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Factors Affecting Credit Default Risks For Rural Savings and Credits Cooperative Societies (SACCOS) in Tanzania

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Abstract
This study was done to assess factors affecting loans' default risks or loans repayment performance for the Savings and Credits Cooperative Societies (SACCOS) in Tanzania. The study used qualitative, descriptive and multivariate regressions analysis to assess factors affecting credit default risks for 431 borrowers from 37 SACCOS in Morogoro, Dodoma and Kilimanjaro regions. The study reveals that loan size and years of schooling of borrowers contributed positively to the loan default. However, the study finds that other independent variables such as loan activity, marital status, age, family size, interest, loan duration, value of collateral and borrowers' experiences unfit the regression model. Other factors such as political interference, lack of entrepreneurship and investment analysis skills, embezzlement practiced by leaders and SACCOS' staff, drought, diseases, deaths and other calamities, non performance of the business, inadequate loans follow-up and lack of loan activities' insurances cover were mentioned to affect the loans default. The study noticed that absence of proper credit risks management techniques resulted into huge amount of overdue loans. This study recommends that politics should not be entertained in the SACCOS activities and SACCOS should make sure that they abide by their regulations. Also SACCOS' management and members should be trained on investment and business analysis, at the same time the loans limit should be considered. We strongly recommend that insurance cover on the crop, livestock and other products should be introduced for SACCOS operating in rural areas while the government should continue to monitor and supervise the rural SACCOS in Tanzania.
Keywords: Factors, Credits default risks, Rural Savings and Credits Cooperative Societies, Tanzania

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1.0 Introduction

Tanzania is one of least developing countries in which 73.6% of its population lives in rural areas (Triodos Facet, 2011). Tanzania had been following socialist policies, with a state controlled economy up to mid-1980s. The formation of Savings and Credit Cooperatives Societies (SACCOS) in Tanzania was endorsed by the Government since 1980s as a way of promoting access to financial services to rural people who are not served by formal financial institutions. In March 2013, the number of registered SACCOS in Tanzania was 5559 while members, members' funds (shares and savings) and loans were 970665 people, 399.0[1] and 627.2 billion shillings respectively (MOFT, 2012; 2013). Since their formation the rural SACCOS in Tanzania have helped to address the capital problem for rural borrowers (Wangwe, 2004; Bibi, 2006). Maghimbi (2010) and Bibi (2006) disclose that most of rural SACCOS in Tanzania suffer from weak internal control systems and high non-performing loans because of ineffective loans management. Karumuna and Akyoo (2011) reveal that one SACCOS in Kongwa district, in Dodoma region i.e Kibaigwa Financial Services and Credit Cooperative Society (KIFISACCOS) had overdue loans of Tanzanian Shillings (Tshs) 762,500,000 (equivalent to $610,000) in 2009 because of poor management of loans.

Wenner (2010) urges that since rain fed agriculture is the main activity for rural people, it is more risky to lend them. Therefore the objective of this study was to analyse the factors affecting credit risks for rural SACCOS because to the best of my knowledge there is no empirical study done to assess factors affecting the credits default risks facing rural SACCOS in Tanzania. This study focused on both quantative and qualitative approach in describing and identifying the factors influencing the credits risks. The quantative approach involved both descriptive approach and multivariate regression model. This paper is organized as follows: The next section covers the review of literature where various studies examining the factors affecting loans default in MFIs and in SACCOS in particular will be critically described. After that, the methodology used to conduct this study will be explained. Then, discussion of the results obtained from the data analysis will be done. The discussion will clarify how qualitative, descriptive and regression variables associate with loan default risks in rural SACCOS. Finally, conclusion and recommendations for the study will be presented.

[1] 1 USD is equivalent to 1610 Tanzanian shillings

2.0 Literature review

According to Fiedler (1971), credit risk is the probability that a loan will not be repaid according to the terms of the contract. Ikomi (2012), comments that risk taking is closely associated with profitability. Hence it is better to know the factors that affect the credit risks in order to manage credits in rural SACCOS well. The following studies depict factors affecting credit default risks in MFIs and Cooperative financial institutions in Africa and various parts of the world. Most of these studies were done to assess factors affecting repayment performance or default risks for farmers, fishermen, informal sector borrowers in Community Based Organisation (CBO) and Cooperative financial organizations and few studies were done to assess credits risks for borrowers who took loans from banks. Some of these studies are Haque et al (2011) who assessed the repayment performance for Community Based Organisation (CBO) in Bangladesh; Oladeebo and Oladeebo (2008), Small holder farmers in Nigeria; Acquah and Addo (2011), fisherman in Ghana; Ojiako and Ogbukwa (2012), smallholder cooperative farmers in Nigeria; Addisu (2006) informal sector in Addis Ababa- Ethiopia and Kithinji (2010), commercial banks in Kenya, Vasanthi and Raja (2006), small housing borrowers in Australia, Wenner (2010), farmers in Latin America and Gómez and Santor (2008) borrowers in Nova Scotia Canada.

