

**CREDIT LENDING MODELS AND LOAN PERFORMANCE  
OF DEPOSIT TAKING SAVINGS AND CREDIT  
COOPERATIVE SOCIETIES IN KENYA**

**BY  
MARTIN NTHENGE MBITHI**

**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF  
THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION,  
FACULTY OF BUSINESS AND MANAGEMENT SCIENCE,  
UNIVERSITY OF NAIROBI**

**2023**

## DECLARATION

This research project report is my original work and has not been submitted for the award of a degree in any other university.

**Name:** Martin Nthenge Mbithi

**Reg. No:** D61/10097/2018



**Signature:**.....

**Date:** October 29, 2023

This research project report has been presented with my approval as the University Supervisor.

**DR. FREDRICK OGILO**

Signed



Date 29/11//2023

Department of Finance and Accounting,  
Faculty of Business and Management Science,  
University of Nairobi.

## **ACKNOWLEDGEMENTS**

I thank God first and foremost for allowing me to complete this research. I also truly thank Dr. Fredrick Ogillo for his helpful suggestions and motivation, which enabled me to finish this task. And many thanks to the University of Nairobi for granting me the opportunity to earn an MBA. I would like to thank the management of the businesses whose data I was able to obtain for the study at this time as well.

Finally, I would like to take this time to thank my dear family members, especially my beloved mother, my lovely wife, my children and my siblings for always being there for me.

## **DEDICATION**

To my cherished family members, I dedicate my study project report. May God reward every one of you for your endurance. I genuinely appreciate your constant support during the entire study period. It cannot be adequately expressed in words.

To my late father, thank you for the indelible mark you left on my heart. Your memory is cherished, and your legacy lives on through me.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>DT-SACCOs</b>	Deposit Taking Savings and Credit Cooperative Societies
<b>KUSCCO</b>	Kenya Union of Savings & Credit Cooperatives
<b>KWFT</b>	Kenya Women Finance Trust
<b>NPLs</b>	Non-Performing Loans
<b>ROSCAs</b>	Rotating Savings and Credit Associations
<b>SASRA</b>	SACCO Societies Regulatory Authority
<b>SPSS</b>	Statistical Package for Social Scientists

## **ABSTRACT**

The overarching purpose of the research was to analyze the impact that various credit-lending models had on the loan performance of deposit-taking savings and credit cooperative societies located in Kenya. Specifically, the research focused on group lending model, individual lending model, digital credit model and cooperative lending model on how loans perform among deposit taking savings and credit cooperative societies in Kenya. The research also sought to find out the joint effect of group lending model, individual lending model, cooperative lending model and digital credit model on how deposit taking savings and credit cooperative society's loans perform in Kenya. The research adopted a descriptive cross-sectional approach. The targeted population were all DT-SACCOs as per their registration with SACCO Societies Regulatory Authority. There are one hundred and seventy-six (176) as of December 2022. It was therefore a census study. The study found out that group-lending models, individual lending model, digital credit lending and cooperative lending were adopted by the DT-SACCOs moderately. The research established that the size of the DT-SACCOs and the lending models used accounted for 97.9% of changes in loan performance. The consequence is that other factors not considered in the model were responsible for only 2.1% of variances in loan performance. Further, credit lending models significantly affect how DT-SACCOs loans perform in Kenya. This implied that effective implementation of the credit lending models led to improved loan performance of DT-SACCOs. The study reached a conclusion that credit lending models have a significant effect on how T-SACCOs loans in Kenya perform. Further, the DT-SACCOs adopted on an average basis the credit lending models. Lastly, individual lending model and total assets significantly affected loan performance. Group lending model, digital lending model, and cooperative lending model however do not significantly affect how the loans perform. The research recommended that the managers of the DT-SACCOs should establish mechanisms for improving individual loan processing and development of competitive individual loan products. The management should also ensure a more comprehensive understanding of the best loan standards to be embraced regarding an individual borrower's lending terms and conditions. The management of DT-SACCOs should also put adequate mechanisms in place to regulate group lending, digital lending, and cooperative lending practices, since they affect loan performance, though insignificantly. Increased use of digital platforms would be given emphasis by management, as new frontiers for increasing loan performance. The digital transaction platforms would be improved by the management to enhance financial inclusion.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the Study

Credit lending models are the documentations of the various mechanisms used by microfinance institutions to lend to their members and the public at large. These models are however tangential to one another, such that most micro finance institutions use a combination of two or more for effective lending management (Sinha, 2020). The models operate as formalized versions of informal financial systems operated by the microfinance institutions. Savings and credit cooperative societies (SACCOs) adopt the lending models in a varied approach depending on needs and varieties of the target groups (Abdi, & Jagongo, 2019). The basis is that improved loan performance would lead to improved overall contribution of the Deposit Taking Savings and Credit Cooperative Societies (DT-SACCOs) in achievement of sustainable economic development in the country.

The study was grounded on Group Lending Theory (Varian, 1990); Agency Theory (Jensen & Meckling, 1976); and Asymmetric Information Theory (Akerlof, 1970). The anchoring theory is the Asymmetric Information Theory. It posits that in a credit relationship, poor-quality borrowers arises when there is inadequate information about the potential borrowers. The concern is when potential borrowers do not give reliable information and disguise like good-quality borrowers. This leads to increased poor loan performance by the by the micro finance institutions. Agency Theory recognizes how principal, and the agents relate. In this case, the agency relationship would exist between the ownership of the micro finance institutions and the management team. The concern is that when the lending process is not managed properly, there would be cases of rampant default (Thuo & Juma, 2014). Finally, Group Lending Theory argues that the group-

lending contract creates joint liability by inducing borrowers to monitor the credit behavior of the group members to improve loan repayment and eventually the credit score of the group (Abdi, & Jagongo, 2019).

SACCOs in Kenya have grown in numbers and financially overtime. DT-SACCOs provide products for savings, credit, and general banking services. These also include bank-related services like depositing money on demand, paying for services, and using automated teller machines or front office service activity (FOSA). DT-SACCOs provide a wide range of financial services as compared to non-deposit taking Saccos (Wang, & Wafula, 2016). DT-SACCOs encourage their members to save and invest by taking advantage of the available credit facilities. It should be noted that a bigger percentage of assets of Saccos is made up of loans issued to members, with some of them being non-performing loans (Ntoiti, & Jagongo, 2021). Recently, the DT-SACCOs have suffered an increased level in non-performing loans, especially coupled with the problems of Covid-19 pandemic (Sacco Societies Regulatory Authority (SASRA) Report, 2021). The concern is the extent to which the adoption of a suitable lending model would assist in reducing loans that are not performing and subsequently improve loan performance.

### **1.1.1 Credit Lending Models**

Credit lending models explain the documentation of approaches by micro finance institutions for making credit facilities available and how the lending process is managed (Sinha, 2020). They comprise a variety of innovative techniques to manage lending beyond the traditional financial intermediary role. This reduces the transaction costs and lowers the exposure to risks that are associated with providing credit facilities. There are variations in legal make-up of the models, as well as how they deliver, how they are governed, and generally their financial framework (Khavul, 2018). The commonly

employed models involve groupings, the use of bank guarantors, communal banking, cooperation, credit unions, Grameen, group, individual, intermediaries, non-Governmental, Rotating Savings and Credit Associations (ROSCAs), small business and village banking models.

The current study focused on group lending, individual lending, digital credit and cooperative lending models. Group lending was measured using group size, group information and group guarantee as used by Abdi and Jagongo (2019). The measures are appropriate since they capture the essence of joint liability that is considered essential in this model. Individual lending was proxied using loan security, loan guarantee and ability to repay (Alaoui, & Tkiouat, 2017). The rationale for choosing the measurements is on the basis that borrowers need to be assessed on the credit score and capacity. Digital lending model on the other hand was measured based on the number of digital platforms, digital products scope and number of customers accessing digital products (Francis, Blumenstockz, & Robinsonx, 2017). These measures are justified on the basis that they help to assess the scope and viability of digital lending. Finally, cooperative lending model was proxied using the types of membership, membership loan portfolio and lending products to members. The rationale of the measures is because cooperative model is based on participation, administration of the cooperatives and profit sharing among the members (Fieve, & Chrysostome, 2022).

### **1.1.2 Loan Performance**

This is the magnitude to which loan portfolio have grown, accompanied by reduced Non-Performing Loans (NPLs) (Buchory, 2021). It is the analysis of the number of clients that have made applications, the amount lent out, timeliness in the loan repayment, the ratio of security against the loan borrowed, loan facilities portfolio and recovery of arrears

(Chernykh & Theodossiou, 2015). The measurement of loan performance involves the use of the ratio of loans that are not performing against total loans. Loans are considered as not performing when the agreed repayments are not being met consecutively for at least 90 days. Otieno and Nyagol (2016) assert that, when loans that are not performing are of a higher ratio, it indicates high credit risks facing the microfinance institutions.

The current study measured loan performance using the ratio of NPLs to total loans. This considered the loans that are not performing against the yearly total gross loans. The justification is that NPLs may arise due to adoption of a poor lending model, that leads to inefficient management of lending activities (Buchory, 2016). This should be based on the model the institution is using to manage the lending process and the lending model adopted by the lending institution. The reality is that, when the loans that are not performing become high against the total gross loans, there would high credit risk exposure and subsequently poor loan performance.

### **1.1.3 Credit Lending Models and Loan Performance**

DT-SACCOs adopt different lending models as frameworks to facilitate management of the entire process. The model adopted is reliant on many variables such as target customers and the nature of the economy (Giri, & Shah, 2019). This therefore affects performance, including loan performance. Loan performance, especially loan repayment, significantly affects those who borrow loans as well as the loan issuer. The customers of the institutions have an obligation to safeguard future ability to access loans, as well as their properties that may have been used to safeguard the loan (Shrestha, & Thapa, 2021). The inability of the clients to make three consecutive repayments therefore points out possibilities of non-repayment of the loan.

Loan performance suffers from significant effects on the nature of the clients, the institution issuing loans and the nature of loans. These characteristics can be effectively handled by adopting a good lending model (Abdi, & Jagongo, 2019). In a good model, borrowers cannot only be held to account in cases of non-performance of loans. It comprises of all the stakeholders in the management of the process. Several empirical studies indicate that the lending models adopted by the microfinance institutions affect their general performance positively and negatively as well. Abdi and Jagongo (2019) concluded that group lending led to improved loan performance, through credit-favorable group mechanisms. Dimble and Mobarak (2019), on the other hand established that innovation and flexibility should be adopted in ensuring good loan performance, including the use digital lending models.

