*Asian Journal of Agricultural Extension, Economics & Sociology*

***40(10): 278-298, 2022; Article no.AJAEES.89373***
***ISSN: 2320-7027***

# Characteristics of Rural Community Savings Systems and Impacts on Rural Livelihood in Selected Districts of Sierra Leone

**Mohamed Paul Ngegba [a*], James Kamara [bø] and Muctar Foday Koroma [a]**

*[a] Department of Agricultural Extension and Rural Sociology, School of Agriculture and Food Sciences, Njala Campus, Sierra Leone.*
*[b] Department of Research and Extension, Ministry of Agriculture, Bomi County Office, Liberia.*

***Authors' contributions***

*This work was carried out in collaboration among all authors. Author MPN designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors JK and MFK managed the comments of the study. Author MFK ordered the literature searches. All authors read and approved the final manuscript.*

***Article Information***

DOI: 10.9734/AJAEES/2022/v40i1031074

**Open Peer Review History:**
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/89373

***Original Research Article***

***Received 04 May 2022***
***Accepted 09 July 2022***
***Published 23 July 2022***

## ABSTRACT

This study attempted to investigate the characteristics of rural community savings systems and their impacts on rural livelihood in selected districts of Sierra Leone. The researchers adopted three objectives, (1) identify the personal and socio-demographic characteristics of rural dwellers (savings members and non-savings members) that influence participation in rural community savings systems, and (2) identify the factors, operational conditions and modalities of the savings systems, and (3) assess the impact of the rural community savings systems on the livelihood of rural dwellers in selected districts of Sierra Leone. The study adopted a cross-sectional design. The population consists of savings members and non-savings in Bo, Bombali and Kenema Districts. The population size was 897, of which 810 savings with an equivalent of 810 non-savings, giving a sample size of 1,620 rural dwellers. Two sets of pretested questionnaires and focus group guides with a reliability of 0.75 were administered using KoBoCollect v.1.14.0a software; analysed data using simple frequencies, logit regression and propensity score match models. Participation in the savings program positively impacted various rural community

*[ø] District Agricultural Officer,*
**Corresponding author: E-mail: mngegba@njala.edu.sl;*

welfare indicators. The recommendations include conducting basic training or in-service training on savings and financial management and guiding characteristics of the operations of the savings system.

*Keywords: Savings members; non-savings members; self-help groups; membership contributions.*

## 1. INTRODUCTION

Self-help groups exist in various forms [1], perform different functions [2], and have been used as a medium for social, political, and economic empowerment in many parts of the world [3-6]. Rural community savings systems are the most expected self-help groups in African, Asian, Caribbean, and Indian countries. Rural Community Savings systems are one of the solutions to empowering their members to generate more income in many parts of West African countries. This process has become the primary tool for fighting poverty and deprivation. Rural community savings groups not only influence job creation in a rural community [7-8] but also stimulate capital accumulation. Capital accumulation is a significant prerequisite for economic development. If the volume of savings is inadequate to meet investment requirements, major bottlenecks may develop in capital formation and the drive for growth. Therefore, the importance of investment depends on income, the cost of procuring investable funds and the entrepreneur's expectations of the future trend of the business. However, if savings are slashed in or under matrasses or otherwise not deposited into a financial intermediary such as a bank, there would be no chance for those savings to be recycled as investment by Business [8-10]. However, it is also possible for savings to increase without increasing investment, possibly causing a shortfall of demand (a pile-up of inventories, a cutback of production, employment, and income, and thus recession) rather than economic growth.

Community savings groups are vital in sustaining viable rural economic development in least-developed countries like Sierra Leone [7, 10, 11]. According to [12,13], adopting rural community savings in the development arena is one significant way of improving well-being, ensuring against times of shock, and providing a buffer for helping people cope in times of crisis. Therefore, rural community savings have directly affected the economic activity level of Sierra Leone's rural community [14]. For instance, the progress attained within the agricultural sector largely depends upon what the farmers do with the incremental incomes generated from their year-to-year farm activities. In addition, the growth rate of the farming economy relies on the stock of capital built in the farm organisation and the reinvesting of such stock in the form of savings for further enhancement of the farm organisation [12, 15]. If these increments are spent on household expenditure without building up the necessary infrastructure, the future economic development of the rural community hampers.

Poverty reduction and rural livelihood security have been the major development issues in Sierra Leone because of the essential role farmers play in natural development [16, 17]. In the past decade, Sierra Leone has endeavoured to reduce poverty among the rural population by designing various strategies to achieve its objectives. Sierra Leone has a poverty reduction strategy that aims at enhancing food production and food security; and livelihoods by increasing crop and livestock production through access to production inputs.

