

The Adoption of Process Innovation and Financial Performance of Savings and Credit Cooperative Societies in Kenya

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ABSTRACT

Objective: to determine process innovation and financial performance of Savings and Credit Cooperative Societies in Kenya.

Research Methodology: Study was guided by transaction cost and agency theories. descriptive research was used targeting 185 Savings and Credit Cooperative Societies in Kenya generated from SASRA reports. Diagnostic tests consisted of, multicollinearity and Hausman tests. Anonymity and confidentiality were adhered to in the research.

Research Findings: Process innovation had positive insignificant effect on financial performance of Non-Deposit Taking Saccos in Kenya. The outcome revealed a wide variation in process innovation as some Saccos recorded zero revenue while others registered high revenue. The findings demonstrated that institutional innovation had a positive insignificant effect to financial performance of non-withdrawable deposit taking saccos in Kenya. The results demonstrated increased effort by the Saccos to adopt process innovation through enhancement of branchless transactions, mobile banking and ATM services to improve financial performance.

Conclusion and Recommendations: Conclusion was made that process innovation is critical in lowering costs of operation and production which ultimately enhances financial performance. Future investigation needs to incorporate other elements of process innovation apart from revenue to reveal any variation in the findings.

Keywords: Financial Innovation, Process Innovation, Financial Performance, Cooperative Societies.

Introduction

Cooperative society is an enterprise formed out of voluntary membership and democratic control process where members jointly own the enterprise to meet socio-economic objectives by pooling resources through deposit mobilization. These deposits are major sources of funding for the members through affordable credit access which aids in improving livelihood, generating household income and members' investment activities. Cooperative societies are governed by core values; solidarity, equity, equality, democracy, self-responsibility and self-help (SASRA, 2024). Similar to other sectors, cooperative societies are experiencing revolution due to dynamics in the global financial system, economic liberalization, globalization and technological advances. These dynamics have exposed the cooperative to intense competition both at the domestic and international level thereby affecting financial performance (Gaichuru, 2023).

Financial performance is the capacity of an enterprise to control the use of resources, identify opportunities and threats, enhance revenue and grow profit. Financial performance can be measured through ratios; solvency, financial performance, liquidity and capital adequacy (Mbegu, Magali & Kara, 2024). Financial performance of cooperative society is widely dependent on innovation to constantly create new platforms, systems and approaches for enhanced competitiveness.

Process innovation is critical in improving cooperative financial performance through creation of new offerings and digital channels to respond to environmental dynamics. Globally, Germany is taking the lead in innovation within the financial sector where above 70% of the conventional banks are fully utilizing Fintech in Europe. In Africa, Nigeria has witnessed an increase in the use of technology to provide financial solutions which is similar to Kenya which has widely embraced innovation through mobile phone application and mobile money wallets (Mugunyi, 2022).

Background of Savings and Credit Cooperative Societies in Kenya

Kenya is ranked top-ten globally in loan provision and the largest movement in Africa constituting 27.9% of Sub-Saharan membership in the continent. With enhanced market penetration, Kenyan Saccos have been able to mobilize the highest amount of credit as compared to other countries in Africa which signifies the role of the Kenyan Sacco within the financial sector (Feather & Meme, 2018). The contribution of the Sacco movement in economic development is evidenced in GDP of 6.67% and the Big 4 Agenda through savings mobilization, financial access deepening and the provision of affordable credit.

In the financial year 2021, the regulator reported that there were 185 licensed NWDT Saccos in Kenya who became under the prudential regulation in the same year. The total membership for

the NWDT Saccos stood at 460,785 with dormant members increasing from 75,272 (2020) to 114,930 (2021) which translated to loss of opportunity to mobilize for more savings (Sacco Supervision Annual Report, 2021). Additionally, the sector's net loans and advances represented 72.8% of the NWDTs assets which came down from 74.54% in 2020. Further observation on loan quality showed that NWDTs recorded low profit at 9.78% in year 2020 where 82 of the Saccos were categorized with NPL over 5% (Sacco Supervision Annual Report, 2023).

Problem Statement

The performance of the cooperative society is important for competitiveness and to enable members access credit for enhanced livelihoods, improved income and investment activities. The cooperative sector makes significant contribution to the government's Big 4 Agenda and generation of 6.67% GDP. However, the regulator report that the cooperative sector experienced decreasing financial performance where Non-Withdrawable Deposit Taking Saccos total assets dropped to 72.8% (2021) from 74.54% (2020). The regulator also recognized poor performance in low profit of 9.78% with 5% non-performing loans from 82 saccos (Sacco Supervision Annual Report, 2023). Financial performance can be enhanced through process innovation which utilizes technology to improve processes, create new platforms and digital channels (Mugunyi, 2022).