#### **1.1.4 Deposit Taking Savings and Credit Co-operative Societies in Kenya**

Kenyan issues with SACCOs dates to 1908, with accelerated growth being realized with time. The growth has been in relation to the number of Saccos as well as financial capability (KUSCCO, 2019). They are classified in terms of those who do not take deposits and those that take deposits from the public. SACCOs encourage members to save money and provide them with access to credit. They encourage members to save and provide guidelines for prudent financial management that aid the society as a whole. SACCOs serve the varying requirements of their members and can be found in both urban and rural settings. Because of this, they are now widely regarded as a viable means through which members and the public at large can pool their resources and access loans (Onduko, 2013). There are 176 deposits taking SACCOs as of 2021 as shown in Appendix II (SASRA Annual Report, 2021).



DT-SACCOs allocate loans at a cheaper interest rate compared to mainstream commercial banks and this greatly benefits low- and middle-income households, and the economy in general. They solicit deposits from members and other external sources cheaply, that they use to invest further and hence offer affordable loans (Murage, Muya, & Mogwambo, 2018). This also improves financial inclusion, which further helps to achieve sustainable development goals. Deposit-taking Saccos however face challenges of external drivers of interest rates as well as increased non-performing loans as the performance of the economy shrinks. Currently, SACCOs are facing fierce competition from commercial banks. This has made them formulate effective loan management techniques, for improved efficiency. High loans that are not performing have adversely affected the balance sheet, ability to meet short-term financial obligations, ability to repay debts and acquire more capital. DT-SACCOs must therefore critically manage non-performing loans to survive and grow overtime (Maina, Kinyariro, & Muturi, 2016).

## **1.2 Research problem**

Credit lending models that are adequate are considered as an antidote to the growing concerns about loan defaults. When loans are issued to customers, repayment efficiency is mostly achieved when an appropriate mechanism is put in place to manage the entire lending process (Ambunya, & Moronge, 2019). Studies reviewed do not consider joint models, while others focused on credit management strategies as a way of improving loan performance. Many models have been implemented by organizations to disburse microfinance services to different stakeholders. They are either on an individual or group basis (Sinha, 2020). Individual lending models provide credit directly to persons on individual capacity, while group models involve provision of funds to groups. Financial

institutions, especially micro finance institutions, adopt different models depending on the nature and needs of the different stakeholders.

The SASRA Annual Report (2020) indicates that among the variables indicating the extent to which the DT-SACCOs are sound, asset quality underperformed for the period 2018 – 2021. The SACCOs specifically experienced a growth and development in the main key stability and soundness indicators during the year 2020, with the exception of non-performing loans (NPLs) ratio that registered a marginal deterioration in comparison to other years. The composition of the total asset within the DT-SACCO system during the period 2018-2020 equally indicate that net loans' portfolio constituted 72.49%, 71.88% and 71.79% of the total assets respectively, thereby underpinning the importance of loans' portfolio as the most important component of the total assets' portfolio (SASRA, 2021). For DT-SACCOs to be financially sustainable, they therefore must effectively manage the lending process. Most of the studies in credit lending models focus on microfinance banks and commercial banks. The reality is that DT-SACCOs have experienced tremendous growth, to the extent that successful lending management would have a greater financial multiplier effect on the financial players (Masolo, & Wanjohi, 2021).

The study by Karanja and Simiyu (2022) focused on the concept of credit management strategies as a basis of improving loan performance, while Ambunya and Moronge (2019) and Abdi and Jagongo (2019) focused on group lending strategies as a basis of improving customer care and performance respectively. Mburu, Mwangi and Muathe (2020) on the other hand emphasized methods for managing credit as the basis of improving loan performance. Regarding emerging models, Wanyonyi and Ngaba (2021) examined digital lending based on digital services. The main concern is that there is an unsatisfactory contribution from the existing models. This means that more innovative and flexible

lending models would be put in place to boost the lending process, entrepreneurship, and welfare (Dimble, & Mobarak, 2019). The concern handled in the present investigation is also on the basis that the use of joint models would help serve diverse customer base of the DT-SACCOs. The studies reviewed depict methodological gaps of interest to be addressed by the current study. The study Abdi and Jagongo (2019) was a case study, while Equally Mburu, Mwangi and Muathe (2020) adopted explanatory research framework. A case study is deemed narrow and limiting. In this study, research gaps was filled by answering the question, ‘What is the effect of credit lending models on loan performance of microfinance institutions in Kenya?’

### **1.3 Research Objectives**

The objectives of the study were as follows:

#### **1.3.1 General Objective**

The general objective of the study was to determine how credit-lending models affect loan performance of deposit taking savings and credit cooperative societies in Kenya.

#### **1.3.2 Specific Objectives**

- i. To determine the effect of group lending model on how deposit taking savings and credit cooperative societies’ loans perform in Kenya.
- ii. To establish how individual lending model affect loan performance of deposit taking savings and credit cooperative societies in Kenya.
- iii. To examine how digital credit model affect how deposit taking savings and credit cooperative societies loans perform in Kenya.
- iv. To determine the effect of cooperative lending model on how deposit taking savings and credit cooperative societies loans perform in Kenya.

- v. To find out the joint effect of group lending model, individual lending model, cooperative lending model and digital credit model on loan performance of deposit taking savings and credit cooperative societies in Kenya.

#### **1.4 Value of the Study**

The work offers significant assistance to theoretical aspects of finance, practice and formulation of policies. Regarding theoretical application, the findings are likely to offer academicians a basis of understanding key issues in credit risk management, especially, the main concern of lending management. This research therefore seeks to increase knowledge regarding lending management among microfinance institutions. The goal is to ensure that there is an understanding of how DTSS would deal with the rising cases of default risk, using appropriate models for lending out money. This would invite numerous research in the less researched area of credit lending models.

In practice, the study would guide the staff and management of microfinance institutions to formulate a good mix of lending models and put in place an appropriate method of mitigating credit-related risks. The management and staff of DT-SACCOs would therefore find it a strong basis of formulating credit management frameworks and the entire lending process management. The study would also add value to financial analysts in a bid to help microfinance institutions and borrowers with information on an optimum credit lending model. The study also gives managers of DT-SACCOs food for thought in considering the practical trade-offs in digitizing the lending process. This would cut down cost of loan management and improve efficiency, especially for small-scale loans.

Finally, the outcomes might aid in the development of policies for changing intervention measures regarding risks related to lending. This would assist in regulating decision

making on the issue of managing credit. This study would also help in the formulation of risk management policy to help define guidelines that can be used in controlling credit by DT-SACCOs. The study equally encourages policymakers to develop guidelines for adoption of different lending models, especially the digital lending model in such a way that customer data integrity is not at risk.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The part analyses theories about credit lending and how loans perform. It also outlines past studies conducted in the same area by other authors. The chapter finally tend to address the relationship between the variables diagrammatically and identify divergence in studies under review.

#### **2.2 Theoretical Review**

This part outlines three theories underpinning the research. The study was anchored on Group Lending Theory (Varian, 1990); Agency Theory (Jensen & Meckling, 1976); and Asymmetric Information Theory (Akerlof, 1970). The main theory is the Asymmetric Information Theory, which posits that poor loan performance would be due to inadequate information held by the institution and used as the basis of offering lending facilities. There is a need for adequate information to be used in underwriting requests for lending.

##### **2.2.1 Asymmetric Information Theory**

Akerlof (1970) formulated the theory. It asserts the existence of information asymmetry in a transaction; one party is more endowed with information as compared to the other party. This implies that, there would be key differences in decisions made by the parties by virtue of the information they possess, leading to cases of risk exposure by the less informed party (Nwosu, Okedigba, & Anih, 2020). The theory attributes poor loan performance to lack of adequate information about the borrowers and the market trend in general. This happens when the financial institutions do not have the relevant information about their loan clients, to the extent that they end up lending high risk clients. The lack of relevant

information compromises the credit worthiness analysis, before a lending decision is made.

The relevance of the theory was based on significance of adequate models that would ensure reduced information asymmetry. This would reduce uncertainties in loan repayments, since financial behavior can be predicted and caution taken, well in advance (Muratbek, 2017). The main challenge leading to poor loan performance is inadequate information. Group lending model for example ensures that the group members know each other, to the extent that information asymmetry may not exist. This would also help in distinguishing between good and bad borrowers. Critics however argue that information asymmetry creates a condition for opportunistic behavior, which is a critical survival basis for businesses in market economies (Levchenko, & Ostapenko, 2016).

### **2.2.2 Group Lending Theory**

It was initiated by Varian (1990). It states that, the use of groups as a basis of issuing loans lead to reduced default risk, since the group members help in monitoring each other's risk portfolio. According to the theory, loan provision is made to individuals as members of a group, that is formally constituted comprising of between 5-10 members. The repayment process is therefore a group facilitation, and this reduces cases of poor loan performance. In this case therefore, the group becomes the security, upon which the loan is issued, since it is formed in a voluntary manner (Obinna, Javed, Hatem, David, & Ernest, 2019). The basis is joint liability, whereby members monitor one another to ensure that there are no cases of default. The group liability is exercised on the basis that, in case of default by one-member, other members may not be allowed to access loan facilities.

The theory is relevant on the basis that group liability improves loan repayment as members ensure that repayments are done by all members. The group equally improves trustworthiness and subsequently improved loan performance (Shettima & Dzolokarnaini, 2018). This implies that safety of groups depends on the selection of the group members, and subsequently reduced default risk, as members are known to each other. Ahlin and Debrah (2022) however argue that group lending may be costly in terms of cost of forming them, training of expectations, supervising members, and repayment process. There are several criticisms that have been put forward on the model. The amount of social capital generated through group lending may not be measured in the context of DT-SACCOs. Nkwocha, Hussain, El-Gohary, Edwards, and Ovia (2019) also indicate that the leaders of the groups may misuse their authority, leading to dilution of the group advantage.

### **2.2.3 Agency Theory**

Jensen and Meckling (1976) and Ross (1973) put the theory forward. It indicates agency relationships in financial relationships, whereby one party plays agency role and the other, is the principal. The agent in this case decides on behalf of the principal, and this may cause conflicts, in case the expectations of the principal are not reached. According to Panda and Leepsa (2017), there are differences in risk profiles between the agent and principal, to the extent that decision making may not be realigned, leading to possible risk exposure. The assertion of the theory is that there is need to realign interests of both parties to reduce cases of risks, especially in financial relationships. In the lending process, the model adopted must incorporate the element of different risk profiles between the owners of wealth and the borrowers, to help in proper loan underwriting.

In its relevance, the theory focuses on the variable of loan performance. The argument is that there is an agency relationship between those borrowing and owners of funds. This



explains the need to adopt options that would guarantee that the loans lent out are repaid as per the agreement. A suitable lending model must therefore reduce moral hazards and information asymmetry through effective agency relationship management (Zhang, Cai, Dickinson, & Kutan, 2016). The theory therefore helps in the management of loan performance, based on models used of issuing out loans. A major critic explains that the relationship between the agent and principal can be negatively influenced by the unpredictable behavior of the principal, who may exploit the agent (Pepper & Gore, 2012).

