

Digital Transformation and Financial Performance of Deposit-Taking Savings and Credit Co-Operatives in Nairobi City County, Kenya

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Abstract

The deposit-taking Saccos in Kenya have registered an increased amount of non-performing loans as well as a reduction in liquidity, which have affected their overall financial performance. There is little research on digital transformation and the financial performance of recipient pockets. Therefore, this study aims to examine how digital transformation affects the financial performance of Nairobi-based Saccos. Specific objectives include investigating the impact of mobile banking, ATM, agency banking, and Internet banking on financial performance. Financial intermediation theory, agency theory, and transaction cost innovation theory support this research. Explanatory research is used in this study. The target group consists of 44 licensed savers. 30 Saccos were included in this study. This study uses secondary panel data from 2017 to 2021. The method used is panel regression. Regression and correlation were also employed. The results showed that agency banking ($\beta=0.046817$, $p<0.05$) and internet banking ($\beta=0.109425$, $p<0.05$) had a positive and significant effect on the financial performance of Saccos in Nairobi districts. The results also show that mobile banking ($\beta= -0.00945$, $p>0.05$) and ATM ($\beta=0.072028$, $p>0.05$) have no significant impact on the financial performance of saccos by taking deposits in cities in Nairobi. The study concluded that the key factors improving the financial performance of Sacco's deposit beneficiaries in Nairobi District were agency banking and online banking. This study also concludes that ATMs and mobile banking have no impact on deposit-taking saccos' financial success. The paper makes recommendations for enhancing agency banking services for Saccos that accept deposits. The study also suggests enhancing the online banking system for managing Saccos that accept deposits. The research also advises the leadership of deposit-taking Saccos to review their policies on ATMs and mobile banking to identify any potential obstacles to taking appropriate action.

Keywords: *Digital transformation, mobile banking, Automatic Teller Machines, Agency banking services, internet banking, financial performance*

1.0 Introduction

Globally, the banking and financial industries are expanding at a quicker rate than in the past, and digital transformation is a critical tool for gaining a competitive advantage over competitors (Gartner, 2016). Despite being acknowledged as a participant in the national financial system in several official papers, Saccos' membership in the national payment system is also restricted. Threats to the viability of the Sacco sector require innovative management

and management methods to ensure sustainability. This brought about digital transformation of financial services offered by the Saccos.

The majority of cooperatives worldwide are commercial enterprises (Duguid, 2017). The collaborative philosophy was developed in England in 1844 by the Rockdale pioneers, and its ideas are currently used everywhere. They offer services to manufacturers as well as consumers. They were created to fulfill economic needs that could not be satisfactorily met by conventional techniques. Economies of scale are the foundation for cooperative success. They offer a legal framework under which anyone can form self-help groups. They deliver public services and create income in ways that would otherwise be impossible without their mid- and upper-level support structures (Altman, 2017).

Pastor John Ncnulty of Ghana created the first Sacco Society in Africa in 1959. The goal was to assist rural communities in improving their economic circumstances (Nyakado, 2016). Sacco was initially used by English-speaking countries. In the 1960s, the majority of non-English-speaking African countries began to value Sacco, and in the 1970s, a huge flood of people into the Sacco community.

Cooperative development in Kenya has a long history, is characterized by rapid growth, and so has a substantial impact on the country's overall economy (Njeru, 2016). After independence, the Sacco firm was formed from groups of people who banded together to store money and lend it to consumers when they needed it. However, these cooperatives are not active due to a lack of adequate fixed income and poor accounting and financial literacy (Kinyua, 2016). Geographically, Kenya's Sacco movement spans 47 districts, with certain areas having more Saccos than others depending on the local economy and employment opportunities.

In May 2019, the National Government of Kenya published the national digital economy blueprint which provides the conceptual framework to be adopted by the country in its quest to realization of a successful and sustainable digital economy. According to the blueprint, the term "digital economy" refers to all industries that use digitally enabled communication and networks that make use of internet, mobile, and other technologies. This government policy is consistent with WOCCU Challenge 2025 whose objective is to increase the membership of global credit union system through digital transformation by the year 2025. WOCCU through KUSCCO measures digitalization of Saccos in Kenya annually in four areas: Digital channels, digital payments, data analysis, and cyber security. The Sacco subsector is one of the sectors that thrive and rides largely on the use of digitally enabled communication and networks in the provision of financial services. To provide financial services, Saccos have joined with commercial banks to offer services through ATM systems. Additional Saccos have teamed with mobile money service providers. Convenience and simplicity of access to financial services through the use of digitally enabled financial technologies continue to be the major engine for success in the highly competitive world of deposit-taking Saccos (Sasra, 2019).

