

Effect of Process Digitalization on Loan Performance of Deposit Taking SACCOs in Mombasa County

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ABSTRACT: Now financial institutions are efficient putting needs of clients first. Advances in digital financial technology, has improved speed, transparency, security, and accessibility of financial services. However, many SACCOs still grapple with high Non-Performing Loans (NPLs) ratios above 5% of total loan book recommended by regulator. A rise in NPLs symbolizes poor loan performance. This study evaluated process digitalization innovation effect on loan performance of DT SACCOs in Mombasa County to determine the impact of Digital Financial Innovations (DFI). Diffusion Innovation Theory (DIT) was used to identify research gaps and review literature. The study adopted descriptive research design. Target population was 190; representing Board of Management (BOM) and staff of six licensed DT Saccos in Mombasa County. Of the 70 questionnaires sent out, 63 were returned, representing 90% response rate. Findings indicated; majority of respondents believe process digitalization (mean: 4.16) has substantial effect on loan performance in DT SACCOs. Results of the regression analysis and hypothesis testing showed; when digital financial innovations are implemented in the loaning processes, DT SACCOs significantly enhances loan performance metrics. The study recommends deeper integration of digital innovation given that the financial sector is moving toward digital ecosystem.

Keywords: Financial Innovation, Process Digitalization, Loan Performance, DT Saccos, Non-performing loans

1. INTRODUCTION

1.1. Process Digitalization

The past three decades have encountered digital and technological disruptions enabling financial institutions to reinvent their business models to service customers through digital means and increase efficiency, while at the same time be more customer focused channels (Beck, 2020). Improved internet connectivity, mobile technology, advanced computing techniques, data portability, the artificial intelligence and robotics are some of the technological advances that have ushered in a new era of digital financial innovations (Frame, Wall & White, 2018). Through various types of digital financial innovations customers, are offered access and ability to transact a wide range of traditional banking services at their convenience, proximity and without the need to travel to a branch, costly, time consuming and risky.

Process digitalization is a digital innovation that has enabled financial institutions to strengthen their value proposition for better services experience for customers. By digitalizing processes of customers onboarding, access to information, and feedback mechanism, financial institutions have increased their operational efficiency. The lending processes have also been transformed through digitalizing the loan applications, appraisals and approvals, conducted through digital platforms (Alliance Financial Inclusion, 2018).

1.2. Loan Performance

Investment in loans is one of SACCOs core business; making loan performance key to liquidity and profitability of SACCOs. According to Nsengiyumva and Harelimana (2020); loan performance is a measure of whether loans are settled in full according to the loan contract or not; a factor that is integral to financial stability of any financial institution engaged in provision of loans. When the agreed instalments and interests are paid as scheduled, the loan is said to be performing. But there is always the risk that members will not be able to repay as per the contract. When this occurs, the loans are classified as 'nonperforming' which weaken the profitability of the SACCO. The financial crisis of 2008, which led to high levels of non-performing loans across the globe exposed deficiencies in loan performance management practices and a failure by the financial industry to recognize and respond on a timely manner (Nguyen, Dao, Hussain, 2020; Bauze, 2019).

Non-performing loans (NPLs), reduce the amount of money available for provision of new loans as well as deny the SACCO revenue in form of interest (Mensa, 2015). Mensa, further emphasizes importance of performing loans to the growth of financial institutions as well as linking it to the lending capacity, liquidity, and overall institution profitability. Inadequate or poor appraisal processes by SACCOs lead to poor client selection, and inadequate loan monitoring mechanisms have been found to be among the main contributors to loan default (Samoei, Nambuswa & Namusonge, 2015).