Previous studies on process innovation were done by Mbegu, Magali and Kara (2024) where the research was based on how innovation influenced financial performance of Saccos in Tanzania. Gaichuru (2023) study focused on Meru County cooperatives while Mugunyi (2022) investigated how financial innovation determined performance of Deposit Taking Savings and Credit Cooperative Societies in Kenya. These studies had different geographic location, Tanzania, others narrowed down to Meru County while to some, the target population was DT Saccos. The present research focused on all NWDT Saccos in Kenya and therefore offered a wide perspective of dynamics within the cooperative sector by investigating the effect of process innovation on financial performance of Non-Withdrawable Deposit Taking Saccos in Kenya.

Justification of the Study

The Sacco sector plays a critical role in financial mediation through provision of affordable credit to the members and the generation of country's gross domestic product of 6.67%. Financial performance of the sector is therefore essential for stability and competitiveness of the sector. The research outcome may benefit policy makers such as Sacco societies Regulatory Authority who will use the findings to reinforce policies to promote technological innovation for improved financial performance. The Sacco managers may use the results to develop effective process innovation strategies to enhance efficiency and improve financial performance. The outcome will benefit future researchers and scholars to develop future research and encourage

discussion on financial innovation and cooperative performance. There is contribution on empirical evidence on the importance of process innovation among the NWDT Saccos which has previously received limited scholarly attention.

Scope of the Study

The study focused on the regulated Non-Withdrawable Deposit Taking Savings and Credit Cooperative Societies in Kenya where process innovation was the independent variable, measured in terms of new or improved delivery methods and transaction channels. The dependent variable was financial performance measured in form of return on asset. The study included all licensed 185 NWDT Saccos in Kenya making it a census study for enhanced generalizability. The period under investigation was 2020-2023 where panel data was used with panel regression.

LITERATURE REVIEW

Theoretical Review

Transaction Cost Innovation Theory

Hicks and Niehans (1983) came up with a proposal of the theory to show how organizations may minimize transaction costs based on technological advancements evidenced in new processes (Odongo, 2022). Transaction cost innovations theory emerged as a criticism of the neoclassical theory which was seen as leaving out other factors such as institutional impacts on business environment. According to Suska (2016), transaction cost was previously viewed in terms of agency costs. However, in the 1990s other costs such as obtaining market information, distribution and production costs emerged. Additionally, all other factors that constitute the type of enterprise, its size and structure were also considered. In finance, the theory is used to analyze all transaction costs that may reduce financial performance of enterprises (Suska, 2016). An observation on the benefit of the theory by Rahman (2016) added that through technological advances, organizations may lower their costs in administration and coordination such as new processes, mobile banking, internet and digital processes (Odongo, 2022).

The theory supported process innovations, the independent variable whose main aim is cost reduction evidenced in the implementation of internet related information technology that ultimately reduces costs in coordination and administration. For instance, access to company data through the mobile phone reduces exchange costs which lowers operational costs evidenced in agency banking as well as mobile banking which have effects on return on assets (Kiplangat & Tibbs, 2018). The theory was used to analyse how transaction costs influence financial performance which is the dependent variable in the study.

Agency Theory

Jensen and Meckling (1976) advanced risk-sharing theory where principals assign duties to managers to meet goals and deliver outcomes. However, this may not occur as expected based on self-interest (Bendickson *et al.*, 2016). Agency theory analyses issues that occur in business due to the separation of management and the owners which helps in understanding organizational process in the context of principal- agent relationship. Panda and Leepsa (2017) note that management cause deviation from realizing the goals of the owners (Gyamera *et al.*, 2023) which is an assumption of the theory.

Berie and Means (1932) argued that the separation between ownership of the company and the management may lead to motivation to the management and provide opportunity to serve personal interest rather than maximizing wealth to the owners. Jensen and Meckling (1976) added that lack of separation may bring problems due to incomplete contractual agreement with the management. The owners therefore, incur costs in the relationship evidenced in monitoring activities of the agents such as compensation contracts. The principal also incurs expenditure costs to ensure compensation in situations where the agents undertake activities that reduce benefits to the owners.

The theory was used to analyse how the management is effective and efficient in utilizing resources to enhance financial performance thereby meet objectives of the owners who are the members of the NWDT Saccos.

