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EFFECT OF ICT INFRASTRUCTURE ON THE FINANCIAL PERFORMANCE OF SAVINGS AND CREDIT COOPERATIVE SOCIETIES (SACCOS) IN NYERI COUNTY, KENYA

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Effect of Ict Infrastructure On the Financial Performance of Savings and Credit Cooperative Societies (Saccos) In Nyeri County, Kenya

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Abstract:
Information and communication technology (ICT) infrastructure has become central to how Savings and Credit Cooperative Societies (SACCOs) mobilise deposits, process transactions and manage loan portfolios. Despite sustained investment, evidence on how infrastructure quality translates into financial results in county-level, largely rural SACCO settings remains scarce. This study determined the effect of ICT infrastructure on the financial performance of SACCOs in Nyeri County, Kenya. A descriptive cross-sectional survey design was adopted, using quantitative data supported by qualitative information from key informants. The target population comprised 240 managers, ICT officers, finance officers, credit officers, operations officers and board members across 30 SACCOs. Yamane's formula and stratified sampling produced a sample of 150 respondents. Structured questionnaires and interview guides were used to collect data. Of the 150 questionnaires administered, 134 were fully completed and returned, giving an effective response rate of 89.3 per cent. Data were analysed using descriptive statistics, Pearson correlation and simple linear regression, while interview responses were analysed thematically. Respondents generally agreed that their SACCOs had adequate ICT infrastructure (mean = 3.91, SD = 0.85) and reported positive financial performance (mean = 3.87, SD = 0.92). ICT infrastructure had a positive and statistically significant relationship with financial performance ($r = 0.592$, $p < 0.01$) and explained 35.0 per cent of its variation ($R^2 = 0.350$, $F(1, 132) = 71.2$, $p < 0.001$). A one-unit improvement in infrastructure was associated with a 0.641-unit increase in financial performance. The study concluded that ICT infrastructure is a significant determinant of SACCO financial performance. It recommends sustained investment in hardware, reliable connectivity, scheduled maintenance, data security and integrated systems, supported by staff training and partnerships that improve network and power reliability.

Keywords: *ICT infrastructure; financial performance; SACCOs; Nyeri County.*

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1.0 INTRODUCTION

A. Background of the Study

Savings and Credit Cooperative Societies (SACCOs) are member-owned institutions that mobilise savings and extend affordable credit to their members. In Kenya, the regulated sector has grown steadily. By the end of 2024, 355 regulated SACCOs served 7.39 million members, held total assets of KSh 1.076 trillion and managed member deposits of KSh 749.43 billion (Sacco Societies Regulatory Authority [SASRA], 2025). As the sector grows, members expect faster, safer and more convenient services, and managers must process larger transaction volumes while controlling costs. ICT infrastructure, meaning the hardware, software, network facilities and security systems that support daily operations, is the foundation on which these services are delivered.

Evidence from several settings suggests that technology investment improves financial results, although the benefits are not immediate. In Brazil, investment in digital technologies had positive and significant effects on the return on assets, return on equity and return on investment of credit unions, appearing about three quarters after the initial outlay (Lana et al., 2025). Studies of Kenyan SACCOs similarly link ICT adoption to better performance (Mutie & Kibe, 2024; Ndungu, 2021). However, resources are unevenly spread. Sixty large SACCOs hold more than 77 per cent of the sector's assets (SASRA, 2025), which suggests that smaller societies work under tighter budget limits. Whether such limits weaken the financial returns on ICT infrastructure in Nyeri County has not been established. This study therefore examines that relationship.

Global perspective

In Europe, Germany shows how technology and cooperative finance can coexist at scale. At the end of 2025, the country's 646 local cooperative banks served 17.5 million members, held combined total assets of €1,240 billion and reported a profit of €9.5 billion (Bundesverband der Deutschen Volksbanken und Raiffeisenbanken [BVR], 2026). The same association reports that more than 90 per cent of young people now use digital channels, which indicates the pressure on these banks to improve their digital services (BVR, 2026). Giebe and Schulz (2021) compared savings banks and cooperative banks in Germany to establish which group was operationally more efficient under the pressure of digital transformation, showing that efficiency is now judged in a digital context.

In Asia, India has made ICT infrastructure a national priority for primary agricultural credit societies. The Government approved the computerisation of 63,000 functional societies at a cost of ₹2,516 crore, and the National Bank for Agriculture and Rural Development developed common software for them. By February 2024, 15,783 societies in 27 states and union territories had been brought onto the platform (Press Information Bureau, 2024). Both cases show that cooperative institutions are investing in shared, reliable digital infrastructure to stay competitive and to widen access to services.

