

ATM Systems Innovations and Performance of Deposit Taking SACCOs in Kenya

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Abstract

The Savings and Credit Cooperatives in Kenya have increasingly adopted ATM payment systems innovations. However, their performance has drawn interest due to decline in performance. Since 2015, SACCOs' returns fell below two percent of assets for the first time in 2021. The purpose of this study was to examine the influence of ATM systems innovations on performance of Deposit Taking SACCOs in Kenya. The study was guided by the Task Technology-Fit Theory. A cross-sectional survey design was adopted. The target population was 176 Deposit Taking SACCOs, from which a sample of 122 was selected. This resulted in 488 respondents comprising 1 business development manager, 1 finance/accounts/credit manager, 1 IT manager and 1 operations manager. A structured questionnaire was administered to collect data. Collected data was cleaned, coded and analyzed using SPSS version 26.0 using descriptive and inferential techniques. The descriptive results demonstrated varying perceptions by the respondents regarding the influence of ATM deposit, withdrawal and account enquiry services on the performance of DTSs. However, simple linear regression analysis demonstrated that ATM system innovations had a significant and positive influence on the performance of DTSs ($B = 0.468$, $\beta = 0.699$, $p < 0.001$). The findings support the TTF proposition that performance does not depend solely on the adoption of a technology but also on the extent to which the technology matches the demands of the task under hand. The study recommends that policymakers and regulators should promote shared ATM infrastructure and interoperability frameworks within the SACCO sector.

Keywords: *ATM Systems Innovations, Deposit Taking SACCOs, ATM Deposits, ATM Withdrawals, ATM Account Enquiries, Performance*

1.0 Introduction

Global economies revolve around trade, which in turn relies on financial exchanges in form of money or near money for decades. However, with continued innovations in the Information Communication Technology (ICT) sector, trade has evolved to the extent that new payment systems other than hard cash are acceptable media of exchange (Peneder, 2022). The conventional brick-and-mortar financial institution according to Pei et al. (2021) has evolved to the click-and-mortar financial institution. This is evidenced by customers' ability to access financial services and make transaction payments using internet connections on their mobile phones or computers

without having to visit a physical bank. In the recent past, there has been hastened universal embracing of innovative technology, the financial sector included, especially through technologies in mobile, distributed ledgers technology (DLT), data analytics, Internet of Things (IoT), Artificial Intelligence (AI) and Machine Learning (ML).

These innovations have enabled cost effective, custom-made and efficient digital financial services (Akter et al. 2022). Part of this transformation has been ATM system innovations which have provided customers with access to financial services without seeking services from banking halls. ATM systems facilitate financial services such as cash deposits, withdrawals and account enquiries, thus improving financial services accessibility, convenience and efficiency in transactions. These innovations are supported by payment cards such as debit and credit cards that enable services to be offered through ATM infrastructure. Therefore, developments in ATM systems have become a significant component of the broader evolution from traditional delivery of financial services towards technology-driven services.

For instance, in the United States of America (USA) financial institutions have been adopting innovative payment systems in processing millions of transactions every day in payments and purchases facilitation (Bech & Hancock, 2020). Since 2016, the use of payment systems driven by debit cards and credit cards has been on a steady growth of 11.1% while the same period has noted payments through cheques declining by an average rate of 8.4% (Agarwal & Zhang, 2020).

In China, ATM system innovations have seen tech firms replace the traditional debit and credit cards with magnetic strips with quick response (QR) code systems. This has placed the country at the forefront in revolutionizing its payments (Chorzempa, 2021). With over one billion users in the retail system, China has leapfrogged the magnetic striped cards in use in most countries. This has played a role in globalizing the internal payment system innovations being used in China thus tying them directly to the country's financial system.

In Latin America, Brazil takes the top spot in ATM payment systems adoption and innovations. Duarte et al. (2022), note that the Brazilian cooperatives use own branded debit and credit cards, which has led to high value inter-cooperatives cash transfers. In the Arab World, global FinTech companies have been coming up with innovations in an attempt to demonstrate how future payment systems innovations might work. Great examples were evident in Qatar during the FIFA World Cup 2022 where innovations such as animated cards (similar to QR codes scan in China) were greatly adopted (David & Williams, 2022). The developments in advanced economies demonstrate the continued innovations in card-based payment systems as financial institutions respond to the rapid changes in technology and customer requirements.

