Influence of Credit Risk on SACCOS' Performance on Mainland Tanzania and Implications for TEWW SACCOS Ltd

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Abstract

This paper reports the findings of a study that explored the influence of credit risk on SACCOS' performance on Mainland Tanzania and attendant implications for TEWW SACCOS LTD. Specifically, the study had investigated relationship between the non-performing loan over total loan ratio (NPL/TL) and Return on Assets (ROA) among SACCOS. Second, it set out to determine the relationship between the Total loan over total deposits ratio (TL/TD) and (ROA) among SACCOS. Finally, it compared the influence of the two afore mentioned specific objectives among SACCOS. The study population comprised all SACCOS on Mainland Tanzania. A systematic random sampling was employed to select a sample of 15 SACCOS from Dar es Salaam, Arusha, Dodoma, Mwanza and Tanga regions. Both qualitative and quantitative research approaches were applied in data collection. Analysis of Moment Structure, simple regression analysis and descriptive statistics were used in analysis. The findings indicate that (NPL/TL) had a strong negative (-0.89) and significant influence with the ROA at p=0.001. In fact, when NPL/TL was significantly lower, the ROA on average stood at 45.7 percent. Moreover, there is a positive relationship (+0.91, influence) between (TL/TD) and (ROA) and significant at P<0.001. These results imply that loan recipients used to deposit more in their savings accounts but failed to repay the loan. Thus, TEWW SACCOS LTD should be prepared to improvise a special grant mechanism for bad loan provisions or creating discounting sort of mechanism to facilitate the loan repayment before loan crisis.

Key words: *Profitability, Credit risk, financial ratios*

Introduction

Recently the demand for financial loans among people of different educational backgrounds has grown drastically under the Savings and Credit Co-operative Communities (SACCOS) members mainly due to their low costs for opening accounts, collateral provided by groups, rapidity of loan processing and competitive interest rate levels (Chipembere, 2010). The global experience has shown that Micro Finance Institutions (MFIs), which include SACCOS, have significantly changed and developed. In fact, the scale and scope of their operations is also growing beyond their traditional portfolio of delivering credit services—savings, deposits, and insurance services. Meanwhile, the value of disbursed loans from SACCOS has generally revealed a larger proportional of the total assets relative to the rest of the assets a given SACCOS owns. The assumption is that the more a SACCOS disbursed loans to its loan beneficiaries, the better position of that SACCOS to realise more benefits accruing from interest, which leads to higher profitability.

Though interest benefits realisable from the disbursed loans are the main sources of SACCOS' revenue besides savings and minor investments, the disbursed loans subjected SACCOS to various risks such as capital adequacy risk, liquidity risk and credit risk to mention a few. Of these risks, the credit risk appeared to be more serious and most venerable to the SACCOS as it can result in bankruptcy. Credit risk refers to the loss incurred through a defaulter that fails to meet contractual obligations and, thus, causes the creditor's loss. These obligations arise from lending activities, trade and investment activities, payment and settlement of securities trading on its own (Jílek, 2000). There are also cases where a borrower fails to honour his or her obligations including failing to repay fully or partially the due principal and interest on time. Credit risk is part of most balance sheet assets and off-balance sheet transections series (FIs acceptances or FIs guarantee) (Kašparovská, 2006). Credit risk includes credit risk default, risk of the guarantor or counterparties of the derivatives. This type of the risk exists in all financial sectors, but most often in banks and bank derivatives such as SACCOS.

Credit risk also arises by entering derivative transactions, securities lending, repurchasing transactions and negotiation. In case of derivative transactions, analysis helps to identify the creditworthiness of counterparties and looking out for changes (Erika et el., 2015). In the context of this study, credit risk refers to

the potentiality of a SACCOS' loan beneficiary or counterparty failing to meet obligations as stipulated under agreed upon terms and conditions attached to the disbursed loan (Mbowe, 2013).