Regional perspective

In West Africa, Ghana has expanded access to financial services mainly through mobile technology. Adult account ownership reached 68 per cent in 2021, and mobile money account ownership rose from 39 per cent in 2017 to 60 per cent (Demirgüç-Kunt et al., 2022). Credit unions are now being urged to follow this trend. The Ghana Co-operative Credit Unions Association has encouraged them to strengthen their digital capacity and has introduced technology-based services that allow members to transact without visiting credit union offices, while the Bank of Ghana prepares to assume oversight of the sector (Acquah, 2026).

In Southern Africa, South Africa recorded account ownership of 85 per cent in 2021, a rise of about 16 percentage points since 2017 that was driven by both financial institution and mobile money accounts (Demirgüç-Kunt et al., 2022). In both South Africa and Kenya, between 95 and 98 per cent of account owners make or receive digital payments (World Bank, 2024). These figures show that dependable digital infrastructure underpins financial services across the continent, and that cooperative institutions must match it to retain members.

Local perspective of digital ecosystems

Kenya has one of the most developed digital financial ecosystems in Africa. About 79 per cent of adults owned an account in 2021, and 30 per cent reported borrowing through a mobile money account, against a regional average of 7 per cent (Demirgüç-Kunt et al., 2022). SACCOs operate within this ecosystem. In 2024, 4,247 SACCO agents handled transactions worth more than KSh 31.65 billion for regulated societies, and the sector's membership included 5.7 million active and 1.7 million dormant members (SASRA, 2025). The build-up of dormant members may indicate that some societies are not meeting member needs through the channels they offer.

Members who use mobile money daily expect similar speed and convenience from their SACCOs. Societies without dependable infrastructure therefore risk losing members to faster providers. For SACCOs in Nyeri County, whose members include many farmers and salaried workers, the ability to offer reliable mobile, agency and branch-based services is a competitive concern as well as an operational one.

ICT Infrastructure in SACCOs in Nyeri County, Kenya

Nyeri County is largely rural and agricultural, and its SACCOs serve farmers, traders and salaried members spread across several sub-counties. Reliable service to such members requires dependable networks, electricity, hardware and secure data systems at head offices and branches alike. Because budgets and infrastructure needs differ across societies, some may deliver digital services well while others rely on ageing equipment and manual processes. Despite this variation, published studies have not measured how infrastructure affects financial results in these SACCOs. This study addresses that gap.

ICT Infrastructure

ICT infrastructure is the combination of hardware, software, network facilities, security systems and supporting services that allow an organisation to capture, process, store and share information. In this study it was measured through availability, adequacy, reliability, connectivity, maintenance, security and integration of hardware, software and network facilities. Well-maintained infrastructure allows SACCO staff to process transactions quickly, produce accurate reports and protect member data, which are the activities that most directly affect financial results.

Performance and its Measurement

Financial performance shows how well a SACCO uses its resources to earn a surplus, grow its assets and safeguard member funds. This study measured it using return on assets (ROA), operating efficiency and loan portfolio growth, subject to the availability of SACCO financial records. ROA shows the surplus earned for every shilling of assets, operating efficiency shows the cost of earning income, and loan portfolio growth shows the capacity to expand lending. Together, these indicators give a balanced view of profitability, cost control and growth, and they are consistent with the capital, asset and deposit indicators that SASRA (2025) uses to track the sector.

B. Statement of the Problem

Savings and Credit Cooperative Societies (SACCOs) in Kenya face increasing pressure to maintain financial performance amid growing demands for efficient transaction processing, reliable service delivery, data security and operational efficiency. ICT infrastructure is essential in supporting these functions through reliable networks, hardware, software, data management systems and integrated financial platforms. However, investing in ICT infrastructure does not automatically translate into improved financial performance, particularly where systems are unreliable, inadequately maintained, vulnerable to security threats or poorly integrated. This raises concerns about whether SACCOs are obtaining sufficient financial returns from their ICT infrastructure investments.

