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## Use of Multiple Linear Regressions to Study the Effect of Credit Management Practices on Financial Performance among Front Office Services Activity SACCOs in Nairobi County, Kenya

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### **Abstract:**

*Front Office Service Activities (FOSA) Saving and Credit Cooperative Societies (SACCOs) have provided an avenue to deal with poverty issues by addressing specific needs of destitute and poor people. Their performance generally relies upon the adequacy of their credit management practice on the grounds that the institution creates a large portion of their income from interest netted on extended Credits and members share contribution. Good Credit management is essential for a SACCOs' stability and continued profitability but credit delinquency is the reason for poor financial performance. The main objective of this research was to investigate the effect of credit management practices on financial performance among FOSA SACCOs in Nairobi county using multiple linear regression. The credit management practices investigated in this study included; credit appraisal practice, credit risk control practice, credit recovery practice and credit rationing practice. The research employed questionnaires administered to branch managers, credit manager and Finance managers in 37 FOSA SACCOs in Nairobi county. A total of 75 respondents were recorded in this research. The results indicated that multiple linear regression equation had a coefficient of determination ( $R^2$ ) of 0.537, with all the four credit management practices registering positive and significant influence on financial performance of FOSA SACCOs in Nairobi. It can therefore be concluded that credit appraisal practice, credit risk control practice, credit rationing practice and credit recovery practice are critical part of credit management practices for FOSA SACCOs in Nairobi. This study recommends that there is need for FOSA SACCOs to enhance their credit management practices in a bid to improve their financial performance.*

**Keywords:** *Front Office Service Activities (FOSA), Saving and Credit Cooperative Societies (SACCOs), credit appraisal practice, credit risk control practice, credit recovery practice and credit rationing practice*

## 1. Introduction

### 1.1. Background

Credit and savings cooperative societies have been instrumental in facilitating access to financial services. This has been recognized as one of the strategies to promote financial inclusion. They also act as financial intermediary, by providing affordable credit to larger spectrum of people, especially the low-income earners. The growth of credit unions has been tremendous globally as evidenced by the change in membership from 208 million to over 260 million. Countries with credit unions have also increased from 103 to 117 and the number of credit unions from 57,000 to 89,000 in a span of 4 years (2013 to 2017). Globally, the American continent records the highest membership in credit unions followed by Asia while Africa takes the lead in terms of numbers of credit unions (SACCOs). Oceania records the lowest number as well as membership. In terms of loans advanced to members, America takes the lead followed by the Asian Continent while Africa lags behind (WOCCU, 2017). In Africa, Ethiopia takes dominance in terms of number while Kenya comes in second but records the highest membership in Africa. In Kenya, SACCOs assume pivotal position in the Kenyan economy by giving the genuinely necessary financial inclusion consideration by focusing on improving individuals' monetary status and therefore improves member's welfare. This is because of simplicity in accessing credit and mobilization of savings thus improving the nation's monetary development. Since it is simpler to get credit from SACCO's instead of other monetary establishments, the average and low-class individuals have moved to join SACCO's. This creates an issue whereby SACCOs find themselves not well equipped to deal with high risk clients, who may fail to meet financial obligation (loan repayment), thus affecting the cash flow of the SACCO (Durner and Shetret, 2015). FOSA SACCOs additionally face the likelihood of poor administration practice, and absence of enough human resource, prompting decreased internal control (Wambugu, 2010).

According to SASRA report (2017), eleven (11) FOSA SACCOs were granted restricted licences due to inability to maintain the prescribed minimum basic capital of KES 5 Million. In 2016 the growth rate in total assets, member's deposit and advance, which stood at 14.8%, 14.8% and 15.3%, plummeted to 12.4%, 12% and 11.3% respectively in 2017. Additionally, there was a rise of 23.4% in unpaid loans. Several SACCOs have been blacklisted because of poor financial performance among them Ekeza SACCO which was deregistered in 2019, Moi University SACCO which was put under receiverships since 2018 and metropolitan national SACCO which has been in the news for poor financial management for the last two years. Different investigations covering a few variables which incorporate inward governmental issues, operational costs, saving culture, speculations strategies, credit risk, management and training on the performance of SACCOs have additionally been determined. Further research has been reported on the effects of selected management practices on the performance of FOSA SACCOs. Kibui and Moronge (2014), reported on influence of procedural follow up, credit policy credit risk evaluation and client appraisal methods. This study was however carried out on one FOSA SACCO, which was considered to be large and had operated for over 30 years. There is need to consider other SACCOs that may have fewer members and/or has operated for a shorter period. Therefore, the main focus of this examination was to set up the connection between credit management practice and financial performance of FOSA SACCOs in Kenya.

