

Product Innovation and Profitability of Non- Withdrawable Deposit Taking Savings and Credit Co-Operative Societies in Kenya

David Kamau Mwangi¹ and Supervisor : Caroline Kimutai (PhD)²

¹PhD Student, Department of Accounting and Finance, School of Business, Economics and Tourism, Kenyatta University

DOI: 10.46609/IJSSER.2026.v11i08.010 URL: <https://doi.org/10.46609/IJSSER.2026.v11i08.010>

Received: 14 July 2026 / Accepted: 15 August 2026 / Published: 20 August 2026

ABSTRACT

Research Objective: *The study investigated the adoption of product innovation and profitability of Non-Withdrawable Deposit Taking Saccos in Kenya.*

Research Methodology: *The research was anchored on diffusion of innovation theory guided by positivist philosophy. Explanatory research design was employed covering a population of all 185 Non-Withdrawable Deposit Taking Saccos as reported by SASRA. Descriptive statistic was used to discover hidden data patterns while Pearson correlation aided in the investigation of variable relationships. Panel regression explained cause-effect between product innovation and profitability. SPSS version 23 aided the analysis. Anonymity and confidentiality were adhered to in the research.*

Results and Findings: *The findings showed that product innovation enhanced profitability significantly hence demonstrating the crucial role of product innovation of NWDT Saccos. The outcome indicated how majority of the Saccos had made efforts to innovate new products in the period under review. The results showed a positive relationship and therefore implying that the more Saccos increase product innovation, the more profitability will be enhanced.*

Conclusion & Recommendation: *The study made conclusion that Saccos have put in place adequate measures on product innovation which is important in the enhancement of profitability. The research recommended the need for Sacco leaders to boost product innovation by scanning markets and customer needs and creating matching products for improved profitability.*

Key Words: Product Innovation, Profitability, Financial Innovation, Non-Withdrawable Deposit Taking Saccos

Background to the Study

Non-Withdrawable Deposit Taking (NWDT) Saccos are member owned institutions with sole objective of providing socio-economic benefits to their members. Cooperative societies are voluntary associations owned by the members who pool their resources together to support themselves while sharing the gains and losses (Sathyammothi *et al.*, 2016). In the last 40 years, the movement has been recognized in creating an economy of scales, providing access to markets, enhancing market efficiency, risk management, reducing transaction costs as well as promoting innovations (Karakas, 2019). The NWDT Saccos are therefore significant in contributing to economic development giving more than 63% of Kenyans benefits in form of financial access, employment and business expansion (Oluoch & Muchemi, 2024).

Profitability of an organization signifies its health and the likelihood of surviving in the market (Njeri, 2013) hence, it is assumed that excellent profitability performance demonstrates managerial team's skill in utilizing organization's resources to achieve profitability objective (Mutuku, 2014). Profitability is crucial for business survival and success and enabling financial soundness and sustainability. Chirchir (2022) notes that the main objective of any business is to reap returns through innovative investment ideas, expanding operations, integrating assets and human capital for continued profitability.

Globally, the cooperative movement has a membership approximating 1 billion. In 2014, the sector was reported to have reached 57,000 Saccos spread in 105 countries within six continents. Additionally, the sector has achieved savings totaling to USD 1.5 trillion and USD 1.8 trillion asset base with a loan portfolio of USD 1.2 trillion (Barus, 2017). An observation on the United States of America's (USA) cooperatives' sector recognizes their achievement in playing significant role in the USA's economy. However, the sector is experiencing challenges in efficiency prompting considerable attention due to a decline in the number of agricultural cooperatives from 3338 to 1953 owing to reduced profitability (Singh *et al.*, 2019).

The cooperative movement in India is comprised of urban cooperative banks with structures similar to the traditional cooperative societies. These cooperatives have continued to provide financial solutions to customers within the specific area, enhancing access to soft loans as well as savings. However, urban cooperatives are facing difficulties in meeting customer needs as a result of social and economic challenges. These cooperatives have limited financial resources and advanced technology which creates imbalance in their competition with main stream banks (Yogitha *et al.*, 2023).

The Sacco sector in Africa constitutes 16 million members translating to 8% global membership where 65% of loans and 62% of savings from the members across the continent are ranked in

position three after Asia and North America (Barus *et al.*, 2017). An analysis of the Rwandan economic transformation reveals how the cooperative sector aids the government's financial inclusion agenda by enhancing affordability, access to financial services and improved living standard. However, profitability of these Saccos has deteriorated owing to external and internal challenges (Eric & Claude, 2020). In Tanzania, the sector is supporting socio-economic development of its members evidenced in high income growth, improved housing, education and food consumption. However, these cooperatives are facing obstacles in poor management, inadequate working capital, high loan delinquency rates and misappropriation which hinder profitability. Additionally, some of these cooperatives have collapsed before the members could reap the benefits (Juma & Maseko, 2022).

The Kenyan cooperative sector contributes 45% of GDP through effective management and mobilization of assets totaling to Kshs 210 billion. However, the cooperative movement is experiencing intense competition from investment groups, commercial banks, microfinance institutions and shylocks (Keruoya & Waitthaka, 2023). The sector is struggling to meet member financial needs due to inability to meet total loans requested by the members. Additionally, many of the Sacco members have lost their trust in their Saccos as they fail to be given loans after long-period of savings (Odhiambo, 2019). The sector is faced by loan backlog, inadequate capital, management deficiency (Nymoo *et al.*, 2020), reduced profitability and poor efficiency (Ndirangu & Muturi, 2019). Additionally, the cooperative sector continues to experience reduced total assets from 14.8% to 12.4% (2016-2017), decline in total deposits from 14.8% (2016) to 12% in year 2017 as well as decrease in gross loans from 15.3% in 2016 to 11.3% in 2017 (Sigei, 2022).