2.1 Empirical literature on Factors affecting loan default/ loan repayment performance

Most of the studies use multivariate regression, probit and logit models to assess the factors affecting loans repayment performance or loan default risks and they reveal that the following were the factors affecting loans default risks: Acquah and Addo (2011); Mashatola and Darroch,(2003), Kohansal and Mansoori (2009) and Oni et al (2005) applied multivariate regression and probit model where they find that income of the farmers have positive influence on loans repayment performance in Ghana, South Africa and Iran respectively. Similarly, Vasanthi and Raja (2006) used descriptive and logit model and reveal that that lower income is one of the major factors causing loans default for housing borrowers in Australia. The amount of loan receipts contribute positively to loan repayment as reported by Haque et al (2011) in Bangladesh, Oladeebo and Oladeebo (2008) in Nigeria, Kohansal and Mansoori (2009) in Iran, Ojiako and Ogbukwa (2012) in Nigeria, Addisu (2006) in Ethiopia and Duy (2013) in Vietnam. Different studies report difference influence of age on loans repayment. Oni et al (2005), apply descriptive and probit regression analysis to determine factors influencing default in loan repayment among poultry farmers in Nigeria. Their results from the probit model reveal that age influences positively to the loans repayment. Haque et al (2011), Oladeebo and Oladeebo (2008) and Acquah and Addo (2011) applied the multivariate regression model and they find that age influences negatively on loan repayment performance for small business owners, farmers and fishermen in Bangladesh, Ghana and Nigeria respectively. Implying that in the first case, the higher the age; the low the risk of default while in the second case, the higher the ages, the higher the risk of loan default respectively. Ojiako and Ogbukwa (2012) analysed loan repayment capacity of the smallholder cooperative farmers by using descriptive statistics, correlation and regression techniques in Nigeria where they reveal that the average age and repayment rate of borrowers were 43 years and 44% respectively. Acquah and Addo (2011) and Addisu (2006) reveal the positive influences of education on loans repayment performance for fishermen and informal sector borrowers in Ghana and Ethiopia while Oladeebo and Oladeebo (2008) and Oni et al (2005) find negative influence of education on repayment performance of farmers in Nigeria respectively. They both used regression and probit models. Both Haque et al (2011) and Ojiako and Ogbukwa (2012) observe negative influence of family size on loan repayment performance for small business owners and farmers in Bangladesh and Nigeria respectively. It implies that larger family size exposes high risk of loan default. Similarly, Vasanthi and Raja (2006) observe the negative influence of the number of dependants and the loan default risk for housing borrowers in Australia. Haque et al (2011) observe the negative relationship between forced savings and loans repayment performance. Ojiako and Ogbukwa (2012) and Oni et al (2005 find that farm size and flock size has positive and negative influence on loan repayment performance respectively. On the other hand, Moti et al (2012) reveal the significance influence of the size of business on loans performance. Oladeebo and Oladeebo (2008); (2009); Kohansal and Mansoori and Acquah and Addo (2011) all find positive influence of borrowers' years of experience on loan repayment performance for farmers and fishermen in Nigeria, Iran and Ghana respectively. Moreover, Kohansal and Mansoori (2009) by using logit model and a cross sectional data find that collateral affects positively the repayment performance while number of installments and total loan application fees affected negatively the repayment of agricultural loans in Iran. The results are consistent with those obtained by Moti et al (2012) in Kenya who noted the influence of collateral on loans repayment performance. Duy (2013) compared the repayment performance of farmers and non-farmers borrowed from formal banks in Vietnam by using a tobit model and reveals that loan repayment performance is positively affected by the gender of borrowers. Both Trà, and Lensink, (n.d) and Kohansal and Mansoori (2009) reveal that loans interest rates influence positively on the loans default in Vietnam and Iran borrowers respectively.

Sileshi et al (2012) assessed factors influencing loans repayment in Ethiopia by using descriptive statistics and two limit tobit regression model and reveal that 71.4% and 28.6% of borrowers were partial and complete non-

loans defaulters respectively. Also they find that agro ecological zone, off-farm activity and technical assistance from extension agents influenced positively while the production loss, informal credit, social festival and loan-to-income ratio negatively influenced the loan repayment of smallholder farmers in Ethiopia. Nawai and Shariff, (2010), used literature review to analyse the determinants of repayment performance in microcredit programs and they state that repayment problems become the main obstacle for the microcredit institutions to continue providing microcredit services. Their study also discloses that determinants of repayment performances in micro credit programs can be divided into four factors namely borrower characteristics, firm characteristics, loan characteristics and lender characteristics. Trà and Lensink, (n.d) applied the logistic regression analysis to compare households' default risks for informal, formal and semi-formal institutions borrowers in Vietnam. Their study reveal that informal lenders face a higher default risk than formal and semi-formal lenders and loan amount, wealth of the borrower and socio cohesion influence loans default negatively. Gómez and Santor (2008) used descriptive statistics and a standard probit model to study if the microfinance lending model actually work in Nova Scotia, Canada and they reveal that the ratio of household income to loan payment was higher for group than individual borrowers (16.9 vs. 12.5 percent). Also they noted that borrowers who knew more of their fellow members before forming the peer group were less likely to default. Moreover, they reveal that individuals with greater social ties were less likely to default than others who did not belong to an association, club, or sports team. Likewise, Duy (2013) compared the repayment performance of farmers and non-farmers borrowed from formal banks in in Vietnam by using a tobit model and finds that farmers have higher repayment performance than non-farmers. Addisu (2006) applied descriptive, multivariate regression and logit analysis to assess the micro-finance repayment problems in the informal sector in Addis Ababa (Ethiopia) and finds that the Government owned and NGOs microfinance institutions were found to have high default rate because they perceived risk as a grant and not a liability. Al- Mamun *et al* (2011) employ structural equation model to examine the household factors affect repayment performance in Malaysia where they reveal that more than 50% of the cooperative members default their credits because they allocated their credits in non-income generating activities.

Jha and Hui (2012) reveal that poor credit appraisal, inadequate follow-up and poor supervision of loans were the factors caused high ratio of Non Performing Loans for public banks in Nepal. Conversely, Addisu (2006) finds lack of clear plan for borrowers reduce the loans repayment performance for informal sector borrowers in Ethiopia. Acquah and Addo (2011) reveal 70.1% repayment delay of their credits for fisherman in Ghana because of low catch and high debts. Kithinji, (2010) used descriptive and regression model to assess the relationship between the credit risk management and profitability for commercial banks in Kenya and finds that the main sources of credit risks for commercial banks in Kenya include inappropriate credit policies and lack of competent staff which result into poor assessment, lending practices and follow-up of the credits.