Various studies show that digital financial innovations in financial cooperatives reduce: 1. onboarding risk by risky borrowers (Arner, Auer & Frost, 2020), 2. creates savings in terms of time and cost. 3. reduce the risks associated with handling cash; such as loss and fraud (D'Silva, Filková, Packer & Tiwari, 2019), 4. reduce transactional and decision making turnaround time (Feyen, Heffernan, Natarajan, Saal & Sarkar, 2021) and 5. leads to increased liquidity and profitability (Goldfarb & Tucker, (2019). In their study on mobile money innovation and financial performance of financial institutions, Memba and Sum (2016), concluded that adoption of mobile money innovation increased loan performance by reducing default rate and should be embraced by players in the financial services industry to reduce the risk posed by NPLs.

1.3. Statement of the Problem

The last decade has seen many SACCOs in Kenya embrace the use of digital financial innovations in their operations in a bid to cope with increased competition in financial services industry. To deepen the gains, existing studies have sought to examine the effect of financial innovations in the SACCOs sector, (Tsuma, 2015; Nderitu, Muthii & Ngina, 2020; Moki, Ndungu & Kinyua, 2019; Tahir, Said, Arif, Gulzar & Ullah, 2018; Agufa, 2016; Aoko, 2017; Jeruto, 2020). Generally, these studies conclude that if digital financial innovations are well implemented, SACCOs will experience improved services delivery, liquidity and profitability for enhanced financial health.

Despite, heavy investment in digital financial innovations; many SACCOs are still grappling with high number of non-performing loan ratios that are way above the standard of 5% of the total loan book as recommended by SASRA. According to SASRA's supervisory report, (2020); the last 5 years have seen a steady rise in NPL rate for DT SACCOs above the standard 5% as follows: 5.12% (2015), 5.23% (2016), 6.14 (2017), 6.30% (2018), 6.15% (2019) and 8.39% (2020).

Quite often than usual, high loan delinquency rate results in non-performing loans increasing liquidity problems that cause SACCOs to fail delivering on their promises (Jeruto, 2020). Given that investment in loans is one of the core businesses of SACCOs, the performance of such loans is key to the organization's liquidity and profitability. A rise in NPLs is symbolic of poor loan performance.

It is noted that existing studies on digital financial innovations have mainly focused on financial performance as a dependent variable (Wamugo, 2018; Nekesa & Olweny, 2018; Njenga, Kiragu & Opiyo, 2015; Mwangi, 2018; Mugo, Muathe & Waithaka, 2018); and hardly is any evidence of studies done on loan performance as a dependent variable. Therefore, this research differs from many, since its goal is to investigate the effect of

digital financial innovations on loan performance variable. Specifically, the study aims at determining whether process digitalization innovation has any effect on the loan performance of DT SACCOs in Mombasa.

1.4. General Objective

To determine the effect of process digitalization on loan performance in DT SACCOs in Mombasa County.

1.5. Research Hypothesis

H₀₁: Process digitalization has no significant effect on loan performance of DT SACCOs in Mombasa.

2. LITERATURE REVIEW

2.1. Theoretical Review

Popularized by Everett Rogers in 1962, the Diffusion of Innovation Theory (DIT) seeks to explain the basis of innovation adoption and what determines one's choice of innovation over another (Matyunina, 2019). DIT further asserts that; four components play a critical role in an individual's choice to adopt an innovation or not: The Invention, the Communication Channel, the Individual's Social System, and the time taken to go through the Adoption Process. According to this theory, for an innovation to be adopted or not, it needs to possess the attributes of: relative advantage, compatibility, complexity, trial ability, and observability (Dearing & Cox, 2018).

Diffusion of Innovation Theory rests on the assumption that people or organizations will tend to adopt an innovation that is deemed as superior to the existing product or technology in terms of being more productive, efficient, and less costly. An innovation will also be easily adopted if it is thought to be easy to understand and use, easy to figure out the relative benefits and the ease in which the innovation can be used on a trial basis (Aoko, 2017).