Problem Statement

The Sacco sub-sector plays essential role in socio- economic empowerment of its members (Sacco Supervision Annual Report, 2022). However, Non-Withdrawable Deposit Taking Saccos experience declining profitability owing to reduced total income from 18.93% to 12.69%. There was reduction in retained earnings/core capital ratios from 73.28% to 62.49% (2020-2023) and decreased dividend and interest on deposit /Total income ratio to the members from 59.06% to 56.03% in the same period (Sacco Supervision Annual Report, 2023).

Previous studies on profitability by Gharaibeh and Khaled (2020) focused on determinants of profitability of Jordanian services' firms where ROA and ROE were used as profitability measurements. This study had a different geographical location and population that may have had effect on the findings. Kinyua (2021) targeted Deposit Taking Saccos in a different geographical location. These studies did not consider product innovation as a predictor of profitability within the Non-Withdrawable Deposit Taking Saccos. Similarly, geographical

location and target population were different which may have had effect on the findings. The current study investigated product innovation adoption on profitability of NWDT Saccos in Kenya.

LITERATURE REVIEW

Theoretical Review

Diffusion of Innovation Theory

Rogers (2003) proposed the theory to explain how new ideas are communicated in different channels and their effective adoption among potential users (Scot & McGuire, 2017). The theory is conceptualized into; relative advantage where potential adopters perceive the advantage of the new idea, service or product. The compatibility element of the theory demonstrates theory incorporation in the system or with existing values without any challenges hence enhancing adoption rate. Complexity of innovation measures the difficulty in the application or use of the new product or service. This means that when the new product is difficult to use, members may not adopt the product which reduces chances of generating value to the organization hence reduced profitability (Syahadiyanti & Subriadi, 2018).

Scot and McGuire (2017) add that the communication channels used in passing the innovation may determine how it is adopted where mass media such as television, radio and newspaper may produce different results as compared to face-to-face channels such as workshops, seminars, classes, and conferences. The authors also point out that time taken in acquiring knowledge and awareness may determine innovation adoption (Dearing & Cox, 2018).

Innovation of new products are made to meet member needs hence their adoption by the members. However, adoption of new products depends on relevancy to the needs of the customer as well as how effective communication and awareness is made (Ali, 2016). The theory was used to explain adoption of product innovation, how it is product benefits are communicated and whether innovation meets customer needs for enhanced adoption to improve profitability.

Neo-Institutional Theory

Meyer & Rowan (1977) proposed neo-institutional theory in their discussion paper to show what organizations were doing to remain legitimate. Di Maggio and Powell (1983) would later contend that organizations do not just adopt practices to enhance their effectiveness and efficiency but because they want to remain legitimate (Alvesson & Spicer, 2019). The theory is borrowed from the word “institution” which means standardization and conventional behavior that exists within organizations thereby giving meaning to order. In the 1980s, the theory shifted

to more empirical support where processes of institutionalization were explored such as professionalism networks. With the publication of the orange book by DiMaggio & Powell (1991), the theory explained how organizations-maintained legitimacy. Critics of neo-institutional theory argue that there is ambiguity in the theory as institutions are everything hence can be used for many purposes (Alvesson & Spicer, 2019).

DiMaggio & Powell (1983) highlight isomorphic pressures that characterize the behavior of organizations, mimetic, coercive and normative isomorphism. Organizations that experience coercive isomorphism are faced with powerful external organizations that force them to adapt to the industry practice. This means that they are adapting to survive based on external pressure. For the mimetic isomorphism, uncertain organizations model their peers to feel rational while normative ones are based on their professionalism such as education and network. This model helps in explaining how organizations do not only focus on efficiency but based on isomorphism (Guth, 2016). The theory was used to analyze organizations recognize pressure in the external market such as customer demands and develop new offerings to meet emerging demands and remain relevant and competitive.

Empirical Review

Product Innovation and Profitability

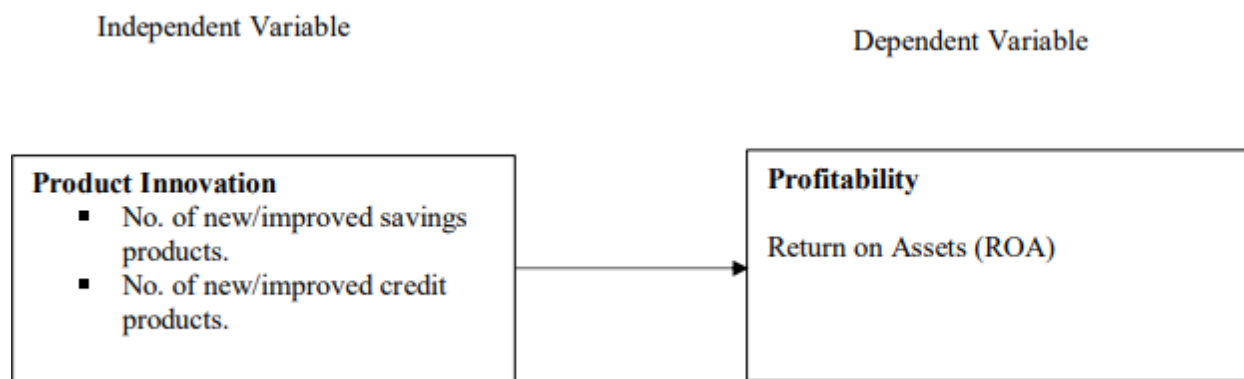
An investigation by Nandal *et al.* (2021) targeted selected Indian organizations using quota and purposive sampling to identify participants. Questionnaire was distributed to 423 respondents consisting of top and middle management. Structural equation modelling enabled the testing of hypothesis. The findings indicated that product innovation had influence on ROA of automobile industry. The present research used random sampling and revealed a similar outcome that product innovation enhanced return on assets.