Although previous studies have established a positive relationship between ICT adoption and SACCO performance in Kenya (Mutie & Kibe, 2024; Ndungu, 2021; Njoroge et al., 2025), their geographical and conceptual coverage remains limited. Ndungu (2021) examined deposit-taking SACCOs in Kiambu County, while Cheruiyot (2024) focused on deposit-taking SACCOs in Eldoret town. Furthermore, existing studies have largely concentrated on the adoption of digital banking channels, including mobile banking and automated teller machines, rather than examining the underlying ICT infrastructure and its contribution to financial performance. Consequently, limited empirical evidence exists on how ICT infrastructure availability, reliability, maintenance, security and integration influence the financial performance of SACCOs in Nyeri County. This gap is significant because differences in network coverage, power reliability and institutional investment capacity may influence the effectiveness of ICT infrastructure across geographical settings. Without county-specific evidence, SACCO management and boards lack an adequate basis for determining which infrastructure investments contribute to improved financial

performance. The study therefore examined the effect of ICT infrastructure on the financial performance of SACCOs in Nyeri County, Kenya.

C. Purpose of the Study

The purpose of the study was to determine the effect of ICT infrastructure on the financial performance of SACCOs in Nyeri County, Kenya.

D. Research Hypothesis

H01: ICT infrastructure does not significantly influence the financial performance of SACCOs in Nyeri County, Kenya.

2.0 LITERATURE REVIEW

A. Theoretical Review

Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by Davis (1989), proposes that users' intention to adopt technology is determined by two beliefs: perceived usefulness and perceived ease of use. It has since been extended to include social influence, facilitating conditions and hedonic motivation, which produced the Unified Theory of Acceptance and Use of Technology (Venkatesh, 2022). In Nyeri County SACCOs, TAM explains how staff and members perceive and use ICT systems, and how those perceptions turn into usage that affects financial performance. Employees who find systems useful and easy to use are more likely to adopt them, which improves data management, speeds up transactions and supports decisions. TAM has a limitation. It concentrates on individual acceptance, so organisational factors such as maintenance budgets, infrastructure quality and governance, which this study measures, receive less attention (Venkatesh, 2022).

B. Empirical Review

This review identifies knowledge gaps, areas of agreement and points of divergence in studies on ICT and the financial performance of cooperative institutions.

ICT Infrastructure and Financial Performance of SACCOs

Mutie and Kibe (2024) examined the influence of information and communication technology (ICT) adoption on the financial performance of Kitui Teachers SACCO using a mixed-methods approach. The findings revealed that ICT adoption had a positive and statistically significant influence on financial performance ($\beta = 0.287$, $p < .05$). The study also reported an overall mean score of 3.72 (SD = 0.495), indicating a positive assessment of ICT adoption among the respondents. These findings suggest that technology adoption can contribute to improved financial outcomes in SACCOs. However, the study focused on a single institution in Kitui County, limiting the generalisability of its findings to SACCOs operating in other geographical settings.

Furthermore, it examined ICT adoption broadly rather than assessing the specific attributes of ICT infrastructure, including availability, reliability, maintenance, security and integration. The present study addresses these conceptual and geographical gaps by examining the effect of ICT infrastructure on the financial performance of SACCOs in Nyeri County.

Ndungu (2021) investigated the influence of ICT adoption on the performance of deposit-taking SACCOs in Kiambu County, Kenya. The study examined mobile banking, agency banking, automated teller machines (ATMs) and data security policies and controls. The findings indicated that ICT adoption contributed to SACCO performance, with the study reporting that the adoption of the examined ICT applications explained 56.7% of the variation in performance. Ndungu recommended increased investment in ICT to strengthen SACCO operations and performance. Although the study established the importance of technology in SACCO operations, its focus was primarily on digital banking applications and security controls rather than the overall quality and adequacy of the supporting ICT infrastructure. In addition, the study was conducted in Kiambu County, leaving the circumstances of SACCOs in Nyeri County insufficiently examined. The present study therefore addresses the conceptual gap by focusing on ICT infrastructure and the geographical gap by examining SACCOs in Nyeri County.

Cheruiyot (2024) assessed the effect of ICT adoption on the financial performance of deposit-taking SACCOs in Eldoret town, Kenya. The study examined internet banking, automated teller machines and mobile banking. The findings indicated that ATM investments were associated with increased customer uptake, while mobile banking improved convenience and accessibility for members. Internet banking was also associated with increased daily transaction volumes, suggesting that digital banking services could enhance operational efficiency and financial effectiveness. The study recommended that SACCOs expand mobile and internet banking services to improve service delivery and financial performance. However, its emphasis on digital banking applications did not adequately establish how the underlying ICT infrastructure influenced financial performance. Its focus on Eldoret town also provides limited evidence on SACCOs operating in other geographical settings, particularly Nyeri County. The present study addresses these gaps by examining the influence of ICT infrastructure on the financial performance of SACCOs in Nyeri County.