Since, adoption of an innovation does not happen simultaneously across all people in the social system; DIT analyses individual adopters' characteristics in terms of innovators as early adopters, early majority, late majority and laggards (Matyunina, 2019). The characteristics are influenced by the individual adopter's willingness to take risk, social class, liquidity, opinion in society, education, gender, and age. Innovators and early adopters tend to be young, have a high social class, financially liquid and to some degree of opinion leadership. The older generation generally tend to be late majority and laggards in terms of innovation adoption due to their preference of sticking to tradition and unwillingness to take on risks (Hådén & Englund, 2019). Other factors such as economic, organizational, and structural factors besides the behavioral barriers can also prevent the diffusion of an innovation (Tidd, 2010 as cited in Hådén & Englund, 2019).

As SACCOs adopt the digitalization of the business processes, consideration must be given to the different preferences, attitudes and needs of their members (Scott & McGuire, 2019). The SACCO must be cognizant of the different media habits of their members and adopt to a variety of communication channels that will reduce resistance and speed up the diffusion rate, the use of social media and interpersonal connections is highly recommended (Williams, Dhoest & Saunderson, 2019). The basic principles of this theory are relevant to this study since they will be applied to explore the factors that affect the adoption and diffusion of process digitalization in the SACCO sector, given that the spread of an innovation within society is greatly impacted by how it is communicated.

2.2. Empirical Review

Financial innovation is key to firm survival in the ever-changing globalized financial industry. Fueled by innovation firms have been forced to develop strategies to diversify their products and services and increase their customer base to stay competitive and increase their operational efficiency to survive (Ojalere, Kes, Islam & Rahman, 2021). It has taken a long time for the SACCO industry to embrace the use of technology in their operations on a broader scale with many of the SACCOs historically relying on manual systems and only using excel for basic data analysis and reporting (Kariuki, 2019). The reluctance to embrace digital innovations has

been attributed to the initial high-cost, necessary infrastructure, data security and privacy concerns as well staff redundancy concerns (Mwangi, 2018).

A study by Moki, Ndung'u and Kinyua (2019), identified financial innovation as being important in enhancing SACCOs financial performance. The study noted that by digitalizing their processes SACCOs have been able to reduce cost and increase efficiency. The study further recommended that SACCOs should endeavor to employ competent staff to supplement the adoption of innovations to enhance service delivery. By investing in the use of digital tools, activities such as loan application and appraisal, deposits, withdrawals, account balance checks and loan repayment undertaken by staff have been taken over and as such resulted in reduction in operational errors (Nekesa & Olweny, 2018). The study, further observed that process digitalization has enhanced the SACCOs ability to maintain records that are more accurate improving management and compliance reporting.

According to Mwangi (2018), SACCOs that have adopted process digitalization have experienced cost saving, improved operational efficiency, faster processes, and enhanced customer experience. The study, further alluded that digitalization has enabled SACCOs to register high income levels attributed to increased demand for loans and rise in membership due to the increased outreach. In their study on financial performance of SACCOs in Kenya, Memba and Sum (2016), concluded that financial innovations are a key determinant of financial performance and SACCOs should adopt the innovation that is suitable to increase their operational efficiency. The results were in line with the findings of Shkeily and Abdullah (2021); who carried out a similar study of SACCOs in Zanzibar and concluded that innovation has a significant relationship with growth of SACCOs.

2.3. Conceptual Framework

A Conceptual framework provides a visual analysis of the relationship between the independent and dependent variables of the study. This study will make use of the Diffusion of Innovation Theory (DIT) to explain the effect of the independent variable on dependent variable in DT SACCOs in Mombasa County.