Mainstreaming poverty reduction efforts has become an integral part of the regular work of the Government of Sierra Leone (line ministries, central government institutions and bodies, local governments) and its development partners according to their respective mandates and responsibilities. Sierra Leone implements its poverty reduction strategy through three pillars: Pillar one focuses on improving public sector governance, consolidating the peace and strengthening national security. Improving public sector governance involved; reforming the public sector, enhancing Public Financial Management (PFM) and Procurement, supporting the process, fighting corruption, peace consolidation and improving the security sector. The second Pillar focuses on promoting Food Security and Job Creation, Investment in Supportive Infrastructure, Improving the climate for Private Sector Development (PSD), Investment in Mining, Tertiary Sectors, and Promoting Youth Employment and Development. The third Pillar focuses on promoting human development, including expanding quality primary Education and Training, developing access to Health and

the economic status of both the rural and urban populations.

Rural community savings systems in Sierra Leone bring rural dwellers together to help them learn how to develop and manage their resource base. These savings reduce individual vulnerability by providing immediate lending facilities to the poor [17,18]. These rural community savings groups also strengthen community processes that address other issues. Thus, reducing the exclusion of the poor from formal political and financial systems by bridging the informal political and economic systems from which most people draw their livings. Through asset-building in rural community savings systems, the capacity building consists of a range of personal assets and resources belonging to individuals- skills, education, and intellectual ability- influencing future money and psychological outcomes [14]. Human capacity signifies an estimated per cent of total wealth. Financial asset accumulation is also a vital component of rural community savings systems that help members access ready financial services at a low cost. This service is especially very important to rural women. Access to cash affects women's ability to afford transport costs and meet the cost of personal needs, such as appropriate clothing while visiting health facilities, as wand purchase items required during pregnancy and childbirth [19,11].

The core component of the Rural Community Savings Systems (CRSS) intervention is savings, a prerequisite for subsequent credit opportunities and insurance. The main categories of the rural savings systems include dynamic savings (*take returns any time*), fixed savings (*accept returns after a specified period*), rotary savings (*give returns to several people at a time*), thrift, and credit (*give loan with interest*). In short, the rural community savings system contributes to the overall development of members in the social, political, cultural, and economic arena.

NGOs initiated the majority of rural community savings groups existing in Sierra Leone. Examples include AFRICARE, World Vision Sierra Leone, Plan International, Swedish Internal Development Agency (SIDA), and private and community-based organisations. At the same time, few communities replicated the implementation stages of these organisations they witnessed. The question one needs to ask now is what characteristics of these rural community dwellers influence their participation in the rural community savings systems? What features of operational modalities affect asset accumulation in the rural community savings system? What are the overall impacts of rural community savings systems on the rural livelihoods of selected districts in Sierra Leone? As it is today, most community development practitioners are concerned about the impact of project interventions to measure whether or not such projects have achieved their goals. In the fight to improve the rural livelihood of rural dwellers in Sierra Leone, the rural community savings system has emerged as one of the leading subjects for debate. However, not many empirical studies exist in Sierra Leone that assert the characteristics of dwellers' rural livelihood, hence the trust of this study.

### 1.1 Purpose and Objectives

The study aimed to investigate the impact of the characteristics of rural community savings systems on the livelihood of selected districts of Sierra Leone. Three main objectives guided the research to achieve this aim: 1. Identify the socio-demographic characteristics of rural community dwellers that influence participation in rural community savings systems, 2. identify the factors of operational modalities that affect asset accumulation, and 3. Compare the impacts of overall rural community savings systems on rural Livelihoods.

## 2. METHODOLOGY

### 2.1 Research Design

The research was a descriptive cross-sectional survey that produced relevant data based on real-life observations. The researcher collected both quantitative and qualitative data to seek an understanding of the characteristics of rural savings systems and their impacts on the rural livelihoods of rural dwellers in selected districts in Sierra Leone.

### 2.2 Study Area

The researchers conducted the study in Sierra Leone. Still, the researcher decided to concentrate on three districts in three regions - south, north, and eastern regions out of the country's five areas because it was not feasible to cover all the districts in the country. Only the regional headquarter districts, Bo, Bombali, and Kenema, were targeted (see Fig 1). These districts are typically agricultural areas where the

local farmers have long been in contact with agricultural extension and research personnel. The communities also have numerous NGOs implementing poverty reduction and rural development programs over the past decades. Secondly, poverty levels seem to be high in the rural chiefdoms of these districts. The most remote areas in these districts lack infrastructures such as roads, electricity, markets, banks, and educational institutions. Thirdly, these districts are renowned for their ethnic groups, whose savings systems have been part of their culture for decades. Fourthly, these districts are known to be metropolitan in their population mix. As regional administrative capitals, these districts can provide relevant documents on most ongoing development activities in the various chiefdoms.