Criticisms of agency theory are opined on the fact that how agents relate to principals have some complexity and ambiguity than normal business and non-business relationships. The assumption that the views, needs and interests of the principal are paramount and ethically acceptable is hypocritical. The reality is that the action of an agent may be against the expectations of the principal, but ethically acceptable and makes a lot of business sense (Zogning, 2017). The theory is also criticized for not being socially attainable. The assumption that both agents and principal have self-interest may not be practical, since how people relate socially may not have significant economic implications. Equally the actors are not always financially interested in the transactions, to the extent that financial implications are given significant focus.

### **2.3 Determinants of Loan Performance**

Performance of loans is the analysis of clients taking loans, the amount taken, repayments done, security for the loans granted, loan portfolio and cases of arrears (Chernykh & Theodossiou, 2015). The determinants are as explained below:

### **2.3.1 Credit Lending Model**

Credit lending model is the documentation of the approaches for making credit facilities available and management of the lending procedure (Sinha, 2020). They include variety innovative techniques used in managing lending beyond intermediation traditionally done by financial institutions. It led to reduced costs and risks associated with lending, arising from reduced transaction costs and low credit risks. Group lending model for instance imply that the group members build social networks, enabling the selection of group members with good credit standing (Abdi & Jagongo, 2019). An effective credit lending model would imply effective management of the lending process and subsequently effective loan performance.

### **2.3.2 Credit Quality**

Credit quality means the creditworthiness of the target customers and maximization of profits arising from loans on a safety basis. It is the level to which the DT-SACCOs attain their goals of size, safety, and profitability from credit-based business (Idris & Nayan, 2016). It is therefore an indication that reflect how DTs perform on the basis of credit, demonstration of credit management capability and achievement of credit-related objectives (Philip, 2018). Generally, the credit quality is indicated by the ratio of loans that are not performing, the coverage ratio and the cost of risk. High credit quality high implies good loan performance.

### **2.3.3 Credit Strategy and Policy**

Pasiouras (2018) posits that this involves understanding of the institutions' credit vision and mission with respect to credit management. It helps in the determination of accepted level of risk and planning of how to manage credit risk appropriately. The policy frameworks help to develop guidelines for managing credit-related activities. This would

include setting up limits for loans, classifying of debts, and making relevant provisions. Through effective policies, DTSS could attract and retain credit worthy clients, which subsequently improves loan performance (Percy & Wimalasiri, 2017). A fair credit policy creates room for DTSS in optimization of capital and creating a good environment for expanding credits and ensuring safe business environment.

#### **2.3.4 Credit Organization and Administration**

In modern financial institutions, the organization and administration of credit management can be implemented using different models and administrative guidelines (William & Mark, 2017). Management needs to either centralize or decentralize credit administrative issues to improve loan performance. Laivi and Kadri (2017) assert that how credit is organized and administered affects the operations of DTSS. The reality is that, with a clear and well-articulated organization structure, and good administration, credit management improves. According to Ghazouani (2016), good organization and administration means good management credit risks, and this may involve planning, implementing and supervising credit-related activities, leading to maximization of profitability of the institution.

#### **2.3.5 Size of the DT-SACCOs**

Size of the firm is the primary factor in determining the profitability of a firm due to the concept of economies of scale, and this is very critical to financial performance. Essentially, it means larger DT-SACCOs can obtain cost leadership relative to smaller SACCOs. Despite this acknowledgement, the clarity on its impact on real performance has not been ascertained (Otwoko, Maina, & Kwasira, 2021). The findings showed that the larger the company, the better its financial results. Growth in membership and access to capital are two key drivers of enterprise size (Shibutsea, Kalundab, & Achoki, 2019). It

was also established that size of the DT-SACCOs moderate the relationship between interest rate drivers and financial performance positively.

## **2.4 Empirical Literature Review**

Karanja and Simiyu (2022) studied how managing credit-related activities affect how loans given by microfinance institutions perform in Kenya. The research focused on formulation of credit policies, evaluation of customers, policy on collection of loans, and credit conditions as variables and their effect on how the loans perform. The population of the study was 13 in number. Descriptive research was employed, adopting freshly collected and already published data to be used for analysis. This involved the computation of averages and measures of dispersion. Using multiple regression, it was established that credit policies, evaluation of customers, policy on collection of loans, and credit conditions lead to improved loan performance.

Ambunya and Moronge (2019) studied group lending strategies affect the ability of microfinance banks to retain customers. The study was contextualized in Nairobi County, Kenya. The study targeted all microfinance banks that operate in Nairobi County, Kenya. The unit of study included 79 members of the management team in three cadres namely top, middle, and low-level management from the 13 MFBs in Nairobi County. Detailed questionnaires were used to collect first-hand information. The data was then analyzed through SPSS. It was confirmed that there is existence of a significant correlation between group lending strategies and ability of microfinance banks to retain customers. The conclusion of the study was that when the group members are selected freely, lending is done progressively, flexibility of social security and lending in sequence lead to improved customer retention in the MFBS in Kenya.

Abdi and Jagongo (2019) examined how group lending relate to the efficiency of microloans in Kenyan financial institutions. Sixty participants were recruited from six different KWFT locations in Nairobi County. The units observed were those in charge of management of credit and loans management. It was therefore a census study. Primary data was collected via detailed questionnaires. The data was then analyzed in SPSS using descriptive and inferential statistics. The study reached a conclusion that group lending improves performance of loans, since groups bear a joint responsibility, such that they ensure the members pay their loans.

Mburu, Mwangi and Muathe (2020) examined how activities of credit management affect how bank loans perform in Kenya. The study's primary focus was on how debts were collected, clients were appraised, and the guidelines on lending, with respect to how they affect how commercial banks' loans perform. Explanatory research design was adopted, targeting 44 banks undertaking commercial businesses in Kenya. The study was census because of the small population size. The collection of first-hand data was done through designed questionnaires and published information was gathered from published financials for a period 2015-2018. This data was then analyzed using description and inference using SPSS. It was established that debt collection and policies in lending positively affect how commercial banks' loans perform locally. The research reached a conclusion that the extent to which loans perform among commercial banks depends largely on effective credit management practices.

Regarding digital lending model, Wanyonyi and Ngaba (2021) established the extent to which financial services offered on a digital platform affect the financial efficiency of Kakamega. Mobile banking was the primary research focus, as well as on-line banking, the use of credit cards and transfer of money digitally as independent factors. The

researcher determined their effects on how the commercial banks perform financially. Descriptive research design was adopted. 162 employees were targeted, from where 49 were sampled. First-hand data collection was done via self-administration of semi-structured questionnaires. Data was examined using description and inferential statistics using SPSS. It was discovered that relying on a digital platform for financial transactions significantly influence how the SACCOs perform financially.

In another study, Masolo and Wanjohi (2021) determined how digital credit impact the financial success of Kenya's commercial banks. Specifically, the research emphasized on loans issued on mobile platforms, on-line and app-based loans with respect to how they affect the extent of performance financially of the commercial banks. Further, it investigated how the size of the bank helps in moderation of how the variables relate. The targeted population was 38 commercial banks, out of which 5 banks with large scale digital platforms were sampled for the research. The study used already published information, as gathered from existing financial statements. Description of data and panel multiple regression was employed. It was concluded that digital loans performance significantly and positively relates to how commercial banks perform financially.

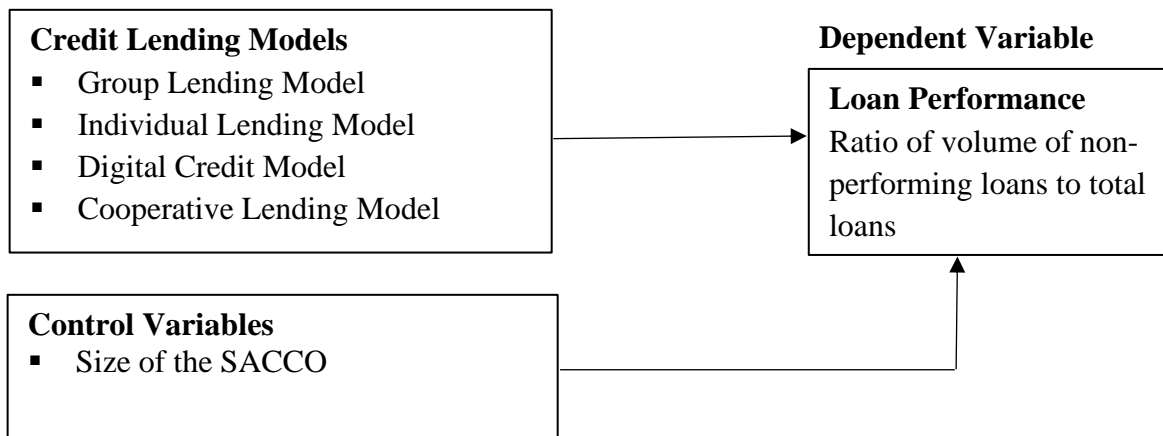
Finally, Siabei, Kibati and Gitahi (2019) examined the extent to which the process of disbursing and appraising loans as well as, conditions on repayment and digital loans affect how microfinance banks perform financially. It targeted finance officers from the 13 microfinance banks in Kenya. 98 informants were sampled using Taro Yamane formula. It was established that the process of disbursing and appraising loans as well as, conditions on repayment and digital loans significantly affect financial performance.

## 2.5 Conceptual Framework

The study explored how credit-lending models affect the efficiency with which Kenya's micro lenders disburse loans. Credit lending models was proxied using group lending, individual lending, digital credit, and cooperative lending models. Loan performance was measured using the ratio of loans that are not performing. The control variables included the size of the microfinance institutions and total loans. Microfinance organizations' sizes were evaluated by tallying their entire assets. The model is expressed on the assumption that size of the SACCOs have a moderating effect on how credit-lending models affect loan performance. The connections between the variables are shown in Figure 2.1.

**Figure 2.1: Conceptual Framework**

### Independent Variables



**Source:** Researcher (2023)

## 2.6 Summary of Literature Review and Research Gap

Empirical research assessed indicate aspects of conceptual, contextual gaps and methodological gaps. The study by Karanja and Simiyu (2022) indicates conceptual gap by focusing on credit management strategies and not the credit lending models as independent variable. The study by Ambunya and Moronge (2019) focused on group lending model, though the dependent variable was customer retention. The study by Abdi and Jagongo (2019) shows a contextual gap, since it was based on Kenya Women Finance

Trust (KWFT), with the current study focusing on DT-SACCOs. The study by Mburu, Mwangi and Muathe (2020) was contextualized in commercial banks and focused on the independent variable of credit management practices. Regarding digital credit model, the study by Wanyonyi and Ngaba (2021) was contextualized in Kakamega County, with a focus on financial performance as the dependent variable. Masolo and Wanjohi (2021) also contextualized their study on the commercial banks, depicting contextual gap.