## *1.2. Empirical Review*

### 1.2.1. Credit Appraisal Practice and Financial Performance

Credit appraisal involves the process of scrutinizing a loan request, to determine the creditworthiness of the loan applicant, to meet their repayment obligation in a timely manner. This is usually alluded to as credit evaluation and is a fundamental factor in credit management (Sumari, 2013). All loan specialists must do legitimate credit examination, to guarantee that the borrower will most likely reimburse the obtained credit. Most loan specialists think about the borrower's credit report, and attempt to set up the; character, capital, limit and states of the borrower. Credit managers find themselves in a dilemma, since they have to make decisions, which may deny a legitimate borrower credit facility, thus causing a colossal loss to the firm, while availing credit, to borrowers who may not repay. There is therefore need for credit managers to find a balancing act and make prudential decisions that ensure SACCOs remain profitable. Credit risk examination, which is one of the credit evaluations methods, was carried out for SACCOs in Kisumu to decide the impact of credit management on performance of advanced portfolio. The researcher opined that there existed a direct effect of credit risk investigation and performance of advance portfolios and therefore emphasis should be directed towards management of credit risks to improve performance (Toroitich and Omagwa, 2017). Investigation of credit administrators for 40 FOSA SACCOs, in Nairobi, indicated that over 60% of the credit directors trusted that credit evaluation is basic for the prosperity of the SACCOs. Further research reported that SACCOs had infrastructural issues as certain SACCOs came up short on the correct systems to complete credit appraisal (Wambugu, 2010).

### 1.2.2. Credit Risk Control Practice and Financial Performance

Credit risk control includes the investigation of the likelihood that a borrower may neglect to meet his/her commitment according to the stipulated terms and conditions set up by financial organization. Uwuigbe, Uwuigbe, Babajide (2015) reported on the effect that credit management exhibited on the performance of ten Babied (10) financial institutions in a West African country (Nigeria) by gathering information for a five-year period (2007-2011). Report from the above study indicated that the ratio of unpaid credits facilities recorded an adverse impact on the financial performance. In another study carried out in Ghana, Asantey and Tengey (2014) researched on the unpaid loans effect to banks potential lending and financial performance in Ghana for a period of 5 years using 4 banks. The study found that banks need to shield against unpaid loans advanced to clients in order to improve their financial performance. An investigation by Essendi (2013) of 35 SACCOs in Nairobi province showed that credit control approaches are structured by the individuals from the SACCOs, with inclusion of the directors and representatives. The policy document in existence for the SACCOs is the source document upon which the advance policies are anchored on. While formulating the policy, borrowers' trend and indirect management costs are taken into consideration. All around credit risk control strategies are guided by overhead expenses and patterns of financial institutions. The administration of financial organizations in Kenya has adjusted a few strategies as a component of credit risk control. These incorporate; credit observing (Toroitich and Omagwa, 2017); preparing of supervisors in credit risk administration (Wambugu, 2010), use of shareholding, collateralization and use of information technology that allows for flagging out of overdue credit promptly (Kibui and Moronge, 2014). Additionally, the ability of portfolio managers to make decision as opposed to standardizing credit and credit risk management policies enhanced credit risk control. From the foregoing it is clear that Credit risk is of critical importance for credit management as it has been demonstrated to significantly affect the financial performance of financial organizations.