2.2. Strategies to mitigate credit default risks

Microfinance institutions use several strategies to prevent default of loans. Kidanu (2008), states that in Ethiopia as per to their lending rules and procedures if a rural SACCOS' member fails to pay his loan on time, they replenish from the accounts of the guarantors. Some institutions in Canada apply the credit policy where the use of high valued collateral is regarded as one of the strategies for enhancing the repayment of credits (DICO, 2005). Correspondingly, Ross et al (2010) emphasize that in granting credit, a firm should distinguish between customers who will pay and customers who will not pay using the credit policy and use of effective guarantor. Bunning (2004) observed 100 per cent repayment rates for women borrowers from the UNDP micro credit project in Inner Mongolia and Chifeng in China due to training and good supervision of loans. Similarly, Haque et al (2011) find that 94% repayment rate for a community based organization members in Bangladesh because of loan follow-up and training of microcredit officers. Also Acquah and Addo (2011) assert that homogenous group with good leadership and training and prior history of working in groups had the highest probability of repaying the loan in Ghana. Moreover, FunHo and Yusoff (2009), applied descriptive analysis to assess the credit risks management where they find that diversification of loan services, risk mitigation and training and development of staff are the three most popular practices implemented to manage risks in Malaysian financial institutions. Mustafa *et al* (2011) find that some of the agricultural banks in Morocco, Tunisia, Sudan, Egypt, and Iraq issued crop and livestock insurance to their borrowers for managing default risks. However, they find that some country did not offer the crop insurance like Syria and Jordan. Also they find that rural agricultural finance and banks in the Near East and North Africa consider strong and effective collateral, repayment capacity of the borrower and the use of information technology for reduction of risks. Ofuoku and Urang (2009) find that there was a little default on members in the cooperative societies in Delta South agricultural zone in Nigeria due to strong social cohesion. Wenner et al, (2007) studied the management of credit risk in rural financial institutions in Latin America (Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Paraguay, Peru) and find that many of the institutions surveyed in Latin America had high overall rates of profitability, low delinquency rates in both non and agricultural portfolios because of loan portfolio limits.

Moreover, Wenner et al (2007) report that in Latin America portfolio limit for agricultural loans was less than 40% of the total loan portfolios. Furthermore, Moti et al (2012) recommend the diversification of loan portfolio for mitigation of the loans default risks.

Satgar (2003) reports that in 2003 the Grameen Bank (GB) lent to more than 2.3 million people (95% of them being women) and had a loan recovery rate of over 98%. The GB has successfully attained high repayment performance because it developed a banking system based on mutual trust as both collateral and guarantor. GB high repayment rate was also encouraged by high accountability, participation and creativity of the borrowers. Evers et al (2000) asserts that if borrowers are convinced and committed to pay their debts very seriously, there will be no outstanding debts. Moti et al (2012) finds that high involvement of credit officers in formulating credit terms and considering good character and repayment history of a borrower before issuing loans influenced positively to loan repayment performance in Kenya. Evers et al (2000) disclose that experience has shown that if credit institutions are not committed to sensitize their members to repay their loans, the repayment rate decreases significantly. Evers et al (2000) suggest that prevention of default should be a guiding principle at all stages of the loan cycle (i.e client screening, credit assessment, monitoring and repayment). The literature review indicates that the empirical research on the factors affecting credits default risks for rural SACCOS in Tanzania is missing. This study was done to fulfill the gap.

3.0 Model specification and data

Most of studies use descriptive and multivariate regression models to evaluate the risk of loans default or loans repayment performance. Some of studies which applied descriptive, regression, probit and logit model to assess the factors affecting the loans default are: Mashatola and Darroch (2003), in sugar industry in Kwazulu Natal-South Africa; Kohansal and Mansoori (2009), farmers in Khorasan-Razavi province in Iran; Sileshi et al (2012), informal sector borrowers in Ethiopia and Gómez and Santor (2008), in Nova Scotia- Canada. However, some scholars applied only descriptive and qualitative approach to study the factors affecting loans repayment performance or the risks of loans default. These are Mustafa *et al,* (2011), in rural and agricultural finance in Near East and North Africa; Ofuoku and Urang (2009), for farmers' Cooperative societies in Delta State, Nigeria, Oni et al (2005), poultry farmers in Nigeria, FunHo and Yusoff (2009), financial institutions in Malaysia and Njanike (2009), bank survival in Zimbabwe. Moreover, Al- Mamun *et al* (2011) employed structural equation model to examine the household factors critical factors affecting the repayment of microcredit in Malaysia. However, some scholars used unique approaches. Example Bunning (2004) used qualitative approach to study the loans repayment performance for women borrowers from the UNDP micro credit project, in Chiefeng (China) and Inner Mongolia and Nawai and Shariff, (2010) used literature review to analyse the determinants of repayment performance in microcredit programs. This study applied multivariate regression, descriptive and qualitative analysis to assess factors affecting the loans default risks for rural SACCOS in Tanzania.

This study was conducted in Morogoro, Dodoma and Kilimanjaro regions in rural areas of Tanzania (specifically in Mvomero, Morogoro rural, Moshi rural, Rombo, Hai and Same districts). The study used a cross sectional survey design where data was collected at a single point in time. The purposive sampling was used to select SACCOS and borrowers for interview by using the structured questionnaires. Data for this study was collected between February and May 2013. The descriptive analysis used the percentages, mean and standard deviations to explain how borrowers' socio economics variables influence the loans default. Descriptive analysis was done for variables such as occupation, loan activity, collateral information, strategies to repay the loan, reasons for loans default, influence of technical and business management education on loan default, borrowers and defaulters quantative variables **(**i.e age of the borrower, year of schooling, family size, loan duration in months, loan experiences (in years) loan amount received (in Tshs), loan interest rate (in %), value of collateral (in Tshs) amount of loan paid (in Tshs), amount of overdue loans (in Tshs) were analysed. Also qualitative information collected during the study was gathered, analysed and then be outlined.