1.1 Statement of the Problem

In Kenya, the cooperative sector and the Sacco subsector have made significant contributions to the financial industry and the overall economy. They play a critical role in mobilizing financial resources, as well as providing credit and insurance services to Kenya's enormous population (SASRA, 2018). This sector accounts for 45 percent of the country's total domestic product, according to KNBS (2019). Deposits occupied by Saccos account for about 78% of the lion's share of Sacco's total deposits and industrial assets. This important role of Saccos is recognized in Vision 2030 as key to mobilizing investment savings.

Saccos' overall financial performance, nevertheless, has been declining. The Sacco Societies Regulatory Authority (Sasra) reports that the return on assets for the year ended December 2021 dropped from 2.65 percent the previous year to 1.59 percent of Sacco assets (SASRA, 2021). Additionally, the percentage of non-performing loans held by Sacco increased from 6.15 percent in 2019 to 9.12 percent by the end of June 2020. According to a Central Bank of Kenya study, this is the largest increase seen in more than nine years, highlighting the negative impact the Covid-19 outbreak has had on the banking system (CBK, 2021). These trends are a clear indication that Deposit Taking Saccos is experiencing challenges related to financial performance.

Njenga, Kiragu and Opiyo (2015) noted that Saccos in Kenya have experienced stiff competition from the banking industry due to slow uptake of digital transformation in their everyday processes. In Kenya, financial institutions are now obligated to provide digitalized services to remain competitive. There is little research on digital transformation using Sacco's financial results, but most of these existing studies have also taken a simplified approach to digitization - the relationship between productivity that does not take into account current digitalization approaches - a modern set of tools and processes that can all influence this context, recent trends and the rapid perception of digital transformation is that Saccos have also surpassed the usefulness of previous inventions in this area of research. A study conducted by Mercy Corps (2017) in Uganda established a 24% increase in income of digitalized Saccos from an annual growth rate of 20% before digital transformation, an increase of 4% following digital transformation, also the cost-to-income ratio reduced by 4% following digital transformation.

In their study, Ritho and Jagongo (2015) looked at how mobile banking impacted commercial banks' financial performance and discovered that Kenyan commercial banks' performance had significantly improved as a result of using m-banking. The evaluated study ignored the deposit-taking Saccos' commercial success and technological advancement. This study aimed to close those gaps by investigating how Nairobi-based Deposit Taking Saccos were affected financially by the digital transformation.

1.2 Specific Objectives

- i. Determine the effect of mobile banking on financial performance of Deposit Taking Saccos in Nairobi City County, Kenya.
- ii. Evaluate the effect of Automatic Teller Machines on financial performance of Deposit Taking Saccos in Nairobi City County, Kenya
- iii. Establish the effect of Agency banking services on financial performance of Deposit Taking Saccos in Nairobi City County, Kenya
- iv. Determine the effect of internet banking on financial performance of Deposit Taking Saccos in Nairobi City County, Kenya.

2.0 Literature Review

2.1 Theoretical Review

2.1.1 Financial Intermediation Theory

According to Garley and Shaw, financial intermediation necessitates depositing surplus units with current financial institutions so that these institutions can transfer the same sums to deficient economic units (1960). Financial intermediaries are divided into four groups, according to Bisignano (1998): fixed-term deposits, short-term deposits, and their equivalents.

The third category comprises most of the liabilities that can be terminated immediately upon request, and the last is the assets and liabilities which are mostly non-transferable. As a result, financial intermediaries' major job is to ensure that funds flow steadily from deficit to surplus.