### 1.2.3. Credit Recovery Practice and Financial Performance

Credit recovery practice is a subsequent procedure on credits that have not been paid before they become overdue. Recovery of sum due from one client to the next is critical and may include the utilization of lawful activity if all else fails. SACCOs may use various methods to recuperate credits advanced to the borrower such as use of reminders through short text messages, telephone calls, email and formal demand letters. SACCOs like any other financial institutions can also relay the information about inability of a borrower to repay a credit facility to Credit Reference Bureau. This will forestall the habit of perennial loan defaulters moving from one financial institution to another. Katula and Kirinya (2018), investigated credit repayment and financial performance of FOSA SACCOs in Embu region, Kenya. The Specific targets of

this investigation included; Credit examination, Credit follow-up systems and Client attributes on performance of SACCO's. From the examination, it was clear that SACCO's should grasp models of limiting budgetary risks, such as Credit evaluation, Credit loan costs, Credit follow-up strategies and client qualities models to accomplish financial performance.

Sungwacha, Wanyama and Kirathi (2014) studied variables that impact credit among individuals that acquire credit in groups. The investigation demonstrates that poor credit refund results from absence of customers to distinguish key economic situations before contributing. An investigation conducted to set up the credit checking and recuperation methodologies embraced by business banks in Kenya found that banks have different methodologies of recouping credits. These incorporate verifying advances progressed to clients, sufficient preparing officers to follow up on credits and methodologies to utilize just as visiting their clients to persuade them to pay (Migwi, 2013). Karungari (2012) focused on the effect of obligation gathering techniques on financial performance of local authorities in Kenya. The examination discovered that the utilization of third parties and the rule of law had beneficial outcome with obligation levels while utilization of internal obligation collection units had a negative relationship. The above investigations demonstrate the need for loaning institutions to develop robust measures for credit recovery.

#### 1.2.4. Credit Rationing Practice and Financial Performance

Effective credit rationing can be viewed in several scenarios which include; the chance of borrowers applying for credit facility in proportion to the accessible credit, the number of requests received and the lenders credit access decisions or a situation where requests for credits surpasses the supply at the prevailing interest rates. Therefore, credit rationing should adopt a policy that not only majors on the characteristics of the borrower, but also considers the policies of the lending institution. The characteristics of the borrower can be defined by enumerating the risk and earnings, loan characteristics by interest rates, collateral provided and loan maturity, and observable characteristics by credit history, gender and age. The three factors (borrower, loan and observable characteristics) affect the performance of the credit lending institutions (Kimutai and Jagongo, 2013; Wanzetse, 2018). The extent to which credit is rationed by the lender is determined by collateral offered by the borrower as this serves as the last option in case the borrower defaults in repayments. Das and Laha (2017) investigated the degree of credit rationing and its determinants on farmers in West Bengal, India. The study employed empirical evidence to investigate borrowers' decision and the possibilities of being rationed for credit. The outcome of the study indicated that farmers with larger junks of land and more workers preferred formal credit. Credit rationing policy needs to include other mitigation factors, which may vary from SACCO to SACCO. However, identification of most of the credit rationing methods may fail to differentiate credible debtors from the non-credible ones since profiling of borrowers should be done at the point of applying for credit (Sumari 2013), hence the need to re-look at the credit rationing techniques being applied in SACCOs.

## **2. Research Methodology**

Research methodology applied in this research utilized quantitative techniques by use of primary data to ascertain the financial performance of FOSA SACCOs in Nairobi. Data collected was analysed using SPSS.

### *2.1. Research Design*

A descriptive research design was applied during the study. By utilizing the method applied by Orodho (2003), descriptive survey was utilized to collect information using several data collection techniques, among them questionnaires and interviews. The design was deemed appropriate for this research work since it helped to elaborate on the study of Credit management practices, and how it influences financial execution

### *2.2. Sampling Size and Procedure*

The sample data included 29 authorized FOSA SACCOs in Nairobi county. The respondents included; credit Managers, Finance Managers and Branch Managers of every FOSA SACCOs, under study. The respondents were chosen because of their involvement in management of credits in SACCOs. According to Kothari (2004), sampling design involves selection of respondents who represents the whole population. To guarantee the sufficiency and reliability of the information gathered, simple random sampling was used to select the sample. The examination utilized a sample of 87 respondents based on Krejcie, & Morgan (1970).

### *2.3. Data Collection Procedure*

This research relied on data collected from responses obtained from questionnaires, administered to selected FOSA SACCO officials in Nairobi, who are the credit, finance and branch managers. Appropriate information for this research work was obtained using questionnaires, which was made up of two main sections; statistic and substance. The question sought to find the respondents view on the dependent and independent variables;

#### 2.3.1. Credit Appraisal Practice

Several sub variables which included; ability to repay, credit worthiness, checking Credit Reference Bureau (CRB) listing was investigated.