Since a large proportion of the assets SACCOS own are loans and a substantial part of their revenues stems from interest earned from disbursed loans, the assets tend to be compromised in the face of weak loan policy and criteria for loans disbursement. Eventually, such SACCOS automatically experiences a huge loss. In case of a loan beneficiary fails to repay a disbursed loan, the SACCOS loses both the principal amount lent out and the interest benefit expected on that disbursed loan. Under this circumstance, financing agreements must create contractual obligations, which simply means the disbursed loan to any beneficiary solely depends on whether contracts in place create appropriate incentives for both the loan provider and loan beneficiaries to accomplish the contract (principal agent-problem). In such business financing (SACCOS loans), the principal is the loan provider (SACCOS) and the agent is the loan beneficiary (borrowers – SACCOS members). Furthermore, for the contract to be ideal it should persuade the agent to act in the best interests of the loan provider. In case the contract is created and observed by the loan beneficiaries, then the disbursed loan and demand for such loan are brought into an equilibrium with one another and, therefore, a mutually beneficial relationship between the loan provider and loan beneficiary would emerge. This study, therefore, explored the influence of credit risk on SACCOS' performance on Mainland Tanzania and implications for TEWW SACCOS Ltd. Specifically, the study sought to:

i) Investigate the relationship between the non-performing loans over total loan ratio (NPL/TL) and Return on Assets (ROA) among the SACCOS on Tanzania mainland.

ii) Determine the relationship between the Total loan over total deposits ratio (TL/TD) and Return on Assets (ROA) among the SACCOS on Mainland Tanzania.

iii) To compare the influence of the relationships between the non-performing loans over the total loan ratio (NPL/TL) and Return on Assets (ROA) versus relationship between the Total loan over total deposits ratio (TL/TD) and Return on Assets (ROA) among the SACCOS on Mainland Tanzania.

The study is guided by hypothesis that the profitability of the SACCOS negatively related to the credit risk. Among the chief risks that SACCOS contend with include credit risk (Kasyoka, 2016). Such credit risk can easily and will most likely induce SACCOS failure (Boating, 2008).Thus, all these concerns culminated in the hypothesis: "*Profitability of the SACCOS is negatively related to the credit risk*." This hypothesis was subjected to testing based on the performance indicator—ROA ratio, as a dependent variable, and credit risk based on risk indicators measured by NPL/TL and TL/TD ratios as independent variables within a fixed five-year interval from 2015 to 2020.

Literature Review

Usually, loan contracts among SACCOS' loan beneficiaries failed because of *moral hazard* problems arising from the possibility that the borrower may take actions that may not be observable to the loan provider, SACCOS in this case. For example, a borrower (SACCOS' loan beneficiary) may borrow to enhance his/her business activities. However, the loan provider may have no means of verifying whether the borrower used the loan for the declared objectives (Mensah, 2014). When the lender or loan provider is unable to realise and monitor the borrower's behaviour, the loan provider's money are most likely a default risk. In addition to the difficulty inherent in monitoring the actions of the borrower, other problems include *adverse selection,* relating to the information requirements in a borrowing contract. For sound lending decision, the lender needs to know the borrower's financial status and characteristics that would give the borrower confidence to repay the loan. Other problems include learning what the loan provider can do when the borrower declares his/her inability to repay, and methods to force the borrower reluctant to act on the agreed contractual agreements to repay the loan (Mensah, 2014).

These justifications for contracts failure or difficulties inherent in fulfilling the contractual agreements calls for revisiting the 5Cs of credit before a loan is disbursed to the applicant. These 5Cs are: (C_1) Character of the applicant, (C_2) Capacity to borrow, (C_3) Capital (as back up), (C_4) Collateral (as security), (C_5) Condition (economic condition). These assessment criteria are based upon the lenders own experience which considers not only personal historical information but also the projected borrowers' prospects (MacDonald et al., 2006).

This study is guided by a "Theory of Default" as advanced by Robert Merton in

credit risk analysis in the context of financial options. Default as an embedded put option (an option contract that gives the buyer the right to sell underlying asset at the strike price at any time up to the expiration date - is bought if the trader expects the price of the underlying to *fall* within a certain time frame) available to the borrower when circumstances are economically attractive for the borrower to "exercise" their option to default. This option-theoretic framework can apply to any type of borrower and serve as the basis for default modelling. Credit loss estimates are formed by combining the borrower's probability of default (or default frequency) with their loss given default (LGD), or loss severity.