In Africa, the use of varying payment systems has had significant evolution with cash and e-payment systems being on high gear. In Nigeria, Aduba and Asgari (2022) posit that cooperative societies are playing catch up with innovations such as Automated Teller Machines (ATMs) infrastructure, credit cards and debit cards enhancing savings and deposit mobilization in addition to credit provision.

In Kenya, deposit taking SACCOS (DTSs) have also increasingly adopted ATM system innovations. This has been driven by attempts to enhance delivery of financial services and competitiveness (Murigu, 2008). Services through ATMs are ICT enabled and therefore influence performance of DTSs through cost saving, increase in deposits and withdrawals, efficiency and time saving. However, SACCOs have not been in a position to issue ATM cards directly; instead, they issue them through banks so that their members access funds through the bank ATMs. As a

result, it has taken time to incorporate utilization which has made the SACCOs less competitive as compared to other financial institutions such as banks (Karimi et al. 2025).

Studies on payment cards have mainly focused on ATMs, debit cards and credit cards adoption. For example, Okello et al. (2020) and Domiannah et al. (2018) evaluated the influence of cards such as ATMs, debit/credit cards and Visa cards on SACCOs' financial performance. Other studies have focused on one line of ATM systems innovations. For instance, Mugo et al., (2019) studied debit card services and their influence on performance of DTSS. Further, previous studies have been carried out in a given region, for instance, in one county. In view of the evolution of ATM systems innovations occurring in SACCOs, there is a need that the scope is widened considering the different types of ATM systems innovations adopted by SACCOs in addition to the widening geographical scope of the operations of DTSS. This study therefore examined the influence of ATM systems innovations on the performance of DTSS in Kenya.

1.1 Statement of the Problem

In an attempt to mobilize financial resources and gain a competitive edge, DTSS in Kenya have not been left behind in embracing payment systems innovations. However, the adoption of these innovations has been facing several limitations. SACCOs have not been able to issue ATMs directly but issue them through banks so that their members access funds through the bank ATMs. In cases where SACCOs have had the chance to adopt ATMs, it has taken time to incorporate their utilization thus leading to SACCOs being less competitive. This has affected the performance of DTSS in different aspects such as loss of customers to other more established financial institutions, slow delivery of services, long periods of processing different financial instruments, reduced efficiency and decline in sales among others.

Despite adoption of ATM system innovations, the performance of SACCOs has been in the limelight. Notably, since 2015, SACCOs had for the first time in 2021 had their returns fall below 2% of their assets. The return on assets (ROA) for the year ending December 2021 fell to 1.59% from 2.65% for 2020. This was even below the 1.89% ROA recorded in 2015 (SASRA, 2022). A report by SASRA (2022) also indicated a loan portfolio for SACCOs witnessing slower growth of 9.67% in 2021 as compared to 13.16% witnessed in 2020. This raises the question of whether ATM systems innovations have yielded the expected performance benefits in SACCOs. As a result, the study seeks to examine the influence of ATM systems innovations on the performance of DTSS in Kenya.

1.2 Objective of the Study

To examine the influence of ATM systems innovations on performance of Deposit Taking SACCOs in Kenya.

1.3 Research Hypothesis

H₀₁: ATM systems innovations do not have a statistically significant influence on performance of Deposit Taking SACCOs in Kenya.

2.0 Literature Review

2.1 Theoretical Framework

The study was guided by the Task Technology-Fit (TTF) Theory as put forth by Goodhue and Thompson (1995). The basic TTF model provides an overview of how technology usage creates value. Therefore, in an environment where technology is utilized in performing certain tasks, value

is created by fitting (aligning) the requirements of the tasks to the technology thus allowing users perform tasks with ease (Goodhue et al. 2000). In TTF theory, technology is viewed as a tool utilized in executing tasks whereas tasks are actions executed by individuals so as to transform inputs into yields (Goodhue, 1995). Based on TTF theory, when technology is used in accordance with task requirements, performance is affected.