#### 2.3.2. Credit Risk Control Practice

In this section the questionnaire concentrated on; loan self-insurance, loan securities and guarantorship.

### 2.3.3. Credit Recovery Practice

The questionnaire sought to get the respondents view on the following; retention of title, auctioning of securities /collaterals and follow up/reminders

### 2.3.4. Credit Rationing Practice

The questionnaire sought to get the respondents view on the following; borrower characteristics, loan characteristics and observations characteristics.

The questionnaires were directed to FOSA SACCOs respondents through drop and pick strategy. The language used was English and all respondents were expected to respond using the same language. In order to enhance the response rate, a follow up was undertaken using; short message service (SMS), electronic mail (E-mail), visit to different FOSA SACCO offices and phone calls. A research assistant kept a record of all questionnaires send and those which had been received for follow up purposes which ensured success when gathering the information.

### 2.4. Data Analysis and Presentation

Information collected was screened for any irregularities and only those that met the threshold was accepted to ensure its completeness. Any data that was not complete during the screening process was dealt with according to statistical rules. Where the screening revealed major flaws, a remedial procedure was instituted to ensure that the information gathered is of acceptable quality without gaps. This project worked with fully completed questionnaires only.

Data was analysed using SPSS. The coding was used as an interpretive technique to cluster the information and provide a guidance to discuss the results into given quantitative techniques. The researcher reviewed the data and separated it into clusters with each part labelled by using a code, giving an idea of how the associated data parts informed the research objectives. Coding was used in preparation of various results by summarizing the codes, discussing similarities and differences in related codes across distinct original sources/contexts, and comparing the relationship.

After data collection the researcher applied multiple linear regression to study the relationship between independent and dependent variables. The data was pre-screened to ensure conformity, which includes; normality, linearity and multi-collinearity test. For regression analysis to provide reliable results, the data needs to be normally distributed. The procedure for the normality test for multiple regression models includes testing the dependent variable for normality. This test was done using a histogram. This research also tested for the linearity and multi-collinearity of the data using SPSS. Pearson's Correlation was also used to measure the association between the variables, and a multiple linear regression model fitted for the one dependent variable (Financial performance) and four independent variables (credit appraisal practices, credit risk control practices, credit risk control practices and credit rationing practices).

## 3. Results and Discussions

### 3.1. Pre-liminary testing of Data

The data used for multiple linear regression was tested for linearity as per statistical procedures and Figure 1 gives the plot of the regression residual which exhibits linearity. Therefore, the model was deemed to conform to the linearity test.

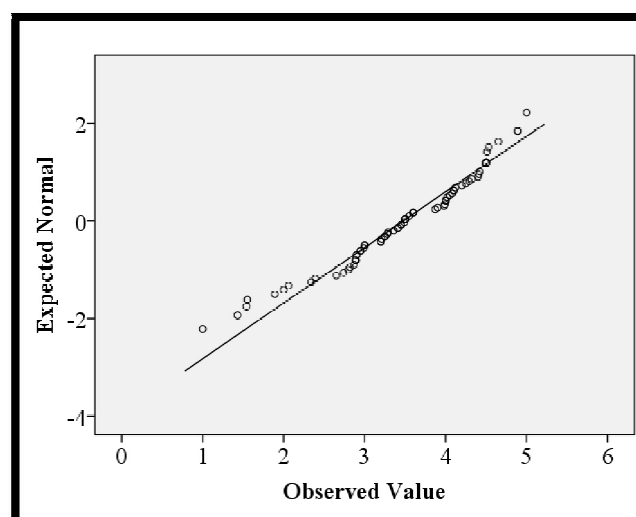


Figure 1 : Q-Q plot of the Dependent Variable

The dependent variable was also tested for normality, and the histogram given in Figure 2 indicated that the data is normally distributed, as it lies along the normal curve.