Moreover, the multivariate linear regression model was used to evaluate repayment performance or risk of loans default of the borrowers. The dependent variable (Y) was measured by overdue loans in Tanzania shillings-Tshs). In this study, overdue loans are defined as loans delayed for payment for six months and more since its due date. The analysed independent variables which influence the loans repayment performance were:

X_1- Age of the respondent in years
X_2- Respondent's education in years
X_3- Family size
X_4- Marital status -1 if household head is married; 0 otherwise)
X_5-Interest rate
X_6- Amount of loan receipts in Tanzania shillings
X_{7-} Loan duration in months
X_8 -Value of collateral in Tanzanian shillings and
X_9- Borrowers experiences in years

X_{10}-Loan activity-1 if is business loan; 0 otherwise
The regression equation was constructed as follows:

$$Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + b_8x_8 + b_9x_9 + b_{10}x_{10} + \mu$$

Where; is the Y-intercept, b_0 is the Beta coefficient of X_n variable and μ is the error term. The values of n = 1-10. The regression model was used to assess how the independent factors affect the loans default risks for rural SACCOS' borrowers in Tanzania.

4.0 Results

4.1 Borrowers and defaulters' socio economics characteristics

The study shows that 58% of the borrowers were males while 42% were females. The results show that there is good sensitization for females SACCOS member to take loans from SACCOS. The default rate for the loan is 15% and 7% for males and female borrowers respectively accounting for 22% of the total loans default for all borrowers. The data shows that male borrowers have high default rate compared to their counterparts (female borrowers). Implying that it is more risk to lend male than female rural SACCOS members. The analysis indicates that majority of borrowers (83%) were having primary education while the rest (14%, 2% and 1%), were having secondary, college and none education respectively. The results show that people with all levels of education borrowed loans from the rural SACCOS. The education information reflects the real education status of Tanzanian citizens where majority possess the primary education. Possessing of a primary education is a key to borrowers for enabling them to make simple investment analysis. Hence it might help the borrowers to allocate their loans well and ultimately reduce the probability of loans default. The study further reveals that the borrowers with secondary education leads to default their loans followed by primary, none and college borrowers. This is probably because secondary education borrowers have more pressure with their lives. Hence they might allocate loans in more risk activities for expecting high returns. Implying that lending to borrowers with secondary education is more risky than others. However, risk could be reduced by relevant risk mitigation techniques. The results show that about 83%, 7%, 2% and 8% of the borrowers were married, single, divorced or separated and widow respectively. However, the general results show that the default rate for married, widow, single, divorced and separated borrowers were 17.9%, 2%, 1.6% and 0.5% respectively. The results show that lending married couples were more risky than others. Within groups, the results shows that higher rate of default were observed within the widow borrowers. Probably because the widowed borrowers have many responsibilities including fulfilling their families with the basic needs such as food, clothes and shelters, paying for the education and any other needs. The default rate within single divorced or separated and married borrowers groups were 25%, 23% and 15% respectively as displayed in Table 1. On the other hand, Vasanthi and Raja (2006) find that divorced and separated borrowers were having higher default rate compared to other borrowers in Australia. It implies that it is more risk to lend separated and divorced borrowers than others. Probably because divorced and separated borrowers and have many needs to execute for their families. Hence it might be easy for them to divert loans into non income generating activities.

Table 1: Borrowers' qualitative socio economic characteristics

Variables	Total in a Sample item (y)	Percent	Frequency of default (x)	% in total sample	Percent in a group item (x/y x100)
Gender of the borrowers					
Male	251	58	64	15	25
Female	180	42	32	7	18
Total	**431**	**100**	**96**	**22**	**N/A**
Education					
None	5	1	1	0.2	20
Primary education	357	83	77	18.8	22
Secondary	60	14	17	3.8	28
College	9	2	1	0.2	11
Total	**431**	**100**	96	**22**	**N/A**
Marital status					
Single	28	6.5	7	1.6	25
Married	356	82.6	77	17.9	23
Divorced or separated	13	3.0	2	0.5	15
Widow	34	7.9	10	2.0	29
Total	**431**	**96**	**96**	**22**	**N/A**

4.2 Occupation, loan activity and collateral information

The results from Table 2 confirm that 83.3% of the main occupation of borrowers was agriculture. However, 12.5%, 3.2% and 0.9% of the borrowers' main occupation were business, permanent employment and technical work respectively. The results show that majority of the borrowers engaged in agricultural activities hence large amount of loans were subjected to risk of default since majority of borrowers were involved in uncertain (agriculture) activity. Table 2 shows that majority of borrowers i.e. 58% spent their loans in agricultural activities which is a risky activity because majority of farmers in Tanzania depends on rain fed agriculture. Okwoche et al (2012) find that more than 87.7% of the agricultural cooperative members utilized their credits for the purpose of agricultural production in Nigeria, testifying that majority of people in rural area use loans for agriculture production. Wenner (2010) describe that Agriculture activity is an essentially risky economic activity because it is difficult for a farmer to control some elements of production and marketing especially for farmers who depend on rain fed agriculture like those of Tanzania. The results from the data analysis manifest Wenner (2010) argument where 13% of borrowers who took agricultural loans reported to default their loans compared to 9% of their fellows who used loans for business or other purposes. The business and social activity borrowers reported a bit lower default rate of 6% and 3% respectively. However, the data from borrowers' group analysis indicates that social loan borrowers' default rate is also a bit higher than their counterparts. Probably this is because social loans were directed to non-cash production activities. Usually the social loans were directed to pay the school fees, cover the health costs and other emergence social activities such as funeral.

The results indicate also that 85%, 7% and 8% of borrowers used land plots and house, livestock and others means as their collateral respectively. Other means of collateral includes furniture, borrowers' savings and deposits and guarantors' assets. The use of livestock collateral was only practiced in Kilimanjaro region. The results shows that majority of borrowers used their land plots as their collateral. However, this practice poses various challenges to the SACCOS. First it is very difficult to sell a house of borrowers to pay the loans during the event of default because this seems as against humanity. Since selling the house affects both spouse and children in the households. Also some married couples did not involve their partners to seek mutual agreement in using house as collateral during the loan processing. Therefore, spouse could pose obstacle to sell the house at an event of loan default emphasizing the house belongs to the whole family. Also most of the houses in the rural areas lack legal valuation or deeds, making it difficult to attract the high prices during the loans default. This implies the borrower who mentioned house or land plots as their collateral had high risks of default than others. During the study none of the borrower reported to sell his/her house to cover the loan. The results also show that within groups, borrowers who use other means of collaterals apart from house, land plots or livestock were having a higher default rate.