The applicability of this theory is evident in several studies. For instance, Junglas and Watson (2006), Staples and Seddon (2004) and Perry et al. (2001) applied the theory to clarify the connection between mobile information systems and organizations' performance. Mugo et al. (2019) applied TTF theory in evaluating debit card services' influence on Kenya's DTSS' financial performance. Gaichuru et al. (2022) utilized TTF model while assessing innovations' effects on SACCOs' performance in Meru County, Kenya. According to Gaichuru et al. (2022), process and product innovations significantly affect SACCOs' performance only if they fit the requirements demanded by members in a SACCO such as deposit mobilization, efficiency and accessibility. According to Wanyonyi and Ngaba (2021), who applied TTF model, SACCOs must adopt innovations such as credit cards to enhance efficiency with optimal cost and maximum benefits. Based on the wide applications, it is notable that if the payment cards used as ATM systems innovations fit the requirements and needs for different users, for instance customers accessing cash services and SACCOs facilitating deposit and withdrawal mobilizations, then they are likely to enhance the performance and efficiency of DTSS. Therefore, the theory was used in this study to explain how ATM systems innovations would impact the performance of DTSS.

2.2 Empirical Literature Review

The use of ATMs in SACCOs may include cash deposits, cash withdrawals, and balance inquiry amongst others (Murigu, 2008). Services offered through ATMs are ICT enabled and therefore influence performance through cost saving, increased deposits and withdrawals, better services, and time saving. The parameters for ATM systems innovations in this study were ATM deposits, ATM withdrawals and ATM account enquiries. A study conducted by Okello et al. (2020) evaluated the relationship between ATMs and DTSS' financial performance in Kenya's Nairobi County. The results showed a statistically substantial relationship between ATMs and DTSS' financial performance ($p\text{-value} < 0.05$).

Domianah et al. (2018) evaluated transactions involving plastic money in SACCOs located in Nairobi County, Kenya and their influence on financial performance. Among the plastic money transactions studied were ATM, debit/credit and Visa cards. All the correlation coefficients obtained were strong, positive and significant: visa cards ($\rho = 0.801$, $p < 0.0001$), debit/credit cards ($\rho = 0.779$, $p < 0.0001$) and ATM cards ($\rho = 0.814$, $p < 0.0001$). The findings indicated that SACCOs' financial performance and ATM, debit/credit, and Visa cards utilization were positively correlated.

In another study, Wanyonyi and Ngaba (2021) evaluated SACCOs' digital services and SACCOs' financial performance in Kenya's Kakamega County. Among the digital financial services considered for the study included credit cards and their influence on SACCOs' financial performance. Based on regression analysis, credit cards ($p\text{-value} = 0.044$) had an impact that was statistically significant on SACCOs' financial performance. Mugo et al. (2019) evaluated how debit card services influenced Kenya's DTSS' financial performance. The focus of the study was Saccolink debit card services under Cooperative Bank of Kenya. From the findings, Saccolink debit card services positively affected Kenya's DTSS' financial performance ($p\text{-value} < 0.05$).

A study by Mwangi (2024) was conducted to establish financial innovations' adoption and its influence on SACCOs' performance in Kenya's Kiambu County. Employing a descriptive research design and utilizing purposive sampling of DTSSs in Kiambu County, the study demonstrated that ATMs positively and strongly affected the Kiambu County's SACCOs' performance where the Pearson correlation coefficient was 0.609, p value < 0.05 .

The reviewed studies demonstrate that ATM and related card-based innovations have a positive relationship with performance of SACCOs. For instance, Okello et al. (2020), Domiannah et al. (2018), Mugo et al. (2019) and Mwangi (2024) established positive relationships between ATM or debit card services and different dimensions of performance. Similarly, Wanyonyi and Ngaba (2021) established a statistically significant influence of credit cards on SACCOs' financial performance. Despite this convergence, empirical, contextual and methodological gaps are notable. Empirically, previous studies have largely examined ATM or card services as a single service or as part of the broader financial innovations. There is limited consideration of ATM deposits, withdrawals and account enquiries together. Contextually, several studies were conducted within individual counties. This limited their geographical coverage compared with DTSSs operating across Kenya. Methodologically, previous studies mainly evaluated ATM and card services to financial performance; limited attention has been given to both financial and non-financial indicators of performance. The present study addressed these gaps by examining the influence of ATM systems innovations on performance of DTSSs in Kenya.