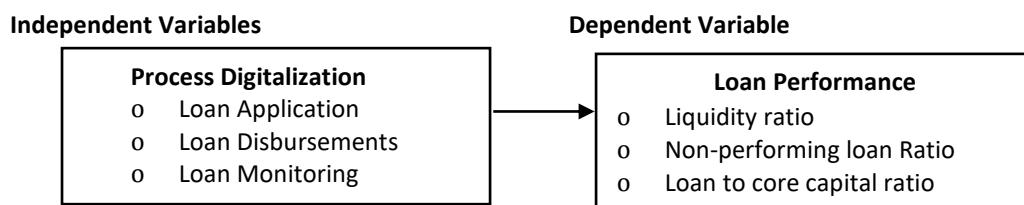


Figure 1: Conceptual Framework

3. METHODOLOGY

The study adopted a descriptive research design to measure the effect of digital financial innovations on loan performance. Descriptive statistics was used to describe characteristics (outcomes, patterns, and trends) of subjects under the study by use of measures of central tendencies, mean and standard deviations, while tables, and cross tabulations, were used to present outcomes. Inferential statistics was used in the study to draw conclusions on the general population based on the observations from the descriptive statistics. The target population for the study was 190 which represented all members of the Board and staff of all the six DT Saccos in Mombasa County as licensed by SASRA (SASRA, 2020; Priyono, 2017).

The researcher utilized stratified random sampling technique to determine respondents for interviews. After acquiring a list of the six (6) SASRA accredited DT Saccos in Mombasa County, the researcher divided the population of each Sacco, into two groups: The Board of Management (BOM) and the SACCO employees as primary strata. This was necessary for better data collection, management, and interpretation. Stratified random sampling yields high statistical accuracy for both larger and smaller sample sizes and enables retrieval

of useful results for research, it also affords total control of each strata division by the researcher (Orangi, 2019).

A sample size of 70 respondents was determined using the Nassiuma formula (Nassiuma, 2008 as cited by Orangi, 2019), which posits that the range of $21\% \leq C \leq 30\%$ for coefficient of variation and $2\% \leq e \leq 5\%$ for standard variation is acceptable in most surveys.

$$n = \frac{NC^2}{(C^2 + (N-1)e^2)}$$

Where:

- n = Sample size
- N = Accessible population
- C = Coefficient of Variance in the range of $21\% \leq C \leq 30\%$
- e = Standard error in the range of $2\% \leq e \leq 5\%$

Questionnaires were used to collect data from primary sources while secondary data was acquired from: data archives, records, journals, annual reports, financial statements, and websites for review and analysis.

The Lawshe formula was used to test the content validity of the research instrument. Content validity is the appropriateness of measures of an instrument for research. It speaks to how the measures (responses, observation logs, questions, etc.) accurately estimate what you want to gauge. That is, the degree to which measurement encompasses all aspects of the concept being measured (Daud, Khidzir, Ismail & Abdullah, 2018). Content validity index values above the commonly acceptable critical value of 0.778 for a panel of 9 is considered acceptable (Nikolopoulou, 2022). The researcher obtained a content validity index of 0.882. and therefore, concluded that the research instrument was accurately measuring what it was intended to.

The reliability of the questionnaire was tested by use of Cronbach's Alpha Index. Reliability is the extent to which the questionnaire yields the same results all the time. It speaks to consistency of a quantifying instrument providing the same measurements when measures are retaken using same items and procedures all the time (Architha & Aithal, 2020). To calculate the Cronbach Alpha Index, a pilot test study of a total of 10 questionnaires were administered. The examination of the variables yielded Cronbach's alpha scores of 0.99 for Process Digitalization. Variables with a Cronbach's alpha score of 0.7 or more are said to be valid and reliable (Taber, 2017).

Multiple Linear Regression analysis to establish the correlations between variables and sub variables was done. The multiple regression analysis model is indicated below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where;

- Y = Loan Performance
- β_0 = Intercept (Constant)
- $\beta_1 - \beta_4$ = Coefficients
- X_1 = Process digitalization
- ϵ = Probable Error Term

Hypothesis testing was performed to test the implication of relationships that existed between the study variables. The study was guided by a null hypothesis that were tested using the z test at a five (5) percent significance level. The null hypothesis was rejected if $\mu_1 \neq 0$ and the p - value is less or equal to 0.05.