Macharia and Tirimba (2018) studied product factors' effect on profitability of Kenya's DT Saccos. Using a descriptive design, they examined links between dependent and independent variables. The research focused on 30 licensed DT Saccos in Nairobi from 2013 to 2017. Employing purposive sampling, the authors selected three respondents from each Sacco, yielding a total sample size of 90. Data collection involved semi-structured questionnaires comprising both open- and closed-ended items. The findings indicated that DT Sacco growth correlated with asset growth in both rural and urban areas. Study found DT Saccos' wider branch networks strongly boosted financial performance. While Macharia and Tirimba utilized data from 30 DT Saccos referenced in the SASRA 2013–2017 report, the present study examined a different population NWDT Saccos and observed increased returns on assets with enhanced product innovation.

Simiyu and Olweny (2018) investigated Kajiado County's cooperative societies' financial innovation using stratified random sampling with a target population of 40 to identify 36 respondents. Product innovation was measured in; introduction of new loan products, mobile banking and electronic banking. Findings showed product innovation significantly raised ROA. Earlier study focused on two Kajiado Saccos with 36 respondents, while current research expanded sample beyond 100.

Bashir (2017) studied how financial products affect SME ROA in Kenya. From 30,253 Nairobi SMEs, a stratified sample of 400 owners was surveyed using descriptive design and closed-ended questionnaires. Analysis combined descriptive and inferential statistics, showing savings, micro-credit, and insurance products, all boosted profitability. While Bashir's analysis centered on Nairobi-based SMEs and highlighted the beneficial effect of savings products on ROA, the present study examined NWDTs and similarly identified a positive relationship between product innovation and profitability.

Conceptual Framework



RESEARCH METHODOLOGY

The study was guided by the positivist's research philosophy based on its objectivity of the reality. The paradigm was preferred as it allowed the researcher to use randomized approaches in sample selection and structured survey in data collection which supported generalization of the findings (Mauther, 2020). Explanatory research design was chosen to support the investigation of relationship between product innovation adoption and profitability (Akhtar, 2016) and the fact that it offered in-depth analysis of cause-and-effect studies hence paying attention to issues of how and why of phenomena (Sakyi *et al.*, 2020).

A census of all 185 NWDT Saccos in Kenya constituted the target population (Sacco Society Regulatory Authority, 2022). The unit of analysis was finance managers of all 185 NWDT

Saccos in Kenya. The population was chosen based on declining membership and high loan provisioning which was above 5% thereby threatening profitability of NWDT Saccos.

The study employed panel data which requires consistency in measurement in all the time periods under observation as well as sourcing of controlled and quantifiable data processes (Zin & Wolbring, 2023). The researcher used data collection schedule which had similar variables that were measured in a four-year period (2020-2023). The NWDT Saccos' data was pooled from financial statements with computation done using financial ratios (Uddin *et al.*, 2022). The researcher sought consent and authorization from Kenyatta University to collect secondary data. Permission from National Commission of Science, Technology and Innovation (NACOSTI) was obtained to collect data from the public.

Prior to data analysis, data was cleaned, edited and sorted to ensure accuracy and completeness. Descriptive statistics such as mean and standard deviation were used to describe the data and detect any unique pattern. Pearson product moment correlation was used to study the relationship between product innovation and return on assets (Schober, Boer, & Schwarte, 2018). Panel regression model was used to analyse the relationship between product innovation and profitability (Kim *et al.*, 2020). The model of Al-Khouri (2012) was adopted and modified to suit the current study;

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \epsilon_{it} \dots 3.1$$

Where Y_{it} is the return on assets of Non-Withdrawable Deposit Taking Saccos i at time t . i =observation (Non-Withdrawable Deposit Taking Saccos) $i=1-185$, t =time ($t=2020-2023$) X_{it} =an independent variable β_i =coefficient, β_0 =constant ϵ_{it} =error term

After expansion, equation 3.1 became 3.2 which was used in analysis

$$\text{Profit} = \beta_0 + \beta_1 \text{Prodit} + \epsilon_{it} \dots 3.2$$

Where;

Prof	=	Profitability of NWDT i at time t
Prodit	=	Product innovations of NWDT i at time t
β_0	=	Constant. β_1 , β_2 , β_3 , are regression coefficients

The researcher was guided by integrity, honesty, objectivity in the process and respected the right of participants to participate voluntarily. The researcher avoided disclosing identities of respondents by concealing business identities (Social Research Association, 2021). The study

acknowledged all authors whose materials were used in the research through citations and references. The findings from the study was shared with all stakeholders to support the building of knowledge within the study concepts (Parveen & Showkat, 2017).