2.3 Conceptual Framework

Gozzi et al. (2017) define ATM systems innovations as digital products that enable customers' better access to their money and comprise of credit, prepaid and debit cards. These enable withdrawals, deposits and account enquiries. ATM systems innovations therefore provide an alternative channel through which customers can access financial services without necessarily visiting the financial institution. The use of ATMs in SACCOs may include cash deposits, cash withdrawals, and balance inquiry amongst others (Murigu, 2008). Services offered through ATMs are ICT enabled and therefore influence performance through cost saving, increased deposits and withdrawals, better services, and time saving. In the conceptual framework (Figure 1), ATM systems innovations comprise the independent variable and were measured through ATM deposits, ATM withdrawals and ATM account enquiries. The framework proposes that changes in ATM systems innovations influence performance of DTSSs, the dependent variable, measured through ROE, cycle time and timely delivery.

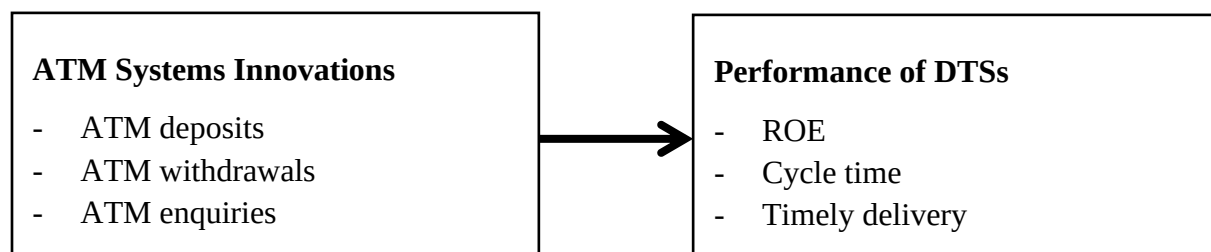


Figure 1: Conceptual Framework

3.0 Methodology

The study adopted a cross-sectional survey design. In a cross-sectional study, data is collected from many different units at a single time point (Cummings, 2018). In addition, variables in a cross-sectional study are observed without having to influence them. The research design also enhances data to be collected on multiple variables and an assessment of the relationship among the variables can be done.

All DTSs whose operations are Kenyan based formed the study's population. Based on a report by SASRA (2023), there are 176 licensed DTSs in Kenya. Four respondents were targeted from each DTS, comprising one business development manager, one finance/credit/accounts manager, one information technology manager and one operations manager. This resulted in a target population of 704 respondents. The sample size computation using Yamane (1967) formula, $n = \frac{N}{1+Ne^2}$ (n is the sample size for the study, N is the target population and e is the precision level-5% for this study), resulted in 122 DTSs being sampled.

The respondents, that is, business development managers, finance/credit/accounts manager, information technology manager and operations manager from DTSs were selected from 122 DTSs. Selection of the DTSs was done through stratified sampling as DTSs are classified in 3 tiers under SASRA. From the 122, in Tier 1; 33 DTSs were sampled, Tier 2; 37 and Tier 3; 52 were sampled using proportionate allocation. There were 4 respondents from each DTS; that made a total of 488 respondents.

The study employed a questionnaire for data collection. The questionnaire for the study was structured with closed Likert scale items. ATM systems innovations were measured using Likert-scale items relating to ATM deposits, ATM withdrawals and ATM account enquiries. Performance of DTSs was measured using Likert-scale items relating to ROE, cycle time and timely service delivery.

The study established content validity of the research instruments. Content validity was established through expert judgment. The questionnaire was reviewed to assess the relevance, clarity and adequacy of the items in measuring the study variables.

In this study, 48 respondents, comprising of 10% (12 DTSs) of the entire sample size, were selected for piloting of the research instruments. Cronbach's alpha coefficient was used to assess the reliability of the questionnaire. ATM systems innovations had a Cronbach's Alpha of .843. Performance had a Cronbach Alpha Coefficient of 0.954. This confirmed good internal consistency of the questionnaire.

Quantitative data were obtained for the investigation. The gathered data was coded, cleaned, and then imported into the version 26.0 of the Statistical Package for Social Sciences (SPSS) for analysis. Descriptive and inferential methods of statistical data analysis were used. Frequencies and percentages formed part of descriptive statistics. The nature of the relationship between the dependent variable and the independent variable was ascertained using bivariate linear regression.

$$\text{Performance of Deposit Taking SACCOs} = \beta_0 + \beta_1 \text{ ATM Systems Innovations} + \epsilon$$

Prior to fitting the regression model, the assumptions of the model comprising of linearity, homoscedasticity and normality were tested.

