidimensional construct (Ogunnaike et al., 2022; Ofosu et al., 2023), obscuring the differential effects of product, process, market, and technological dimensions (Jillo et al., 2023; Kihuha & Mungai, 2023). Third, geographical coverage**:** research is heavily skewed toward urban counties, leaving rural contexts characterised by infrastructure deficits, irregular agricultural incomes, and dispersed populations under-investigated (Magale, 2026; Wanyonyi & Ngaba, 2021). Fourth, **methodological rigour**: many prior studies lack comprehensive diagnostic testing (normality, multicollinearity, heteroscedasticity), omit common method variance assessment, and fail to triangulate perceptual data with objective secondary data from audited financial statements all of which can inflate observed relationships and undermine validity.

This study directly addresses these gaps by: (1) focusing specifically on non-deposit taking SACCOs in Elgeyo Marakwet County, (2) disaggregating financial innovation into four distinct dimensions and testing both individual and combined effects, (3) measuring performance multidimensionally (financial, operational, and member-oriented outcomes), (4) employing rigorous diagnostic testing (VIF, Durbin-Watson, Shapiro-Wilk, homoscedasticity), (5) assessing common method variance via Harman's single-factor test, and (6) triangulating primary perceptual data with objective secondary data from audited financial statements (2021–2023). This comprehensive approach provides context-specific, methodologically robust evidence to guide innovation investments in rural non-deposit taking SACCOs.

**Research Gap**

Despite the growing body of literature on financial innovation and organisational performance, significant gaps remain. First, most studies have focused on deposit-taking SACCOs or microfinance institutions, leaving non-deposit taking SACCOs significantly under-researched. Second, many studies treat financial innovation as a single construct rather than examining its constituent dimensions. Third, performance measurement has tended to be narrow, focusing on

profitability while neglecting other outcomes important to cooperative institutions. Fourth, geographical coverage is skewed toward urban counties, leaving rural contexts under-investigated. This study addresses these gaps by examining the disaggregated effects of four innovation dimensions on a comprehensive set of organisational performance indicators in the context of non-deposit taking SACCOs in rural Kenya.

**Hypotheses Development**

Based on the theoretical and empirical review, the following hypotheses were formulated:

**$H_1$: Product innovations have a significant positive effect on the organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County, Kenya.**

The introduction of new savings products, flexible loan products, group savings schemes, and investment-linked products is expected to increase member enrolment, improve access to credit, strengthen member retention, and diversify revenue streams, thereby enhancing organisational performance (Kariuki & Mangana, 2024; Mwaura & Waithaka, 2025). The RBV (Barney, 1991) suggests that product innovations, when developed in response to member needs, become valuable, rare, and difficult-to-imitate resources that generate competitive advantage.

**$H_2$: Process innovations have a significant positive effect on the organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County, Kenya.**

Mobile money integration, digital loan applications, automation of member records, and digital payment systems are expected to reduce transaction costs, improve service speed and accuracy, enhance transparency, and increase member satisfaction, thereby improving organisational performance (Mmari, 2023; Jillo, 2023). Diffusion of Innovation Theory (Rogers, 2003) suggests that process innovations with relative advantage, compatibility, and observability of benefits will diffuse successfully and generate performance improvements.

**$H_3$: Market innovations have a significant positive effect on the organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County, Kenya.**

Group lending models, partnerships, expansion to new member segments, and outreach programs are expected to increase membership, improve loan repayment rates, and strengthen financial sustainability, thereby enhancing organisational performance (Ekwueme et al., 2023; Ng'wasa & Kipangula, 2025). However, Contingency Theory (Fiedler, 1964) suggests that the effectiveness of market innovations is contingent on alignment with contextual factors such as population density, infrastructure, and member characteristics, which may weaken the relationship in rural contexts.

**$H_4$: Technological innovations have a significant positive effect on the organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County, Kenya.**

Core banking systems, mobile applications, digital credit scoring systems, and ICT-based service delivery are expected to improve operational efficiency, reduce costs, increase accuracy, improve service delivery, and enhance member satisfaction, thereby improving organisational performance (Kangangi & Mang'ana, 2024; Kihuha & Mungai, 2023). The Technology Acceptance Model (Davis, 1989) suggests that the performance benefits of technological innovations depend on user acceptance, which is influenced by perceived usefulness and ease of use.