RESEARCH FINDINGS

Response Rate

Response rate is the proportion of participants in research who give their feedback compared to all who are contacted. Response rate is essential as it may determine the quality of research (Sataloff & Voutela, 2021). The researcher sampled 185 NWDT Saccos in Kenya. However, 147 had all complete data needed for analysis hence translating to 588 observations. Table 1. illustrates the response rate.

Table 1. Response Rate

Response	Frequency	Observation	Percentage (%)
Responded	147	588	79
Did not respond	38	152	21
Total	185	740	100

Source: Survey Data (2025)

From the findings in Table 1, there were 588 observations from 147 NWDT Saccos which were observed using four-year period (2020-2023) while 38 NWDT Saccos did not have all the data needed for analysis. This resulted in a 79% response rate which was considered adequate for analysis. Kothari (2011) suggests 60% response rate as acceptable for analysis while Taherdoost and Madanchlan (2025) note that the mean response rate for business and management research is 55.18%. The present investigation recorded 79% response rate which was above the average response rate within business research. It also met the threshold of being considered acceptable and hence was used in analysis.

Descriptive Analysis

This section presented descriptive results for product innovation. It also demonstrated descriptive findings for the dependent variable profitability which was measured using return on assets. Descriptive statistics is an essential part in business and management research as it offers description of data characteristics. Descriptive research summarizes data to communicate large information in a simple manner thereby demonstrates features of a given set of data (Mishra, 2019). The study used mean, median, standard deviation, minimum, maximum, kurtosis,

skewness and sum as they are essential in describing data (Kaliyadan & Kulkarni, 2019). Table 2 is an illustration of descriptive statistics.

Table 2. Descriptive Statistics

					Std.			
	Obs	Min	Max	Sum	Mean	Dev	Skewness	Kurtosis
Product Inn.	588	0.0000	15.4139	3442.5098	5.8546	6.2803	0.1580	-1.9410
Profitability	588	0.0032	17.2213	507.7783	0.8636	0.9122	12.4730	204.7200

Source: Survey Data (2025)

The outcome in Table 2 reveals that NWDT Saccos experienced profitability in the period under review (2020-2023) with a mean of 0.8636. However, the high standard deviation (0.9122) demonstrates difference in the profitability among the NWDT Saccos as some were able to realize higher profit than others. The findings imply that all the NWDT Saccos achieved positive profitability in varying measures.

Product innovation had a mean score of 5.8546 with a standard deviation of 6.2803. This implies that there was a big difference in the level of product innovation across the NWDT Saccos where some focused-on product innovation to enhance their profitability while some did not manage to innovate new products. The outcome also shows minimum Product innovation as zero (0) which means that there were some NWDT Saccos which did not attain revenue for product innovation in the period under review.

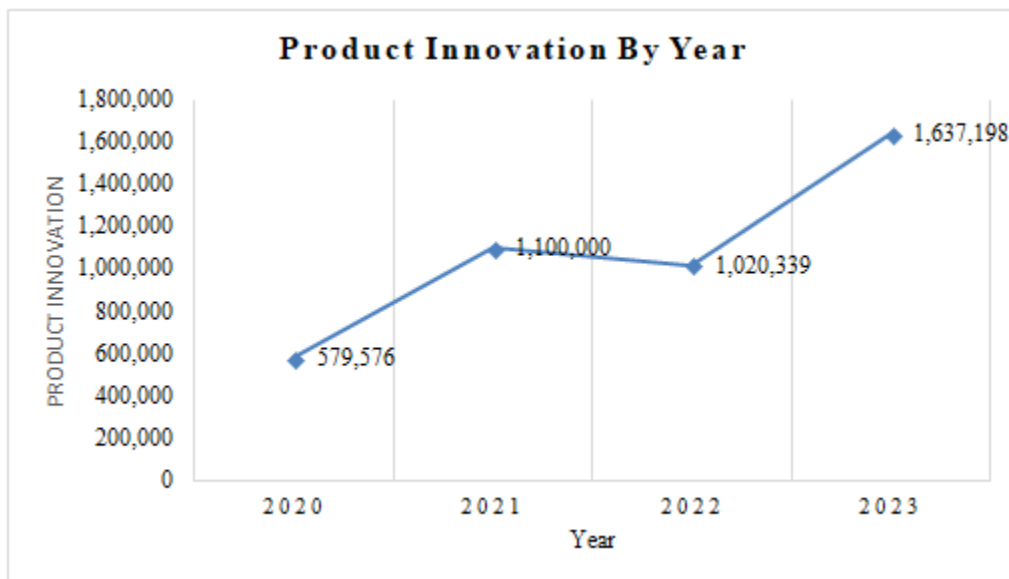
Mugunyu (2022) notes how Saccos, which innovate new products such as deposit account may enhance deposit mobilization. The author adds that the improvement of product quality and the introduction of loan products may improve customer satisfaction and revenue generation for more profitable business. This means that NWDT Saccos adopting product innovation will increase their deposits, satisfy their customers and raise their revenue to improve profitability. Maulana (2016) recognizes the importance of product innovation for business growth by being more proactive to emerging customer demands. This implies that non withdrawable deposit taking saccos will innovate new products which align with changing customer requirements and therefore enhance more value to the organization through more adoption by customers. The study agrees with Mwihi (2017) who observed how product innovation played critical role in influencing performance of hospitality industry enterprises in Nairobi City County.

