

SAVINGS AND CREDIT CO-OPERATIVE SOCIETIES' IMPACT ON POVERTY REDUCTION IN RURAL TANZANIA: THE CASE OF MWANZA AND TABORA REGIONS

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ABSTRACT

The question on whether Savings and Credit Co-operative Societies' (SACCOS) Services reduce poverty among members remains unsettled in the empirical findings in Tanzania. The study was conducted with aim to contribute to the on-going empirical discussions. Six SACCOS were purposively selected in Mwanza and Tabora rural areas. A total of 500 respondents were randomly selected whereby 200 were members and 300 were non-members. The study used a questionnaire and a key informant interview guide to collect quantitative and qualitative data respectively. Microfinance Poverty Assessment Tool (MPAT) and Propensity Score Matching (PSM) were used to analyse quantitative data. The qualitative data were analysed using thematic technique. The study found that non-members of SACCOS were poorer compared to members and that differences of poverty levels between the two groups emanated from SACCOS interventions. It is concluded that SACCOS' services in the study area help to reduce poverty among members. The study recommends that Tanzania Co-operative Development Commission (TCDC), co-operative officers and Moshi Co-operative University (MoCU) to continue sensitise the rural communities so as to establish more SACCOS which will help to reduce poverty among rural residences.

Key words: SACCOS' services, Impact, Poverty Reduction, Mwanza and Tabora rural areas

1. INTRODUCTION

1.1 Background to the Problem

Savings and Credits Co-operatives Societies (SACCOS) are members-based co-operative financial institutions formed with dual missions: economic and social missions (Kleanthous, 2017). While economic mission encompasses being self-sustaining financially, social mission on the other hand involves provision of financial and non-financial services so as to transform socially and economically lives of their members. Generally, social mission of SACCOS focuses on poverty reduction among members (Railienė and Sinevičienė, 2015).

There is a great concern among scholars on whether SACCOS and other Microfinance Institutions (MFIs) fulfil their social mission of reducing poverty to their clients (Wang and Ran, 2019; Khan *et al.*, 2017; Kleanthous, 2017; Zeller and Meyer, 2002). This necessitated scholars to evaluate how far the MFIs including SACCOS have reduce poverty among their members (Abrar, 2019; Zeller and Meyer, 2002). The important question paused in literature concern the evaluation of social mission of SACCOS is whether SACCOS really reduce poverty of members (Wang and Ran, 2019; Magali, 2013). Answering this question is important for promotion of SACCOS model particularly in rural areas of Tanzania which possess 60% of SACCOS and 81% of population is regarded as poor (URT, 2018; Finscope, 2017; Ndiege *et al.*, 2013).

Studies in Tanzania have mixed results on impact of SACCOS' services on poverty reduction. For instance, studies conducted by Goey (2012) and Churk (2015) in Dar es Salaam and Iringa respectively indicated that SACCOS' services had no impact on household income. On other hand studies conducted by Kwai and Urassa (2015) and Kihwele and Gwahula (2015) in Mbozi and Dodoma districts respectively concluded that SACCOS had positive impact on household income.

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The above analysis reveals that empirical findings on whether SACCOS really reduce poverty among members in Tanzania remain unsettled. In addition, the mentioned studies conducted in Tanzania on impact of poverty reduction used household income as main indicator for poverty (Churk, 2015; Kihwele and Gwahula, 2015; Kwai and Urassa; Goey, 2012). The current study evaluated the impact of SACCOS in rural areas using multiple poverty indicators because poverty is a multidimensional concept which cannot efficiently represented by a single indicator. Specifically, the study aimed to examine the poverty levels among members and non-members and determine impact of SACCOS' services on poverty reduction among members. The study was guided by a null hypothesis that "SACCOS' services have no impact on poverty reduction"

1.2 Theoretical Review

This study used the Critical Microfinance Triangle (CMT) to guide the evaluation of SACCOS' services on poverty reduction. CMT is a framework established by Zeller and Meyer in 2002 to evaluate performance of MFIs using three objectives, namely; outreach services, impact on poverty reduction and financial sustainability (Zeller and Meyer, 2002). On one side, the framework shows the social mission (outreach and impact on poverty reduction) and the other side indicates economic mission (financial sustainability) of MFIs. The basic assumption of the framework is that MFIs should work to accomplish both missions. CMT insists that evaluation of the MFIs performance should involve three items: impact on poverty reduction, outreach and institutional sustainability (financially). This study focused on evaluation of SACCOS' services on impact of poverty reduction.