4. RESULTS AND DISCUSSION

A total of 70 questionnaires were sent by the researcher to respondents. Of the 70 respondents, 63 completed and returned the questionnaires, representing 90%, while 7 respondents declined to fill out the questionnaire. According to Mugenda and Mugenda, (2003), as cited by Mwanja and Murithi (2017), a response rate of 50% is

satisfactory for a study, 60% is worthy, and 70% and beyond is excellent. Therefore, the response rate of 90% was considered excellent for the study.

Table 1: Response Rate

Number of questionnaires issued	Number of questionnaires validly completed	Percentage
70	63	90.0%

The researcher sought to determine the extent to which process digitalization has affected the loan performance of DT Saccos in Mombasa County. The respondents were required to rate the sub-criteria in the loan processing parameters: loan applications, loan disbursement, and loan monitoring in their SACCO using a five-point Likert scale of 1. very low, 2. low, 3. average, 4. high, and 5. very high. They were asked, "How has process digitalization impacted loaning processes in DT Saccos in Mombasa County?". Results are herein presented in a table below.

Table 1: Effect of Process Digitalization on Loan Performance in DT SACCOS

Category	VL (%)	L (%)	A (%)	H (%)	VH (%)	Mean	Std Dev.
Loan applications							
Number of applications.	0	0	0	49.2	50.8	4.50	0.499
Number of accepted loan applications	3.2	15.9	44.4	14.3	22.2	3.37	1.088
Number of rejected applications	1.6	1.6	14.3	65.1	17.5	3.95	0.722
Loan Disbursement							
Volume of loans disbursed	0	0	3.2	55.6	41.3	4.38	0.547
Loan Monitoring							
Percentage reduction in loan defaults	0	0	15.9	36.5	47.6	4.32	0.731
Late loan repayments	0	1.6	3.2	44.4	50.8	4.44	0.637
Aggregate mean and standard deviation						4.16	0.704

VL - Very low, L – Low, A – Average, H – High, VH - Very High

Table 4.2 above shows how the respondents estimated the effect of process digitalization on the various loaning processes in their Saccos. When asked about the impact of process digitalization on the number of loan applications, 50.8% indicated very high, 49.2% high, and 0% indicated average, low, and very low. On the number of accepted loan applications, 44.4% felt that the impact on acceptance of loan applications was average, 22.2% very high, 15.9% low, 14.3% high, and only 3.2% very low. On the number of rejected loan applications, 65.1% returned that the number of loan application rejections was high, and 17.5% believed it was very high. The rest of the respondents maintained that digitalizing the loan application process had reduced the number of rejected loan applications, with 14.3% indicating the rejection was average, 1.6% low, and 1.6% very low. 55.6% of the respondents indicated that the impact of process digitalization on the volume of loans disbursed was high, 41.3% very high, and 3.2% average. On percentage reduction on loan defaults 47.6% indicated very high, 36.5% high, and 15.9% average. 50.85% of the respondents claimed there is a very high impact on late loan repayments: 44.4% are high, 3.2% are average, and 1.6% are low.

Overall, the aggregated mean of 4.16 and standard deviation of 0.704 imply that, in general, most of the respondents acknowledge that process digitalization has had a very significant effect on the loan performance of DT SACCOs in Mombasa County.

Multiple regression analysis was conducted to determine the relationship between loan performance and process digitalization.

Table 3: Regression Coefficient

Model	Unstandardized coefficients		Standardized coefficients	
	B	Std. Error	Beta	
(Constant)	1.645	.322	4.959	
Process Digitalization	.250	.142	.319	1.766

a. Dependent Variable: Loan performance of DT SACCOs in Mombasa County

The findings show that process digitalization has a positive and significant impact on the loan performance of DT SACCOs in Mombasa County with regression coefficients of $\beta = 0.250$. The data reveals that a unit increase in process digitalization will lead to a 0.25-unit increase in loan performance of DT SACCOs in Mombasa County.