Moreover, the Merton default model provides a way to determine conceptually both loss components, with a basic theory of credit risk established. Furthermore, the introduction of the Merton model focused on corporate defaults, however, to illustrate how adaptable the theory is to a range of credit risks, including in the context of the current study's need to understand the credit risk profile of a SACCOS loan portfolio to determine how to hedge it against borrowers' default exposure. Applying these concepts to SACCOS loan default, in this case a borrower who has taken out a loan in thousands of Tanzanian shillings from a SACCOS on a collateral of a bit higher than the loan applied for, at a specified period, the borrower's equity stake in the collateral can be an option in the standard Merton default model. Specifically, the borrower's option may be represented as:

$E = MAX [0, A_T - L]$

Where inline is the property value (price) of the collateral at time T and L is the disbursed loan amount at origination (t = 0). Expressed this way, the disbursed loan amount, L is an equivalent of the strike price (Is the set price at which a derivative contract can be bought or sold when it is exercised for call options, the strike price occurs when the security can be bought by the option holder; for put options, the strike price is the price at which the security can be sold. Strike price is also known as the exercise price) and inline is the asset value. Under this form, the borrower's equity is a call option (an option contract that give the buyer the right to buy the underlying asset at the strike price at any time up to the expiration date—and is bought if the trader expects the price of the underlying to *rise* within a certain timeframe).

In essence, the collateral is a fixed-income security that has two components:

A default-free bondless value of an embedded put option provided to the borrower, which allows them to default when economically attractive to do so. Once a borrower defaults, the question how much of the disbursed loan is recovered (or conversely, lost) as a percent of its original value completes the credit risk picture in determining expected loss. The variations in disbursed loan value could reflect differences in collateral value provided by the borrowers elsewhere. For instance, collateral for borrower A may exhibit higher collateral value volatility than, similarly, another borrower B elsewhere depending on some factors. Other assumptions are that the risk-free interest rate (small interest rate) and the time horizon in years the loan taken. With these assumptions the Merton model helped to generate comparative credit risk estimates in this study. The important ratios in the current study for discussion were ROA, ROE and CAR, which need brief explanations prior to discussions. The return on assets (ROA) is a profitability ratio that determines how much profit a financial institution or a company can generate from its assets. In other words, ROA measures how efficient a financial institution's or company's management is in using its assets to generate earnings. ROA is displayed as a percentage. In this regard, the higher the ROA the better.

The return on equity (ROE) is a ratio that provides investors with insight into how efficiently a company (financial institution for the case of the current study or more specifically, its management team) is handling the money that shareholders have contributed to it. In other words, it measures the profitability of a corporation (financial institution) in relation to the stockholders' equity. Return on equity (ROE) is a measure of financial performance calculated by dividing net income by the shareholder's equity. Because shareholders' equity is equal to a financial institution's assets minus its debt, ROE is a return on net assets.

The final important indicator in the current study's discussions is CAR or the capital adequacy ratio, which is a measurement of a financial institution's available capital expressed as a percentage of its risk-weighted credit exposures. A financial institution that has a good CAR has enough capital to absorb potential losses.

Kolapo et al. (2012) argued that when interest rate are high or subject to variations the chance that the borrower will default increase. Similarly, Drehman et al. (2008) documented that credit risk and interest rate risk are linked to each

other and inseparable. The two risks mentioned are related in the following manner. When interest rates charged on loans are high, the loan obligation becomes unbearable to a borrower in terms of monthly or quarterly payments of the interest plus the principal amount and as result a borrower could end up failing to honour his obligation, hence the defaulting.

The name given to the percentage of loan values that are not serviced for three months and above is known as non-performing loans (Ahmad & Ariff, 2007), as it was happened in the SACCOS found in adult learning institutions such as TEWW SACCOS Ltd, which failed to comply with the contractual agreement of the loans disbursed to its members from the PPF pension funds in 2018. Therefore, credit risk increases the level of non-performing loans. All financial institutions including SACCOS are supposed to abide by the Bank of Tanzania (BoT)'s "Risk Management Guidelines" issued since 2010. The document lays down the techniques for combating and managing different types of risks for the smooth running of any financial institution in Tanzania.

A study conducted by Ntangekinshala (2017) revealed that there was a negative and significant relationship between the NPL/TL ratio and ROE. In other words, the more nonperforming loans increase, the more they erode the financial institution's profit. Moreover, the study found that the NPL/TL ratio affects the ROA significantly and, crucially, negatively. This study has also observed that the Capital Adequacy Ratio (CAR) has a positive but insignificant impact on ROE but a positive and significant impact on ROA. Implicitly, the higher the capital adequacy ratio, the more the financial institution become profitable. Though the study focused on the banks' performance and not necessarily on SACCOS, this study did not establish any significant relationship between the TL/TD ratio and either ROA or ROE. Yet, the LLP/NPL ratio revealed a significant negative relationship with ROE and ROA. Apparently, any increase in the provision of bad debts affect financial institution's profits directly.