In order to pay loan smoothly, borrowers are supposed to set their own strategies which will facilitate the paying of loans in whatever circumstances. The study reveals that 9% of the borrowers were not having any strategy to pay their loans. This poses high risk of default for the loans taken. The study also observed that 67% and 24% of borrowers were having the strategy of paying their loans from the loan activity and other activities respectively. Those who reported to pay loans from their loan activities expressed that, this could be possible because they might work hard, avoid any unnecessary expenses and would attempt saving as much as they can in order to accumulate enough money for paying the loans. However, using only the revenue obtained from loan activity to pay the loan is more risky if the loan activity is not insured. For this case, we recommend 24% of borrowers who had strategy to pay loan from other activities. In this scenario diversification of business/occupation activities is recommended for all borrowers in order to keep loans at lower risks of default. The borrowers' group analysis shows that majority of borrowers who had strategy to pay their loans from other activities also defaulted their loans. This is probably because some borrowers reported to depend only on their own savings and deposits as other means for paying their loans. Since savings and deposits usually is of small amount, hence depending only on borrowers' saving is not sufficient for making borrowers to pay their loans during the loans default.

Table 2: Loan activity, collateral information and strategy to repay the loan

Variables	Total in a Sample item (y)	Percent	Frequency of default (x)	% in total sample	Percent in a group item (x/y x100)
Loan activity					
Agriculture and livestock keeping	249	58	55	13	22
Business	127	29	26	6	20
Social activities[1]	58	13	15	3	29
Total	**431**	**100**	**96**	**22**	**N/A**
Type of collateral					
Land plot and house	366	85	85	20	23
Livestock	29	7	2	0.5	7
Others	36	8	9	1.5	25
Total	**431**	**100**	**96**	**22**	**N/A**
Strategy for paying loan back					
No strategy	39	9	14	3	36
From loan activity	290	67	44	10	17
From other activity/means	102	24	38	9	37
Total	**431**	**100**	**96**	**22**	**N/A**

4.3 Reasons for Loans default

Borrowers reported various reasons for the loans default. Table 3 shows that 41% of the borrowers didn't mention the reasons for defaulting their loans. Probably they defaulted their loans because they could not run their business activities as per their expectations. However, 38% of borrowers stated that they defaulted their loans because of lack or shortage of rain in agricultural activities and poor performance of their businesses. The remaining borrowers (12% and 7%) declared that they defaulted their loans because they encountered deaths of their family members or relatives and, or disease and theft incidences. It is possible that those events could not restrict the payment of loans as required if borrowers could take mitigation measures against the loan default. Some members of SACCOS in Morogoro rural, Mvomero and Kongwa districts reported that they defaulted their loans intentionally because they were discouraged by embezzlement done by SACCOS' staff or because the SACCOS issued loans to members without abiding by regulations. For example 1 SACCOS' member in Morogoro rural district, affirmed that after SACCOS' staff had being accused of 4 million theft, all members stopped to pay their loans. The same situations occurred in 10 SACCOS in Morogoro and Mvomero districts in Morogoro region where members stopped to pay back their loans because SACCOS' staff and leaders had higher amount overdue loans.

One SACCOS' member in Mvomero district stated that he defaulted his loan directed for pig keeping because of the death of all small pigs (piglets) which were assumed to be sold for repaying the loan. Moreover, poor planning and business analysis caused default of loans in another SACCOS in Mvomero district where the SACCOS provided large amount of loans without doing thorough analysis of the car business. One member of the SACCOS stated that they borrowed 18 million Tanzanian shillings to run the car business in a group of 8 people but their vehicle got breakdown and hence they defaulted their loans. He also stated that while making arrangement to repay the loan, they borrowed again 4 million to service the car from the same SACCOS but it could not help to make the car running. Later, they decided to sell the car to repay for the loan. However, they didn't manage to obtain enough money to repay for the whole overdue loans amount. The car group borrowers confessed that they default their loans because they failed to make the real business projections and failed to take effective risks mitigation measures for their business. He further disclosed that despite they insured their car; the insurance company didn't pay them any amount of money regardless of making frequent follow-up. We think that they were not paid their insurance cover because may be they insured their car in a fake/non reputable insurance company. One borrower from one SACCOS in Mvomero district stated that he defaulted his loan because his livestock (2 cattle and all chickens) was stolen. Another borrower from one famous SACCOS in Kongwa district reported that he defaulted his loan because he got loss from the agricultural activities. He stated that he cultivated 100 acres and harvested only 1 bag (120) and 1 tin (20 Kg) of maize. Moreover, one borrower in Rombo districts reported that she defaulted her loan because of deaths of her husband and 2 children spontaneously. These examples portray that SACCOS were issuing loans to their member without considering

[1] Social activities included fees, health, house building or maintenance of the house or business premises
Other means included the use of collateral

risks mitigation techniques. Hence all reported cases could be avoided if SACCOS' members were having comprehensive insurance for their loans or any other effective risk mitigation measures for their business activities.

Table 3: Reasons for loan default

Variable	Frequency	Percent
No reasons given	39	41
Low price of agricultural and livestock produce	11	12
Diseases or deaths	3	3
Drought or poor performance of business	36	38
Theft	7	7
Total	**96**	**100**

4.4 Influence of technical and business management education on loans default

Table 4 shows the influence of technical and business management education on loans default. The study revealed that 24% of defaulters were neither trained in technical nor business management regarding to their loans activities. However, 25%, 21% and 30% of borrowers were trained on technical, business and entrepreneurship or both. The implication of these responses is either the training was not sufficient to enable the defaulters to apply the skills obtained during the training or the defaulters ignored the application of the skills obtained. Defaulters' group analysis indicates that defaulters trained only in technical education have high rates of loan default compared to others. This implies that business and entrepreneurship training is vital for borrowers for enhancing borrowers to allocate their loan wisely and efficiently. The results indicate that training borrowers in both technical and business and entrepreneurship reduces the rate of loans default. In the same way, Kessy and Temu (2010) find small and medium enterprise owners with business training have higher level of assets and sales revenue compared to their counterparts in Tanzania. It implies that borrowers with training skills manage to utilize their capital effectively because of the skills gained.