Before embarking on data collection, the researcher obtained an introduction letter from the Graduate School Dedan Kimathi University of Technology, and Ethical clearance letter from the Dedan Kimathi University of Technology Scientific Ethics Review Committee. The letters were

used in securing an approval from the National Commission for Science Technology and Innovation (NACOSTI) in addition to visiting the DTSSs sampled to request for permission to collect data. The researcher ensured confidentiality and anonymity and maintained the highest level of integrity and objectivity throughout the study.

4.0 Findings

4.1 Response Rate

During data collection, 488 questionnaires were distributed. Out of these, 431 questionnaires were returned. This represented a return rate of 88.3%. Following the screening and cleaning of data, six (6) questionnaires were found to be incomplete and were thus excluded from the analysis. As a result, 425 questionnaires were deemed valid and used for the final analysis. This yielded a response rate of 87.1%.

4.2 Descriptive Statistics

Influence of ATM Systems Innovations on Performance of Deposit Taking SACCOs in Kenya

The study examined ATM systems innovations through three key transaction services. These included: ATM deposits, ATM withdrawals and ATM account enquiries. For each key transaction service, respondents were required to indicate their level of agreement with statements assessing its influence on performance of DTSSs. First, respondents were presented with statements on the influence of ATM systems deposits on performance of DTSSs. From the findings in Table 1, 45.9% (195) of the respondents disagreed that ATM deposits affect the return on equity in their respective SACCOs; a total of 30.4% (129) were in agreement. Also evident from the results is that 40.2% (171) of the respondents disagreed that the deposits made using ATM systems innovations improve the DTSSs cycle time; 21.9% (93) were neutral, 14.8% (63) agreed while 14.6% (62) strongly agreed. Further, the findings reveal that 42.4% (180) of the respondents disagreed that the ATM deposits made enable the DTSSs to provide timely service delivery; 21.2% (90) were neutral while 16.2% (69) agreed and 12.5% (53) strongly agreed.

Table 1: Influence of ATM Deposits on Performance of DTSSs

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
ATM deposits affect the return on equity in the SACCO	35 (8.2%)	195 (45.9%)	66 (15.5%)	85 (20.0%)	44 (10.4%)
The deposits made using ATM systems innovations improve the DTSSs cycle time	36 (8.5%)	171 (40.2%)	93 (21.9%)	63 (14.8%)	62 (14.6%)
The ATM deposits made enable the DTSSs to provide timely service delivery	33 (7.8%)	180 (42.4%)	90 (21.2%)	69 (16.2%)	53 (12.5%)

Respondents were also required to indicate their agreement level with statements on the influence of ATM withdrawals on performance of DTSSs. From the analysis in Table 2, 42.8% (182) of the

respondents disagreed that use of ATM cards in accessing funds disbursements through withdrawals affects the SACCOs' transaction volumes thus ROE; 20.9% (89) were neutral, 16.9% (72) agreed while 11.3% (48) strongly agreed. The findings show that 40.9% (174) of the respondents were in disagreement that ATM withdrawals improve customer access to funds affecting transaction cycle time; 28.0% (119) were in agreement while 23.3% (99) were neutral. Based on the responses, 44.2% (188) disagreed that ATM cards are used in making withdrawals affecting timely access to funds by members of the SACCO; 20.5% (87) were neutral while 17.4% (74) agreed.

Table 2: Influence of ATM Withdrawals on Performance of DTSS

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Use of ATM cards in accessing funds disbursements through withdrawals affects the SACCOs' transaction volumes thus ROE	34 (8.0%)	182 (42.8%)	89 (20.9%)	72 (16.9%)	48 (11.3%)
ATM withdrawals improve customer access to funds affecting transaction cycle time	33 (7.8%)	174 (40.9%)	99 (23.3%)	66 (15.5%)	53 (12.5%)
ATM cards are used in making withdrawals affecting timely access to funds by members of the SACCO	32 (7.5%)	188 (44.2%)	87 (20.5%)	74 (17.4%)	44 (10.4%)

Lastly, respondents were presented with statements on the influence of ATM enquiry services on the performance of DTSS. According to Table 3, 44.0% (187) of the respondents disagreed that ATM enquiry services contribute to improved return on equity in the SACCO; 28.7% (122) were in agreement while 19.8% (84) were neutral. Further, 43.1% (183) of the respondents disagreed that ATM-enabled enquiry services affect cycle time that gives the SACCO competitive advantage; 22.4% (95) were neutral, 15.3% (65) agreed and 11.8% (50) strongly agreed. Lastly, 40.2% (171) of the respondents disagreed that ATM account enquiries affect timely delivery/access of funds; 22.4% (95) were neutral while 15.8% (67) and 12.9% (55) agreed and strongly agreed respectively.