Empirical Review

Process Innovations and Financial Performance

An assessment by Jillo, Kanyiri and Moguche (2023) analysed how Laikipia County Saccos enhanced their financial performance using process innovation where descriptive research design was incorporated. The study targeted 118 respondents which consisted of heads of departments and support staff. Mean, frequency tables and percentages aided the presentation of data. The results showed that financial performance was influenced by process innovation. The previous study was conducted in Laikipia County, which featured a distinct population. In contrast, the present research broadened the geographical coverage to encompass all NWDT Saccos across Kenya and found that process innovation had no significant impact on performance.

A study by Gaichuru *et al.* (2022) determined process innovations of Meru County cooperatives working with a population of 162 Saccos registered under SASRA. Correlation analysis was used with findings that new process innovations had a positive impact on financial performance

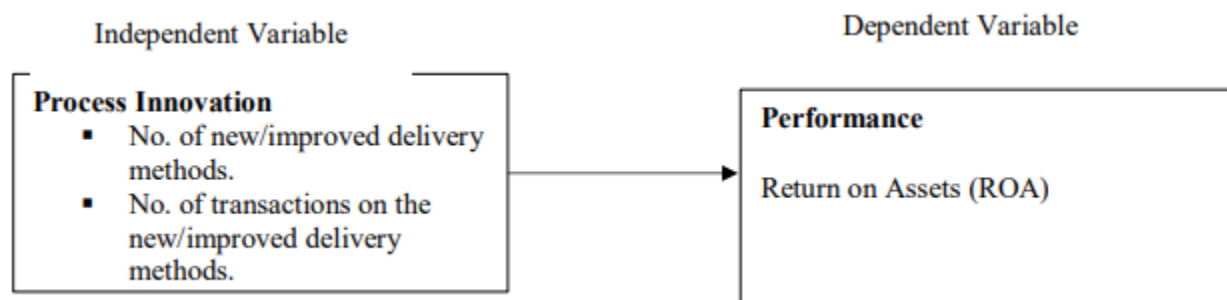
of Saccos. This study focused on Meru County using structured questionnaire and established a similar finding where process innovation demonstrated a positive result to return on assets of NWDT Saccos in Kenya.

An analysis by Yego, Sane and Kibet, (2021) studied how SME performance was determined by process innovation. The study used a positivist approach and explanatory research design with a sample size of 254 personnel comprising of managers and owners of the SMMEs registered under the Kenya Association of Manufacturers. Stratified random sampling technique was used to identify respondents. Pre-testing was also done to ensure the validity and reliability of questionnaires. Data was analyzed using descriptive analysis and inferential statistics. According to the regression model, process innovations accounted for 47.2% of variation in financial performance. The study concluded that process innovation had a positive and significant impact on firm performance. This study targeted SMMEs in Nairobi City County. Working with a different target population, the study did not find any significant relationship of process innovations on financial performance of NWDT Saccos.

An investigation by Cakadende and Mulyungi (2020) adopted a case study of Umwalimu Sacco using qualitative and quantitative data with a population that included 30 branch managers. Descriptive and inferential statistics were used in data analysis. Correlation tests were carried out to determine the relationship between innovations and ROA. The study concluded that there exists a positive significant relationship between process innovations and financial performance of Saccos. The study worked with a sample of 30 participants and targeted one Sacco which limited generalization. The current study increased the sample size above 30 by incorporating 147 NWDT Saccos to allow generalization of the findings into other organizations.

Conceptual Framework

Figure 2.1. Conceptual Framework



RESEARCH METHODOLOGY

Research design specifies the type and sources of information, which approaches are used in data

collection, time and costs, techniques, the population and analysis. Research design is necessary to support smooth flow in the process, generate more accurate answers using minimum effort and time and to organize the study in a way that gives more advantage to the research (Thakur, 2023). Explanatory research was used for in-depth analysis of cause-and-effect studies (Sakyi *et al.*, 2020). The study adopted panel regression model with 185 Saccos participating in the study (Sacco Society Regulatory Authority, 2022).

Secondary data is important in high level research where data can be sourced from diverse sources; organization's records, government agencies, websites, journals and previous surveys collected by third parties. Secondary data helps in retrieving data in a timely and economic manner and hence aiding in faster analysis. Secondary data may also be used in large samples (Kumara, 2022). The study employed panel data collection where the structure of the data and the content were determined prior to data collection (Johnson & Sylvia, 2023). The researcher sought for authorization from National Commission of Science, Innovation and Technology to collect public data.