Hosna et al. (2009) researched on the credit risk management and profitability in Sweden's commercial Banks with a focus on four major commercial banks. Their study used ROE as a performance indicator and CAR and NPL/TL as credit risk variables. This study found that NPL/TL ratio has a significant negative effect on profitability (ROE) whereas CAR had an insignificant positive effect on ROE. The study, however, did not establish a relationship between the performance indicator ROA and credit risk variables NPL/TP and TL/TD. Also, the study was confined to the banks' performance but not that of SACCOS.

Another study that was conducted by (Kasyoka, (2016) had focused on the credit risk management on financial performance in savings and co-operative societies in Kitui County in Kenya. The research was based on the financial performance of the Savings and Credit Co-operative Societies (SACCOs). The researcher had used a descriptive research design and employed self-administered questionnaires to extract primary data from the SACCO managements. The study, which used quantitative method to analyse the data and examine the simultaneous impact of the independent variables on the dependent variable, found a strong positive relationship between credit monitoring and financial performance of SACCOs. Moreover, it found a strong positive relationship between loan policy in mitigation of risk and financial performance of SACCOs, and a strong positive relationship between loan defaulters and financial performance of SACCOs. Despite the important facts generated in this study, it did not utilise all the important tools required in measuring financial performance such Return on assets (ROA), Return on equity (ROE) versus credit risk variables such as non-performing loan over total loan ratio (NPL/TD) and Total loan over total deposits ratio (TL/TD).

On the other hand, Li and Zou (2014) carried out a study in Europe on the impact of credit risk management on profitability of commercial banks. The study involved 47 largest European commercial banks and used ROE and ROA as performance indicators and CAR and the NPL/TL ratio as credit risk indicator. Using the panel data regression analysis model, their findings indicate a significant negative relationship between NPL/TL ratios whereas CAR was insignificant. Even though the performance indicators ROA and ROE were used verses credit risk indicators, the study based on banks and not on SACCOS. Additionally, the study did not employ the risk indicator TL/TD ratio.

Gizaw et al. (2015), who studied the impact of credit risk on profitability performance of commercial banks in Ethiopia, found that NPL/TL and CAR were significant and negative relative to ROE and ROA. The study also found that LLP/NPL was significant and positive when it came to performance whereas TL/TD had an insignificant effect on performance. Although all important performance indicators and credit risk indicators were fully employed in the study, there was silence on the comparisons between the relationships established among the performance indicators and credit indicators. In addition, the study was basically confined to the banks' performance but not that of SACCO in relation to credit risk.

Kithinji's (2010) study in Kenya on credit risk management and profitability of commercial banks in Kenya used ROA as the performance indicator and NPL/TL and TL/TA ratios as credit risk indicators. The regression results indicated no relationship among profits, amount of credit, and the level of non-performing loans. Though study used all the important performance indicators and credit risk indicators, it failed to address the issue of comparing the relationships established among performance indicators and credit risk indicators. Also, the study was limited to banks' performance and not that of SACCOS in relation to credit risk.

Kodithuwakku (2015) carried out a study on the impact of credit risk management on the performance of commercial banks in Sri Lanka. The results showed that non-performing loans and provisions had an adverse impact on profitability. Yet, the study had also failed to address the issue of comparisons that exist between the relationships established among the performance indicators and credit risk indicators. Moreover, like many of the previously reviewed studies it was confined to commercial banks' performance and not that of SACCOS in relation to credit risk.

Kaaya and Pastory's (2013) study on credit risk and commercial banks in Tanzania used panel data analysis to establish that the increase in credit risk tends to lower firm performance. In fact, both indicators produced negative coefficients signalling lower profit levels. This study also failed to address the comparisons that exist between the relationships established among performance indicators and credit risk indicators. Also, the study was confined to banks' and not SACCOSs' performance in relation to credit risk.

A study by Murug (2010) on the effect of credit risk management practices on the performance of SACCOS in Kenya found that such co-operative entities heavily relied on credit risk techniques, which are too inadequate to mitigate against loan losses in a dynamic and competitive lending environment. In this study, Murugu (2010) found adequate credit risk monitoring and control mechanisms to be lacking in most of the SACCOs, hence resulting in late detection and determination of non-performing and loan defaults. This study used some important performance indicators and credit risk indicators, yet failed to address the relationship between the profitability ratio (ROA) and credit risk indicators (NPL/TL and TL/TD).