Njoroge et al. (2025) examined the effect of differentiation strategies on the financial performance of SACCOs in Kirinyaga County, Kenya, with ICT technology adoption considered as one of the strategic dimensions. The study established that mobile banking was the most widely adopted technology, accounting for 66.7% of the reported ICT applications, followed by management information systems at 25.6%. The findings further indicated that the adoption of ICT was associated with improved financial outcomes through enhanced operational efficiency, accessibility and customer satisfaction. The study is relevant to the present research because Kirinyaga County neighbours Nyeri County, providing evidence from a geographically related SACCO environment. Nevertheless, ICT adoption was examined as part of a broader differentiation strategy rather than as an independent explanatory variable. Consequently, the study

did not isolate the contribution of specific ICT infrastructure attributes to financial performance. The present study addresses this conceptual gap by focusing specifically on ICT infrastructure and its effect on the financial performance of SACCOs in Nyeri County.

Internationally, Lana et al. (2025) examined the relationship between investments in digital technologies and the economic and financial performance of Brazilian credit unions. The study used quarterly data covering the period from 2012 to 2021 and assessed financial performance using return on assets (ROA), return on equity (ROE) and return on investment (ROI). The study contributes to the present research by evaluating technology investment in relation to financial performance indicators rather than focusing exclusively on operational outcomes. Its findings provide evidence relevant to understanding the financial implications of technology investment in cooperative financial institutions. However, the study was conducted in Brazil, whose financial regulatory environment and technological conditions differ from those of Kenya. In addition, it examined investments in digital technologies broadly rather than isolating the contribution of ICT infrastructure attributes. The present study addresses these contextual and conceptual gaps by examining ICT infrastructure and financial performance among SACCOs in Nyeri County, Kenya.

Giebe and Schulz (2021) investigated the economic effects of digital transformation in the German banking sector by comparing the operational efficiency of savings banks and cooperative banks. The study examined the two banking groups under similar competitive conditions and used financial and operational ratios to assess their relative performance. Its findings provide relevant insights into the importance of operational efficiency in evaluating the effects of digital transformation among cooperative financial institutions. The study is particularly relevant because cooperative banks share some institutional characteristics with SACCOs. However, its focus was on comparing savings banks and cooperative banks in Germany rather than examining the effect of specific ICT infrastructure attributes on the financial performance of SACCOs. Furthermore, the study did not address the technological and institutional conditions affecting SACCOs in Kenya. The present study addresses this contextual and geographical gap by examining the effect of ICT infrastructure on the financial performance of SACCOs in Nyeri County.

Financial Performance of Savings and Credit Cooperative Societies (SACCOs) in Nyeri County, Kenya

Financial performance describes how effectively a SACCO converts its resources into surplus, growth and member value. The main indicators are ROA, the cost-to-income ratio, loan portfolio growth, deposit growth and capital adequacy. ROA measures profitability relative to assets. The cost-to-income ratio shows how much of each shilling earned is consumed by operating costs, so a falling ratio signals improved efficiency. Loan portfolio and deposit growth show whether a SACCO is attracting member funds and lending them productively.

Nationally, regulated SACCOs have performed strongly. Total assets rose by 10.7 per cent in 2024 to KSh 1.076 trillion, and membership grew from 6.84 million to 7.39 million (SASRA, 2025). Deposit-taking SACCOs, which hold more than 80 per cent of the sector's assets, loans and

deposits, raised their core capital to total assets ratio to 17.28 per cent, above the 10 per cent minimum (SASRA, 2025). These figures show a sector that is growing and well capitalised.

The same report points to weaknesses that bear on financial performance. Dormant members are growing faster than active ones, and employers failed to remit about KSh 4.2 billion in member contributions, which affected 85 regulated SACCOs and 55,602 members (SASRA, 2025). Such weaknesses reduce the funds available for lending and raise the cost of collecting contributions. Efficient, integrated systems help SACCOs track remittances, monitor loan repayment and re-engage inactive members, which links infrastructure to financial results.

For Nyeri County, published figures broken down by county are rarely reported, so performance is usually judged from SACCO-level records and managers' perceptions. SACCOs in the county serve members whose incomes depend heavily on agriculture and wages, and their cash flows may be seasonal. Such patterns place demands on liquidity management and on the speed of loan processing and repayment tracking, which are tasks that depend on dependable systems. Studies in other counties report that ICT adoption raises performance (Mutie & Kibe, 2024; Ndungu, 2021; Njoroge et al., 2025), and international evidence shows that returns on technology investment appear after a period of adjustment (Lana et al., 2025). Whether these patterns hold in Nyeri County is the question this study addresses, using ROA, operating efficiency and loan portfolio growth as measures of financial performance.