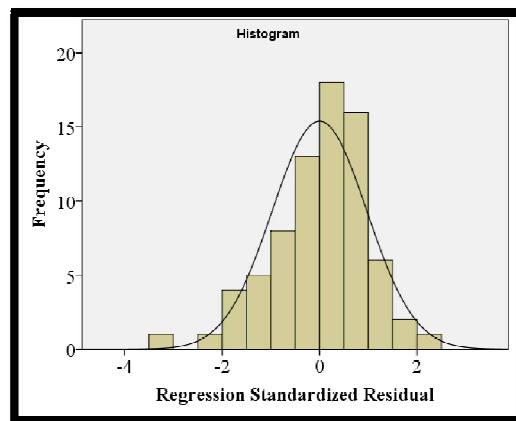


Figure 2: Histogram for Dependent Variable

In conformity with assumptions for regression models, the data was tested for multicollinearity. Table 1 gives the VIF values for all the predictor variables, which indicated that all the aforementioned values which are less than 3, hence there is no evidence of multi-collinearity.

Predictor variable	Collinearity Statistics
	VIF
Credit appraisal practice (X1)	1.064
Credit risk control practice (X2)	1.789
Credit recovery practice (X3)	1.476
Credit rationing practice (X4)	1.455

Table 1: N VIF Results For Measure Of Multicollinearity

### 3.2. Multiple Linear Regression Model

The multiple linear regression analysis resulted in three outputs; a model summary, Analysis of Variance (ANOVA) and coefficients tables. The model summary outcome in Table 2 shows the coefficient of determination ( $R^2$ ) at .0537 which indicates that the model could predict 53.7% of the variations in a performance and hence provided an acceptable fit.

This further meant that the four credit management practices; credit appraisal practice, credit risk control practice, credit recovery practice and credit rationing practice explained 53.7% of the variations in financial performance. The ANOVA results related with model above were extracted and presented in Table 3. A significance value is statistically significant when the p-value  $\leq 0.05$ , since the significant value for the model is 0.000, it implies that the model was significant in explaining the linear relationship between the four predictors that define credit management practices and financial performance.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
	.733 <sup>a</sup>	.537	.511	.61347	.537	20.318	4

Table 2: Model Summary of Credit Management Practices and Performance  
a. Predictors: (Constant), Credit Rationing Practice, Credit Risk Control Practice, Credit Appraisal Practice, Credit Recovery Practice

From Table 4, the coefficients were interpreted. The Table shows that credit appraisal practice had a significant coefficient with p-value of 0.001. The study therefore responded to the research question and concluded that at 5% level, credit appraisal practice had a significant effect on the financial performance of SACCO in Nairobi City County.

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	30.586	4	7.647	20.318	.000 <sup>b</sup>
	Residual	26.344	70	.376		
	Total	56.931	74			

Table 3: Anova<sup>b</sup> of Credit Management Practices

a. Predictors: (Constant), Credit Management Practices; Credit Appraisal Practice, Credit Risk Control Practice, Credit Recovery Practice, Credit Rationing Practice  
b. Dependent Variable: Financial Performance

Table 4 further depicts credit risk control practice had a significant coefficient with p-value of 0.024. The study therefore inferred that at 5% level, credit risk control practice had a significant influence on the financial performance of SACCO in Nairobi City County. An examination of the credit recovery practice reveals the existence of a significant p-value of 0.028 and therefore responded to the research question by concurring that at 5% level, credit recovery practice inferred to have a significant effect on the financial performance of SACCO in Nairobi City County.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.274	.381		.719	.475
Credit appraisal practice (X1)	.319	.096	.279	3.324	.001
Credit risk control practice (X2)	.219	.095	.250	2.300	.024
Credit recovery practice (X3)	.209	.093	.221	2.239	.028
Credit rationing practice (X4)	.263	.091	.283	2.885	.005

Table 4: Coefficient of Independent Variables

An examination of the Credit rationing practice reveals the existence of a significant p-value of 0.005 and therefore at 5% significance level, Credit rationing practice inferred to have a significant effect on the financial performance of SACCOs in Nairobi County. From Table 4, the resulting coefficients were used in derivation of the fitted model as shown in equation below;

$$Y = 0.274 + 0.319X_1 + 0.219X_2 + 0.209X_3 + 0.263X_4$$

From the fitted equation, Y stood for financial performance,  $X_1$  was credit appraisal practice,  $X_2$  was credit risk control practice,  $X_3$  was credit recovery practice and  $X_4$  was credit rationing practice.