2. RESEARCH METHODS

The rural areas of Mwanza and Tabora regions were purposely selected to carry out this study because they had highest number of residences obtained financial services from SACCOS in Tanzania (URT, 2012a, 2012b). For this reason, it was expected to obtain rich data on impact of SACCOS' services on poverty reduction among members. Sengerema and Magu districts were purposely selected in Mwanza region because they had the highest per cents of 35.51% and 32.05% respectively of SACCOS in rural areas compared to other districts. In Tabora region, Nzega and Igunga districts were selected based on the same criteria as the two districts had highest per cent of 33.53% and 31.23% respectively of SACCOS in rural areas relative to other districts (URT, 2017a, 2017b).

The quasi-experimental design involving cross-sectional data was employed. This research design allowed data of interest (impact of SACCOS' services on poverty reduction) to be collected and examined at once unlike other designs like quasi-experimental design involving longitudinal data which requires data to be collected at intervals over the time (Cohen *et al.*, 2018; Bryman and Bell, 2011).

The purposive sampling technique was used to select regions, districts and SACCOS. In each district, SACCOS with the highest breadth of outreach were selected. In Igunga and Nzega districts, Chasigo and UVUMNYA SACCOS were selected respectively. However, in Magu district both Upendo and Victoria SACCOS were selected because they had almost equal numbers of members. The criterion used in Magu district was also employed to select Nyaluhwa and Uzinza SACCOS in Sengerema district. For that matter, six SACCOS were selected in four districts. The study employed lottery simple random sampling to select both members and non-members in the study area. Members were selected randomly from register books in respective SACCOS while non-members were selected randomly from the lists of villagers provided by a VEO in each village where the SACCOS was located.

The study used a sample size of 500 respondents of which 2-to-3 ratio of members to non-members was observed. The sample size was a recommendation from previous quasi-experimental studies (Habte, 2016; Henry *et al.*, 2003). Five hundred (500) respondents were interviewed including 200 members and 300 non-members from six SACCOS in four districts. The large sampling size of non-members captured larger variances among non-members with respect to various poverty indicators among members (Henry *et al.*, 2003). Also, 2-to-3 ratio of members to non-members fitted the requirement of the PSM model applied in this study which requires selection of more non-member households compared to members for the purpose of matching

observable characteristics between two groups. During matching some non-members who do not conform to members' characteristics were dropped.

The study adopted a mixed methods approach which facilitated both quantitative and qualitative data to be collected and analysed. This approach was appropriate because it enabled the researcher to collect data which could give rich information in relation to the focus of the study. Secondly, it helped to neutralise biases inherent in a single technique (Creswell, 2009). In addition, the quantitative technique dominated the qualitative technique, and consequently qualitative data were used to complement quantitative data. A questionnaire and a key informant interview (KII) guide were used to collect primary data. The questionnaire was designed to collect data from both members and non-members on poverty levels. The KII guide was used to collect qualitative data from 6 VEOs and 6 SACCOS' managers.

Table 1: Indicators initially selected to measure household poverty

Human Indicators.	Resource	Dwelling Indicators	Food Security and Vulnerability indicators	Assets indicators
Average age of adult household members		Ownership status	Daily number of meals in the last seven days.	Ownership and value of land owned
Average number of years of schooling of adult household members		Number of rooms per person	Number of days in a last seven days when meat was served	Ownership and value of livestock in TZS
Dependency ratio of children to adults		Type of roofing material	Number of days in a last seven days when fish was served	Ownership and value of transport related assets in TZS
Dependency ratio of unemployed to employed		Type of exterior walls	Number of days in a last seven days when wheat products was served	Ownership and value of appliances and electronics in TZS
Per capita annual clothing and footwear expenditure in TZS		Type of flooring	Number of months of stock of maize in last 12 months	Ownership and value of agricultural implements in TZS
		Quality of drinking water	Number of months of stock of rice in last 12 months	
		Quality of cooking fuels		
		Quality of source of lighting		
		Quality of latrine		

The quantitative data analysis was conducted in two stages. The first stage was conducted to establish poverty levels among members and non-members. This step was analysed using MPAT adopted from the Consultative Group to Assist the Poor (CGAP). MPAT is global acceptable method developed by CGAP to analyse poverty levels using poverty indicators as shown in Table 1. It was developed to capture four dimensions of indicators, namely; human resource, dwelling, food security and vulnerability and assets so as to cover widely multiple dimensional nature of poverty. MPAT uses poverty indicators to construct poverty index using Principal Component Analysis (PCA). Construction of poverty index involved a computation of a series of weights from each indicator toward contribution of overall poverty component. Table 1 indicates types of indicators initially adopted from MPAT.