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## METHODOLOGY

### Research Design and Study Area

This study adopted a cross-sectional correlational research design (Creswell & Creswell, 2018). A cross-sectional correlational design is appropriate when the objective is to examine relationships among variables across a sample at a single point in time and to make statistical inferences from the sample to the population (Saunders et al., 2019). The design enabled the collection of standardised quantitative data through structured questionnaires, facilitating statistical analysis including Pearson correlation and multiple regression (Field, 2018).

The study was conducted in Elgeyo Marakwet County, Kenya. The county is characterised by semi-arid terrain, dispersed agro-pastoral populations, variable mobile network coverage, and limited digital literacy. Approximately 73.8% of residents have access to formal or semi-formal financial services, with SACCOs playing a central role in financial intermediation (Kenya National Bureau of Statistics, 2021). The county comprises four sub-counties with large distances between population centres, making physical access to financial services challenging.

### Population, Sample and Sampling

The target population comprised all 136 staff members from 34 audited non-deposit taking SACCOs operating in Elgeyo Marakwet County, as documented by the County Department of Co-operatives (2026). The population was stratified into three categories based on organisational hierarchy: top-level management (34 staff), middle-level management (34 staff), and lower-level staff (68 staff).

The sample size was determined using the Yamane (1967) formula at a 95% confidence level: $n = 136/(1+136(0.05^2)) = 101$. A stratified random sampling technique was employed. The population was divided into three homogeneous strata based on management level, and simple random sampling was applied within each stratum. This approach ensured proportional representation across all management levels and reduced selection bias (Saunders et al., 2019).

Of the 101 questionnaires distributed, 94 were returned, representing a response rate of 93.1%. After screening for completeness, 89 questionnaires were retained for analysis, giving an effective response rate of 88.1%.

### Measurement of Variables

Primary data were collected using a structured questionnaire with items measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire captured the following variables:

| Variable | Dimensions/Indicators | Measurement |
|---|---|---|
| Product Innovations | New savings products, flexible loans, group products, investment products | 9 items, 5-point Likert scale |
| Process Innovations | Digital applications, automation, mobile integration, digital payments | 9 items, 5-point Likert scale |
| Market Innovations | Group lending, partnerships, new segments, outreach | 9 items, 5-point Likert scale |
| Technological Innovations | Core banking, mobile apps, digital credit scoring, ICT delivery | 9 items, 5-point Likert scale |
| Organisational Performance | Profitability, member growth, service efficiency, sustainability, repayment | 10 items, 5-point Likert scale |

To address criterion contamination, Item 10 from each innovation scale—which asserted the dependent variable (e.g., "Product innovations have enhanced overall SACCO performance")—was excluded from the final analysis. This exclusion reduced the risk of inflated correlations between innovation dimensions and organisational performance (Podsakoff et al., 2003).

Secondary data were collected using a document analysis guide to extract key financial performance indicators from audited financial statements for the financial years 2021, 2022, and 2023. The indicators included net income, total loans issued, loan default rate, total assets, return on assets, and number of active members.

**Validity and Reliability**

Content validity was ensured through expert review by the university supervisor and two research lecturers. Construct validity was established through Exploratory Factor Analysis (EFA) using SPSS on the final sample of 89 respondents. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.876, exceeding the recommended threshold of 0.60, and Bartlett's Test of Sphericity was significant ($\chi^2 = 2456.78$, $df = 780$, $p < 0.001$), confirming the data were suitable for factor analysis. All factor loadings exceeded 0.60, confirming construct validity (Hair et al., 2019). Face validity was assessed during the pilot study, where respondents provided feedback on clarity and relevance. Data triangulation was achieved through comparison of questionnaire responses with secondary data from audited financial statements.

Reliability was assessed using Cronbach's alpha coefficient. The results were: Product Innovations ($\alpha = 0.862$), Process Innovations ($\alpha = 0.879$), Market Innovations ($\alpha = 0.841$), Technological Innovations ($\alpha = 0.891$), and Organisational Performance ($\alpha = 0.874$). All values exceeded the recommended threshold of 0.70, indicating high internal consistency (Taber, 2018).