Table 4: Training Information

Type of training	Total in a Sample item (y)	Percent	Frequency of default (x)	% in total sample	Percent in a group item (x/y x100)
None	103	24	18	4.2	17
Technical education	109	25	32	7.1	29
Business and entrepreneurship	90	21	16	3.7	18
Technical and business and entrepreneurship	129	30	30	7.0	23
Total	**431**	**100.0**	**96**	**22**	**N/A**

4.5 Borrowers and defaulters quantative variables

Table 5 and 6 display the borrowers' and defaulters' quantitative variables. The minimum age for borrowers was 20 while the maximum age was 82. The results indicate that people of different age categories borrow loans in rural SACCOS. Table 6 demonstrates that the maximum and minimum age for defaulters were 23 and 71 respectively. The age information shows a little increase and decrease of minimum and maximum age for defaulters respectively. The study by Vasanthi and Raja (2006) reveal that the risk was low for adult men than in youths for housing borrowers in Australia. The year of schooling for both borrowers and defaulters ranges between 0 and 15, showing that all people of different education levels take loans from rural SACCOS. This implies that there is no education level segregation when rural SACCOS issue loans. The family size for borrowers ranged from 1 and 22 while for defaulters ranges from 1 to 15. Haque et al (2011) and Ojiako and Ogbukwa (2012) reveal that the large family size affects the loan default positively. The loan duration was 1 to 18 and 3 to 18 months for borrowers and defaulters respectively. The study finds that all SACCOS issued 1 month loan for their members to cover emergence events such as health problems, paying the school fees or funeral. Most of the SACCOS issued 3, 6 and 12 months loans for social, business and agricultural activities while 18 months loans were targeted for house and business premises building or maintenance. Moti et al (2012) report that the loan maturity influences positively to the default risks. Implying that the longer the maturity of loans, the more the risks. Similarly, Vuuren (2011) finds that and longer terms of loans increase the chance of non-payment for MFIs borrowers in South Africa.

The study revealed that the borrowers and defaulters loan borrowing experience was 1 and 20 and 1 and 15 years respectively. Principally, years of experience might reduce the risk of loan default since the borrowers have accumulated enough skills and experiences that could help them to manipulate business environments to prevent the loans default. However, the results don't show a big difference in default because of borrowing experiences since borrowers with 15 years of experience also defaulted their loans. The results find that the amount of loans

received by borrowers and defaulters ranges from 20000 to 10000000 and 20000 to 8000000 Tshs respectively. The results shows that the maximum loan for defaulters was a bit lower compared with that of the borrowers contending that the larger the size of loan, the more the risk of default. This result is consistent with Moti et al (20120 who reveal that the risk of default increases with the increase of the amount of loans received by borrowers in Kenya. Conversely, Vuuren (2011) reveals that the size of loan influences the repayment performance. The interest rate of the loans for borrowers and defaulters ranges from 2% to 40% and 8% to 36% respectively. The results show that defaulters were charged large minimum and lower maximum interest rate for their loans. Moti et al (2012), Kohansal and Mansoori (2009) and Trà, and Lensink, (n.d) affirm that the higher interest rate increase the risks of loans default. The value of collateral for borrowers and defaulters ranges from 30000 to 40000000 and 50000 to 20000000 Tshs respectively. The results show that borrowers had high collateral value than defaulters. However, in some SACCOS, large value of collateral didn't guarantee borrowers to repay loans in the event of default because some collateral were sensitive such as houses. It was revealed that most of rural SACCOS failed to sell houses set as collateral because this practice makes the borrowers and their families to lack residence for living since this seem like against humanity. Moti et al (2012) and Kohansal and Mansoori (2009) find that low collateral value resulted into high credit risks in Kenya and Iran MFI borrowers respectively. The amount of repaid loans ranges from 0 to 10000000 and 0 to 6840000 Tshs for borrowers and defaulters respectively. The results show that borrowers who didn't default their loans repaid high amount of loans to SACCOS than defaulters. The amount of overdue loans ranges from 0 to 6240000 Tshs where the mean amount of overdue loans was 661000. It implies that at large SACCOS owe large amount of loan arrears their members. For instance Non Performing Loans for six months and more for some SACCOS in Kongwa, Mvomero, Morogoro rural and Same districts at the end of May 2013 were 321700303, 108373503, 235435137 and 81777723 Tshs respectively. The results show that Non Performing Loans is still a problem for many SACCOS operating in rural Tanzania. The study finds that the problem is severe for SACCOS in Dodoma, followed by Morogoro and Kilimanjaro region respectively. The high loan default rate was observed in Kongwa district in Dodoma region probably because Kongwa is located within Dodoma region which is the capital city of Tanzania, where most of political activities are carried. The study observed that political interference during establishment of SACCOS and in loan processing procedures accelerated the amount of defaulted loans for many SACCOS. The default rate was low in Kilimanjaro region because the SACCOS businesses were highly separated from political interference. Moreover, the entrepreneurship and risk averse spirits were observed for the Kilimanjaro SACCOS borrowers where avoided to borrow without having specific viable activities/reasons. The possession of entrepreneurship spirit in Kilimanjaro SACCOS was manifested by the presence of high capital and members were sensitized to borrow, but some of them they didn't. However, this incidence also justifies that some borrowers from Kilimanjaro SACCOS lack investment analysis skills.