Finally, the study by Siabei, Kibati and Gitahi (2019) focused on digital credit model, with a context on microfinance banks and financial efficiency as the key factor. Abdi and Jagongo (2019) which was a case study emphasizing one organization unlike the current study that targets all the DT-SACCOs give methodological gap. While Mburu, Mwangi, and Muathe's (2020) study used an explanatory research approach, our descriptive cross-sectional survey provides a more accurate picture of the phenomenon under examination. The study by Karanja and Simiyu (2022) focused on the concept of credit management strategies as a basis of improving loan performance, while Ambunya and Moronge (2019) and Abdi and Jagongo (2019) focused on group lending strategies as a basis of improving customer care and performance respectively. The main concern is that there is unsatisfactory contribution from the existing models. This means that more innovative and flexible lending models would be put in place to boost the lending process, entrepreneurship, and welfare (Dimble, & Mobarak, 2019). The concern that the current study addresses is that the use of joint models would help serve diverse customer base of the DT-SACCOs.

The studies reviewed depict methodological gaps of interest to be addressed by the current study. The study Abdi and Jagongo (2019) was a case study, while Equally Mburu, Mwangi and Muathe (2020) adopted explanatory research framework. A case study is



deemed narrow and limiting. This study, therefore, addresses the above gaps by focusing on how credit-lending models affect how micro finance institutions in Kenya perform on a credit basis.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The part conducts an analysis of approaches employed in the current research, respondents being targeted, information that was used in the research including the sources. At last, it details the methods used for gathering and analyzing the data.

#### **3.2 Research Design**

The research adopted a descriptive cross-sectional methodology. It comprises of gathering data from many different individuals in a single instant. The variables are observed without influencing them (Hunziker, & Blankenagel, 2021). The aim is to describe generalized relationships between distinct elements and conditions, without focusing on specific cases and their particularities. The design tries to establish general models that link a combination of elements with other elements under certain conditions. Descriptive studies on the other hand involve collecting information to help in verifying speculated connection and generation of outcomes to the questions of research (Mugenda & Mugenda, 2003).

The design therefore sought to establish how credit lending models affect performance of DT-SACCOs based on credit. It involved collecting data on loan performance of DT-SACCOs over a period of five years, then computing the averages for purposes. Data on credit lending models was however collected once on the same variables.

#### **3.3 Population of the Study**

All DT-SACCOs that were actively registered were included in this study. These SACCOs have been approved to take customer deposits. There are 176 as per SACCO Societies Regulatory Authority report 2021 (SASRA report, 2022). They are grouped into large,

medium, and small tiers based on their asset size. DT-SACCOs suit the current study because their objective is to enhance the social-well-being of members. This would best be achieved through financial empowerment that is facilitated by adopting different models to lend to the members. The research adopted a census approach, due to the few institutions under study.

### **3.5 Data Collection**

Both primary and secondary sources were used in this study. Questionnaires were distributed to SACCO credit managers to collect the primary data needed for this study. SACCO credit managers are deemed to have adequate knowledge about the credit lending models and loan performance. A single respondent in this study represented each SACCO's credit department. The credit manager was considered as respondent. This made one hundred and seventy-six respondents. A three-part questionnaire served as the basis for the data collection. Organizational background information can be found in Section A, whereas credit lending models can be found in Section B. The questionnaire was distributed with a "drop and pick later" strategy. Appendix I contains the questionnaire.

Published data was extracted from existing information from published financial reports included in the annual report covering five years (2017-2021). The secondary data focused on total loans that are not performing and total loans annually for five years. Appendix II has a data gathering sheet used to compile information from secondary sources.

### **3.6 Diagnostic Tests**

These are tests that help to understand the nature of the data, regarding the extent to which the data can be applicable in the study. It assesses whether the data possess the needed characteristics for usage. They include:

### **3.6.1 Normality Test**

A test for normality involves assessing the nature of the data, as it is a requirement in parametric tests. As a result, the characteristics of the data must conform to statistical standards before they can be utilized in a regression. It is a confirmation on whether the data is normally distributed (Das, & Imon, 2016). Normal distribution of data is needed to carry out regression analysis. Shapiro-Wilk was used to check the distribution for normality. In this test, the statistics of less than 0.05 was a suggestion of abnormality of the data.

### **3.6.2 Multicollinearity Test**

In a linear regression analysis, multicollinearity occurs when there is a strong correlation not just between the independent factors but also among them and with the dependent variable. This may create statistical insignificance of the parameters studied when they are expected to be significant. This can also lead to skewedness in the study outcomes (Shrestha, 2020). In this research, VIF were used for analysis. There is a recommendation that VIF should be no more than a value of 10. The lower VIF values of the parameters indicate no collinearity issues.

### **3.6.3 Heteroscedasticity Test**

Parameters in a linear regression model are assumed to be independent of one another, and the error term's variance is assumed to be fixed. If this is missing, then heteroscedasticity is likely an issue. The assumption of homoscedasticity therefore means same variance and is central to linear regression models. The data should therefore be homoscedastic (Yang, Tu, & Chen, 2019). This study used Koenker test, whereby values above 0.05 are acceptable.

### **3.6.4 Autocorrelation Test**

Autocorrelation is the extent to which the measures of the parameters correlate similarly in non-similar observations. It is relevant when collecting data over time, creating the need to check how the values of the parameters change in differently in other observations. It hence measures how the variables correlate over time on the same data set (Winner, Noonan, Fleming, Olson, Mueller, Sheldon, & Calabrese, 2018). It helps to ascertain whether the sampled data set was generated from a random process. Durbin-Watson test ascertained whether the adjacent parameters have a relationship. A Durbin-Watson value close to 2 is an indication that autocorrelation is absent.

### **3.6.5 Linearity Test**

Linearity means that the average measurement of the parameters falls within a straight line. It is adopted in testing the linear correlation between the measured and explanatory parameters, regarding the linear regression models (Chiesa, Manohar, & Shinkar, 2020). The objective is to assess whether the parameters under study are linear or non-linear, with values below 0.05 considered to be accepted.

## **3.7 Data Analysis**

After collecting information, everything was checked for accuracy and completeness. Coding was done to make the data ready to be entered into the software for data analysis. The determination of extent of usage of the credit lending models was done using averages and measures of variations. Multiple regression analysis was then used in the study to aid in the determination of the interactive effect of group lending, individual lending, cooperative lending, and digital credit model on loan performance of DT-SACCOs in Kenya. In this study, the following regression model was used:

$$LP = a + \beta_1 GP_1 + \beta_2 IL_2 + \beta_3 DC_3 + \beta_4 CL_4 + \beta_5 SS_5 + \varepsilon$$

**Where:**

Y = Loan Performance (Dependent variable).

a = Constant

$\beta$  = Coefficient

GP<sub>1</sub> = Group Lending

IL<sub>2</sub> = Individual Lending

DC<sub>3</sub> = Digital Credit

CL<sub>4</sub> = Co-operative Lending

SS<sub>5</sub> = Size of the SACCO

$\varepsilon$  = Error term.

### **3.7.1 Operationalization of Study Variables**

This assists to reduce how abstract the parameters under study are, using easily measurable antecedents. This would help to determine how the parameters under study are related.

The operationalization is given in the Table 3.1:

**Table 3.1: Operationalization of Study Variables**

<b>Variable</b>	<b>Sub Variables</b>	<b>Indicators</b>	<b>Source</b>
<b>Independent variable</b>	Group Lending Model	▪ Group size.	Abdi and Jagongo (2019)
		▪ Group information.	
		▪ Group guarantee	
	Individual Lending Model	▪ Loan security	Alaoui and Tkiouat (2017)
▪ Loan guarantee.			
<b>Credit Lending Models</b>	Digital Credit Model	▪ Number of digital platforms. ▪ Digital products scope. ▪ Number of customers.	Francisy, Blumenstockz, and Robinso (2017)
	Cooperative Lending Model	▪ Types of membership. ▪ Membership loan portfolio. ▪ Lending products to members.	Alaoui and Tkiouat (2017)
<b>Dependent Variable</b>	Loan Performance	Ratio of volume of non-performing loans to total loans	Buchory (2021)
<b>Control Variables</b>	Size of the SACCO	Total Assets	Lee (2002)

**Source:** Researcher (2023)

### 3.6.2 Test of Significance

The significance of the variables and the appropriateness of the regression model were evaluated using the t-test, which was based on the results of the F-test. The researcher also computed Pearson correlation coefficient (R) and adjusted  $R^2$  to establish the positivity or negativity of the correlations computed, while adjusted  $R^2$  helped to establish the percentage variations in loan performance, in response to variations in credit lending models adoption. T-tests were used to determine the statistical significance of the various study variables. The F-test helped determine if the regression structure was adequate. The Pearson correlation coefficient,  $R^2$  and  $\beta$  was equally be used. A 5% threshold of significance was used in the analysis.

## **CHAPTER FOUR**

### **DATA ANALYSIS, DISCUSSION AND FINDINGS**

#### **4.1 Introduction**

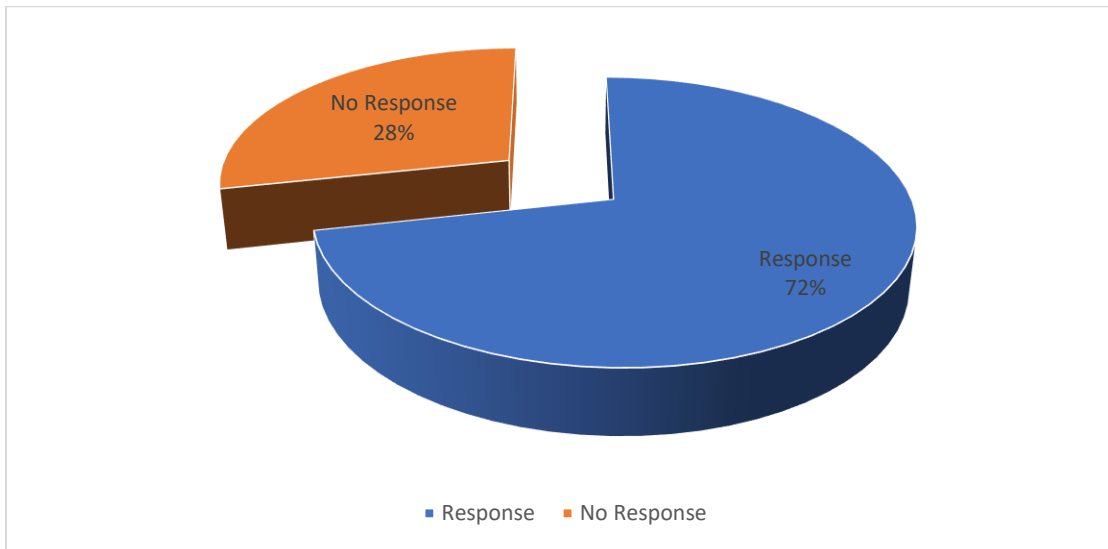
This part contains the results of the analysis and discussion of the data. This follows forth from a detailed understanding of the research objectives. Savings and credit cooperatives in Kenya that accept deposits were analyzed to see how different credit lending methods affected their loan portfolios. The analysis was focused on determining the joint effect of group lending model, individual lending model, cooperative lending model and digital credit model on how loans of DT-SACCOs in Kenya perform.