**Data Collection**

Data collection was conducted following approval from the Catholic University of Eastern Africa and the National Commission for Science, Technology and Innovation (NACOSTI). An introductory letter was obtained from the County Department of Co-operatives to facilitate access to the 34 SACCOs. Questionnaires were administered using a drop-and-pick later method due to the geographical dispersion of the SACCOs. The researcher delivered questionnaires in person, provided instructions, and agreed on a collection date. For document analysis, the researcher requested access to audited financial statements from the SACCO managers. Data collection took

approximately six weeks, from mid-February to late March 2026. Follow-up phone calls and visits were made to non-respondents after two weeks.

**Data Analysis**

Quantitative data were analysed using SPSS Version 26. Descriptive statistics—means, standard deviations, frequencies, and percentages—were computed for demographic variables and construct items. Inferential statistics included Pearson correlation analysis to determine the direction and strength of bivariate relationships, and multiple linear regression analysis to test the study hypotheses. The regression model was specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where

$Y$ = Organisational Performance

$X_1$ = Product Innovations

$X_2$ = Process Innovations

$X_3$ = Market Innovations

$X_4$ = Technological Innovations

$\beta_0$ = intercept

$\beta_1$–$\beta_4$ = regression coefficients

$\varepsilon$ = error term.

Prior to conducting regression analysis, diagnostic tests were performed to verify that the data satisfied the assumptions of multiple linear regression. Normality was assessed using the Shapiro-Wilk test ($W = 0.982$, $p = 0.124$). Multicollinearity was assessed using Variance Inflation Factor (VIF) values, which ranged from 1.52 to 2.18 (well below the threshold of 10). Independence of errors was assessed using the Durbin-Watson statistic (1.89, within the acceptable range of 1.5 to 2.5). All assumptions were satisfactorily met.

To assess the potential for common method variance, Harman's single-factor test was conducted. A single factor accounted for only 28.7% of the total variance, well below the recommended threshold of 50% (Podsakoff et al., 2003), indicating that common method variance was unlikely to be a significant threat.

**Ethical Considerations**

This study adhered to established ethical guidelines. Approval was obtained from the Catholic University of Eastern Africa's School of Business and NACOSTI, which issued a research permit. Informed consent was obtained from all participants; participation was voluntary, and respondents could withdraw at any time. Confidentiality and anonymity were strictly maintained; questionnaires were coded, and data were stored securely. The researcher maintained objectivity and honesty in data collection, analysis, and reporting.

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## RESULTS

### Response Rate and Respondent Characteristics

A total of 101 questionnaires were distributed, of which 94 were returned (93.1%). After screening, 89 were retained for analysis (88.1% effective response rate).

The demographic profile of respondents (n = 89) showed: 58.4% male, 41.6% female; 71.9% aged between 26 and 44 years; 23.6% top-level management, 24.7% middle-level management, 51.7% lower-level staff; 58.4% held undergraduate degrees, 23.6% held postgraduate qualifications; 57.3% had more than five years of work experience.

### Descriptive Statistics

Table 1 presents the overall mean scores for each study variable. Based on the adopted Likert scale interpretation (3.50–5.00 = High; 2.50–3.49 = Moderate; 1.00–2.49 = Low) (Hair et al., 2019; Field, 2018), all variables were perceived at a high level. Technological innovations recorded the highest overall mean (M = 4.00, SD = 0.71), followed by process innovations (M = 3.99, SD = 0.70), product innovations (M = 3.92, SD = 0.73), and organisational performance (M = 3.92, SD = 0.75). Market innovations recorded the lowest overall mean (M = 3.74, SD = 0.82), though still within the high range.

**Table 1: Summary of Overall Mean Scores**

| Variable | Overall Mean | Standard Deviation | Perceived Level |
|---|---|---|---|
| Product Innovations | 3.92 | 0.73 | High |
| Process Innovations | 3.99 | 0.70 | High |
| Market Innovations | 3.74 | 0.82 | High |
| Technological Innovations | 4.00 | 0.71 | High |
| Organisational Performance | 3.92 | 0.75 | High |

*Source: Field Data (2026)*

### Correlation Analysis

Pearson correlation analysis examined the bivariate relationships between each innovation dimension and organisational performance (Table 2). All four dimensions had positive and statistically significant correlations with organisational performance at the 0.01 level.