The Z-test was used in the study to examine the objective's null hypotheses. To make inferences, process digitalization was assessed against loan performance at a 5% level of significance.

Table 4: Summary of Hypotheses Results

Hypothesis statement	Sig.	Decision rule
H₀₁: Process digitalization has no significant effect on loan performance of DT SACCOS in Mombasa.	0.001	Null hypothesis rejected

The results showed that process digitalization has a favorable and statistically significant effect on loan performance. Descriptive statistics gave an aggregate mean of 4.16 for process digitalization, which implies that most respondents indicated that digitalizing the DTS loan processes had a significant effect on SACCO loan performance. Similar results were arrived at by Waithaka, Muathe, and Muchangi (2018), who concluded that with digitization comes an increase in the earning portfolio of SACCOs as revenues increase due to an increase in the loan portfolio.

The study results further concur with the findings of Kiragu (2017), who noted that digitalization enhances loan decision-making and applicant evaluation. It eliminates manual tasks that are repetitive in nature and are best carried out digitally, and it enables the application of human expertise where it is most effective. Such tasks include establishing decision criteria to assess the candidate's qualities and offering instant loan approval to applicants who meet the requirements or rejection to those who lack credit history or have a history of excessive credit use. Chibuike (2015) also found that, with faster credit determinations being an advantage in the SACCO business, digitalizing the application process enables all necessary data to be swiftly and accurately gathered and sent to the lender for a quicker decision-making process. However, proper planning is required when adopting process digitalization in organizations to avoid creating employee uncertainty that may arise from a lack of the necessary skills to use the financial innovations (Robledo, 2017).

Loan applications, loan disbursement, and loan monitoring were the three dimensions used to digitalize the categories' processes. The highest mean was found in the loan disbursement and monitoring dimensions, followed by loan applications. The alternative hypothesis (H1) that the process of digitalization significantly affects the loan performance of DT Saccos in Mombasa County was accepted as a result of the study's findings, which demonstrated a positive correlation and statistical significance between the process of digitalization and loan performance at DT SACCOS in Mombasa ($z = -3.3017$; $p = 0.0010.05$).

5. CONCLUSION

Many SACCOs may not onboard digital financial innovations because they are unsure of where the journey will lead their organization, their staff, and their customers. In addition, the lack of a proper digital infrastructure for the new digital era may force SACCOs to significantly change their current IT infrastructure or, in certain circumstances, create whole new infrastructure solutions. To remain competitive in the financial sector industry, SACCOs will need to continuously monitor their environment for changes in digital financial innovations that test current business practices, assumptions, and systematic cognitive distortions. They must

be prepared for surprises and willing to rapidly change by adopting new approaches to business development and management.

Process digitalization has resulted in an increased number of loans applied for and processed and the issuance of quality loans given the initial parameters set for loan acceptance and rejection. It is clear from the study that, for better loan performance, SACCOs must continue to use the growing popularity of process digitalization to manage their operations.

6. RECOMMENDATIONS

Today, customers value their time and convenience more than anything else from a financial institution. With the right solutions, deposit-taking saccos are able to reduce their spending and increase revenues. Deposit-taking saccos have traditionally been managed by community-led organizations using clear, conventional procedures that demand a significant amount of paperwork, thousands of physical documents, and regular office visits. But this is gradually altering due to digital banking and a dynamic financial system. Thanks to these recently discovered capabilities, deposit-taking saccos in Mombasa are beginning to change from community-based organizations with limited lending options to neo-banks offering more services and products to its members. A comprehensive strategy for digital change is necessary for successful digital transformation. This entails allocating additional funds for the purchase of appropriate digital infrastructure, paying particular attention to the difficulties brought on by digitalization, such as cyber risk, and providing staff with cutting-edge technological capabilities.

7. AREAS OF FUTURE RESEARCH

Further research should be done to establish how digital financial innovations have affected the other aspects of SACCO operations, such as mobilization of savings and member recruitment and retention.

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