Financial intermediaries' fundamental goal is to ensure the creation of highly specialized financial goods. If financial intermediaries can provide these financial things at a higher price that fully covers all manufacturing expenses, they can be created ideally (Scholtens & Wensveen, 2003). In financial markets, information asymmetry is particularly apparent since borrowers are aware of the level of care, moral purity, and security required. It's also important to note that business owners are intimately familiar with the projects they present to financial intermediaries to secure funding (Ranjani, 2012). Financial intermediaries, such as Saccos, help to smooth out existing market flaws. It's worth noting that financial intermediaries don't exist in an ideal market because there aren't any information or transaction fees. Even borrowers are aware of the moral integrity and confidence expected of their lenders in today's financial marketplaces.

Due to its clarification of Saccos' role as a financial intermediary, this study is relevant to the financial intermediation hypothesis. According to theory, the main duty of financial intermediaries is to make sure that funds are consistently transferred from units that are in deficit to those that are already in surplus. Saccos may need to include aspects of the digital transformation like agency banking, internet banking, mobile banking, and ATM usage to achieve this. Therefore, the idea connected the financial success of saccos to elements of digital transformation like agency banking, internet banking, mobile banking, and ATMs.

2.1.2 Agency Theory

According to the paradigm given forth by Jensen and Meckling (1986), Sacco is seen as a principle and the banking agent as an agent, with issues arising from their inability to communicate or their competing interests. When financial institutions do not obey the rules and regulations set by the regulator, agency theory arises. According to agency theory, financial institutions (Saccos and their agents) serve as middlemen between markets or households and money. Due to frictions such as transaction costs and asymmetric knowledge, it is difficult to distribute resources (money) based on a perfect and full market (Aduda et al., 2013).

The principle assumes that customers and policymakers have a good relationship. The effectiveness of market mechanisms is evaluated to ensure that benefits are maximized and controls are separated. Although issues with a lack of written agreement amongst principles are uncommon, laws are valuable, acknowledged, and created (Jensen & Meckling, 1986). Management levels may not be able to pass agent laws because of the various transactions between agents. The commissioning of financial services by various financial service providers has led to the successful implementation of financial services. This service has tapped into a market previously untapped by banking services. Increased transaction volumes and client numbers have occurred from agent services in places where Saccos are unwilling to operate. Agencies have increased the level of financial inclusion by expanding services to low-income populations. The agency theory is pertinent to this research since it emphasizes the importance of agency-provided financial services. The idea, therefore, connects agency banking to the financial success of saccos that accept deposits.

2.1.3 Transactions Cost Innovative Theory

According to Niehans' (2006) theory of transaction cost innovation, the reduction in transaction costs is the most significant aspect of financial innovation, and financial innovation is a response to technical advancements that have led to lower transaction costs. Financial

innovation and service improvement can be sped up by lowering transaction costs. Transaction costs are meant to be reduced by financial innovation.

The idea of transaction cost innovation is also pertinent in this context; for instance, a firm's transaction costs can be greatly decreased by utilizing Internet-related Information Technology (IT) to facilitate efficient coordination, management, and utilization of information. Mobile, Internet-connected IT can further reduce transaction costs by allowing outside access to the organization's internal databases and other permitted information sources. As a result, agency banking, online banking, and mobile banking could help Saccos save money by lowering operational costs.

The hypothesis is pertinent to our study because it stresses how important digital transformation is in reducing operating costs for financial organizations. By implementing digital advances like agency banking, online banking, mobile banking, and ATM use, saccos can save costs.

2.2 Empirical Review

2.2.1 Mobile Banking and Financial Performance

According to Mbama et al. (2018), managers' perceptions of how digital banking impacts customer happiness and bank financial performance were examined. Key UK bank managers were interviewed for the poll to learn their viewpoints. Interviews were analyzed topically to gather data and build models. A few factors that affect the experience of using digital banking include service quality, functional quality, perceived value, service flexibility, speed of service, staff and customer engagement, brand trust, innovation in digital banking, perceived user-friendliness, and perceived danger. They have an impact on revenue, brand loyalty, and consumer happiness. However, this study was conducted in a different place than Kenya, so adapting the results to account for the local context may not be practical. The study was conducted in the United Kingdom, a developed nation that operates in a different environment than Kenya. The results may, therefore, not fit the local situation. Mbama et al. study also relied on data from interviews, which may not be adequate to reflect the actual financial performance of a firm.