Rogers (2003) diffusion of innovation theory suggests the adoption of innovative products that offer benefits to the users. The theory adds that new products should be relevant to the needs of the consumers. NWDT Sacco management will need to develop products with value as well as align with demands to attract purchase decisions thereby improve revenue and profitability. The neo-institutional theory proposed by Meyer and Rowan (1977) note how organizations are forced to adapt due to external forces. Non withdrawable deposit taking Sacco management needs to be proactive in response to external forces such as changing customer preference to develop innovative products for more profitability.

Product Innovation Trend Analysis

Product innovation is the development of new products and services to provide value to the customers while advancing profitability of NWDT Saccos (Juma, 2022). The study analysed overtime movement of product innovation in 2020-2023 as in Figure 1.

Figure 4.2. Product Innovation Trend (2020-2023)



Source: Survey Data (2025)

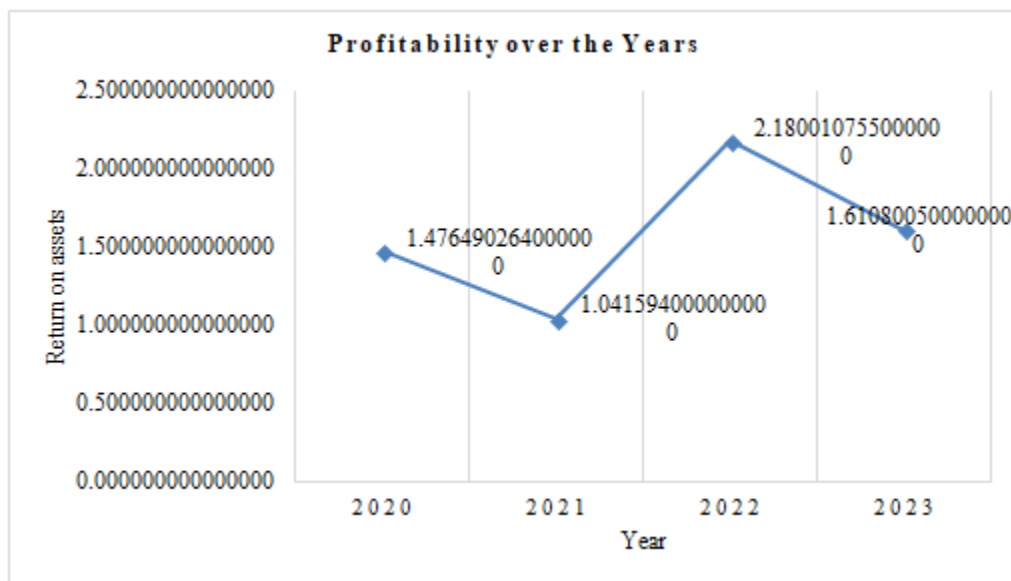
The outcome depicted in Figure 1 illustrates a positive movement of product innovation evidenced in 2020 to 2023 where NWDT Saccos recorded high revenue starting at Kshs 579576 and improving to 1637,198 in 2023. Overall product innovation exhibited stability with high peak in 2021 and 2023 which implies that NWDT Saccos are adopting product innovation gradually to improve profitability.

Wallace and Kilika (2021) observe the intense competition where new members seeking financial services from the Sacco sector declined from 13.5% in 2009 to 9.1% in 2013. However, commercial banks continue to increase recruitment of new customers growing from 13.5% to 29.2% (Kiragu, 2015). The implementation of product innovation will enhance the number of new members making inquiries on Sacco products and services, thus improve profitability. The study findings align with Gichuki (2021) who notes how NWDT Saccos are adopting product innovation by expanding new branches, opening of common bonds to tap into new membership, diversifying new products and introducing new banking channels to improve profitability.

Trend Analysis for Profitability

Profitability is an essential metric which demonstrates the ability of an institution to generate more financial gain in a defined period. Profitability examines revenue generated in relation to expenditure which shows business sustainability (Kamau, 2023). The study analysed the movement of profitability of NWDT Saccos for the period 2020-2023 where return on assets was used to measure profitability as illustrated in Figure 2.

Figure 2. Profitability Trend (2020-2023)



Source: Survey Data (2025)

The results in Figure 2 show the movement of NWDT Sacco's profitability between 2020-2023. In the financial year 2020-2021, NWDT Saccos recorded a drop in profitability from 1.476 to 1.041 perhaps due to the Covid 19 effects which disrupted businesses worldwide. In 2022, there was a sharp increase in profitability from 1.041 to 2.180 due to Covid 19 recovery measures

adopted by NWDT Saccos during the period which aided in improving profitability. However, the growth in profitability was not stable as it fluctuated downward in 2023 from 2.180 to 1.610. Generally, profitability demonstrates instability in the period under review. Gakenia and Warui (2021) note how the Sacco sector has experienced stagnating profitability where ROA was 22.90% (2016) in comparison to 2017 where ROA grew by 9.80%. This aligns with the present research which does not show stable growth in profitability among NWDT Saccos.

Correlation Analysis

Correlation analysis aids in determining the relationship between the variables under investigation. Pearson correlation coefficient was used with values ranging between -1 and 1 where values close to 0 showed minimal relationship while coefficient values closer to 1 revealed strong relationship. The negative sign in regression coefficient is an indication of negative relationship while the positive demonstrates positive connection between the variables (Yang *et al.*, 2021). The researcher used Karl Pearson correlation to analyse existing relationship between financial innovation and profitability of NWDT Saccos in Kenya as presented in Table 3.