The study used Hausman test to determine which model between fixed effect and random could be used as an efficient estimator (Abdullah *et al.*, 2022). The null hypothesis was that fixed effect model should be selected ($p \text{ value} < 0.05$) as it showed that individual specific effects are similar with the regressors hence fixed effect is unbiased estimator. However, failure to reject the null hypothesis ($p \text{ value} > 0.05$) demonstrates no correlation with individual specific effects with their regressors hence preference was made to the random effect. The researcher was guided by integrity, honesty and objectivity in the process. The researcher avoided disclosing identities of respondents by concealing business identities (Social Research Association, 2021).

FINDINGS

Descriptive Analysis

Table 1. Descriptive Statistics

	Obs	Min	Max	Sum	Mean	Std. Dev	Skewness	Kurtosis
Process Inn.	588	0.0000	15.0875	1717.7744	2.9214	5.3230	1.2910	-0.2950
Financial performance	588	0.0032	17.2213	507.7783	0.8636	0.9122	12.4730	204.7200

Source: Survey Data (2025)

The outcome in Table 1, reveals that NWDT Saccos experienced financial performance in the period under review (2020-2023) with a mean of 0.8636. However, the high standard deviation (0.9122) demonstrates difference in financial performance among the NWDT Saccos as some were able to realize higher return on assets than others. The findings imply that all the NWDT Saccos achieved positive financial performance in varying measures.

Equally, Process innovation recorded a mean score of 2.9214 with a standard deviation of 5.3230. This demonstrates a big difference in the level of process innovation as some recorded zero revenue while others achieved high revenue to increase their financial performance. However, the wide gap between the mean and the standard deviation shows that some embraced minimal process innovation while others achieved major breakthroughs in their innovation and hence improved financial performance. Process innovation achieved a minimum of zero (0) which implies that not all NWDT Saccos embraced Process Innovation for the period 2020-2023.

Jillo (2023) research on process innovation in Laikipia County's Saccos observed how 58% of respondents strongly disagreed while 28% disagreed that Saccos had put in place effective systems to facilitate less downtime. Equally, the author recognized how upto 67% of respondents strongly disagreed while 19% disagreed that Saccos had made investments in good working computer systems to enhance processes. The current research found inconsistency in process innovation where certain NWDT Saccos recorded zero process innovation while others recorded improved process innovation. This agrees with Jillo (2023) on how inadequate effort is made by the NWDT Saccos to improve process innovation demonstrated by low revenue and hence influencing financial performance. Chepkori *et al.* (2022) reported how Saccos in Kericho County were experiencing network hitches which reduced financial performance. This agrees with the present research where there is low process innovation which reduces financial performance.

The contribution of process innovation is observed by CCSC (2021) on how the non-withdrawable deposit taking saccos may diversify using emerging technologies to improve transaction thereby enhance financial performance. The author recognizes the importance of training staff to equip them with digital skills. NWDT Saccos may need to empower staff with technological skills to scale up creativity and innovation for effective and efficient process innovation that will improve financial performance. Flores-Chia and Mougenot (2022) reported how Peru Saccos adopted process innovation which helped in smoothening processes and transactions thereby attracting more customers for high ROA. NWDT Sacco management needs to recognize essential role of process innovation in customer attraction for increased financial performance.

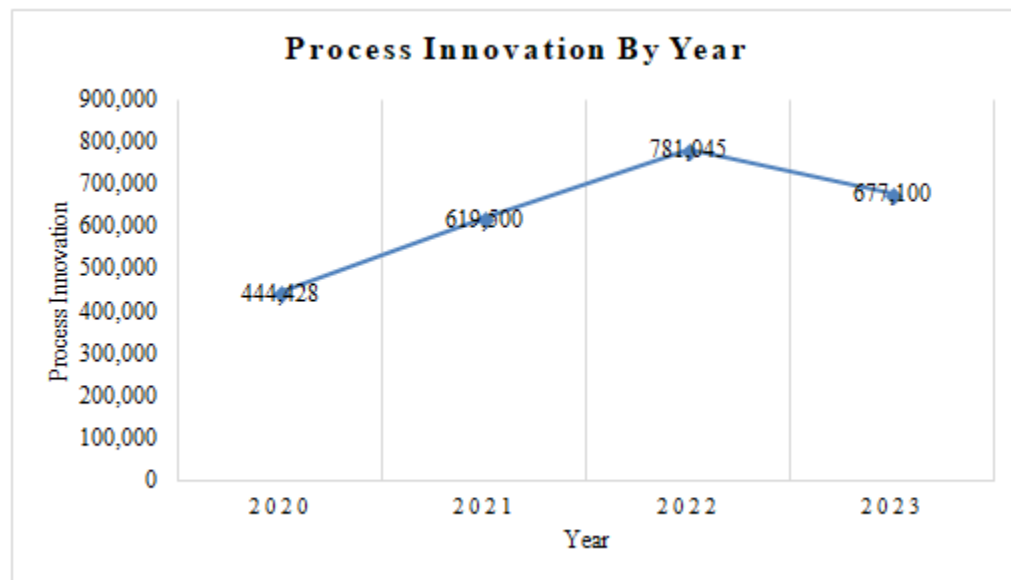
Transactional cost theory proposed by Hicks and Niehans (1983) argues that firms may reduce