Rito et al. (2015) examined the impact of mobile banking on the monetary performance of Kenyan commercial banks. This descriptive research study looked into the price of m-banking services, the security of the m-banking system, the speed of m-banking services, and the skills needed to use m-banking services. Utilizing the descriptive methodology, the data was examined. This study demonstrates that mobile security banking's quickness and security have a favorable effect on financial success. To try to establish a relationship between variables, the study adopted a descriptive survey approach, which is incorrect. When summarizing the features of the study variables, a descriptive survey approach is acceptable.

2.2.2 Automatic Teller Machines and Financial Performance

Jan (2019) looked into the impact of financial innovation on the financial performance of several Ghanaian institutions. The use of ATMs is the main subject of this study. A study of bank executives' perceptions of how financial innovation affects financial performance is also available. The usage of ATMs enhanced bank profitability dramatically, according to this study. Nonetheless, the research was in Ghana and focused on banks as opposed to SACCOs. The contextual differences make it necessary to conduct this research.

Jegede (2014) looked into how the use of ATMs affected effective Nigerian banks. A survey was used to gather information from a representative sample of 125 workers. The data indicate that, despite the alarmingly high rate of ATM fraud, Nigerian banks perform better on average

when ATMs are used. In a similar vein, customer and supplier privacy and confidentiality have no impact on the level of service provided by ATMs. The use of ATMs was shown to have no substantial impact on bank performance. The current research focuses on Kenyan SACCOs. The study findings indicated that use of ATMs did not significantly improve performance. The findings were contrary to those of Jan (2019) who found that use of ATMs significantly increased firm profitability.

2.2.3 Agency Banking Services and Financial Performance

Chude and Chude (2014) looked at how the profitability of Nigerian commercial banks was affected by banking agents. Descriptive research is used in this study to conduct research, while content analysis is used to analyze jobs. It is advised that agent banking be implemented in Nigeria as it was discovered to have significantly increased bank profitability and customer happiness. However, this study uses a descriptive research design rather than an explanatory design. The latter is considered to be appropriate when the aim is to evaluate relationship between variables. Furthermore, the research was conducted in Nigerian banks, which are not the same as those in Kenya.

Ndegwa and Koori (2019) evaluated the impact of bank intermediary services on the effectiveness of SACCO in accepting deposits in Meru. This research used a descriptive research approach. A semi-structured, self-administered questionnaire was used to gather the data. The effectiveness of DT SACCO is improved by using agency banking services, according to this study. The role of bank intermediation services in influencing the effectiveness of SACCOS is examined in this study. But the descriptive research approach used in this study wasn't strong enough. The explanatory research design will be used in this investigation.

2.2.4 Internet Banking and Financial Performance

Amin (2016) looked into the effectiveness of online banking services in Malaysia and how that affected the satisfaction and loyalty of e-customers. Users of Internet banking were sent a total of 1,000 questionnaires, and 520 of them were returned. The findings support the notion that the four factors (personal needs, website organization, website usability, and efficiency) are separate phenomena. The findings also demonstrate a substantial correlation between service quality and each of the four aspects of internet banking service quality. The efficiency of a banking website is a key factor in assessing the quality of internet banking services. The results showed a strong correlation between e-customer satisfaction and loyalty, as well as the standard of online banking services. However, as this study was carried out in a different environment than Kenya, it might be challenging to translate the results into explanations for the local context.

Kagendo (2015) investigated the impact of Kenya's e-banking strategy on the operation of the country's commercial banks. A descriptive research design was employed in this study. A total of 43 Kenyan commercial banks were investigated. The results of this study show that the use of an e-banking infrastructure method greatly enhances bank performance. This study found a tenuous positive correlation between an e-banking strategy's quality and effectiveness. The study found that advancements in e-banking infrastructure, efficiency strategies, and quality were responsible for the increased efficiency of Kenyan commercial banks. This study recommends that banks enhance the processes of their e-banking strategies to more effectively respond to customer requests in a timely and suitable manner. The study, however, used a descriptive research approach rather than an explanatory methodology. The latter is considered to be appropriate when the aim is to evaluate relationship between variables.

3.0 Methodology

The study utilized an explanatory research design. The target group consists of 44 licensed savers. 30 Saccos were included in this study. This study uses secondary panel data from 2017 to 2021. The method used is panel regression. Utilizing descriptive statistics like mean, standard deviation, minimum and maximum, it is possible to characterize the characteristics of the research variables. Regression and correlation were also employed. Fabrication and falsification of data and findings were avoided.