C. Conceptual Framework

A conceptual framework shows the expected relationship between the independent and dependent variables, which makes the links in a study easier to understand (Saunders et al., 2023). In this study, ICT infrastructure is the independent variable and financial performance is the dependent variable. The framework expects that SACCOs with available, adequate, reliable, well-maintained, secure and integrated infrastructure will process transactions faster, control costs better, reduce errors and retain members, which would raise ROA, improve operating efficiency and expand the loan portfolio.

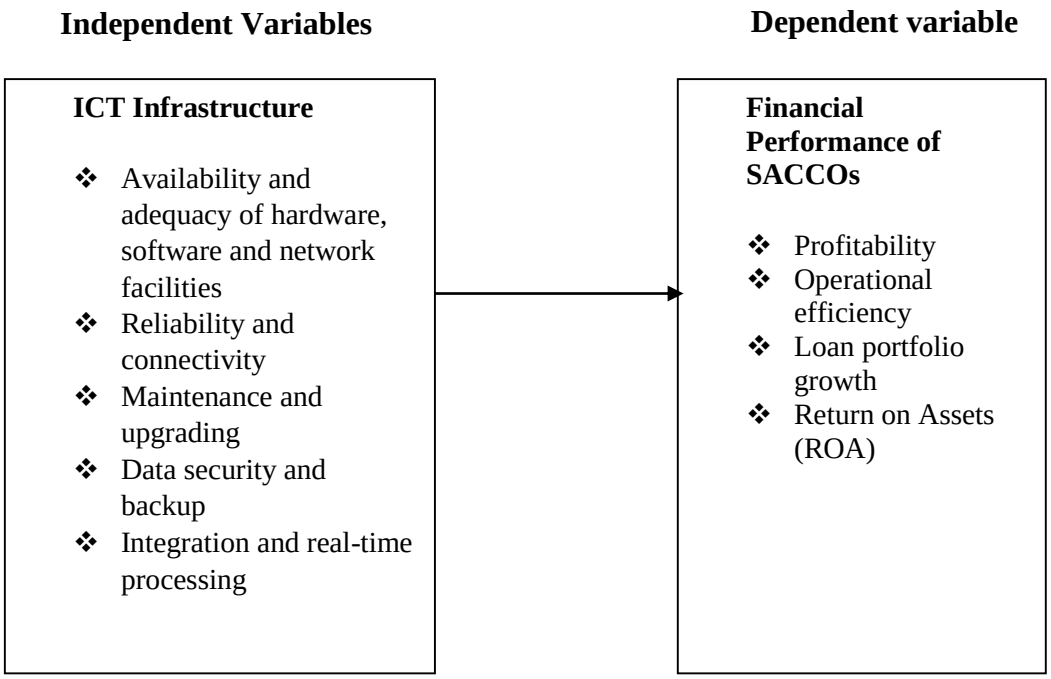


Figure 1: Conceptual Framework

Source: Researcher (2025)

3.0 RESEARCH METHODOLOGY

The study adopted a descriptive cross-sectional survey design using quantitative data, supported by qualitative information from key informants. The target population comprised 240 managers, ICT officers, finance officers, credit officers, operations officers and board members across 30 SACCOs. Using Yamane's formula at a 5% margin of error, a sample of 150 respondents was selected. Stratified sampling ensured representation of respondent categories, while purposive sampling identified key informants. Structured questionnaires and interview guides were used to collect data. The questionnaire measured ICT infrastructure in terms of availability, adequacy, reliability, connectivity, maintenance, security and integration of hardware, software and network facilities. Financial performance was assessed using return on assets, operating efficiency and loan portfolio growth, subject to the availability of SACCO financial records. A pilot study conducted outside Nyeri County assessed instrument clarity and reliability. Quantitative data were analysed using SPSS through descriptive statistics, Pearson correlation and simple linear regression. Qualitative responses were analysed thematically. Findings were presented using tables and narrative explanations, while informed consent, confidentiality and relevant research approvals were observed.

4.0 RESEARCH FINDINGS AND DISCUSSION

A. Response Rate

Out of 150 questionnaires administered, 134 were fully completed and returned, yielding an effective response rate of 89.3 per cent. Saunders et al. (2023) regard response rates above 70 per cent as excellent for survey-based organisational research. The obtained response rate was therefore adequate for credible statistical analysis and minimised the risk of non-response bias.