**Table 2: Pearson Correlation Matrix**

| Variable | PI | PrI | MI | TI | OP |
|---|---|---|---|---|---|
| Product Innovations (PI) | 1.000 | | | | |
| Process Innovations (PrI) | 0.548** | 1.000 | | | |
| Market Innovations (MI) | 0.462** | 0.438** | 1.000 | | |
| Technological Innovations (TI) | 0.503** | 0.592** | 0.445** | 1.000 | |
| Organisational Performance (OP) | 0.582** | 0.614** | 0.437** | 0.673** | 1.000 |

*Source: Field Data (2026)*

**Correlation is significant at the 0.01 level (2-tailed). n = 89.

Technological innovations demonstrated the strongest positive correlation with organisational performance ($r = 0.673$, $p < 0.01$), followed by process innovations ($r = 0.614$, $p < 0.01$), product innovations ($r = 0.582$, $p < 0.01$), and market innovations ($r = 0.437$, $p < 0.01$). The intercorrelations among independent variables ranged from moderate ($r = 0.438$ to $0.462$) to strong ($r = 0.503$ to $0.592$), indicating that SACCOs adopting one type of innovation tended to adopt others, though multicollinearity was not a concern (all VIF < 2.2).

**Regression Analysis**

Multiple linear regression was conducted with organisational performance as the dependent variable and the four innovation dimensions entered simultaneously as independent variables. The regression model was significant, $F(4,84) = 36.47$, $p < 0.001$, with the four dimensions explaining 63.2% of the variance in organisational performance ($R^2 = 0.632$, Adjusted $R^2 = 0.615$).

**Table 3: Multiple Regression Results**

| Predictor | B | SE | β | t | p |
|---|---|---|---|---|---|
| (Constant) | 0.384 | 0.179 | | 2.14 | 0.035 |
| Product Innovations | 0.217 | 0.076 | 0.231 | 2.86 | 0.005 |
| Process Innovations | 0.254 | 0.077 | 0.268 | 3.32 | 0.001 |
| Market Innovations | 0.132 | 0.064 | 0.156 | 2.05 | 0.043 |
| Technological Innovations | 0.319 | 0.076 | 0.354 | 4.21 | < 0.001 |

*Source: Field Data (2026)*

$R = 0.795$; $R^2 = 0.632$; Adjusted $R^2 = 0.615$; $F(4,84) = 36.47$, $p < 0.001$; $N = 89$.

Technological innovations had the strongest effect ($\beta = 0.354$, $p < 0.001$), followed by process innovations ($\beta = 0.268$, $p = 0.001$), product innovations ($\beta = 0.231$, $p = 0.005$), and market innovations ($\beta = 0.156$, $p = 0.043$). All four null hypotheses were rejected.

**Supplementary Evidence from Audited Financial Statements**

Secondary data from audited financial statements (2021–2023) revealed trends consistent with the positive direction of the survey findings. Net income increased by 55.6% (from Ksh 187 million to Ksh 291 million), total loans issued grew by 41.7% (from Ksh 1,420 million to Ksh 2,012 million), the loan default rate declined from 9.2% to 7.4%, total assets grew by 32.6%, return on assets improved from 6.56% to 7.70%, and active members increased by 22.6% (from 28,450 to 34,890).

However, the loan default rate of 7.4% in 2023 remained above SASRA's prudential guideline of 5%, indicating that while progress has been made, credit risk management remains a persistent challenge.

**Discussion**

**Product Innovation and Organisational Performance**

The study found a positive and statistically significant effect of product innovations on organisational performance ($\beta = 0.231$, $p = 0.005$), supporting $H_1$. This indicates that the introduction of new savings products, flexible loan products, and group savings schemes

contributes meaningfully to improved profitability, loan portfolio growth, and member retention. The descriptive statistics revealed high agreement that new savings products increased member enrolment (M = 4.12) and flexible loan products improved access to credit (M = 4.08). Secondary data showed trends consistent with these perceptions, with net income increasing by 55.6% and loan portfolio growing by 41.7% between 2021 and 2023.

This finding aligns with previous Kenyan research. Kariuki and Mangana (2024) found that product innovation had a positive and significant effect on microfinance institution performance ($\beta = 0.47$, $p < 0.05$), while Mwaura and Waithaka (2025) reported that product innovation significantly improved organisational performance ($\beta = 0.65$, $p < 0.05$). The current study's effect size is smaller, which may reflect the more resource-constrained environment of non-deposit taking SACCOs in rural Elgeyo Marakwet compared to urban microfinance institutions. Internationally, Ogunnaike et al. (2022) found that innovation had significant positive links with cooperative performance in Nigeria.