4.0 Findings and Discussion

4.1 Descriptive Analysis

This section presents statistical summary outcomes for the constructs in terms of means, minimum, maximum, and standard deviation.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Financial Performances	150	0.083487	0.240581	2.29E-06	1.86667
Mobile Banking	150	35.45	12.20757	15	55
ATM	150	9.759091	3.18116	5	15
Agency Banking Services	150	6.927273	2.92434	2	12
Internet Banking	150	12.68182	4.606788	1	4

Source: Research data (2022)

Table 1 shows that the average annual financial performance (ROA) of deposit-taking Saccos during the study period was 0.083487. According to this, the average financial performance of deposit-taking Saccos between 2017 and 2021, as determined by ROA, was 8.3%.

Results also show that the average annual value of transactions by deposit Saccos through mobile banking was Ksh. 35.45 million for the period between 2017 and 2021. The minimum annual value of transactions was Ksh. 15 million and maximum was Ksh. 55 million.

Results further show that the average total annual value of transactions by deposit Saccos through ATM was Ksh 9.75 million for the period between 2017 and 2021. The minimum total annual value of transactions was Ksh 5 million, and maximum was Ksh 15 million.

In addition, results show that the average annual value of transactions by deposit Saccos through agency banking was Ksh. 6.9 million for the period between 2017 and 2021. The minimum annual value of transactions was Ksh. 2 million, and maximum was Ksh 12 million.

Finally, results indicate that the average annual value of transactions by deposit-taking Saccos through internet banking was Ksh. 2.5 million for the period between 2017 and 2021. The minimum total annual value of transactions was Ksh. 1 million and maximum was Ksh. 4 million.

4.2 Correlation Analysis

Correlation analysis was used to correlate the elements of the digital transformation with the financial success of deposit-taking Saccos.

Table 2: Correlation between Digital Transformation and Financial Performance

	Financial performance	Mobile Banking	ATM	Agency Banking Services	Internet banking
Financial-performance	1				
Mobile Banking	.434** .000	1			
ATM	.410** .000	.479** .000	1		
Agency Banking Services	.446** .000	.480** .000	.580* *	1	
Internet banking	.496** .000	.415** .000	* .000	.444** .000	1

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

Source: Research data (2022)

According to Table 2, there was a substantial and positive correlation between mobile banking and the financial success of deposit-taking Saccos ($r = 0.434$, $p < .05$). This demonstrated that mobile banking and deposit-taking Saccos both experienced similar changes in their financial performance. That is, the growth of mobile banking was accompanied by an improvement in Saccos' financial performance.

The results also reveal a strong and favorable association between ATM use and deposit-taking Saccos' financial health ($r = 0.410$, $p < .05$). This indicated that ATM modifications followed the same trajectory as the financial results of Saccos that accepted deposits. In other words, as the number of ATMs increased, so did the Saccos' financial performance.

Further findings show that there was a substantial and favorable link ($r = 0.446$, $p < .05$) between agency banking and the monetary success of Saccos. This indicated that changes in agency banking followed a path similar to that of Saccos which accepts deposits financially. That is, an increase in agency banking was accompanied by an improvement in the Saccos' financial performance.

The final finding shows that there was a substantial and positive correlation between internet banking and deposit-taking Saccos' financial performance ($r = 0.496$, $p < .05$). This indicated that changes in online banking follow trends in deposit-taking Saccos' financial performance. In other words, as internet banking grew, deposit-taking Saccos' financial performance grew as well.

4.3 Hausman Test

Hausman test results are presented in Table 3.

Table 3: Hausman Test

	(b) random	(B) fixed	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Mobile Banking	-0.00945	-0.02399	0.014538	0.00666
ATM	0.072028	-0.00931	0.081336	.
Agency Banking	0.046817	0.03995	0.006867	0.005516
Internet Banking	0.109425	0.091178	0.018247	0.008143
chi2(4)	5.99			
Prob>chi2	0.1997			

Source: Research data (2021)

Table 3 indicates a p-value of 0.1997, which was higher than the threshold for significance, which is 0.05 (Random Effect Model was appropriate). The random effect model was therefore considered to be more consistent and suitable for this study.