Table 4.1: Response Rate

Response category	Frequency	Percentage (%)
Questionnaires administered	150	100.0
Fully completed and returned	134	89.3
Not returned/incomplete	16	10.7
Total	150	100.0

The study achieved a response rate of 89.3%, with 134 of the 150 administered questionnaires successfully completed and returned, while 16 questionnaires, representing 10.7%, were not available for analysis. The high response rate demonstrates substantial participation among the targeted SACCO stakeholders and provided an adequate dataset for examining the influence of ICT infrastructure on financial performance. This finding compares favourably with Holtom et al. (2022), who analysed 1,014 surveys and reported an average response rate of 68% in 2020, indicating that the present study achieved a considerably higher level of participation. Similarly, Beehr et al. (2024) found that response rates had no noticeable effect on correlations among variables, suggesting that response rate should be interpreted alongside the overall quality and suitability of the collected data. Thus, the 89.3% response rate provided a strong empirical basis for subsequent statistical analysis.

B. Descriptive Analysis

ICT Infrastructure (ICTI)

This section examined the effect of ICT infrastructure on the financial performance of SACCOs in Nyeri County. Respondents indicated their level of agreement with seven statements on ICT infrastructure. The descriptive statistics are presented in Table 4.2.

Table 4.2: ICT Infrastructure (ICTI)

Statement	N	Min	Max	Mean	Std. Deviation

Our SACCO has modern and adequate ICT hardware (computers, servers, printers, ATMs) to support financial operations.	134	1.00	5.00	3.7537	1.38432
Our SACCO has reliable internet and network connectivity across all its operational branches.	134	1.00	5.00	4.1940	.90510
The ICT infrastructure in our SACCO is regularly maintained and upgraded to meet growing operational demands.	134	1.00	5.00	4.3134	.92108
Our SACCO has invested in data security and backup systems to protect member and financial data.	134	1.00	5.00	4.2015	.95602
Inadequate ICT infrastructure has at some point disrupted our SACCO's financial service delivery.	134	1.00	5.00	4.1194	.90980
Our SACCO's ICT infrastructure supports real-time financial transaction processing and reporting.	134	1.00	5.00	3.8806	1.20802
Investments in ICT infrastructure have directly contributed to improved financial performance indicators in our SACCO.	134	1.00	5.00	4.0373	.99175
Overall mean	134			**3.91**	**0.85**

The overall mean score for ICT infrastructure was 3.91 (SD = 0.85), indicating that respondents generally perceive ICT infrastructure as adequate and positively influencing financial performance. The statement that infrastructure is regularly maintained and upgraded recorded the highest mean of 4.31 (SD = 0.921), suggesting that SACCOs prioritise maintenance. This agrees with Lana et al. (2025), who found that gains from technology investment emerge after a period of adaptation and training, and with Ndungu (2021), who recommended deeper investment in ICT. An ICT Systems Administrator confirmed: "We have a scheduled maintenance program that ensures our servers and network equipment are regularly serviced and upgraded. This has significantly reduced system downtime and improved service reliability."

Reliable connectivity across branches scored a mean of 4.19 (SD = 0.905), indicating good network coverage, which is essential for real-time processing and integrated reporting. Njoroge et al. (2025) found mobile banking to be the most widely used technology among Kirinyaga SACCOs, and Ndungu (2021) reported that mobile banking lets members reach services anywhere and at any time. Both depend on dependable networks.

Investment in data security and backup recorded a mean of 4.20 (SD = 0.956), indicating substantial attention to protecting member records. Ndungu (2021) treated data security policies

and controls as part of SACCO ICT performance, and secure systems protect both organisational assets and member confidence.

The statement that inadequate infrastructure had at some point disrupted service delivery had a mean of 4.12 (SD = 0.910). Because this statement is negatively worded, the high score confirms that disruptions occur despite ongoing investment. Such disruptions can cause service delays and transaction errors that may weaken member confidence and financial results.

Real-time transaction processing and reporting scored 3.88 (SD = 1.208), showing that real-time capability is generally supported but varies between SACCOs. Cheruiyot (2024) recommended that SACCOs adopt internet banking to increase the number of daily transactions, which depends on such capability.

Modern and adequate hardware recorded the lowest mean of 3.75 (SD = 1.384), with the highest standard deviation, indicating wide differences in hardware quality across SACCOs. This is consistent with the concentration of sector assets in a few large societies (SASRA, 2025), which leaves smaller societies with tighter budgets for equipment. Respondents also agreed that infrastructure investment had directly improved financial indicators (M = 4.04, SD = 0.992).