The study aimed at establishing the influence of credit management practices on financial performance among FOSA SACCOs in Nairobi County. The financial performance was investigated by considering: profit before tax, return on assets and liquidity ratio. Credit management was investigated using: credit appraisal (ability to repay, credit worthiness and check CRB listing), credit risk control practices (loan self-insurance, loan securities and Guarantorship), credit recovery practices (retention of title, auctioning of securities /collaterals and follow up/reminders) and credit rationing (borrower characteristics, loan characteristics and observable characteristics). Using the designed regression model, the most influential factor was credit appraisal practice, which recorded a positive change on financial performance, followed by credit rationing practices with a positive impact. Credit appraisal practice had a significant coefficient with p-value of 0.001. The study therefore responded to the research question and concluded that at 5% level, credit appraisal practice had a significant effect on the financial performance of SACCO in Nairobi City County. These findings are in total agreement with Kibui and Moronge (2014). Findings on credit appraisal practices indicate that, credit reference bureau listing had the most effect on FOSA SACCOs while examination of customer's credit history had the least. This means that lack of credit appraisal could affect the financial performance of FOSA SACCOS in Nairobi county. The findings are in agreement with reports by Sharma and Kalra (2015).

Based on results obtained from credit risk control practices, it is evident that in a bid to guard against client's default, most SACCOs insure loan product advanced to their clients while less attention is given by FOSA SACCOs on consideration of other collaterals apart from shares and guarantors. Nevertheless, more efforts are directed towards how the borrower intends to utilize the credit. Credit risk control practices also indicated a moderately but positive relationship and a  $p < 0.05$  which is statistically significant. Therefore, FOSA SACCOs need to ensure proper credit risk control practices are institutionalized in order to remain profitable. The findings are in agreement with Toroitich and Omagwa (2017). On credit recovery practices, credit recovery strategies, follow up, reminders and holding of customers' deposits was the best practice that FOSA SACCOs management adapt to improve financial performance while minimal credit policies in place was evidenced as one of the reasons that may hinder credit recovery. The outcome also indicated a positive relationship and a significant  $p < 0.05$ . This implies that credit recovery practice has influence on financial performance. The findings are in agreement with Katula and Kirinya (2018). Report findings also indicated that, credit rationing practices influences financial performance of FOSA SACCOs. Most rationing is determined by the size of the loan applied for and FOSA SACCOs ability to differentiate between borrowers who are risky and those that are not. The report indicated a positive relationship and p value less than 0.05 and therefore statistically significant. The findings are in agreement with Kimutai and Jagongo (2013). In overall, the study indicated that credit management practices had positive influence on financial performance of FOSA SACCOs in Nairobi. Therefore, credit management practice is an integral part of FOSA SACCOs located in Nairobi and it influences financial performance.

#### 4. Conclusions and Recommendations

##### 4.1. Conclusions

Quantitative data was collected from a target population of 37 FOSA SACCOS in Nairobi county, to investigate the effect of management practices (credit appraisal practice, credit risk control practices, credit recovery

practices and credit rationing practices) on financial performance of SACCOS. In each SACCO, three managers, namely Branch, finance and credit managers were targeted. The sample size used for this research work was 29 officials per SACCOs giving a total of 87 officials for the whole study. The final data had 75 entries since 12 data were deemed to be incomplete. To fit the regression equation the data was tested for normality, linearity and multi-collinearity and it satisfied all the above-mentioned tests. Results obtained in this study, using multiple linear regression model indicated that the four predictor variables (Credit Appraisal Practices, Credit Risk Control Practices, Credit Recovery Practices and Credit Rationing Practices) registered significant positive influence on financial performance with an  $R^2$  value of 0.537. Credit appraisal practices recorded greatest influence on financial performance, while credit recovery practice exerted least influence.

#### 4.2. Recommendations

In a bid to boost the financial performance of FOSA SACCOs, the following recommendations are suggested based on this study report. The management should enhance effective management practices since they all positively impact on financial performance. More emphasis should be directed towards credit appraisal practices as it contributes more towards improving the financial position of FOSA SACCOs. The study also recommends enhancement of credit recovery with respect to improving the credit recovery policy and auctioning of defaulter's properties.

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