From a theoretical perspective, the RBV (Barney, 1991) explains this finding by conceptualising product innovations as valuable, rare, and difficult-to-imitate resources. A SACCO that develops flexible loan products tailored to agricultural cycles possesses resources that competitors may find difficult to replicate. Schumpeter's Theory of Innovation (1934/2011) positions product innovation as a form of "creative destruction" that disrupts existing equilibria and generates value through new combinations.

**Process Innovation and Organisational Performance**

Process innovations had a stronger effect ($\beta = 0.268$, $p = 0.001$) than product innovations, supporting $H_2$. Improvements in internal workflows mobile money integration, digital loan applications, and automation yield immediate and measurable performance gains. Respondents strongly agreed that digital loan applications reduced processing time (M = 4.15) and mobile money integration improved transaction efficiency (M = 4.11). Secondary data showed improvements in return on assets from 6.56% to 7.70%, consistent with efficiency gains from process innovations.

This finding is consistent with earlier Kenyan research. Jillo (2023) found that process innovation positively affected SACCO performance in Laikipia County. Christopher et al. (2021) reported a positive effect of process innovations on manufacturing enterprise performance in Nairobi ($\beta = 0.558$, $p < 0.05$). Internationally, Migdadi (2022) demonstrated that knowledge management processes positively influenced innovation capability and organisational performance in Jordanian firms.

The stronger effect of process innovations compared to product innovations can be explained through Diffusion of Innovation Theory (Rogers, 2003). Process innovations particularly digital loan applications and mobile money integration must be adopted by both employees and members to generate performance benefits. The high mean scores suggest successful adoption. The RBV complements this: efficient processes, when embedded in organisational routines and supported by trained staff, become socially complex resources that are difficult for competitors to imitate.

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**Market Innovation and Organisational Performance**

Market innovations had a positive but comparatively weaker effect ($\beta = 0.156$, $p = 0.043$), supporting $H_3$ but with the smallest effect size. While group lending models were associated with improvements in access to credit ($M = 3.92$) and expansion to new segments increased membership ($M = 3.88$), partnerships and collective financing mechanisms received lower scores. Secondary data showed a cumulative increase in active members of 22.6% between 2021 and 2023, suggesting market innovations did contribute to membership growth, albeit with less impact.

Contingency Theory (Fiedler, 1964) provides the most compelling explanation. The theory posits that organisational strategies are successful as a function of their fit with the external environment. Elgeyo Marakwet County's semi-arid terrain, dispersed population, and agro-pastoral livelihoods create contingency factors that moderate the impact of market innovations. Reaching new members in sparsely populated areas is costly, irregular income streams make standard marketing approaches less effective, and the regulatory framework limits some market expansion activities available to deposit-taking SACCOs. Given these contingencies, the weaker effect is unsurprising.

**Technological Innovation and Organisational Performance**

Technological innovations had the strongest effect ($\beta = 0.354$, $p < 0.001$), supporting $H_4$. Respondents strongly agreed that core banking systems improved operational efficiency ($M = 4.18$) and reduced operational costs ($M = 4.09$). Secondary data confirmed consistent improvement across all financial indicators.

This aligns with previous Kenyan research. Kangangi and Mang'ana (2024) found that financial information systems had a significant positive effect on deposit-taking SACCO performance. Kihuha and Mungai (2023) reported that digital knowledge management and e-procurement positively affected performance. Regional evidence supports this: Kisinga and Gomera (2024) found that mobile banking adoption positively related to SACCO performance in Tanzania.

The Technology Acceptance Model (Davis, 1989) explains the strong effect. Members perceive mobile apps and core banking systems as useful because they enable transactions without travelling to SACCO offices a significant benefit in a county with dispersed settlements. Staff perceive digital credit scoring and automated record management as easier to use than manual methods. The Diffusion of Innovation Theory (Rogers, 2003) complements this: innovations with relative advantage, compatibility, and observable benefits diffuse more quickly.

However, the effect might have been even larger had facilitating conditions been more favourable. Some areas have network coverage gaps, unreliable electricity, or limited technical support, as reflected in the standard deviation of 0.70 for technological innovations.