Indicators indicated by Table 1 were entered in Statistical Package for Social Sciences (SPSS) software to compute poverty index. Five components were initially formed. Then, the first principal component was used to construct poverty index because it represented largest proportion of the variance (18.30%) in the set of indicators used. However, some of indicators with component loadings or coefficients less than 0.3 were considered weak (Towo, 2012), hence removed before re-run the model. After several scrutinisations of indicators, three components were finally formed of which the first principle had improved proportion of variance of 28.04% with largest Eigenvalue of 2.64. Table 2 indicates final poverty indicators used to construct the poverty index. Henry *et al.* (2003) argued that the larger the Eigenvalue and percentage of variance, the more the component is explained by model's indicators.

Table 2: Indicators finally used to construct poverty index

Human Indicators.	Resource	Dwelling Indicators	Food and Vulnerability indicators	Security and Assets indicators
Average number of years of schooling of adult household members		Type of exterior walls	Daily number of meals in the last seven days.	Per capita value of total assets in TZS
		Type of flooring	Number of days in a last seven days when meat was served	
Per capita value of annual clothing and footwear expenditure in TZS		Quality of source of lighting	Number of days in a last seven days when wheat products was served	
		Quality of latrine	Number of months of stock of rice in a last 12 months	

Afterward, the final version of first principle was saved into SPSS which enabled the PCA to compute a series of weights from each indicator. The weights were used to formulate poverty scores or poverty index of each household. Poverty scores formulated ranged from -1.90093 to +3.91617. Once the poverty scores were generated for each household, non-members (control group) were sorted in descending order according to their poverty scores. Then, their poverty index was divided into three levels: “lowest” poverty group followed by “middle” poverty group and “highest” poverty group (least poor). The primary role of non-members was to define limit or cut-off poverty scores for each tercile because they represent the general population. Then, members were categorised in the same groups based on their poverty scores. The poverty index cut-off scores for lowest group was $< +0.0013$, middle group ranged from $\geq +0.0013$ to $+0.94879$ while higher group was $> +0.94879$. The poverty cut-off scores were defined based on the argument from Henry *et al.* (2003) that poverty scores below 0 can represent the lowest poverty group and those ranges between 0 and 1 can represent middle group while those 1 and above can used to represent the highest group (least poor).

The second stage established whether differences existed in poverty levels among members and non-members was the result (impact) of SACCOS interventions. This stage was analysed using by PSM. PSM constructed a comparison group based on propensity score or probability of participating in treatment using observable characteristics. Members were matched with non-members using propensity score and then final impact was determined by using mean differences in poverty scores across two groups. In order to execute PSM, four steps were carried out. The first step was to estimate propensity score of participating using observable characteristics for each unit in the sample. The logit regression model was used to implement this step using eleven (11) independents variables which are: age, marital status, gender, household size and education level. Others are ownership of microenterprise, entrepreneurship experience, land ownership and land size, livestock ownership and size of livestock. The second step was to check the balance in characteristics of members and comparison group. In this step common support region was identified. The common support region is a place where characteristics of both members and non-members were balanced or in other word were the same using eleven observable characteristics mentioned earlier. The study found that the common region lied between region of $[0.02910472, 1]$. The third step was to selects a matching algorithm to be used to match members and control group. The study employed widely matching estimators include Nearest Neighbour (NN), Radius or Caliper, Stratification and Kernel methods.

All matching estimators maintained 200 treated households in a common region with exception of stratification matching which dropped 4 treated (members) households in common region. NN picked 63 from control group, radius and kernel picked 247 comparison household while stratification picked 251 comparison household. The study used neighbour of 5 ($n=5$) in NN method as suggested by Shahidur *et al.* (2010) while 0.1 radius was used in caliper matching. The radius of 0.1 was obtained as one quarter of standard deviation of propensity score as suggested by Rosenbaum and Rubin (1983). The fourth step was to estimate SACCOS' impact on poverty scores using average treatment effects on treated (ATT). Finally, the sensitivity analysis (goodness of fit test) was conducted to test whether unobserved factors influenced poverty score and treatment effects since PSM results based on observable characteristics alone. In this method, recalculation of ATT with unobserved factors U (confounders) was compared with ATT without confounders which referred as ATT (target), and then effects

of confounders on outcomes were estimated. Estimates were considered more robust if simulated ATT (conf) do not deviate much from original ATT (target).