4.4 Random-effect Regression Model

The impact of digital transformation elements on the financial outcome of Saccos was examined using a random-effect regression model.

Table 4: Random-effect model: Digital Transformation and Financial Performance

Financial performance	Coef.	Std. Err.	z	Prob
Mobile Banking	-0.00945	0.027213	-0.35	0.728
ATM	0.072028	0.094	0.77	0.444
Agency Banking Services	0.046817	0.020036	2.34	0.019
Internet banking	0.109425	0.031626	3.46	0.001
_cons	-0.40228	0.167228	-2.41	0.016
R-square	0.297			
F-statistic	32.11			
Prob	.000			

Source: Research data (2022)

The measured model is as follows:

Financial Performance of

$$Saccos = -0.40228 + 0.109425 \text{ Internet banking} + 0.046817 \text{ Agency Banking} + 0.072028 \text{ ATM} - 0.00945 \text{ Mobile banking}$$

Table 4 shows R squared of 0.297 indicating that digital transformation components (mobile banking, ATM, agency banking services, and internet banking) explain 29.7% of variations in financial performance. With an F statistic of 32.11 and a p-value of $0.000 < 0.05$, the results also demonstrate the study model's relevance.

The findings further show that agency banking had a positive and significant effect on financial performance of deposit-taking Saccos in Nairobi City County ($\beta=0.046817$, $p < 0.05$). This implied that a unit increase in agency banking would increase monetary performance of Saccos by 0.046817 units.

The findings concurred with those of Chude and Chude (2014) who found that agency banking plays a key role in increasing customer satisfaction and profitability. Similarly, the findings agreed with Ndegwa and Koori (2019) assertion that effectiveness of organizations is improved by agency banking services.

The results demonstrate that internet banking considerably and favorably impacted deposit-taking Saccos' financial performance ($r=0.109425$, $p<0.05$). According to this forecast, Saccos' financial performance would improve by 0.109425 units for every additional unit of internet banking.

The findings supported Amin's (2016) claim that customer satisfaction and internet banking have a high association. The results also supported a study by Kagendo (2015) that found an association between e-banking strategy and corporate performance.

The results also showed that neither ATM ($\beta =0.072028$, $p>0.05$) nor mobile banking ($\beta = -0.00945$, $p>0.05$) had a significant impact on financial performance. This implied that the financial performance was minimally affected by ATM and mobile banking. The results supported Jegede's (2014) claim that the usage of ATMs did not significantly affect business performance.

The study findings disagreed with the work of Rito et al. (2015) and Njenga et al. (2015) who found that mobile banking had a substantial impact on organizations' financial success. Additionally, the findings disagreed with Jan (2019) conclusion that usage of ATMs enhanced firm profitability.

5.0 Conclusion

The research concludes that banking agencies have a favorable and substantial effect on the financial success of Saccos deposits in Nairobi District. This means that the banking services of the institution contributed significantly to positive changes in the monetary success of the Saccos deposit companies in the Nairobi District.

The study also concluded that internet banking significantly and favourably affected the financial performance of Saccos and Nairobi District deposit firms. Thus, the acquisition of Saccos deposits in the city of Nairobi resulted in beneficial improvements in the monetary output that were considerably aided by internet banking.

The study concludes that neither ATM nor mobile banking usage significantly affects the financial performance of deposit-taking saccos in Nairobi District. This means that mobile banking and ATMs have only made a small contribution to changing the monetary output of deposit-taking saccos in the City of Nairobi.

6.0 Recommendations

The research makes recommendations to the management of deposit-taking Saccos to strengthen agency banking services. This can be achieved by contracting more agents to offer services on behalf of Sacco. Agency banking brings services closer to members and this translates to increase financial performance of Saccos.

The research also recommends that the leadership of deposit-taking Saccos should strengthen internet banking platform. This can be achieved by strengthening the internet banking systems to assure members of safety and quick access to services. Saccos should also sensitize members on benefits of using internet banking.

The study further recommends that management of deposit-taking Saccos should review policies on mobile banking and ATMs to establish possible challenges for proper action. It

was discovered that the two factors had no discernible impact on Saccos' financial success. As such, reforms are necessary to achieve the desired outcome of enhancing financial performance of Saccos.

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