A study that carried out on four Swedish banks by Purda (2008) established that better credit risk management results in better bank performance. In addition, the study found banks with good or sound credit risk management policies to have lower loan default ratios (bad loans) and, naturally, with higher interest income (profitability). The study also found banks with higher profit potentials can better absorb credit losses when they crop up and, hence, record better performances than those with lower profits margins. Furthermore, the study established a direct but inverse relationship between profitability (ROE, ROA) and the ratio of non-performing loans to capital (NPL\C). The study used some vital performance indicators and credit risk indicators; however, it failed to address the relationship between the profitability ratio ROA and both credit risk indicators TL/TD and NPL/TL. The study was also confined to banks.

A study by Gweyi et,. el. (2017) found that credit risk has a negative and significant bearing on financial performance. The study, however, failed to address the existing relationships between the profitability indicators and credit risk indicators. Also, a study by Nguta and Guya (2013) in Kenya found that loan defaults had characteristics in relation to other variables that differed from the microfinance institution performance based on the profitability aspect. But the study lacked credibility in terms of micro-finance profitability and it was silent on the question of credit risk associated with non-performing loans. Furthermore, Kolapo et al.'s (2012) study on credit risk and commercial banks' performance in Nigeria used a panel data approach to establish a negative relationship between ROA and NPL/TL and LLP/NPL and a positive relationship between ROA and TL/TD ratio. Nevertheless, the study failed to address the issue comparisons of relationships established among performance indicators and credit risk indicators. In addition, the study was confined to banks' and not SACCOS' performance in relation to credit risk.

Also, a study by Macharia (2012) on the relationship between the level of non-performing loans and the financial performance of commercial banks in Kenya used a cross-sectional research design to determine the level of NPLs and their effect on the ROA. The study found that the amount of credit extended contributed positively to profits but marginally so. Additionally, as the level of non-performing loans increased, the profits decreased, hence revealing a positive relationship between the amount of credit extended and the amount of profits gained. Meanwhile, the study also found a negative relationship between

the level of non-performing loans and profits. Furthermore, t-test indicated that the profits that did not depend on credit and non-performing loans were significant. The test of significance also indicated that there was no association among profits, amount of credit, and the level of non-performing loans. Similarly, this study also failed to address the issue of comparisons that exist between the relationships established among the performance indicators and credit risk indicators. In addition, the study was confined to banks' performance and not SACCOS's performance in relation to credit risk.

Despite the development and use of highly sophisticated tools and models to measure the exposure of financial institutions to credit risk, the default rate in the SACCOs in Tanzania remain unpredictable. For example, the Amount of defaulted loans for SACCOS in the country rose from Tshs 1.5 billion (USD 647,109.58 – exchange rate, Tshs 2,318 per USD on 23rd July 2021) in 2006 to more than Tshs 3 billion (USD 1,294,219.154 – exchange rate, Tshs 2,318 per USD on 23rd July 2021) in 2015 (URT,2016). Meanwhile, SACCOS at adult learning institutions such as the Institute of Adult Education TEWW SACCOS LTD from the time of contract with PPF Pension fund had Tshs 1,071,500,000 (USD 462,251.941 – exchange rate, Tshs 2,318 per USD on 23rd July 2021) and a loan balance of Tshs 480,263,897.95(USD 207,188.912 – exchange rate, Tshs 2,318 per USD on 23rd July 2021) by 31st July 2018. The sum of arrears stood at Tshs 126,324,378.92 (USD 54,497.144 – exchange rate, Tshs 2,318 per USD on 23rd July 2021)for instalments accruing from October 2017 to 2018 (TEWW SACCOS LTD, 2019).

Materials and Methods

The population for this study was all SACCOS based on Mainland Tanzania. The study used cross-sectional study design to collect requisite data to answer the research questions of interest. The data collected were for the 2015 – 2020 period. Systematic random sampling was used to select a sample of 15 largest SACCOS from five regions of Dar es Salaam (the country's commercial hub and largest city), and Dodoma (the country's capital city) , and Arusha Mwanza and Tanga (three other cities). This sample was representative of the SACCOS population on Mainland Tanzania because the selected SACCOS owned more than 50 percent of the total amount of assets the SACCOS sector owned on Mainland Tanzania. The selected sample was chosen to study the SACCOS performance in relation to the credit risk associated.