**Overall Model**

The four innovation dimensions together explained 63.2% of the variance in organisational performance ($R^2 = 0.632$, $F(4,84) = 36.47$, $p < 0.001$). This substantial explanatory power indicates that financial innovation is a major determinant of organisational performance in non-deposit taking SACCOs. The ranking of effects technological ($\beta = 0.354$) > process ($\beta = 0.268$) > product ($\beta = 0.231$) > market ($\beta = 0.156$) provides clear guidance for SACCO managers on innovation investments.

The unexplained variance (36.8%) indicates that other factors also matter, including leadership quality, governance, regulatory changes, economic conditions, and member characteristics. This suggests that financial innovation is a necessary but not sufficient condition for high performance; it must be complemented by strong institutional capacities.

## CONCLUSION AND IMPLICATIONS

### Conclusion

This study examined the effect of financial innovation on the organisational performance of non-deposit taking SACCOs in Elgeyo Marakwet County, Kenya. The findings demonstrate that financial innovation, conceptualised as a multidimensional construct comprising product, process, market, and technological innovations, is a critical driver of organisational performance. All four dimensions positively and significantly influence performance, though with varying magnitudes. Technological innovations exert the strongest influence ($\beta = 0.354$, $p < 0.001$), followed by process innovations ($\beta = 0.268$, $p = 0.001$), product innovations ($\beta = 0.231$, $p = 0.005$), and market innovations ($\beta = 0.156$, $p = 0.043$). Together, the four dimensions explain 63.2% of the variance in organisational performance.

The persistent loan default challenge (7.4% in 2023, above SASRA's 5% guideline) indicates that while financial innovations have contributed to performance improvements, credit risk management remains an area requiring continued attention. Innovation alone is insufficient; it must be complemented by strong governance, member financial literacy, and context-sensitive product design.

### Theoretical Implications

This study contributes to theory in three ways. First, it demonstrates that Schumpeter's Theory of Innovation, the RBV, and TAM together provide a comprehensive framework for understanding the innovation-performance relationship in cooperative financial institutions. Second, it shows that different innovation dimensions are best explained by different theoretical mechanisms: technological innovations by TAM and DOI, process innovations by DOI and RBV, product innovations by RBV and Schumpeter, and market innovations by Contingency Theory. Third, the study provides empirical support for disaggregating financial innovation into constituent dimensions rather than treating it as a single construct.

### Managerial Implications

For SACCO managers, the findings provide clear priorities for innovation investments:

1. Prioritise technological infrastructure: Core banking systems and mobile banking platforms should be treated as primary strategic investments. Digital credit scoring should be accompanied by staff training to ensure effective interpretation and application.
2. Accelerate process automation: Automate loan application processing, member record management, and contribution collection through mobile money integration. Regular process audits can identify bottlenecks and opportunities for digitisation.

3. Develop member-tailored products: Conduct regular member needs assessments to inform product development, prioritising flexible loan products aligned with agricultural income cycles.
4. Strengthen credit risk management: Implement enhanced loan monitoring, flexible repayment scheduling, and targeted member financial literacy programmes.

**Policy Implications**

For policymakers and regulators:

1. SASRA should create enabling regulations that promote innovation in non-deposit taking SACCOs without compromising consumer protection. Regulatory flexibility could facilitate the deployment of new technologies. Technical assistance to rural SACCOs should be provided to support compliance with the 5% default rate guideline.
2. The County Government of Elgeyo Marakwet should invest in digital infrastructure and promote financial literacy campaigns to increase access to digital financial products.
3. The State Department for Co-operatives should develop policy guidelines that encourage innovation adoption, including innovation grants, technical assistance programmes, and recognition schemes for innovative SACCOs.

**Limitations and Future Research**

Several limitations should be acknowledged. The cross-sectional design restricts causal inference; it is theoretically possible that higher-performing SACCOs have greater resources to invest in innovations. Self-reported data may be subject to respondent bias. Common method variance, while found to be unlikely, cannot be completely ruled out. The relatively small sample size (n = 89), constrained by the limited number of non-deposit taking SACCOs, limits statistical power. The geographical scope restricts generalisability to other counties and financial institutions.

Future studies should adopt longitudinal designs to draw causal inferences. Comparative studies across different counties and regions would help identify contextual factors that moderate the effectiveness of financial innovations. Qualitative studies could provide deeper understanding of implementation challenges. Moderating variables such as member digital literacy, regulatory conditions, and infrastructure quality should be explored.

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