Table. 3. Correlation Analysis

		Product Innovation	ROA
Product Innovation	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	588	
ROA	Pearson Correlation	0.1085664	1
	Sig. (2-tailed)	0.008419	0.045
	N	588	588

Source: Survey Data (2025)

The study showed that Product innovation had a positive and weak significant relationship with ROA ($r=0.1085$, $\text{sig.}=0.008$) which implied that product innovation is important in enhancing ROA for NWDT Saccos in Kenya. The outcome agrees with Ndiema *et al.* (2024) who focused on DT Saccos in Nairobi City County and recognized how product innovation had a positive relationship with profitability. Equally, the study aligns with Ngure *et al.* (2019) who appreciated the positive correlation between product innovation and profitability in Kirinyaga County. The outcome complies with Aduda (2023) investigation where product innovation practiced by Absa Bank showed positive correlation with profitability and sustainability. The study matches Dankwah *et al.* (2023) analysis where innovation orientation and performance were observed with results of positive relationship between the variables.

Panel Regression Analysis

Panel regression bears observations of diverse events which are generated from different periods for similar firms. Data was converted into panel data frame prior to analysis. All data was subjected to log transformation to normalize and standardize the data. The panel data dimension was checked, and it was found to bear balanced panel with a sample of 147 totaling to 588 observations. The researcher used fixed and random effects panel regression (Boz, Tas & Onder, 2020). However, Hausman test revealed the effectiveness of random effect model in the analysis hence the model used to analyse the effect of product innovation on profitability was random effect as in Table 4.

Table 4. Panel Regression

Variable	Coefficients	Std. Error	t-value	Pr(> t)
Intercept	0.4909381	0.0247160	19.8631	2.2e-16 ***
Product Innovation	0.0030782	0.0015838	1.9436	0.0519471
factor (Year)2021	0.0314978	0.0270388	1.1649	0.2440539
factor(Year)2022	0.0822049	0.0247129	3.3264	0.0008798 * * *
factor(Year)2023	0.1356455	0.0251432	5.3949	0.6.855e-08 * * *
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 4.9 shows that when all things are constant, profitability will increase at 0.490. However, an addition of product innovation will lead to a positive effect (0.0030782) to ROA. This means that product innovation plays a crucial role in positively enhancing profitability of NWDT Saccos in Kenya. From the outcome, the R Square is an important determinant in the model's fitness by demonstrating the proportion of change of the dependent variable that is accounted for by the independent variable (Skiera, Reiner & Albers, 2021). The study revealed an R Square of 0.058 hence, implying that 5.8% of financial innovation enhances profitability of NWDT Saccos in Kenya. Ozili (2023) states that a low R Square is acceptable if the explanatory variables bear significant effect on the response variable. The results demonstrates that Product innovation is significant to profitability and hence validating the low R Square.

P value is an important statistic in demonstrating the quality of research. P value is used by researchers to make inferences about population parameters. Greenland *et al.* (2016) suggest that

p value may be interpreted as a compatibility measure between the null hypothesis and observed data which lies between 0 and 1. From the findings, product innovation recorded a p value of 0.0519 which implies the significant effect of product innovation in enhancing profitability.

The null hypothesis was that product innovation adoption does not have significant effect on profitability of NWDT Saccos. From the outcome, Product innovation reveals a positive and significant effect on profitability and hence, rejecting the null hypothesis. The results comply with Bashir (2017) who targeted SMEs in Nairobi and noted a positive effect on profitability. The outcome agrees with Nanda *et al.* (2021) who reported how product innovation positively affected return on assets of the automobile industry. Simiyu and Olwenyu (2018) research collected data through questionnaire and observed how product innovation had a positive and significant effect on return on assets which is aligned with the present investigation where product innovation demonstrated significant effect on profitability of NWDT Saccos in Kenya.

The results showed that time effect relative to the base year (2020) did not have significant difference in the year 2021 where profitability was not significantly different (Coef=0.031, p=0.244) from the year 2020. However, there was a significant difference in profitability in the subsequent year (2022) where coefficient of regression was 0.082, p value of 0.000, hence less than 0.05. This implies that Profitability was higher by 0.082 when other factors were held constant. This demonstrates enhanced product innovation in 2022 thereby improved profitability among NWDT Saccos in Kenya. The outcome showed a strong time effect evidenced in year 2023 where (coef=0.135, p value<0.00) and therefore improved profitability among the Saccos. The Hausman diagnostic test demonstrated p value above 0.05 which proved that random effect was the right model for determining the effect of financial innovation on ROA. The random effect model that was adopted was therefore;

$$Y_{it}=0.49093+0.0030782\text{ProductIn}_{it1} +\gamma t\text{Year}+U_{it}+\epsilon_{it}$$

Summary

The objective was to establish how product innovation adoption affected profitability of NWDT Saccos in Kenya. The study hypothesized that product innovation does not have significant effect on profitability of NWDT Saccos. Innovation of products was based on the revenue from new products innovated in the four-year period. Descriptive analysis demonstrated differences in product innovation among NWDT Saccos in Kenya. Trend analysis revealed how product innovation peaked in 2020 where some NWDT Saccos recorded high product innovation. However, it reduced in 2020 until 2022 when product innovation increased. In 2023, NWDT Saccos recorded the highest product innovation which enhanced revenue thereby increasing profitability. Correlation analysis proved a positive, weak and significant relationship with

profitability. It was established that product innovation had a positive and significant effect to profitability. This showed that product innovation had significant effect on profitability and therefore rejecting the null hypothesis that product innovation did not have significant effect on profitability of non-withdrawable deposit taking Saccos in Kenya.