## 2.3 Bo District

Bo District of the Southern region of Sierra Leone (Fig. 1) is one of the research districts. The district is one hundred and fifty-two miles (152 miles) or --Kilometres from the capital city, Freetown. Bo District is bounded to the North by Tonkolili District, North–Northeast by Kenema District, South by Pujehun District, Southwest by Bonthe District, and West and West-north by Moyamba District (see Fig. 1). There are seventeen (17) - Badja, Bagbew, Bagbo, Baoma, Bumpeh Ngao, Gbo, Jaiama, Bongor, Kakua, Komboya, Lugbu, Niawalenga, Selenga, Tikonko, Valunia and Wonde chiefdoms in Bo District.

## 2.4 Bombali District

Bombali District lies in the northern region of Sierra Leone. It is bounded north by Port Loko District and the west by Kambia district (See Fig. 1). To the south, it is bordered by the Tonkolili district and to the east by Koinadugu, covering a land area of approximately 7 985 km$^2$ (3, 083 sq. miles). There are 12-Biriwa Limba, Bombali Sebora, Bombali Siari, Gbanti, Gbendembu, Kamaranka, Magbaiamba-Ndowahun, Makari, Mara, Ngowahun, Paki Masabong, and Safroko Limba chiefdoms in Bombali District.

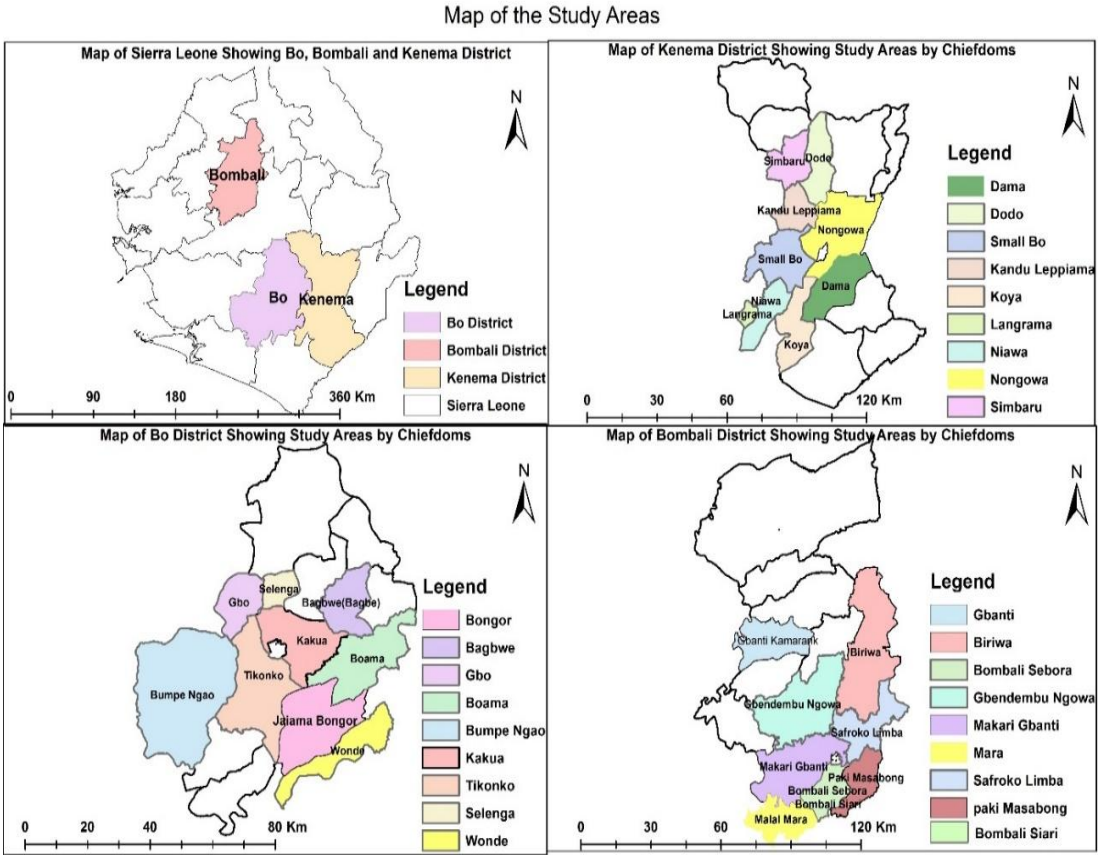


**Fig. 1. Map of sierra leone showing the Study Districts and Chiefdoms**

## 2.5 Kenema District

Kenema District in the Eastern region of Sierra Leone (see Fig. 1). It covers an area of 6,053 $km^2$ (2,337 sq. mi) with a population of 609,891(Rural = 338,191, Urban = 271,699) people [20]. Kenema is bordered to the west by Bo District and the southeast by the Republic of Liberia. To the north, it is bordered by Tonkolili District and Kono District, to the east by Kailahun District, and to the southwest by Pujehun District (See Fig. 1). There are 16- Dama, Dodo, Gaura, Gorama Mende, Kandu Lekpeyama, Koya, Langruma Lower Bambara, Malegohun, Niawa, Nomo, Nongowa, Simbaru, Small Bo, Tunkia, and Wandor chiefdoms in Kenema District.