The study employed both qualitative and quantitative research approaches to analyse the data using the **S**tatistical **P**ackage for **S**ervice **S**olutions (SPSS). It also applied the Pearson correlation and regression analysis and analysis of moment structure. Secondary data (largely audited financial statements of each SACCOS over the study period (five years) were collected from various sources (Company websites, ministries responsible for co-operatives affairs and the SACCOS' head offices). The study adopted the Kargi (2011) model to test the relationship between credit risk and profitability in addition to analysing the moment structure, since "a given variable/ indicator in, this study might serve as an independent variable in one test and the same as a dependent variable in another" (dual role) as well as descriptive statistics. The model expression for these variables was therefore:

$ROA = f\left(\frac{NPL}{TL}, \frac{TL}{TD}\right)$ and the relationship between the two variables mentioned (Profitability and Credit risk) was tested based on the model $ROA = \beta_O + \beta_1\left(\frac{NPL}{TL}\right) + \beta_2\left(\frac{TL}{TD}\right) + e_i$

Where

ROA: $Ratio\ of\ SACCOS'netincome\ to\ Total\ assets$ (Dependent variable)

$\frac{NPL}{TL}$: $Ratio\ of\ Non-performing\ Loan\ to\ Total\ Loan$ (Independent variable 1)

β_o: $Constant\ term$

$\beta_1 and \beta_2$: $Are\ coefficients\ of\ independent\ variables\ \left(\frac{NPL}{TL}\right)\ and\ \left(\frac{TL}{TD}\right)\ respectively$

$\frac{TL}{TD}$: $Ratio\ of\ Total\ Loan\ to\ Total\ deposits$ (Independent variable 2)

e_i: $An\ error\ term$

Results

Credit Risk Variables (NPL/TL, TL/TD) and Criterion Variable Performance (Profitability – ROA) on Pearson Correlation Matrix

The Pearson correlation coefficient was performed between ROA (criterion variable) and TL/TD ratio (predictor variable) to show the direction of the relationship between the variables performance based on the profitability aspect measured by the Return on assets (ROA) and credit risk measured by ratio of Total Loan to Total deposit (TL/TD). Also, the Pearson correlation coefficient was executed between ROA and the Non-performing loan to Total loan (NPL/ TL) ratio as indicated (Table1). The results show that the variable credit risk measured by TL/TD) positively correlated (0.272) and was significant at to

ROA. In other words, this predictor variable TL/TD has significant increasing influence on criterion variable ROA. Meanwhile, the results from the Pearson correlation show that the predictor variable NPL/TL negatively correlated (-0.784) and significant at 0.000 to the ROA. This correlation means that the NPL/TL significantly reduces the ROA on average. Furthermore, when we look at the absolute value (without the minus or plus sign of the Pearson correlation) and choose the highest value, NPL/TL (0.784) has the strongest relationship with ROA. This must be the first indicator we need to focus on credit risk to enhance SACCOS' performance (profitability). Table 1 shows the correlation for ROA, TL/TD and NPL/TL:

Table 1: CORRELATION MATRIX FOR ROA, TL/TD, AND NPL/TL

		ROA	TL/TD	NPL/TL	Std	Mean
	Pearson correlation	1	-0.308	0.004	-0.321	-0.0026
ROA	Sig 2-tail test	0.001	0.002**	0.003**		
	Pearson correlation	0.272	1	0.321	0.631	0.212
TL/TD						
	Sig 2-tail test	0.000	0.008**	0.004**		
	Pearson correlation	-0.784	0.915	1	-0.782	1.234
NPL/TL						
	Sig 2-tail test	0.000	0.008**	0.004**		

Source: Author's data (2015 -2020) from the SACCOS financial audited statements

Relationship between the Return on Assets (ROA) and Non-performing Loan over Total Loan Ratio (NPL/TL) among the SACCOS on Mainland Tanzania

Basically the results indicate that the Non-performing loan over total loan ratio (NPL/TL) is negatively related to the Return on Assets (ROA) (-.534). This predictor is significant at p=0.001 and has a strong negative influence as the beta value (-.457) in Table 2 further illustrates.

Relationship between the Return on Assets (ROA) and Total Loan over Total Deposits Ratio (TL/TD) among SACCOS on Mainland Tanzania

The results from regression analysis indicate that the total loan over total deposit ratio (TL/TD) is positively related to the Return on assets (ROA) (1.285) Table 2. This predictor is significant at and has a strong positive influence as the beta value (0.306) presented in Table 2 further illustrates:

Table 2: COEFFICIENTS OF PREDICTORS

Model	Unstandardized Coefficients		Standardized coefficients	t	Sig
	B	Standardised error	Beta		
1 Constant	232.076	30.500		-5.608	.000
TL/TD	1.285	.326	3.06	6.059	.000
NPL/TL	-.534	.0156	-.457	3.393	.001