Therefore, ICT infrastructure is perceived as adequate and beneficial, yet disruptions persist. A General Manager noted: "We have invested heavily in ICT infrastructure over the past five years, including upgrading our servers and networking equipment. However, the rapid pace of technological change means we must continuously review our infrastructure needs and allocate sufficient resources for upgrades."

Financial Performance (FP)

This section assessed the financial performance of SACCOs in Nyeri County. Respondents indicated their level of agreement with seven statements on financial performance indicators. The descriptive statistics are presented in Table 4.3.

Table 4.3: Financial Performance (FP)

Statement	N	Min	Max	Mean	Std. Deviation
Our SACCO's Return on Assets (ROA) has improved over the past five years.	134	1.00	5.00	3.7537	1.02917
The loan portfolio of our SACCO has grown consistently over the past five years.	134	1.00	5.00	4.1493	.98490
Our SACCO's operational efficiency ratio (cost-to-income ratio) has improved in recent years.	134	1.00	5.00	3.8582	1.03439

Member deposits and savings in our SACCO have recorded consistent growth over the past five years.	134	1.00	5.00	4.0149	1.06894
Our SACCO has consistently achieved its annual financial targets and performance benchmarks.	134	1.00	5.00	3.9851	1.09671
The adoption of ICT has contributed directly to improvements in our SACCO's profitability.	134	1.00	5.00	4.0970	1.03959
Our SACCO's financial performance compares favourably with other SACCOs in Nyeri County.	134	1.00	5.00	3.8881	1.05246
Overall mean	134			**3.87**	**0.92**

The overall mean score for financial performance was 3.87 (SD = 0.92), indicating that respondents perceive their SACCOs' financial performance as relatively strong and improving. Consistent loan portfolio growth recorded the highest mean of 4.15 (SD = 0.985). This matches national trends, in which regulated SACCO assets rose by 10.7 per cent in 2024 (SASRA, 2025).

The statement that ICT adoption contributed directly to profitability scored 4.10 (SD = 1.040), showing that respondents credit technology for better profitability. Mutie and Kibe (2024) likewise found a positive and significant effect of ICT adoption on SACCO financial performance ($\beta = 0.287$, $p < 0.05$). A Finance and Accounts Officer confirmed: "Since we implemented our core banking system and integrated digital payment channels, our profitability has improved substantially. Operational costs have decreased, transaction volumes have increased, and member deposits have grown."

Consistent growth in member deposits scored 4.01 (SD = 1.069). Deposits are the main source of lending funds, and national deposits reached KSh 749.43 billion in 2024 (SASRA, 2025). Njoroge et al. (2025) associated mature ICT use with better outcomes through greater accessibility and member satisfaction. Achievement of annual financial targets scored 3.99 (SD = 1.097), suggesting effective planning and monitoring. Favourable comparison with other Nyeri County SACCOs scored 3.89 (SD = 1.052), showing confidence in competitive position.

The cost-to-income ratio improvement recorded 3.86 (SD = 1.034), indicating moderate agreement that efficiency has improved. ROA improvement had the lowest mean of 3.75 (SD = 1.029). Although above the neutral point, it suggests that ROA gains have been more modest. This agrees with Lana et al. (2025), who found that returns on technology investment, including ROA, appear only after about three quarters.

The overall mean of 3.87 shows that SACCOs in Nyeri County have recorded positive financial performance, with ICT cited as a key contributor. A Board of Directors member emphasised: "Our financial performance has been consistently improving, and we attribute much of this to our

strategic investments in ICT. The Board is now prioritizing further technology investments to maintain this positive trajectory and remain competitive."

C. Inferential Statistics

The Pearson correlation coefficient (r) varies between -1 and +1. A positive coefficient indicates a positive relationship, and a negative coefficient indicates an inverse one. The absolute value shows the strength of the relationship, with values closer to 1 indicating stronger relationships. The significance value shows whether the observed relationship is statistically significant.

Table 4.4: Pearson Correlation between ICT Infrastructure and Financial Performance of SACCOs in Nyeri County, Kenya

	ICT Infrastructure	Financial Performance
ICT Infrastructure	1	0.592**
Financial Performance	0.592**	1

Note. N = 134. ** Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher (2026).

Table 4.4 shows a moderately strong, positive and statistically significant relationship between ICT infrastructure and financial performance ($r = 0.592$, $p < 0.01$). SACCOs with better infrastructure therefore tended to report stronger financial performance.

Table 4.5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.592	0.350	0.346	0.744

Note. Predictors: (Constant), ICT Infrastructure.

Dependent variable: Financial Performance.