Table 3: Influence of ATM Account Enquiries on Performance of DTSS

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
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ATM enquiry services contribute to improved return on equity in the SACCO.	32 (7.5%)	187 (44.0%)	84 (19.8%)	65 (15.3%)	57 (13.4%)
ATM-enabled enquiry services affect cycle time that gives the SACCO competitive advantage	32 (7.5%)	183 (43.1%)	95 (22.4%)	65 (15.3%)	50 (11.8%)
ATM account enquiries affect timely delivery/access of funds	37 (8.7%)	171 (40.2%)	95 (22.4%)	67 (15.8%)	55 (12.9%)

4.3 Diagnostic Tests

Prior to regression analysis, diagnostic tests were conducted to assess the assumptions of linearity, homoscedasticity and normality. Linearity was assessed using the ANOVA deviation from linearity test. The relationship between performance of Deposit Taking SACCOs and ATM systems innovations showed no significant deviation from linearity ($F = 1.082, p = .348$). Since the significance value was greater than .05, the assumption of linearity was satisfied. Homoscedasticity was assessed using a scatterplot of standardized residuals against standardized predicted values. The residuals were randomly distributed around zero without a noticeable systematic or funnel-shaped pattern, indicating that the assumption of homoscedasticity was satisfied. Normality was assessed using a Normal P-P Plot of standardized regression residuals. The standardized residuals closely followed the diagonal reference line with only slight deviations, indicating that the residuals were approximately normally distributed. Therefore, the assumptions required for the regression analysis were adequately satisfied.

4.4 Inferential Statistics

A bivariate regression model was fitted to examine the influence of ATM systems innovations on the performance of deposit taking SACCOs. The results in Table 4 showed that ATM system innovations had a strong positive relationship with performance ($R = 0.699$). The coefficient of determination, $R^2 = 0.489$, shows that 48.9% of the variation in performance of DTSs was explained by ATM systems innovations.

Table 4: Simple Linear Regression Model Summary for ATM System Innovations and SACCO Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.699 ^a	.489	.488	.52641
a. Predictors: (Constant), ATM System Innovations				

The ANOVA results used to assess whether the regression model significantly predicts SACCO performance shows that $F(1, 423) = 405.689, p < 0.001$. Therefore, the regression model is statistically significant. This indicates that ATM system innovations significantly predict the performance of DTSs as summarized in Table 5.

Table 5: ANOVA for Regression of ATM System Innovations on SACCO Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	177.916	1	177.916	405.689	.000 ^b
	Residual	185.511	423	.439		
	Total	363.427	424			

a. Dependent Variable: Performance of DTSS

b. Predictors: (Constant), ATM Systems Innovations

The regression coefficients results indicated that ATM System Innovations coefficient ($B = 0.468$, $p < 0.001$). This indicates that a one-unit increase in ATM system innovations is associated with a 0.468-unit increase in SACCO performance. The standardized beta ($\beta = 0.699$) demonstrates that ATM system innovations have a strong positive effect on performance as shown in Table 6. Since ATM systems innovations had a statistically significant positive influence on the performance of Deposit Taking SACCOs ($p < 0.001$), the null hypothesis; H_{01} : *ATM systems innovations do not have a statistically significant influence on performance of Deposit Taking SACCOs in Kenya* was rejected. Thus, the alternative hypothesis that ATM systems innovations have a statistically significant influence on performance of Deposit Taking SACCOs in Kenya was supported. Subsequently, the bivariate regression equation derived was;

$$\text{Performance} = 2.494 + 0.468 \text{ ATM Systems Innovations} + \epsilon$$

Table 6: Regression Coefficients for the Effect of ATM System Innovations on SACCO Performance

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.494	.114		21.834	.000
	ATM Systems Innovations	.468	.023	.699	20.130	.000

a. Dependent Variable: Performance of DTSS

4.5 Discussion of Findings

From the descriptive results, it was revealed that the majority of the respondents perceived ATMs key service dimensions such as deposits, withdrawal and enquiry services as having a limited influence on the performance of DTSSs such as return on equity, transaction cycle time and timely service delivery. However, inferential statistics established that ATM system innovations have a statistically significant positive influence on performance of DTSSs. The contrast in the descriptive and inferential results may be a reflection of variations in ATM usage across DTSSs. Contrary to commercial banks which have traditionally invested in extensive ATM networks, many DTSSs rely more on alternative digital delivery channels such as agency banking and mobile banking. As a

result, most of the DTSs may perceive ATM services to have less visible contribution to the daily operations of the DTSs.