Source: Author's data (2015-2020) from the SACCOS financial audited statements

[a] **Dependent variable performance/profitability- ROA**

Profitability of the SACCOS Negatively Related to the Credit Risk

This hypothesis was subjected to the test through Analysis of Moment Structure (Amos) - Hypothesis testing. The result shows that the regression weight for credit risk measured by NPL/TL in the prediction of SACCOS performance based on profitability aspect measured by ROA significantly differs from zero at p 0.001 (see Table 3). This result is supported by the critical ratio (CR) value of less than 0.001. Moreover, the credit risk measured by the ratio of Total Loan to Total deposit (TL/TD) in the prediction of SACCOS performance based on profitability aspect measured by Return on assets (ROA) is also significant at p 0.001. Results further show that the regression weight for credit risk measured by NLP/TL and TL/TD in predicting the SACCOS performance based on the profitability aspect measured by ROA to predict the credit risk explain about 78 percent and 27 percent of their variances, respectively.

Profitability of the SACCOS Negatively Related to the Credit Risk

Table 3: REGRESSION WEIGHT –DEFAULT MODEL

	Estimate	SE	CR	P	Label
NPL/TL ← ROA	-.0781	.0022	.002**	.001**	Par 1
TL/TD ← ROA	.273	.0061	.001**	.006*	Par 2

Source: Author's Data (2020) from SACCOS financial audited statements.

credit risk measured by the NPL/TL ratio and SACCOS' performance (measured

by ROA), implying that the change of a unit of non-performing loan over total loan ratio will influence ROA by 45.7 percent standard deviations. Thus, the increase in non-performing loan erodes the profitability of the SACCOS by 45.7 percent. The study revealed further that there is a positive relationship between credit risk (measured by TL/TD ratio and SACCOS' performance measured by ROA) implying that loan recipients deposited in their saving accounts but failed to repay the loan, hence the increase in the return on assets (profitability) of SACCOS by marginal estimates. Moreover, the relationships between the Return on assets (ROA) and Non-performing loan over total loan ratio (NPL/TL) bears more influence than the relationship between the Return on assets (ROA) and Total loan over total deposits ratio (TL/TD) among SACCOS on Mainland Tanzania.

Based on these findings, the study recommends that the SACCOS, as loans providers, should make a grant for a normal share of non-performing loan recipients as mechanism for cushioning off bad loan, or blowing out the ripple effect of risk by captivating insurance sort mechanism. Meanwhile, timely, proper and adequate appraisal strategies should be put in place to control or minimise default instances during the lending process. Furthermore, participatory involvement is essential for fostering checks and balances in monetary policy, which should be coupled with the introduction of creative new loan products. All these findings observed should be considered in efforts aimed to enhance the operations of SACCOS operating in adult learning institutions.

Discussions

Relationship between the Return on Assets (ROA) and Total Loan over Total Deposits Ratio (TL/TD) among the SACCOS on Mainland Tanzania

Based on the results in presented Table 2, the statistics indicate that the change of a unit of Non-performing loan over total loan ratio will influence Return on asset ratio by 45.7 percent standard deviations decrease. Meanwhile, the increase of a unit of Non-performing loan over total loan will decrease the profitability of the SACCOS by 45.7 percent. In other words, as the SACCOS keep on disbursing more loans to its members, there will be a possibility of losing 45.7 of expected profit. This finding is significant at 0.001. The study findings, on the one hand, render support and, on the other hand, they contradict the findings by Macharia (2012) on the relationship between the level of non-performing loans

and the financial performance of commercial banks in Kenya using a cross-sectional research design to determine the level of NPLs and their effect on the ROA. This study found that the amount of credit extended contributes positively to profits but marginally.

Additionally, as the level of nonperforming loans increase, the profits slump. Therefore, a positive relationship exists between the amount of credit extended and the amount of profits. In the current study, on the other hand, a negative relationship between the level of non-performing loans and profits emerged. The notable difference might be caused by the methodological approach adopted and the different context (Kenya commercial banks versus Tanzania SACOOS) in which the study conducted.

The study findings concur with Kolapo et al. (2012) whose research on credit risk and commercial bank's performance in Nigeria found that there was a negative relationship between ROA and NPL/TL. The current study also support the research that was conducted by Kaaya and Pastory (2013) on credit risk and commercial banks in Tanzania using panel data analysis. The study concluded that the increase in credit risk lowers a firm's performance, with indicators producing negative coefficients, which tend to lower profit level. In this case, there is a negative relationship between profitability (measured by ROA) and credit risk (measured by NPL/TL).