the costs using technological innovation aimed at improving efficiency in process (Odongo, 2022). The Sacco sector's process innovation such as mobile banking, digital processes and internet banking will guarantee low costs and improve financial performance.

Process Innovation Trend Analysis

Process innovation entails the enhancement or development of new delivery methods, creation of new techniques or software aimed at reducing cost of production, improving quality and enhancing efficiency for financial performance (Mugunyi, 2022). The researcher analysed process innovation trend for 2020-2023 for 147 NWDT Saccos in Kenya as revealed in Figure 1.

Figure 1. Process Innovation Trend (2020-2023)



Source: Survey Data (2025)

The results in Figure 1, indicates slow and steady growth in process innovation among the NWDT Saccos over the years. In 2020, NWDT Saccos recorded 444428 revenue which rose to 619500 in 2021, further increasing to 781045. This indicates consistent effort by the cooperative societies to adopt process innovation for improved financial performance. However, there was a slight decrease in process innovation to 677100 in 2023. This means that there were some NWDT Saccos which registered low revenue due to reduced process innovation. Generally, the NWDT Saccos had stable process innovation in the period under study. The results showed that Saccos are adopting process innovation by incorporating branchless transactions, ATM services and mobile banking to enhance convenience and accessibility of financial services to the

members (Laina, 2018). The sector is also adopting a 24-hour customer service, incorporating text message services and artificial intelligence to enhance automation while reducing costs for improved financial performance (Jillo, 2023).

Hausman Specification Test

Hausman test makes comparisons between two different estimators to establish their consistency when the model is specified correctly (Guastdisegni *et al.*, 2025). Hausman test is important in detecting the efficiency between the fixed effect and random effect models (Ser, 2025) and therefore may be used to detect misspecification in the model. The technique was chosen due to its power and easy implementation in determining efficient estimator (Hausman & Taylor, 1980). Table 2, presents the results of Hausman test.

Table 2. Hausman Specification Test

Chisq	df	p-value
3.8899	6	0.6916

Source: Survey Data (2025)

From the outcome in Table 2, the Chi-square was 3.8899, df of 6 and a p value of 0.6916. When the null hypothesis is rejected ($p < 0.05$), it demonstrates that the fixed effect is the most appropriate model as it illustrates that the individual specific effects are related with the regressors hence the selection of fixed effect due to its unbiased nature in estimating the variables. However, where the p value is above 0.05, it implies there is no correlation between individual specific effects and their regressors hence the efficient model will be random effect (Abdullah, Sahudin & Bahrudin, 2022). To choose between fixed and random effects, the p values in the Hausman test was 0.5013 and therefore random effect was selected as the most efficient in analysing process innovation and financial performance of NWDT Saccos in Kenya.

Correlation Analysis

Table. 3. Correlation Analysis

		Process Innovation	ROA
Process Innovation	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	588	
ROA	Pearson Correlation	0.008419	1
	Sig. (2-tailed)	0.841	0.045
	N	588	588

Source: Survey Data (2025)

It was established that Process innovation, in Table 3, had a moderate and positive insignificant connection ($r=0.008419$, $\text{sig.} = 0.841$) to ROA. The outcome depicts a positive relationship where process innovation enhances ROA of NWDT Saccos in Kenya. The study agrees with Kubasu *et al.* (2023) who used automated loan processing and mobile banking and revealed a positive relationship by lowering cost of transaction. The outcome confines to Mutuku and Kariuki (2021) where workflow automation and digitization of commercial banks were analysed with recognition of a positive relationship with financial sustainability. Additionally, there is consensus in the present study with Omesa (2015) who targeted Kenya Power and Lighting Company where automation of customer service processes and billing were employed with observation of a positive correlation with financial performance.