Conclusion

Product innovation is essential in the enhancement of profitability of non-withdrawable deposit taking Saccos in Kenya. The study concluded that NWDT Saccos are using product innovation to enhance their revenue for improved profitability. This is demonstrated in the significant contribution in revenue generated which helps improve profitability. It is concluded that the more Saccos embrace product innovation, the more profitability will be enhanced. The researcher makes conclusion that Saccos have put in place effective measures to advance product innovation which will raise profitability. However, there is need for NWDT Saccos to differentiate their products for more revenue and profitability.

Contribution to Knowledge

The study makes contribution to the field of finance in multiple ways; in reinforcing discussion on profitability. The research widens understanding on critical areas of finance for the policy makers, practitioners as well as future researchers. The findings provide critical knowledge on the essential role of product innovation in enhancing profitability and therefore more effort should be put in place to facilitate product innovation.

Recommendations

The study found that product innovation was significant which demonstrate how important product innovation is in revenue generation for enhanced profitability. The NWDT Sacco management may need to scan the environment for potential opportunities as well as identify member needs to inform product innovation. This will enable the development of distinctive product innovations that align with market and customer needs and hence grow more revenue for enhanced profitability.

REFERENCE

- Abdulhafedh, A. (2017). How to detect and remove temporal autocorrelation in vehicular crash data. *Journal of Transportation Technologies*, 133-147.
- Akhtar, I. (2016). Research design. Research in Social Science: Interdisciplinary Perspectives.
- Akhtar, I. (2016). Research design. ResearchGate.

- Ali, A. A. (2016). Diffusion of innovations theory and adoption of e-government by medium business enterprises in Kenya: A case of Nairobi City County. Nairobi: University of Nairobi.
- Barus, J. J., Muturi, W., Kibati, P., & Koima, J. (2017). *Effect of capital adequacy on the financial performance of savings and credit societies in Kenya. American Journal of Finance, 1*(4), 1-12.
- Barus, J. J., Muturi, W., Kibati, P., & Koima, J. (2017). Effect of earnings ability on financial performance of savings and credit societies in Kenya. *International Journal of Finance and Accounting, 2*(5), 56-67.
- Boz, C., Taş, N., & Önder, E. (2020). The impacts of aging, income and urbanization on health expenditures: A panel regression analysis for OECD countries. *Turkish Journal of Public Health, 18*(1), 1-9.
- Chirchir, R. K. (2022). *Effect of Microfinance Credit on the Profitability of Saccos in Kenya* (Doctoral dissertation, University of Nairobi).
- Dearing, J. W., & Cox, J. G. (2018). Diffusion of innovations theory, principles and practice.
- Gakenia, K. M., & Warui, F. (2021). *Financial risk management and profitability of deposit taking savings and credit cooperative societies in Nyeri County, Kenya* (Doctoral dissertation, Kenyatta University).
- Gharaibeh, O. K., & Khaled, M. H. (2020). Determinants of profitability in Jordanian services companies. *Investment Management and Financial Innovations, 17*(1), 277-290.
- Gichuki, A. (2021). *The influence of ICT implementation and use on SACCO innovativeness, innovations and performance* (Doctoral dissertation, University of Nairobi).
- Greenland S., Senn S. J., Rothman K. J., Carlin J. B., Poole C., Goodman S. N., Altman D. G. (2016). Statistical tests, *P* values, confidence intervals, and power: A guide to misinterpretations. *European Journal of Epidemiology, 31*, 337–350.
- Guth, K. (2016). The SAGE encyclopedia of corporate reputation institutional theory. SAGE . Gyamera, E., Atuilik, W. A., Eklemet, I., Matey, A. H., Tetteh, L. A., & Apreku-Djan, P. K.
- Juma, M. A. (2022). *Strategic Product Innovation and Performance of Ushuru Sacco in Kenya* (Doctoral dissertation, University of Nairobi).

- Juma, M. L., & Maseko, F. E. (2022). Factors affecting financial performance of savings and credit co-operative societies during Covid 19 pandemic in Dodoma region. *European Journal of Accounting, Auditing and Financial Research*, 10(11), 104-124.
- Kabarak *Journal of Research & Innovations*, 13(3), 38-50.
- Kaliyadan, F., & Kulkarni, V. (2019). Types of variables, descriptive statistics, and sample size. *Indian dermatology online journal*, 10(1), 82-86.
- Kamau, H. M. (2023). *Effects of Financial Soundness on the Profitability of Deposit Taking Saccos in Kenya* (Doctoral dissertation, University of Nairobi).
- Karakas, C. (2019). Cooperatives: Characteristics, activities, status, challenges. European Parliament.
- Keruoya, E. W., & Waithaka, P. (2023). Strategic planning and performance of savings and credit cooperative societies in Nairobi City County, Kenya. *East African Scholars Journal of Economic, Business and Management*, 6(6).
- Kim, S. W., Jung, D., & Choung, Y.-J. (2020). Development of a multiple linear regression model for meteorological drought index estimation based on Landsat satellite imagery. *Water*, 12(3393). doi:10.3390/w12123393
- Kinyua, M. G. (2021). Financial risk management and profitability of deposit taking savings and credit cooperative societies in Nyeri County, Kenya. Nyeri: Kenyatta University.
- Kothari, C. (2011). *Research Methodology: Methods and Techniques*. Second Edition. India: New Age International publishers. Ministry of Health. (2016). Adolescent Sexual and Reproductive Health in Busia County: Factsheet. MOH.
- Mauther, N. S. (2020). Research philosophies and why they matter. ResearchGate.
- Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of cardiac anaesthesia*, 22(1), 67-72.
- Mugunyi, G. M. (2022). *Effect Of Financial Innovation on Financial Performance Of Deposit Taking Savings and Credit Cooperative Societies In Kenya* (Doctoral dissertation, KCA University).
- Mutuku, B. M. (2014). *The relationship between financial innovation and efficiency of SACCOs in Kenya* (Master's thesis, University of Nairobi).