#### **4.2 Response Rate**

This is the number of persons that provided the needed information divided by those the questionnaires were sent to, expressed as a percentage. The research targeted 176 respondents from the DT-SACCOs. Feedback was received from 126 respondents, which represented 72%. a figure of 30-40% is regarded suitable in descriptive cross-sectional research (Saunders, Lewis, and Thornhill, 2017) (Saunders, Lewis, and Thornhill, 2017). Therefore, the rate of responses was satisfactory.



**Figure 4.1: Response Rate**



**Source:** Research Data (2023)

### **4.3 Adoption of Credit Lending Models**

The participants indicated their extent of agreement provided, based on the the given scale. The results are detailed in the analysis that follows:

#### **4.3.1 Group Lending Model**

In recent years, group lending mechanisms have grown in popularity among microfinance companies. This is partly because of its capacity to boost loan repayments through joint liability while encouraging an entrepreneurial spirit among borrowers. Through the united efforts of all group members, group lending models aid in the promotion of women's emancipation. However, there hasn't been much research done on how effective group lending is at delivering microfinance in underdeveloped nations (Obinna et al., 2019).

The findings in Table 4.1 group lending model were adopted by the DT-SACCOs to a moderate extent ( $M= 3.1587$ ;  $SD = 0.8441$ ). The institutions moderately adopted practices including consideration of the size of the group as a prerequisite before lending,

collection of information about the group before lending, group guarantee is a requirement, emphasis on internal governance mechanism and ascertainment of the size of the group.

According to this interpretation, a higher mean shows that the practices were implemented on average to a greater extent, whereas a higher SD shows that the informants' responses varied more widely. The data was skewed to the left since the average skewness statistic of -.3456 is less than +1. The data exhibited a flatter curve with a negative kurtosis of -1.344.

**Table 4.1: Group Lending Model**

	N	Mean	Std. Deviation	Skewness	Std. Error	Kurtosis	Std. Error
	Statistic	Statistic	Statistic	Statistic	Error	Statistic	Error
Consideration of the size of the group as a prerequisite before lending.	126	3.1508	.82041	-.375	.216	-1.168	.428
Information is collected about the group before lending.	126	3.1825	.85230	-.361	.216	-1.534	.428
Group guarantee is a requirement.	126	3.1111	.85997	-.294	.216	-1.395	.428
Internal governance mechanism exists to avoid delinquency.	126	3.1984	.86736	-.323	.216	-1.454	.428
The size of the group is a prerequisite before lending.	126	3.1508	.82041	-.375	.216	-1.168	.428
<b>Average</b>	<b>126</b>	<b>3.1587</b>	<b>0.8441</b>	<b>-.3456</b>	<b>.216</b>	<b>-1.344</b>	<b>0.428</b>

**Source:** Research Data (2023)

### 4.3.2 Individual Lending Model

Individual Lending describes the provision of credit to an individual without considering other members to play a role as guarantors. Based on individual evaluation of character and ability to pay, a loan is given. Gauging it from the view point of a firm, it can minimize uncertainty in payment of loans and can allow various individuals to

take loans thus the growth and positioning of the institution. Individual lending enables DT-SACCOs get relevant information from customers for better comprehension of what they need and is thus able to improve in services offered.

Table 4.2 indicates that the DT-SACCOs adopted individual lending model at an average level given by (M= 3.2889; SD = .8744). Individual lending practices were also adopted averagely as indicated in Table 4.2. The practices included obtaining loan security from individuals, the use of guarantors for everyone, assessment of ability to repay before granting loans, establishment of eligibility criteria and determination of risk levels for individual lending.

**Table 4.2: Individual Lending Model**

	N	Mean	Std. Deviation	Skewness	Std. Error	Kurtosis	Std. Error
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
Loan security is obtained from individuals.	126	3.1429	.86454	-.282	.216	-1.611	.428
Enough guarantors are sought for each individual loan.	126	3.1190	.87276	-.162	.216	-1.523	.428
The SACCOs assess ability to repay before granting loans.	126	3.8810	.85423	-.394	.216	-.444	.428
There are eligibility criteria for selecting individual customers.	126	3.1349	.87043	-.193	.216	-1.508	.428
Risk levels are determined for individual lending.	126	3.1667	.90995	-.144	.216	-1.426	.428
<b>Average</b>	<b>126</b>	<b>3.2889</b>	<b>.8744</b>	<b>-.235</b>	<b>.216</b>	<b>-1.3024</b>	<b>.428</b>

**Source:** Research Data (2023)

The average mean indicates that the practices were adopted to an average extent comparatively, while the smaller SD shows a small variation in answers by the informants. A skewness statistic of -.235 indicates a leftward bias in the data (because

skewness statistics are negative numbers). The kurtosis of the data was -1.3024, suggesting a flatter distribution.

### **4.3.3 Digital Lending Model**

Digital lending means financial and credit services that are delivered and used by customers through digital technology. The advancements in mobile money transfer are significantly responsible for Kenya's adoption of digital finance. Digital lending has increased because of the rise in the digital finance sector that has been sparked by mobile money technologies. The convenience, accessibility, and quick remittance of digital loans are factors in their appeal. Since digital lending makes it possible to execute individualized client journeys successfully, it represents a significant opportunity for competitive differentiation (Chen et al., 2023).

Table 4.3 indicates that digital lending model was adopted by DT-SACCOs moderately given by a mean ( $M= 3.3143$ ;  $SD = 0.8631$ ). The specific digital lending practices were adopted equally adopted averagely. The practices included continuous evaluation of digital lending platforms for adequacy, authentication of customer information before advancing credit, obtaining of loan guarantee on the digital loans, assessment of costs associated with digital lending and review of risks associated with digital lending regularly.

The average mean indicates that the practices were adopted to an average extent comparatively, while the average standard deviation means the variations in answers by the informants are not wide. Data was left-skewed, as indicated by the average skewness statistic of -0.334, which is less than one. The data equally had a negative kurtosis of -1.3 explaining a flatter curved data.

**Table 4.3: Digital Lending Model**

	N	Mean	Std. Deviation	Skewness	Std. Error	Kurtosis	Std. Error
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
Continuous evaluation of digital lending platforms for adequacy.	126	3.1032	.88389	-.204	.216	-1.699	.428
Authentication of customer information before advancing credit.	126	3.1905	.87374	-.310	.216	-1.483	.428
Loan guarantee on the digital loans is obtained.	126	3.9444	.79303	-.487	.216	-.041	.428
Mechanisms exists for assessing costs associated with digital lending.	126	3.1349	.89758	-.271	.216	-1.716	.428
Reviews of risks associated with digital lending regularly.	126	3.1984	.86736	-.398	.216	-1.561	.428
<b>Average</b>	<b>126</b>	<b>3.3143</b>	<b>0.8631</b>	<b>-0.334</b>	<b>0.216</b>	<b>-1.3</b>	<b>0.428</b>

**Source:** Research Data (2023)

#### 4.4.4 Cooperative Lending Model

This seems to be productive as co-operatives make use of available economic resources and are key in putting together micro-savings and micro-lending. In co-operative, people of similar aspirations in striving to enhance their status and needs economically, socially, and culturally join hands in forming an enterprise that can help them achieve their aspirations.

Table 4.4 indicate that cooperative lending model was averagely adopted by the DT-SACCOs as given by an average mean of  $M= 3.1016$ ;  $SD = .9144$ . The specific

practices were equally adopted on an average basis, and they included categorization of members, continuous assessment of membership loan portfolio to monitor performance, review of lending products to members, update of membership on a regular basis and credit risk assessment.

The average mean shows that the behaviors were adopted on average in comparison, and the average standard deviation shows that the informants' responses varied not significantly from one another. The data was skewed to the left because the average skewness statistic of -.0956 is less than 1, which is less than 1. The data also exhibited a negative kurtosis of -1.6096, which accounts for the flatter curve.

**Table 4.4: Cooperative Lending Model**

	N	Mean	Std. Deviation	Skewness	Std. Error	Kurtosis	Std. Error
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
The SACCOs have categories of membership for purposes of lending	126	3.1032	.87480	-.203	.216	-1.672	.428
There is continuous assessment of membership loan portfolio to monitor member loan performance.	126	3.0476	.89315	-.094	.216	-1.752	.428
The SACCOs regularly review lending products to members.	126	3.0556	.96586	.050	.216	-1.630	.428
There is update of membership on a regular basis for purposes of lending.	126	3.1984	.96349	-.028	.216	-1.322	.428
Members are categorized for purposes of assessing credit risks.	126	3.1032	.87480	-.203	.216	-1.672	.428
<b>Valid N (listwise)</b>	<b>126</b>	<b>3.1016</b>	<b>.9144</b>	<b>-.0956</b>	<b>.216</b>	<b>-1.6096</b>	<b>.428</b>

**Source:** Research Data (2023)

## 4.5 Regression Diagnostics

Since multiple regression analysis was performed in the study, it was crucial to determine how accurately the results might be extrapolated. It was crucial to run tests for normalcy, multicollinearity, autocorrelation, heteroscedasticity, and linearity. to aid in the diagnosis. The analysis is described as follows:

### 4.5.1 Reliability Analysis

Assessing a model's reliability involves identifying the proportion of output fluctuation attributable to sources other than the data itself or a result of specific measurement errors, most notably misconceptions among respondents regarding the intent of the employed question-statements. It refers to the degree to which the outcomes are generated under constant circumstances (Canatay et al., 2022). Repetition of an analysis reveals consistency in measurement data that is dependable. As a result, ensuring the accuracy of the collected data calls for a reliability analysis. Cronbach's alpha values between 0 and 1 were used to make this determination in this research.

According to Sekaran (2000), who claimed that a range between 0.5 and 0.8 is preferable, Employed here were values of 0.5 and above, and the data is credible. From Table 4.5 the variables' data were accurate because all their alpha coefficients were more than 0.5.

**Table 4.5: Reliability Test**

<b>Cronbach's Alpha</b>	<b>Cronbach's Alpha Based on Standardized Items</b>	<b>N of Items</b>
.400	.856	6

**Source:** Research Data (2023)

### 4.5.2 Validity Analysis

This ensures accuracy in what is used in the investigation. In coming up with questionnaires related information was assessed; there was a discussion and

consequently incorporation of ideas from experts in the area. The study also to evaluate sampling adequacy. A consideration was made to values greater than 0.5 (Dragostinov, & Mottus, 2023).

Table 4.6 shows that the KMO values of all the factors used in the survey were greater than 0.5, as required.