Panel Regression

Random effect assumes that unobserved factors behave randomly and tend to vary across subjects. The model analyses the differences within firms over the period as well as between subjects. It also treats unobserved features of firms as random and not fixed ones (Mustafa, 2024) as in Table 4

The model's formula;

Table 4: Process Innovation Panel Regression

Variable	Coefficients	Std. Error	t-value	Pr(> t)
Intercept	0.4909381	0.0247160	19.8631	2.2e-16 ***
Process Innovation	0.0011159	0.0019725	0.5657	0.5715921
R-Square	0.058231			
Adj. R-Squared	0.048506			
Chi Sq	35.9244			
P_value	2.8515e-06			

Source: Survey Data (2025)

The revelation in Table 4, shows that when all things are constant, financial performance will increase at 0.490. Equally, the outcome demonstrated how Process innovation exhibited positive effect on return on assets as revealed in panel regression coefficient of 0.0011. This indicates that the more NWDT Saccos use more of process innovation, they stand to benefit by increasing financial performance. The outcome demonstrates that process innovation bears no significant effect on financial performance and therefore accepting the null hypothesis as the p value was above 0.05. This implies that NWDT Saccos are inadequately practicing process innovation to enhance financial performance.

Studies focused on Deposit Taking Saccos have however recorded different results which do not agree with the present findings; Cakadende and Mulyungi (2020) adopted a case study approach of Umwalimu Sacco which included all the 30 branches and reported a positive and significant effect on Sacco performance. Additionally, there is a mismatch with the findings of Yego *et al.* (2021) who focused on manufacturing enterprises in Nairobi and revealed how process innovation positively and significantly affected firm performance. Gaichuru *et al.* (2022) also targeted Meru DT Saccos and recognized the significant positive contribution of process innovation on financial performance. The revelation agrees with Jillo *et al.* (2023) whose study recognized how process innovation positively improved financial performance of cooperatives in Laikipia County.

The random effect model that was adopted was therefore;

$$Y_{it}=0.49093++0.0011159\text{ProcessIn}_{it2} +\gamma t\text{Year}+U_{it}+\epsilon_{it}$$

Summary of the Findings & Conclusions

The study used secondary panel data to analyse the relationship between process innovation and financial performance of Non-Withdrawable Deposit Taking Saccos in Kenya. Random effect panel regression was deemed appropriate in predicting the relationship between process innovation and financial performance of NWDT Saccos in Kenya.

Descriptive analysis showed how process innovation was inconsistent among the NWDT Saccos as some firms adopted more innovation while others had low innovation in certain periods. This showed fluctuating revenue from process innovation thereby affecting financial performance. Trend analysis further demonstrated a fluctuating trend having recorded low revenue in 2020. However, in 2021, there was increase in revenue for process innovation which declined again in 2022. The outcome showed that process innovation rose evidenced in 2023 though not all Non-Withdrawable Deposit Taking Saccos registered high revenue for improved financial performance. Correlation showed a positive insignificant relationship to financial performance which was similar to the findings where random effect regression was used, demonstrating a positive insignificant effect to financial performance.

The study concluded that process innovation positively increased financial performance of NWDT saccos in Kenya. With increased process innovation, NWDT Saccos will be able to minimize costs associated with production and operation thereby raise more revenue for enhanced financial performance. The researcher makes conclusion that there is minimal effort towards process innovation by the NWDT Saccos. This will reduce opportunities for improving financial performance.

Recommendations

Process innovation demonstrated positive insignificant effect on financial performance. There is need for the management to adopt more process innovation using emerging technologies tailored according to the needs of the NWDT Saccos. Saccos may also engage in partnership with technology companies to implement cost effective and efficient innovative processes. This will minimize transaction and administrative costs, enhance convenience and access to the customers, thus allow more transactions and improve revenue for enhanced financial performance.

Suggestion for Further Research

The study covered some years during Covid 19 where NWDT Saccos were severely affected due to restrictions. Other studies may focus the post-covid period to identify any unique patterns in the findings. Further, process innovation was the main independent variable. Future investigation may focus on other innovation dimensions to explore dynamics and effective innovations that may be used to enhance financial performance. The study was based on secondary panel data. Researchers may consider including primary data that combines open questions to obtain feedback on possible challenges to process innovation. This will enhance discussion and generate solutions to improve financial performance. The study covered all NWDT Saccos in Kenya which incorporated both rural and urban Saccos. Further investigation may consider adopting either rural or urban Saccos to establish any difference in process innovation.

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