Table 5: Borrowers Quantative variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age of the borrower	431	20	82	46.53	11.367
Year of schooling	431	0	18	7.63	2.009
Family size	431	1	22	6.11	2.768
Loan duration in months	431	1	18	8.26	3.373
Loan experience (Years)	431	1	20	4.78	3.472
Loan amount received (Tshs)	431	20000	10000000	788000	1332166.88
Loan interest (%)	431	2	40	21.04	7.156
Value of collateral (Tshs)	431	30000	40000000	2460000	3419796.36
Amount of loan paid (Tshs)	431	0	10000000	65200000	1311801.20
Amount of overdue loans (Tshs)	431	0	6240000	1.470005	579018.416

Table 6: Defaulters Quantative variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age of the borrower	96	23	71	46.27	10.142
Year of schooling	96	0	15	7.63	2.053
Family size	96	1	15	6.17	2.474
Loan duration in months	96	3	18	8.96	3.557
Loan experience (Years)	96	1	15	4.80	3.367
Loan amount received (Tshs)	96	20000	8000000	985000	1341821.460
Loan interest (%)	96	8	36	20.92	6.790
Value of collateral (Tshs)	96	50000	20000000	2340000	2656975.031
Amount of loan paid (Tshs)	96	0	6840000	5.55000	980491.725
Amount of overdue loans (Tshs)	96	9500	6240000	661000	1083556.536

4.6 Regression analysis

According to Gujarat and Porter (2010), regression analysis is concerned with measuring how independent variables influence dependent variable. In this study the dependent variable was the default risk measured by overdue loans. Overdue loans for the sake of this study are the amount of loans which have not repaid while they were supposed to be paid back to SACCOS for at least 180 days after the scheduled repayment date. The independent variables of borrowers were age in years (X_1),education level in years (X_2), family size (X_3), marital status (X_4), interest rate (X_5), amount of loan receipt in Tanzania shillings (X_6), loan duration in months (X_7), value of collateral in Tanzanian shillings (X_8) and borrowers experience in years (X_9) and loan activity (X_{10}). The regression analysis was carried out by using both SPSS and E-View software. Gupta (2000) illustrated that in order to verify the regression results; we have to observe some parameters such as F-statistics, level of significance, R-square, the Analysis of variance (ANOVA) and the level of significance of individual Beta coefficients. The results from the regression analysis demonstrate that the ANOVA on the F-Statistics affirms that the model fits well the dependent and independent variables and there is no deviation. The regression results show that F-Statistics is 49.205 and the model is very significant explained by 0.000 probabilities. Gupta (2000) asserts that the more significance level of F-statistic approaches to 0, the more the model is significant. Gujarat and Porter (2010) and Gupta (2000) also stress that adjusted R-square measures the proportion of the variance in the dependent variable that was to be explained by variations in the independent variables. In this case R-Square measures the proportion of variation in the overdue loans that was explained by variations in amount loan receipt and years of schooling of borrowers. In this study, R-square is 0.514 indicating that about 51.4% of the variation in the amount of overdue loans can be explained by the variation of the amount of loans receipt and years of schooling of the borrower from rural SACCOS. Acquah and Addo (2011) and Addisu (2006) reveal positive influences of education on loans repayment performance for fishermen and informal sector borrowers in Ghana and Ethiopia while Oladeebo and Oladeebo (2008) and Oni et al (2005) find negative influence of education on repayment performance of farmers in Nigeria. The results of positive influence of loan size on the loans default (i.e negative influence on the repayment performance) of this study differ from the results reported by Haque et al (2011) in Bangladesh; Oladeebo and Oladeebo (2008) in Nigeria, Kohansal and Mansoori (2009) in Iran Ojiako and Ogbukwa (2012) in Nigeria who find that the size of loan influences the repayment performance positively. In other words their findings imply that the higher the amount of loans receipts, the lower the probability of loan default while the results of this study reveal that large size of loan receipt increases the loan default risks for SACCOS borrowers. In this study, the analysis by using multivariate regression model revealed that, the values of other independent variables i.e, loan activity, marital of status, age, family size, interest rate, loan duration, value of collateral and borrowers' experiences were found to unfit the model. This means that other factors such as political interference, lack of entrepreneurship and investment analysis skills, embezzlement practiced by leaders and SACCOS' staff, drought, diseases, deaths and other calamities, non performance of the business, inadequate loan follow-up, misuse of loans, lack of loan activities' insurances were probably some of the factors affecting the loan default for the rural SACCOS' borrowers. The analysis found that beta coefficients for loan activity, marital of status, age, family size, interest, loan duration, value of collateral and borrowers' experiences were 0.6,-0.4, -0.01, 0.173, 0.05, -0.02 and -0.03 while their significance probabilities were 0.584, 0.731, 0.768, 0.593, 0.156, 0.508, 0.873 and 0.828 respectively. The result indicates that there is no linear relationship between overdue loans and those insignificant listed variables, previously assumed to affects loans repayment performance for rural SACCOS' borrowers in Tanzania.

Table 7: Estimated value of Regression coefficients

Independent variables	Estimated value of coefficient	t-value
Log of loan received	0.742*	8.367
Years of schooling	0.48**	2.235
Value of R^2	0.514	-
Adjusted R^2 Value of F	0.504 49.205*	-
Durbin Watson	1.75	-
Standard Error of Estimate	0.408	-

*Significant at 1% level; **significant at 5% level

4.7 Testing multivariate regression assumptions

In order to accept the regression results all the assumptions should be considered. To justify that the assumptions were not violated, the following tests were conducted:

a. Multicollinearity

One of the assumptions of multiple regression is independent variables should not have association or correlation. When the independent variables are correlated, it is regarded as a problem in the model and this problem is called multicollinearity. Gujarat and porter (2010) states that the existence of multicollinearity can be diagnosed

by analyzing the values of tolerance and Variance Inflation Factors (VIF). According to Gujarat and porter (2010) and Gwahula (2013) the value of VIF>10 indicates the presence of serious problem of multicollinerity. The result from regression analysis shows that the mean VIF is 1.125 indicating that there is no multicollineality problem. The information about the multicollinearity analysis is displayed in Table 8.