- Nandal, N., Kataria, A., Nandal, N., & Jora, N. (2021). Impact of product innovations on the financial performance of the selected organizations: *A study in Indian context. Psychology and Education*, 58(1), 5152-5163.
- Ndiema, A. T., Bosire, J., Maina, K. E., & Roche, C. (2024). Product innovations and financial performance of deposit-taking savings and credit co-operatives societies in Nairobi City County, Kenya. *International Research Journal of Economics and Finance*, 6(2), 169–179.
- Odhiambo, S. O. (2019). Determinants of financial performance of savings and cooperative societies in Nakuru town, Kenya. *Journal of International Business Management*, 1(1), 45-53.
- Oluoch, L. A., & Muchemi, A. Risk Avoidance Strategy and Performance of Non-Withdrawable Deposit Taking Saccos in Nairobi City County, Kenya. *International Journal of Innovative Research and Advanced Studies (IJIRAS)* Volume 11 Issue 5, May 2024
- Ozili, P. K. (2023). The acceptable R-square in empirical modelling for social science research. In *Social research methodology and publishing results: A guide to non-native English speakers* (pp. 134-143). IGI Global Scientific Publishing.
- Parveen, H., & Showkat, N. (2017). Research ethics. ResearchGate.
- Samantaraya, A. (2024). Diagnostic Tests in Regression Analysis. *Basic Econometric Tools and Techniques in Data Analytics*, 50.
- Samwel Ngugi, D. L. M. Effect of Retention Practices on Interest Payment Among Non-Withdrawable Deposit Taking Saccos in Kenya: A Machine Learning Approach. *International Journal of Economics, Business and Management Research* Vol. 9, No.09; 2025
- SASRA. (2022). Advertisement notice Review of Capital Adequacy Requirements for the Sacco Societies' in Kenya (1). Sacco Societies Regulatory Authority (SASRA). <https://www.sasra.go.ke/download/advertisement-notice-review-of-capital-adequacy-requirements-for-the-sacco-societies-in-kenya-1/>
- Sataloff, R. T., & Vontela, S. (2021). Response rates in survey research. *Journal of Voice*, 35(5), 683-684.

- Sathyamoothi, C. R., Mbekomize, C. J., Radikoko, I., & Wally-Dima, L. (2016). An analysis of the financial performance of selected savings and credit co-operative societies in Botswana. *International Journal of Economic and Finance*, 8(8).
- Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation. ResearchGate.
- Scot, S., & McGuire, J. (2017). Using diffusion of innovations theory to promote universally designed college instruction. *International Journal of Teaching & Learning in Higher Education*, 29(1), 119-128.
- Singh, K., Misra, M., Kuwar, M., & Tiwari, V. (2019). A study on the determinants of financial performance of US Agricultural Cooperatives. *Journal of Business Economics and Management*, 20(4), 633-647.
- Skiera, B., Reiner, J., & Albers, S. (2021). Regression analysis. In *Handbook of market research* (pp. 299-327). Cham: Springer International Publishing.
- Social Research Association. (2021). Research ethics guidance. Social Research Association.
- Syahadiyanti, L., & Subriadi, A. P. (2018). Diffusion of innovations theory utilization online financial transaction: Literature review. *International Journal of Economics and Financial Issues*, 8(3), 219-226.
- Taherdoost, H., & Madanchian, M. (2025). The Impact of Survey Response Rates on Research Validity and Reliability. In *Design and Validation of Research Tools and Methodologies* (pp. 183-212). IGI Global.
- Uddin, M. N., Uddin Khan, M. S., & Hosen, M. (2022). Do Determinants Influence the Capital Structure Decision in Bangladesh? A Panel Data Analysis. *International Journal of Business & Society*, 23(2).
- Wallace, C. K., & Kilika, J. (2021). Strategic innovations and competitiveness of sacco in South Imenti Sub-county, Meru County. *International Academic Journal of Innovation, Leadership and Entrepreneurship*, 2 (2), 93, 117, 2.
- Yang, Q., Kang, Q., Huang, Q., Cui, Z., Bai, Y., & Wei, H. (2021, June). Linear correlation analysis of ammunition storage environment based on Pearson correlation analysis. In *Journal of physics: Conference series* (Vol. 1948, No. 1, p. 012064). IOP Publishing.
- Yogitha, G. P., Akhila, S., & Shabu, K. R. (2023). A study on the financial performance of urban cooperative banks in Ernakulam District. *ECB*, 12(6).

Zinn, S., & Wolbring, T. (2023, October). Recent Methodological Advances in Panel Data Collection, Analysis, and Application. In *Survey Research Methods* (Vol. 17, No. 3, pp. 219-222).