**Table 4.6: KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.812
Bartlett's Test of Sphericity	Approx. Chi-Square	747.609
	df	15
	Sig.	.000

**Source:** Research Data (2023)

#### 4.5.3 Test of Normality

A normality test attests to suitability of the data (Kwak, & Park, 2019). The reasoning goes that because different statistical approaches presuppose that the population data distribution has a normal distribution, it is crucial to verify and confirm that the data meet the normality criteria. In this test, the data are normal if Shapiro-Wilk value greater than 0.05. Table 4.7 confirms that data collected regarding the parameters using a questionnaire are not normally distributed as per the above guideline.

**Table 4.7: Tests of Normality**

Variable	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Group Lending Model	.322	126	.000	.729	126	.000
Individual Lending Model	.232	126	.000	.769	126	.000
Digital Lending Model	.161	126	.000	.887	126	.000
Cooperative Lending Model	.254	126	.000	.850	126	.000

a. Lilliefors Significance Correction

**Source:** Research Data (2023)



#### 4.5.4 Test for Multicollinearity

It demonstrates that there is a robust linear relationship between the predictor variables. As a result, it may be difficult to ascertain the unique effects of each IV on the DV when performing a regression analysis. The VIF was utilized to look at the relationship between the regressors. A strong correlation marks multicollinearity. This increases the likelihood that some factors will be statistically insignificant (Shrestha, 2020).

VIF was utilized to look at the relationship between the regressors. Young (2017) posit that VIF values should range from 1 to 10, while tolerance values  $<0.20$  suggest a major collinearity issue. Table 4.8 confirms the absence of multicollinearity following the guideline stated previously.

**Table 4.8: Test for Multicollinearity**

Model	Collinearity Statistics	
	Tolerance	VIF
Group Lending Model	.488	2.050
Individual Lending Model	.327	3.057
Digital Lending Model	.790	1.266
Cooperative Lending Model	.789	1.267
Total Assets	.224	4.459

a. Dependent Variable: Loan Performance

Source: Research Data (2023)

#### 4.5.5 Test of Autocorrelation

It gauges associations between a construct's original value and its lagged value in a time series. Autocorrelation analysis aids in the discovery of recurring periodic patterns. It is used to spot non-randomness in the data that has been presented. Durbin Watson was chosen for this purpose. Table 4.9 shows that the value was 1.899 as per expected;  $1.5 < d < 2.5$ . The conclusion was that autocorrelation was nonexistent.

**Table 4.9: Test of Autocorrelation**

<b>Model</b>	<b>Durbin Watson Test</b>
<b>Predictors:</b> (Constant), Total Assets, Cooperative Lending Model, Digital Lending Model, Group Lending Model, Individual Lending Model	1.899
<b>Dependent Variable:</b> Loan Performance	

**Source:** Research Data (2023)

#### **4.5.6 Test for Heteroscedasticity**

It means that the variance of the predictor variable does not vary similarly throughout the data. The Breusch-Pagan and Koenker test was used to evaluate it in this research.. Here, a p-Value > 0.05 show absence of heteroscedasticity. The values were as in Table 4.10:

**Table 4.10: Breusch-Pagan and Koenker test**

	<b>LM</b>	<b>Sig.</b>
Breusch-Pagan	387.503	.000
Koenker	49.800	.000

**Source:** Research Data (2023)

#### **4.5.7 Linearity Test**

It established whether the association between regressor and regressed parameters were linear. For regression analysis, there should be a linear relationship between regressed and regressor parameters. It is shown when deviation from linearity > 0.05. The correlations between the variables in Table 4.11 were linear.

**Table 4.11: Test of Linearity**

<b>Variables</b>	<b>Deviation from Linearity</b>	<b>Significance Level</b>
Loan Performance and Total Assets	0.501	0.000
Loan Performance and Group Lending Model	6.800	0.000
Loan Performance and Individual Lending Model	3.403	0.000
Loan Performance and Digital Lending Model	8.104	0.000
Loan Performance and Cooperative Lending Model	13.133	0.000

**Source:** Research Data (2023)

#### **4.6 Pearson Correlation Coefficient**

Correlation involves assessing the association, relationship, or correlation between two variables to ascertain positive or negative relatedness. The two variables are said to be related if changes in one influence the other. Therefore, correlation coefficients are employed to illustrate the degree of this connection or relationship. Correlation coefficients thereby measure the degree to which two variables are connected or associated.

Table 4.12 shows that there is a positive and statistically significant relationship between loan performance and both group and individual lending models ( $r = .715$ ;  $p < 0.05$  and  $r = .813$ ;  $p < 0.05$ , respectively). The correlation coefficient between total assets and loan performance was  $.988$  ( $p < 0.05$ ). The link between digital and cooperative lending models and loan performance is weak ( $r = .418$ ;  $p < 0.05$ ) but favorable and statistically significant ( $r = .393$ ;  $p < 0.05$ ). The implication is that there is a strong connection between group lending model, individual lending model and total assets with loan performance, while digital and cooperative lending models do not have a strong connection with changes in loan performance.

**Table 4.12: Pearson Correlation Coefficient**

		<b>Group</b>	<b>Individual</b>	<b>Digital</b>	<b>Cooperative</b>		
		<b>Lending</b>	<b>Lending</b>	<b>Lending</b>	<b>Lending</b>	<b>Total</b>	<b>Loan</b>
		<b>Model</b>	<b>Model</b>	<b>Model</b>	<b>Model</b>	<b>Assets</b>	<b>Performance</b>
Group	Pearson	1	.588**	.206*	.367**	.704**	.715**
Lending	Correlation						
Model	Sig. (2-tailed)		.000	.021	.000	.000	.000
	N			126	126	126	126
Individual	Pearson		1	.374**	.250**	.815**	.831**
Lending	Correlation						
Model	Sig. (2-tailed)				.005	.000	.000
	N				126	126	126
Digital	Pearson			1	.010	.413**	.418**
Lending	Correlation						
Model	Sig. (2-tailed)				.910	.000	.000
	N				126	126	126
Cooperative	Pearson				1	.397**	.393**
Lending	Correlation						
Model	Sig. (2-tailed)					.000	.000
	N						126
Total Assets	Pearson					1	.988**
	Correlation						
	Sig. (2-tailed)						.000
	N						126
Loan	Pearson						1
Performance	Correlation						
	Sig. (2-tailed)						
	N						

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

\* . Correlation is significant at the 0.05 level (2-tailed).

**Source:** Research Data (2023)

## 4.7 Regression Analysis

Multiple regression analysis was used in the study to help researchers figure out the combined impact of group lending, individual lending, cooperative lending, and digital credit model on loan performance of DTSCCS.

### 4.7.1 Model Summary

According to Table 4.13,  $R = 0.990$  indicates a good correlation between credit lending models and loan performance. The coefficient of determination, or R square, shows that the variables used in the regression model account for 98% of the variance in loan returns. According to the adjusted  $R^2$  of 0.979, the size of the DT-SACCOs and the lending models used account for 97.9% of changes in loan performance. The consequence is that other factors not considered in the model were responsible for only 2.1% of variances in loan performance. According to the standard error of estimation, the average loan performance score is 0.06090 points outside the predicted range by the model. The better the model fits the data, which indicates the model's applicability, the less the value of the estimation error standard.

**Table 4.13: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.990 <sup>a</sup>	.980	.979	.06090

a. Predictors: (Constant), Total Assets, Cooperative Lending Model, Digital Lending Model, Group Lending Model, Individual Lending Model

b. Dependent Variable: Lending Performance

### 4.7.2 Analysis of Variance

Table 4.14 shows that credit lending models significantly affect how loans perform ( $p < 0.05$ ). This means that effective usage of the models leads to improved loan performance of the DT-SACCOs. An F-statistic of 1155.889 indicates that the degree

of dissimilarity between sample means is larger than the degree of dissimilarity within samples. High F statistics is associated with lower p-value, implying that variations in predictor variables reliably and significantly cause variations in the DV.

**Table 4.14: Analysis of Variance**

<b>Model</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	21.435	5	4.287	1155.889	.000 <sup>b</sup>
	Residual	.445	120	.004		
	Total	21.880	125			

a. Dependent Variable: Lending Performance

b. Predictors: (Constant), Total Assets, Cooperative Lending Model, Digital Lending Model, Group Lending Model, Individual Lending Model

### 4.7.3 Regression Coefficient

According to Table 4.15, the Unstandardized coefficients of -.249 indicate that 24.9% variation in loan performance is due to variations in any of the determinants in the regression model, when all other DVs are held constant. More specifically, the model's independent variables point to a standardized beta value of .036 for group lending, which translates to a .036 point improvement in loan performance for every one SD unit increase in group lending. Individual lending had a beta value of .072 indicating that a SD unit improvement in individual lending result in a .072 improved loan performance. Further, the beta value of digital lending indicates that a SD unit increase in digital lending led to a .013 improved loan performance. The beta value of cooperative lending model also led to an improvement in loan performance of .006 SD units when SD units increased cooperative lending. Finally, total assets had the higher influence, having a beta of .896. This shows that a SD unit increase in total asset led to a .896 improved loan performance.

The importance of the independent factors is further shown by the analysis. The findings indicate that individual lending model and total assets significantly impact loan performance because the  $p < 0.05$ . Group lending model, digital lending model, and cooperative lending model do not significantly impact on loan performance, since  $p > 0.05$ .

**Table 4.15: Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.249	.068		-3.667	.000
Group Lending Model	.031	.016	.036	1.949	.054
Individual Lending Model	.076	.024	.072	3.163	.002
Digital Lending Model	.008	.008	.013	.898	.371
Cooperative Lending Model	.003	.007	.006	.397	.692
Total Assets	.052	.002	.896	32.608	.000

a. DV: Lending Performance

Source: Research Data (2023)

The link between the variables was therefore indicated in the equation that follow with the assigned co-efficient as follows:

The analysis was based on the multiple regression model given as:

$$LP = -.249 + .036GL_1 + .072IL_2 + .013DL_3 + .006CL_4 + .896SS_5 + \varepsilon$$

**Where:**

Y = Loan Performance

a = Constant

$\beta$  = Coefficients

GL<sub>1</sub> = Group Lending

IL<sub>2</sub> = Individual Lending

DL<sub>3</sub> = Digital Lending

CL<sub>4</sub> = Co-operative Lending

SS<sub>5</sub> = Size of the SACCO

$\varepsilon$  = Error term.

#### **4.8 Discussion of Findings**

Deposit-accepting savings and credit cooperatives were found to have a positive relationship between credit lending rules and loan performance. The study found that the credit lending models used in the study significantly impacted the loan performance of DT-SACCOs (p0.05 significant). The insight drawn was that by effectively implementing the models, loan performance of the DT-SACCOs improved. The findings are similar to those of Abdi and Jagongo (2019) on group lending improves performance of loans. In addition, these results are consistent with the findings of Karanja and Simiyu (2022), who discovered that Microfinance Banks in Kenya benefited from better loan performance because of better credit management techniques.