The study findings further contradict those of Kithinji (2010) whose regression results in Kenya found no relationship among profits, amount of credit and the level of nonperforming loans Moreover, the current study is congruent with results by Li and Zou (2014) who used the panel data regression analysis model to establish the presence of a significant negative relationship between NPL/TL the performance indicators ROA.

Moreover, the current study contradicts Kasyoka (2016) findings on the credit risk management on financial performance in savings and co-operative societies in Kitui County, Kenya, which found a strong positive relationship between loan defaulters and financial performance of SACCOs. The current study findings, on the other hand, found a strong negative relationship between loan defaulters (NPL/TL) and financial performance (ROA) of SACCOs. In essence, this finding implies that the SACCOS management did not consider well the Merton default model, which provides a way to determine conceptually both loss components, with a basic theory of credit risk. In the context of the current study, there was a

need to grasp the credit risk profile of the SACCOS loan portfolio to determine how it can be hedged against borrowers' (SACCOS loan beneficiaries) default exposure, especially by establishing some collateral cushioning mechanisms.

Relationship between the Return on Assets (ROA) and Total Loan over Total Deposits Ratio (TL/TD) among SACCOS on Mainland Tanzania

The results presented in Table 2 imply that the change of a unit of Total loan over total deposit ratio influences ROA by 0.306 percent standard deviation. Thus, the increase of total loan increases the profitability of the SACCOS by 0.306 percent. However, the correlation between credit risks measured by the ratio of Loan to total deposit (TL/TD) is positively related at p 0.001 to SACCOS' performance based on profitability aspect measured by Return on assets (ROA), though the correlation value seems not strong enough. This result implies that loan recipients deposit more in their savings accounts but fail to repay the loan, hence leading to an increase in the return on assets (profitability) of SACCOS. As the Return of total assets (ROA) considers the return on investment (ROI) and indicates the effectiveness in generating profits with its available assets, the higher deposits mobilisation could lead to better performance of the SACCOS. The current study findings also concur with the findings of Kolapo et,. al.'s (2012) research on credit risk and commercial banks' performance in Nigeria. The study used a panel data approach to determine the credit risk and found a positive relationship between ROA and TL/TD ratio. Furthermore, the study findings of the current study contradicts those of research conducted by Gizaw et al. (2015) in Ethiopia and revealed that TL/TD had an insignificant effect on performance.

Profitability of the SACCOS Negatively Related to the Credit Risk

The results from the test presented in Table 3 clearly articulate the structural equation modelling as it displays the link between ROA and Credit risk. These results imply that the error variance of SACCOS performance is about 22 percent for NPL/TL and 73 percent for TL/TD. This test confirmed the negative significant influence of credit risk on SACCOS' performance based on NPL/TL ratio, that is, it was stronger than TL/TD.

Influence of the Relationships between ROA and NPL/TL versus Relationship between ROA and TL/TD among the SACCOS on Mainland Tanzania

The result of the regression analysis shows that mean of ROA is - 0.0026 (Table 1). In general, the rule of thumb is that the banking sector expects not to be less than 5% of ROA. In this case, the SACCOS under review did not reach the expected level of ROA. Information from the analysis revealed further that the SACCOS had a negative mean value for the study period. The standard deviation of ROA indicates that the SACCOS have negative value. There is negative standard deviation (-0.782) among the SACCOS in the case of NPL/TL (Table 1). The mean value is less in NPL/TL ratio than TL/TD ratio in this study. Based on the general rule, which states that the higher value of standard deviation implies greater spread of data, the smaller the standard deviation shows the data is concentrated around mean. As such, the standard deviation is negative as well as small for NPL/TL, positive as well as small for TL/TD. In general, the data in the current study spread away from the mean value. This justifies the influence of Non-performing loans on SACCOS' performance. Thus the influence of the relationships between the Return on assets (ROA) and Non-performing loan over total loan ratio (NPL/TL) has more bearing than the relationship between the Return on Assets (ROA) and Total loan over total deposits ratio (TL/TD) among the SACCOS on Mainland Tanzania. The results further imply that the loan recipients deposited more in their savings accounts but, nevertheless, failed to repay the loan, hence resulting in SACCOS' management failure to hedge properly the loan against anticipated credit risk. Thus, implicitly the TEWW SACCOS LTD should be prepare to improvise a special grant mechanism for cushioning off bad loan or creating discounting sort of mechanism and collateral to facilitate the loan repayment before it falls upon the financial loan crisis among its members.

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