The qualitative data which complemented the quantitative data was analysed by using thematic analysis technique. In this case, interview data from key informants were transcribe, sorted and arranged to obtain general sense of information. Then information obtained was coded into different themes which were further interpreted into meaningful information.

3. FINDINGS AND DISCUSSIONS

3.1 Poverty levels of SACCOS' members and non-members

In the first place, the study compared the poverty status of SACCOS' members and non-members based on poverty scores generated by PCA.

Table 3: Poverty Levels of Members and Non-members

Relative poverty terciles	Poverty index cut-off	Non-members (n=300)			Members (n=200)			t-statistic
		Number	%	Mean of poverty index	Number	%	Mean of poverty index	
Highest poor tercile	> 0.94879	9	3		74	37		
Middle poor tercile	≥ 0.0013 to 0.94879	44	15		82	41		
Lowest poor tercile	< 0.0013	247	82	-0.4913	44	22	0.7369	16.8358
Total		300	100		200	100		

The findings in Table 3 indicate that 82% of non-members of SACCOS fell under the lowest poverty group compared to 22% of members who were categorised on the same group. On the other hand, only 3% of non-members fell under highest poverty group relative to 37% of members. This implies that non-members were poorer relative to members. The poverty differences between members and non-members were found to be highly statically significant using t-statistic. However, the question on whether the differences of poverty levels between members and non-members was the result (impact) of SACCOS' services could not be justified at this point by neither MPAT nor independent t-test, hence further analysis was conducted by using PSM.

3.2 Impact of SACCOS' on Rural Poverty Reduction

Using PSM, efforts were made to find out whether the findings indicated in Table 3 were driven by SACCOS' interventions.

Table 4: Impact of SACCOS' on Rural Poverty Reduction

Outcome variable	Matching estimator	No of members household	No of non-members household	ATT	Bootstrapped standard errors	t-statistic
Poverty scores	Nearest Neighbour	200	63	0.821	0.172	4.767
	Radius	200	247	1.014	0.085	11.885
	Kernel	200	247	0.842	0.086	9.834
	Stratification	196	251	0.864	0.098	8.822

The findings in Table 4 indicate that the poverty scores for members were higher than for comparison households by estimated amount of 0.821 to 1.014 across all matching estimators and it was found to be highly significant measured by the t-statistic. The reason for poverty difference between two groups was captured from one male key informant in Simbo village who narrated that:

"The lives of SACCOS members are better compared to non-members because SACCOS usually provide loans which are used in agriculture and small business while non-members do not have reliable source of financial services" (Key informant Interview).

This quotation indicates that SACCOS' financial services were used by members to finance livelihood activities which consequently reduce poverty levels. To this end, both quantitative and qualitative data indicate that SACCOS' services reduce poverty among members. The study results concur with the studies conducted by Ghalib (2013) in Pakistan and Annim (2018) in Ghana who found that the poverty status of MFIs' borrowers were much better-off compared to non-borrowers.

3.3 Theoretical Implications

One of the basic assumptions of CMT is that MFIs should impact lives of clients by reducing poverty. The finding of the study is in-line with CMT assumption because non-members of SACCOS were poorer compared to members and that differences of poverty levels between the two groups emanated from SACCOS interventions.

4. CONCLUSIONS AND RECOMMENDATIONS

The study determined impact of SACCOS' on rural poverty reduction among members. Based on the findings generated by the study, it is concluded that SACCOS intervention in rural area help to reduce poverty among members. This has vividly evident due to the fact that non-members of SACCOS were found to be poorer compared to members and that differences of poverty levels between the two groups emanated from SACCOS interventions. Therefore, the study rejects a null hypothesis which guided the study that: "SACCOS' services have no impact on poverty reduction"

The study found that non-members of SACCOS were poorer compared to members and that differences of poverty levels between the two groups emanated from SACCOS interventions. Therefore, the study recommends to the Tanzania Co-operative Development Commission (TCDL), co-operative officers and Moshi Co-operative University (MoCU) to continue sensitise the rural communities to establish more SACCOS which will help to reduce poverty among rural residences.

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