However, the significant positive regression findings demonstrate that ATM system innovations remain an important factor that determines the performance of DTSs if effectively implemented. Therefore, the individual perceptions do not automatically reflect the overall organizational impact of ATM innovations. The regression results align with Okello et al. (2020) who established that ATM services and the financial performance of DTSs in Nairobi County, Kenya, have a statistically significant relationship. In another study, Domiannah et al. (2018) established that utilization of ATM cards had a significant positive association with financial performance of SACCOs. Similarly, Mugo et al. (2019) conducted another study in Kenya and found that SaccoLink debit card services had a positive influence on the financial performance of DTSs. Further, Mwangi (2024) demonstrated that ATM adoption had a strong positive influence on performance of SACCOs in Kiambu County, Kenya. The findings of the study also agree with Wanyonyi and Ngaba (2021) who evaluated the effect of SACCOs' digital services on performance in Kakamega County, Kenya. Using a regression model, the study found that credit cards had an impact that was statistically significant on SACCOs' financial performance.

The findings on the effect of ATM systems innovations on performance of deposit taking SACCOs in Kenya can be explained using TTF Theory proposed by Goodhue and Thompson (1995). The theory claims that technology innovations enhance organizational performance only when their functionalities are well aligned with the tasks they are intended to support. Though the descriptive results revealed varying perceptions regarding the influence of ATM functionalities, regression results demonstrated a strong and statistically significant relationship between ATM systems innovations and performance of deposit taking SACCOs. The variation in respondents' perceptions of ATM system innovations can be interpreted from a TTF Theory perspective. Although ATM technologies may be readily available for adoption in many deposit taking SACCOs, their capabilities may not be fully aligned with the transactional needs of the members such as accessing loans, withdrawals of dividends, routine deposits and merchants' payments.

The observed performance gains are consistent with the TTF proposition. Performance gains appear to accrue primarily to deposit taking SACCOs where ATM system innovations effectively support core tasks in financial operations by ensuring convenience, accessibility and efficiency. In situations where such alignment is weak, the presence of ATM technologies alone may not lead to substantial performance improvements. Therefore, the findings support TTF's central claim that performance does not just depend on adoption of a technology but also on the extent to which the technology matches the demands of the given task.

5.0 Conclusion

Based on the findings of the study, it can be concluded that ATM system innovations have a significant and positive influence on performance of DTSs in Kenya. Although the descriptive results demonstrated varying perceptions by the respondents regarding the influence of ATM deposit, withdrawal and account enquiry services on the performance of DTSs, inferential analysis established that ATM system innovations have a statistically significant positive influence on the performance of DTSs. It can therefore be concluded that enhanced utilization of ATM services has the potential to improve the performance of DTSs.

6.0 Recommendations

The study found that ATM systems innovations have a significant positive effect on performance of deposit taking SACCOs. The study therefore recommends that policymakers and regulators should promote shared ATM infrastructure and interoperability frameworks within the SACCO sector. This would help reduce capital and maintenance costs linked to standalone ATM networks deployment, expand geographical access to SACCO services and increase transaction volumes through improved customer convenience.

Additionally, enhanced interoperability of ATMs would improve operational efficiency, speed of service delivery and revenue generation which would ultimately lead to improved performance of deposit taking SACCOs. The study further recommends that government agencies such as CBK and SASRA should come up with policies that encourage cost-sharing arrangements such as white-label ATMs and inter-SACCO ATM networks. This will also reduce operating costs and improve accessibility. Policies should also support investment incentives for SACCOs upgrading their ATM security and integrating with other financial providers and platforms such as mobile money platforms. This will encourage SACCOs to invest in ATM systems innovations and ultimately affect their performance.

The observed performance gains in DTSs are consistent with the TTF proposition that performance depends on the extent to which technology matches task demands, rather than on technology adoption alone. It is therefore recommended that further theory based research should be undertaken to compare performance of DTSs as influenced by ATM systems over a period of time through trend analysis to identify any significant variation in the observations made in this research.

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