In addition, the study indicated that for every one standard deviation unit an increase in group lending, loan performance improved by .036. The same improvement in loan performance, .072, was seen when individual lending increased by one standard deviation unit. Additionally, an increase of one standard deviation unit in digital lending was associated with a .013 improvement in loan performance. The results also demonstrate that an increase of one standard deviation unit in cooperative lending resulted in a .006 improvement in loan performance. Finally, a .896 improvement in loan performance was found when total assets were increased by one standard deviation unit.



The study also found that there was a statistically significant relationship between the individual lending model and total assets and loan performance at the 0.05 level of significance.

Group lending model, digital lending model, and cooperative lending model however did not significantly impacted on loan performance, since  $p > 0.05$ . These results are in line with those obtained by Ambunya and Moronge (2019), who investigated the effectiveness of group lending practices at microfinance institutions and found a strong association between the two. Further, the works of Wanyonyi and Ngaba (2021) established that the use of digital platforms for financial transactions significantly influences how the SACCOs perform financially. Finally, the study found out that DT-SACCOs adopted credit lending models on a moderate basis. This included group lending, individual lending, digital lending, and cooperative lending models. This finding agreed with the study by Karanja and Simiyu (2022) who found out that credit-related activities affect how loans given by microfinance institutions perform in Kenya.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATION**

#### **5.1 Introduction**

In this section, we reviewed the findings of the research. Finally, conclusions and suggestions based on the findings are provided. It also lists potential constraints and offers suggestions.

#### **5.2 Summary of Research Findings**

The following are the exact goals upon which the results were based:

##### **5.2.1 Group Lending Model**

The study found out that group lending models were moderately utilized by the DT-SACCOs. The adopted practices included consideration of the size of the group as a prerequisite before lending, collection of information about the group before lending, group guarantee is a requirement, emphasis on internal governance mechanism and ascertainment of the size of the group. It was also established that the group lending model positively and significantly correlated with loan performance. Finally, a unit increment in group lending resulted in a .036 increase in loan performance. The findings reinforce the works of Abdi and Jagongo (2019) who indicated that group lending improves performance of loans, since groups bear a joint responsibility, such that they ensure the members pay their loans.

##### **5.2.2 Individual Lending Model**

It was established that DT-SACCOs adopted individual lending model at an average level. The individual lending practices adopted included obtaining loan security from individuals, the use of guarantors for everyone, assessment of ability to repay before

granting loans, establishment of eligibility criteria and determination of risk levels for individual lending. Individual lending models were observed to have strongly and significantly correlate with loan performance. Further, a standard deviation unit increase in individual lending led to a .072 improved loan performance. The outcomes agree with those of Muthama and Warui (2021). They established that lending terms on individual borrowing affects loan performance.

### **5.2.3 Digital Credit Lending**

The study found out that digital lending model was adopted by DT-SACCOs at an average level. The specific digital lending practices were adopted included continuous evaluation of digital lending platforms for adequacy, authentication of customer information before advancing credit, obtaining of loan guarantee on the digital loans, assessment of costs associated with digital lending and review of risks associated with digital lending regularly. Digital lending model was observed having a weak positive, but a significant correlation with loan performance. Further, a standard deviation unit increase in individual lending led to a .013 improved performance of loans. The findings were found to be in line with the findings by Wanyonyi and Ngaba (2021). They established that the use of digital platform for financial transactions and credit management significantly influences how the SACCOs perform financially.

### **5.2.4 Cooperative Lending Model**

The findings establish that a cooperative lending model was averagely adopted by DT-SACCOs. The specific practices included categorization of members, continuous assessment of membership loan portfolio to monitor performance, review of lending products to members, update of membership on a regular basis and credit risk assessment. The bivariate correlation coefficient established that cooperative lending

model's positive connection with loan performance was modest, but substantial. The beta value of cooperative lending model also indicates an increase of one standard deviation unit in cooperative lending is associated with a.006 improvement in loan performance.

### **5.2.5 Joint Effect of Group, Individual, Cooperative and Digital credit model**

The research confirmed that the average size of DT-SACCOs and the lending models used accounted for 97.9% of changes in loan performance. The consequence is that other factors not considered in the model were responsible for only 2.1% of variances in loan performance. Further, credit-lending models significantly influenced loan performance of DT-SACCOs in Kenya. This implied that effective implementation of the credit lending models led to improved loan performance of DT-SACCOs.

### **5.3 Conclusion**

According to the findings of the research, the credit lending models that DT-SACCOs in Kenya use have a significant bearing on the success of their loan performance. Another finding that led to this conclusion was that the DT-SACCOs, on average, utilized the credit lending models. These activities included lending to groups, lending to individuals, lending on the internet, and financing to cooperatives. The overall asset composition as well as the specific lending methodology both had a substantial effect on loan performance. However, the performance of loans was not considerably affected by the use of the group lending model, the digital lending model, or the cooperative lending model.

The research came to the additional conclusion that a positive and statistically significant association exists between loan performance and both group and individual

lending models. This was found to be in both cases. Although there was a positive correlation and a statistically significant association between digital and cooperative lending models and loan performance, the connection was only a weak one. The implication was that there was a strong positive and significant improvement in how their loans performed whenever the DT-SACCOs improved their group and individual lending activities.

#### **5.4 Recommendations of the Study**

According to the results, DT-SACCOs in Kenya adopt credit lending models moderately. However only the individual lending model and total assets significantly affected loan performance. The recommendation therefore is that the managers of the DT-SACCOs should establish mechanisms for improving individual loan processing and development of competitive individual loan products. The management should also ensure a better comprehension of loan standards to be embraced regarding an individual borrower's lending terms and conditions. Equally, the management should ensure sustainable asset quality to improve and sustain loan performance. This would be achieved through reduced non-performing loans and efficient credit management. DT-SACCOs need to develop tight for loan client access to enhance loan performance.

The management of DT-SACCOs should also put adequate mechanisms in place to regulate group lending, digital lending, and cooperative lending practices, since they affect loan performance, though insignificantly. Increased use of digital platforms would be given emphasis by management, as new frontiers for increasing loan performance. The digital transaction platforms would be improved by the management to improve financial inclusion.

### **5.5 Limitations of the Study**

It is easy to single out a few issues that were problematic with the study. Inadequate planning had been done for the gathering of data, and the DT-SACCOs were located in a variety of locations. As a direct consequence of this, the researcher was forced to make use of a large number of research assistants in order to collect the data within the permitted amount of time. In addition, the researcher handed out some questionnaires, which were promptly returned after being filled out, scanned, and finally dispatched. One such problem was that some of the participants were hesitant to provide responses to vital questions because those questions referred to essential activities. To address this issue, a letter from the institution was used, in which it was explained that the data and research effort had been used for academic reasons.

### **5.6 Suggestions for Further Studies**

This study's objective was to investigate the ways in which various models of credit lending had an impact on the final loan amounts disbursed by DT-SACCOs in Kenya. The findings of this study imply that similar research should be conducted at different types of institutions. Researchers in the future need to investigate the impact that credit reference offices have on how well loans are performed. In addition, research can be carried out to investigate the manner in which the proliferation of digital lending has increased access to loans and, consequently, the influence on financial inclusion brought about by loan performance.

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## APPENDIX I: QUESTIONNAIRE

Date...../...../2022

### EXTENT OF ADOPTION OF CREDIT LENDING MODELS

Please indicate the level of your agreement with the extent to which the DT-SACCOs have adopted credit lending models, using the scale: 5 = To a very large extent; 4 = Large extent; 3 = Moderate extent; 2 = Small extent and 1 = Very small extent.		Very small	Small extent	Moderate extent	Large extent	Very large extent
		1	2	3	4	5
<b>A</b>	<b>Group Lending Model</b>					
1	The organization considers the size of the group as a prerequisite before lending.					
2	There is the collection of as much information as possible about the group.					
3	The organization obtains group guarantee as a requirement.					
4	The groups have internal governance mechanism to avoid delinquency.					
5	The institution adopts default recovery mechanisms suitable for each group.					
<b>B</b>	<b>Individual Lending Model</b>					
6	The organization ensures that loan security is obtained from individuals.					
7	The SACCOs ensure that enough guarantors are sought for each individual loan.					
8	The SACCOs conduct an assessment of ability to repay before granting loans.					
9	There are eligibility criteria for selecting individual customers.					
10	There are strategies to determine risk levels for individual lending.					
<b>C</b>	<b>Digital Lending Model</b>					
11	The SACCOs conduct continuous evaluation of their digital lending platforms for adequacy.					
12	There is authentication of customer information before advancing credit.					
13	The organizations obtain loan guarantee on the digital loans.					
14	The institution has mechanisms for assessing costs associated with digital lending.					

15	The institution reviews risks associated with digital lending on a regular review.					
<b>D</b>	<b>Cooperative Lending Model</b>					
16	The SACCOs have categories of membership for purposes of lending					
17	There is continuous assessment of membership loan portfolio to monitor member loan performance.					
18	The SACCOs regularly review lending products to members.					
19	There is update of membership on a regular basis for purposes of lending.					
20	Members are categorized for purposes of assessing credit risks.					

## APPENDIX II: RAW DATA

<b>1</b>	<b>Group Lending Model</b>	<b>Individual Lending Model</b>	<b>Digital Lending Model</b>	<b>Cooperative Lending Model</b>	<b>Total Assets</b>	<b>Loan Performance</b>
2	4.2	4	4	4.4	51.21	2.63
3	4	3.9	4	4.6	36.98	2.34
4	3.6	3.6	4.4	4	34.39	2.19
5	3.6	3.4	3.8	4.8	27.84	1.55
6	3.4	3.2	3	3.8	17.84	1.03
7	3	3	3	3.8	14.32	0.9
8	3	3	3.8	3.6	12.24	0.77
9	2.8	2.8	3.8	3.6	12.28	0.74
10	2.8	2.6	3.4	3.6	13	0.65
11	2.8	2.4	3.8	3.4	11.55	0.74
12	3	2.4	3.8	2.6	9.52	0.54
13	3	2.4	3.4	3.2	9.25	0.62
14	3	2.4	3.6	3.6	8.96	0.52
15	2.8	2	3.6	3.4	10.62	0.51
16	3	3	3.4	3	12.55	1.11
17	2.6	2.2	3.4	3	8.46	0.55
18	2.6	2.2	3.2	3.6	8.36	0.47
19	2.4	2	3.4	3.4	11.61	0.46
20	2	2.2	3.6	3.4	7.28	0.41
21	2.4	2.2	3	3	7.33	0.45
22	2.6	2.2	3	2.6	6.77	0.42
23	2.8	2.2	3.4	2.6	6.24	0.46
24	2.6	2.2	3.8	2.4	5.53	0.39
25	2	2.2	3.2	2	6.21	0.37
26	2.4	2.3	2.8	2	5.68	0.37
27	2	2.2	3	2	6.1	0.41
28	2	2.2	2.8	2	5.98	0.3
29	2	2.2	2.6	2	5.29	0.33
30	2	2.2	3.4	2	5.95	0.26
31	1.8	2.4	3.8	2	5.35	0.33
32	2	2.2	3.8	2.6	5.66	0.28
33	2	2.4	3	2.2	4.82	0.3
34	2	2.4	3.8	2	3.89	0.24
35	2	2.2	3	2	4	0.24
36	2	2.4	3.6	2	4.76	0.22
37	2	2	3.4	3.6	4.14	0.22
38	2.2	2.4	3.8	3.2	4.31	0.28
39	2	2.4	3.4	2.2	3.77	0.2
40	1.8	2.2	3	2	4.18	0.16
41	2.6	2.4	3	2	3.76	0.21
42	2	2.4	3	2	3.55	0.24