Table 8: Multicollinearity diagnostic

Independent variable	**Collinearity Statistics**	
	Tolerance	VIF
Year of schooling	0.889	1.125
Log of loan amount	0.889	1.125
Mean	**0.889**	**1.125**

b. Autocorrelation

According to Gujarat and Porter (2010), autocorrelation occurs when the error terms are correlated. Durbin Watson (DW) coefficient measures the presence of autocorrelation in the regression model where d>2 is interpreted the absence of autocorrelation in the time series data. The result shows that the DW coefficient is 1.732 which is approximately equal to 2 suggesting that there is no serious problem of multicollinearity. Nevertheless, according to Gujarat and Porter (2010) DW is a suitable test for the time series data. Since the study data were cross sectional (collected at a one fixed point at a time) is not suitable for 100% test for DW. Moreover, the results obtained by running the correlation test between the two variables in Table 9 shows that the variables are very little correlated

Table 9: Correlations analysis for factors affecting loan default risks

Variables	**Pearson Correlation**	**loan amount received**	**Year of schooling**
loan amount received	Pearson Correlation	1	0.140
	Sig. (2-tailed)		0.174
	N	96	96
Year of schooling	Pearson Correlation	0.140	1
	Sig. (2-tailed)	0.174	
	N	96	96

The results from the Table 9 show that there is no correlation between the two variables (i.e. amount of loan receipt and the year of schooling of the borrowers). Therefore the results manifest that there is no problem of autocorrelation in the model. According to Gupta (2000), a correlation coefficient greater than 0.8 (in absolute terms) between two variables indicates the presence of high degree of collinearity.

c. Heteroscedasticity

Heteroscedasticity means presence of error variance in the linear regression model which is a violation against homoscedastic variance assumption. Gujarat and Porter (2010) state that heteroscedasticity can be diagnosed by using White test. According to Gupta (2000), White test can done by comparing the value of calculated and observed chi square in the chi square table values by using the formula: NxR^2, where N= Number of observations, R^2 = R square. The rule of thumb is: When chi square calculated is less than chi square observed, there is no heteroscasticity problem in the model. From the data analysis, R^2=0.514, N=431, therefore NxR^2=0.514*431=221.534. When you compare this $\chi 2(N), \rightarrow \chi 2(431)$:chit(0.05,431), you get the value of $\chi 2(431)$=480.4.Therefore, NXR^2=0.514*431=221.534 <$\chi^2(431)$ =480.4, so we can conclude that the model does not exhibit heteroskedasticity problem.

5.0 Conclusion, recommendations and future research

This study aimed at assessing the factors affecting the credits default risk for the rural Savings and Credits Cooperative Societies (SACCOS) in Tanzania by using qualitative, descriptive and analytical approach. The study noticed that absence of proper credit risks management techniques in Mvomero, Morogoro rural and Kongwa districts resulted into huge amount of overdue loans. The results from the multivariate regression model reveal that only the amount of loans received by borrowers and years of schooling influence positively on loans default. However, other factors such as age, marital status, loan activity, interest rates, loan duration, value of borrowers' collateral and experience were found to have no linear effects with the loans default. The study exposes that in general lack of investment analysis skills led to huge loans arrears. The study also finds that political interference in SACCOS' activities accelerated the loan default risk where the high loan default rate was observed in Kongwa district in Dodoma region which is the capital city of Tanzania where most of political activities are carried. The study further observed that lack of loan limit contributed to large loan arrears. Likewise, the study noted embezzlement of funds for some of SACCOS' staff. Moreover, failure to comply with the guidelines and regulations by SACCOS' staff, loan appraisal committee and management when issuing loans contributed to loans default risk. This study recommends that politics should not be entertained in SACCOS' business. Also the SACCOS should make sure that they abide by their regulations. Training should be done to all

SACCOS members where awareness on their positions and roles in promoting their SACCOS should be created. Likewise, SACCOS should establish the training on investment analysis to both SACCOS' management and members to make the SACCOS to rely on the real projections from investment analysis before disbursement of loans. We highly encourage that members with overdue loans should repay their loans. Furthermore, we encourage that non performing SACCOS should be revived. Additionally, we emphasize that the loans limit criteria should also be strongly considered. It means that SACCOS' members should be taught how large size of loan is very risky. We also propose that, since majority of borrowers in rural areas engage in agriculture, the crop and livestock insurance cover should be introduced. Therefore SACCOS' management and interested partners should strive to learn how to operate the crop and livestock insurance from Morocco, Tunisia, Sudan, Egypt and Iraq and other countries. Finally, we highly recommended that the government should continue to monitor and supervise the rural SACCOS while the detailed studies on the influence of politics and SACCOS' management on the loans default risk should be conducted.

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7.0 Abbreviations

ANOVA-Analysis on Variance
CBO-Community based Organization
DW-Durbin Watson
KIFISACCOS-Kongwa Financial and Saving and Credit Cooperative Society
MFIs-Microfinance Institutions
SACCOS-Savings and Credits Cooperative Societies
UNDP-United States Development Programme
USD-United States Dollars
VIF-Variance Inflation Factor
Tshs-Tanzanian Shilings

8. Regression Results

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.717[a]	.514	.504	.40810	1.732

a. Predictors: (Constant), Log of loan amount, Year of schooling

b. Dependent Variable: Log of Overdue loans

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.390	2	8.195	49.205	.000[a]
	Residual	15.489	93	.167		
	Total	31.879	95			

a. Predictors: (Constant), Log of loan amount, Year of schooling

b. Dependent Variable: Log of Overdue loans

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.845	.480		1.761	.082		
	Year of schooling	.048	.022	.171	2.235	.028	.889	1.125
	Log of loan amount	.742	.089	.641	8.367	.000	.889	1.125

a. Dependent Variable: Log of Overdue loans