The R value of 0.592 confirms a moderately strong relationship. The R^2 of 0.350 shows that ICT infrastructure explains 35.0 per cent of the variation in financial performance, and the adjusted R^2 of 0.346 shows that the estimate holds after allowing for sample size. The remaining 65.0 per cent is likely due to factors outside this study, such as governance quality, credit risk management and member characteristics. For comparison, Ndungu (2021) reported that ICT adoption explained 56.7 per cent of performance variation among Kiambu SACCOs; the difference may reflect the broader set of channels examined there.

Table 4.6: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	39.46	1	39.46	71.2	.000
Residual	73.11	132	0.554		

Total	112.57	133			

Note. Dependent variable: Financial Performance.

Predictor: (Constant), ICT Infrastructure.

The model was statistically significant ($F(1, 132) = 71.2$, $p < 0.001$). Because p was below 0.05, the study rejected the null hypothesis (H01) that ICT infrastructure does not significantly influence the financial performance of SACCOs in Nyeri County.

Table 4.7: Regression Coefficients

Model	B	Std. Error	Beta	t	Sig.
(Constant)	1.364	.304		4.49	.000
ICT Infrastructure	0.641	.076	.592	8.44	.000

Note. Dependent variable: Financial Performance.

ICT infrastructure had a positive and statistically significant effect on financial performance ($\beta = 0.592$, $t = 8.44$, $p < 0.001$). A one-unit improvement in ICT infrastructure was associated with a 0.641-unit increase in financial performance, holding other factors constant. The regression equation was:

Financial Performance = 1.364 + 0.641 (ICT Infrastructure)

The result agrees in direction with Mutie and Kibe (2024), who found a positive significant effect of ICT adoption on SACCO performance, and with Lana et al. (2025), who found positive effects on ROA, ROE and return on investment.

5.0 SUMMARY OF THE STUDY

ICT Infrastructure. Respondents agreed that their SACCOs had adequate ICT infrastructure (M = 3.91, SD = 0.85). Maintenance and upgrading (M = 4.31), connectivity (M = 4.19) and data security (M = 4.20) were rated highest. Hardware adequacy (M = 3.75, SD = 1.384) and real-time processing (M = 3.88, SD = 1.208) varied most, and respondents confirmed that disruptions still occur (M = 4.12). Financial performance was rated positively (M = 3.87, SD = 0.92), with loan portfolio growth highest (M = 4.15) and ROA lowest (M = 3.75). Correlation showed a significant positive relationship between ICT infrastructure and financial performance ($r = 0.592$, $p < 0.01$). Regression showed that infrastructure explained 35.0 per cent of the variation in performance ($R^2 = 0.350$, $F(1, 132) = 71.2$, $p < 0.001$), with a coefficient of 0.641 ($p < 0.001$). The null hypothesis was rejected. Interviewees confirmed that scheduled maintenance, core banking systems and integrated payment channels had reduced downtime and costs.

6.0 CONCLUSION

The study concludes that ICT infrastructure is a significant driver of the financial performance of SACCOs in Nyeri County. SACCOs with well-maintained, reliable, secure and integrated infrastructure reported stronger loan growth, deposit growth, efficiency and profitability. The finding that hardware quality and real-time processing vary between SACCOs, and that disruptions persist, shows that investment alone is not enough. Infrastructure must be kept current and supported by adequate budgets. Because infrastructure explained about one third of performance, it should be pursued together with sound governance and credit management.

7.0 RECOMMENDATIONS

SACCO boards and management should keep dedicated budgets for scheduled maintenance and timely replacement of ageing hardware, giving priority to smaller societies where hardware adequacy was weakest. Management should strengthen connectivity at all branches by arranging backup network links and alternative power supply, so that service disruptions are reduced. SACCOs should extend real-time transaction processing and reporting by integrating core banking, payment channels and reporting systems, and should continue to invest in data security and backup. Staff should receive regular training so that new systems are used fully, since benefits from technology investment take time to appear (Lana et al., 2025). SASRA and the county government should consider supporting smaller SACCOs through shared platforms, joint procurement and guidance on minimum infrastructure standards. Boards should also track financial indicators such as ROA and the cost-to-income ratio against infrastructure spending to judge returns.

8.0 AREAS FOR FURTHER RESEARCH

Future studies should replicate this work in other counties and use audited financial ratios alongside perception data. Longitudinal studies could track how long infrastructure investments take to affect ROA. Further research could add variables such as governance, credit risk management and staff ICT skills, and could test whether these moderate or mediate the relationship examined here.

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