<b>1</b>	<b>Group Lending Model</b>	<b>Individual Lending Model</b>	<b>Digital Lending Model</b>	<b>Cooperative Lending Model</b>	<b>Total Assets</b>	<b>Loan Performance</b>
43	2	2.4	3	1.8	3.74	0.23
44	2	2.6	3	2.2	3.09	0.17
45	2.6	2.2	3	1.8	3.37	0.21
46	2	2.2	3.8	2	3.39	0.16
47	2.4	2.4	3.8	2	3.63	0.22
48	2.4	2.4	3	3.9	3.16	0.19
49	2	2.2	3	3.8	3.07	0.19
50	2	2.4	3	1.8	3.01	0.19
51	3.2	2.2	3.8	2	2.77	0.15
52	2.1	2.2	3.4	2	2.98	0.13
53	3.4	2.4	3.6	2	2.65	0.15
54	2	2.2	3.8	2	2.79	0.17
55	2	2.2	2.8	2	2.29	0.14
56	2	2.4	3.8	2.8	2.12	0.11
57	2	2.4	4.2	2.6	2.16	0.13
58	2	3.4	3	1.8	2.49	0.11
59	2	2.2	4.2	1.8	2.13	0.12
60	2	2.4	4	1.8	2	0.11
61	2	2	3.8	1.8	1.8	0.11
62	2	2	2	3.8	1.91	0.12
63	2	2	2	3.8	1.92	0.12
64	3	2.2	3.8	3.2	1.73	0.11
65	2	2	3.8	3	1.58	0.08
66	2	2	3.6	2	1.67	0.07
67	2.2	2.4	2	2	2.26	0.12
68	2	2.2	2	2	1.61	0.09
69	2.1	2	3.4	3.8	1.83	0.08
70	2.2	2.2	2	3.8	1.74	0.1
71	3.2	2	2	3.6	1.43	0.08
72	2	2	2	3.8	1.4	0.08
73	2	2	3.4	3.6	1.18	0.08
74	2	2	3.8	3	1.53	0.07
75	2.2	2	2	2	1.14	0.07
76	3	1.8	2	2	1.28	0.05
77	2	1.8	3	3.6	1.14	0.05
78	3	2	3	3.8	1.2	0.07
79	2	2.2	3.8	3.6	1.4	0.08
80	3	2	2	2	1.14	0.07
81	2	2	2	2	1.29	0.06
82	2	2	3.8	3.4	1.16	0.07
83	2	2	2	2	1.25	0.07
84	2	1.8	3.6	2	1.18	0.06
85	2.6	2	2	2	1.02	0.06

<b>1</b>	<b>Group Lending Model</b>	<b>Individual Lending Model</b>	<b>Digital Lending Model</b>	<b>Cooperative Lending Model</b>	<b>Total Assets</b>	<b>Loan Performance</b>
86	2	1.8	3.4	3.4	1.09	0.04
87	2.6	2.2	2	2	1.03	0.04
88	2.6	2	2	3	0.92	0.06
89	2	1.8	2	2	0.81	0.05
90	2	1.6	2	3.6	1.11	0.03
91	2	1.8	2	3.6	0.96	0.05
92	2	1.8	2.2	3.4	0.77	0.03
93	2	1.8	3.8	2	0.72	0.05
94	2	1.8	2	2	0.82	0.05
95	3.4	1.8	2	3.6	0.75	0.03
96	2	2	2	2	0.66	0.04
97	2	2	3.4	2	0.65	0.04
98	2	1.8	3.4	3.8	0.76	0.02
99	2	2.2	2	2	0.6	0.02
100	2.4	2.4	2	2	0.74	0.02
101	2	2	2	3.6	0.52	0.02
102	2	2.4	2	2	0.53	0.03
103	2	2.6	2	3.8	0.64	0.03
104	2	2.4	2.2	3.8	0.53	0.03
105	1.8	2.2	2	3.6	0.59	0.03
106	2.8	2.4	2.2	3.8	0.55	0.03
107	2	2	2	3.8	0.61	0.03
108	2	2	2.2	3.8	1.15	0.07
109	2	2	2	3.6	0.59	0.03
110	2	2	2.4	3.8	0.46	0.03
111	2.2	2	2.4	2.6	0.55	0.02
112	2	2	3.6	3.6	0.44	0.02
113	2.4	2.2	2.6	1.8	0.43	0.02
114	2.4	2.2	2.6	3.4	0.35	0.02
115	2	2.2	2.4	3	0.55	0.02
116	2	2.2	3.2	1.8	0.44	0.02
117	2	2	3	2.4	0.46	0.01
118	2.2	2	2.4	2.6	0.33	0.02
119	2.2	2	3.8	1.8	0.4	0.02
120	2	2	2.3	2.4	0.39	0.02
121	2	2	3	2.8	0.26	0.01
122	2	2	2.8	3.6	0.3	0.01
123	2	2	2.8	1.8	0.35	0.02
124	2	2	3.8	2	0.3	0.02
125	2	2	3.6	2	0.29	0.02
126	2.2	1.8	2	2	0.3	0.02
127	2	1.8	2	2	0.29	0.02

**APPENDIX III: LIST OF MICRO FINANCE INSTITUTIONS IN  
KENYA**

<b>S.NO</b>	<b>Name of the SACCO</b>	<b>S.NO</b>	<b>Name of the SACCO</b>
1	MWALIMU NATIONAL	42	YETU
2	STIMA DT	43	FORTUNE
3	KENYA NATIONAL POLICE DT	44	CHAI
4	HARAMBEE	45	TEMBO
5	AFYA	46	NYATI
6	UNAITAS	47	TAIFA
7	IMARISHA	48	CAPITAL
8	TOWER	49	SHIRIKA DT.
9	UNITED NATIONS	50	NDEGE CHAI
10	UKULIMA	51	KENPIPE
11	INVEST AND GROW (IG)	52	GDC
12	GUSII MWALIMU	53	TAI
13	HAZINA	54	KENYA HIGHLANDS
14	BANDARI	55	NG'ARISHA
15	METROPOLITAN NATIONAL	56	KENVERSITY
16	IMARIKA DT	57	THE NOBLE
17	MENTOR	58	NAWIRI
18	KENYA BANKERS	59	QWETU
19	NEW FORTIS	60	ASILI
20	BORESHA	61	NSSF
21	SAFARICOM	62	NATION DT
22	KIMISITU	63	BIASHARA
23	WINAS	64	MWITO
24	TRANSNATION	65	ARDHI
25	COSMOPOLITAN	66	DIMKES DT
26	KITUI TECHERS	67	SKYLINE
27	SHERIA	68	TRANS-NATIONAL TIMES
28	MOMBASA PORT	69	EGERTON UNIVERSITY
29	SOLUTION	70	AZIMA
30	MAGEREZA	71	CHUNA
31	OLLIN	72	UKRISTO NA UFANISI
32	BINGWA	73	KINGDOM
33	WAUMINI	74	SIMBA CHAI
34	UNISON	75	FARIDI
35	AMICA	76	WAKENYA PAMOJA
36	USHURU	77	TAQWA
37	NACICO	78	TRANS-ELITE COUNTY
38	K-UNITY	79	DAIMA
39	JAMII	80	SOUTHERN STAR
40	MAISHA BORA	81	WANANDEGE
41	KWETU	82	UNIVERSAL TRADERS

<b>S.NO</b>	<b>Name of the SACCO</b>	<b>S.NO</b>	<b>Name of the SACCO</b>
83	WANANCHI	127	WEVARSITY
84	SMARTLIFE	128	KENYA ACHIEVAS
85	WANA-ANGA	129	LENGO
86	ELIMU	130	MUDETE FACTORY TEA GROWERS
87	CENTENARY		
88	ECO-PILLAR	131	BARAKA
89	DEFENCE	132	SMART CHAMPIONS
90	KEYSTONE (FORMERLY KITE)	133	ACUMEN
91	MAFANIKIO	134	UFANISI
92	MUKI	135	STRATEGIC DT
93	TELEPOST	136	VIKTAS
94	FUNDILIMA	137	TENHOS
95	TABASAMU	138	KENCREAM
96	AIRPORTS	139	CHUKA UNIVERSITY
97	SULUHU	140	PUAN
98	TIMES U	141	STAWISHA
99	2NK	142	WASHA
100	PRIME TIME	143	HOME BUSINESS
101	JAMII YETU	144	FORTITUDE
102	MAGADI	145	JOINAS
103	K-PILLAR	146	DUMISHA
104	GOOD HOPE	147	STAKE KENYA
105	TARAJI	148	ILKISONKO
106	ORIENT	149	NYAMBENE ARIMI
107	COUNTY	150	SOTICO
108	WAKULIMA COMMERCIAL	151	EDIS
109	DHABITI	152	NUFAIKA
110	NYALA VISION	153	LAMU TEACHERS
111	THAMANI	154	JUMUIKA
112	NAFAKA DT	155	TRANS COUNTIES
113	KIMBILIO DAIMA	156	AMMAR
114	SHOPPERS	157	ENEA
115	BI-HIGH	158	NDOSHA
116	SUPA	159	BARATON
117	VISIONPOINT	160	KOLENGE
118	NRS	161	KENYA MIDLAND
119	LAINISHA	162	AGRO CHEM
120	GOLDEN PILLAR	163	JACARANDA
121	VISION AFRIKA	164	NANDI FARMERS
122	JITEGEMEE	165	MWIETHERI
123	SIRAJI	166	RACHUONYO TEACHERS
124	PATNAS	167	NEXUS
125	FARIJI	168	AINABKOI FARMERS
126	TABASURI DT	169	UNI-COUNTY

<b>S.NO</b>	<b>Name of the SACCO</b>	<b>S.NO</b>	<b>Name of the SACCO</b>
170	THE APPLE	174	VIHIGA COUNTY FARMERS
171	BIASHARA TOSHA	175	GOODWAY
172	KORU	176	KABIYET
173	GOOD FAITH		