## 2.6 Research Population

The population for this study comprised all members of savings groups and non-savings members in Bo, Bombali, and Kenema Districts. The researcher obtained the study population size, 1,620 using the formula by [21].

$$s = X^2 NP (1 - P) \div d^2 (N - 1) + {}_X{}^2 P (1 – P) \quad (1)$$

S = required sample size.
$X^2$ = table value of chi-squared at the desired confidence level (3.841)
N= number of population size
P= to the population proportion (assumed to be .50 since this would provide the maximum sample size).
d = the degree of accuracy expressed as a proportion (.05).

The study used a simple random sampling (probability) technique in selecting respondents. From the three geopolitical administrative regions – East, North, and Southern regions, Kenema, Bombali, and Bo Districts were selected using simple random techniques. For easy accessibility, these districts are strategically located within their parts, and most of their chiefdoms operate community savings systems. Twenty-seven chiefdoms, nine from each section, were purposively selected to participate in the study. The rural communities were determined using a multistage random sampling technique. The Native Administrative Office in of the chiefdoms provided the lists of villages and towns with savings systems. Then each sample community was divided into two clusters: Savings members and Non-savings. Savings members were selected using a stratified random sampling technique. Chairmen provided the lists of memberships through the secretaries of the savings group, and the list of members was systematically set at equal intervals of five. A total of 1,620 members (810 savings members and 810 non-savings members) were selected. To avoid selection bias in selecting non-savings members, the researcher created an equivalent list within the same communities. This selection was achieved through a systematic random technique, assuming both savings and non–savings members experience the same socioeconomic situations.

## 2.7 Validity and Reliability of Data Collection Instrument

The research instrument consisted of two sets of questionnaires and interview guides containing closed-ended and open-ended questions. The researchers divided the questionnaire and interview guides into five subsections based on the objectives.

## 2.8 Validity Test of the Instrument

Questionnaires for characteristics were developed based on the demand of the objectives of the study. Testing validity of the instrument (questionnaire) included several steps of checking the vocabulary and correcting language by experts in the English Department, extension, and economic advisers in Local Councils in Bo, Makeni, and Kenema. This purpose was to select similar words suitable to the circumstances of the questionnaire. Second, there were three experts from the Njala Agricultural Research Centre (NAR), a Sierra Leone Agricultural Research Institute (SLARI) branch, and some NGOs working with rural savings systems in the study districts in the three regions. These panellists corrected some words to ensure the questionnaire language was correct.

## 2.9 Reliability Test of the Instrument

The researchers pretested study instruments for face validity and to establish reliability. The researchers pretested the questionnaire in two districts -Tonkolili and Pujehun Districts, not included in the study areas and two regions. The instrument's reliability was tested by calculating Cronbach's alpha coefficient [9]. Table 1 presents the results obtained.

**Table 1. Population and sample**

| District | Target Population | Savings Members | Equivalent Population for Non-savings members | Non-savings members | Sample Size |
|---|---|---|---|---|---|
| Bo | 301 | 270 | 301 | 270 | 540 |
| Bombali | 275 | 251 | 275 | 251 | 502 |
| Kenema | 321 | 289 | 321 | 289 | 578 |
| **Total** | **897** | **810** | **897** | **810** | **1,620** |

*Grand Total: 540+502+578 = 1,620 Source: Field survey, 2019; P = 0.5*

**Table 2. Results of construct validity and reliability test for the variables**

| S/N | Variables | No. of Items | ∝-levels |
|---|---|---|---|
| 1 | Characteristics of rural dwellers | 12 | 0.835 |
| 2 | Characteristics of operational modalities | 11 | 0.846 |
| 3 | Administrative operative structures | 9 | 0.779 |
| 4 | Financial Involvement | 8 | 0.755 |
| 5 | Impact on rural livelihood | 9 | 0.825 |

A reliability level of 0.75 or higher was considered acceptable (Gall and Borg, 2007).

## 2.10 Data Collection

Data were collected using different techniques and tools such as questionnaires, in-depth interviews, informant interviews Focus Group Discussions (FGDs), and direct observations. Most of the respondents indicated a preference for the discussions to take place at home. The debriefing aimed to ensure that the respondents were not left emotionally harmed or traumatised during the interview. It was interesting to note that the respondents enjoyed the discussions.

## 3. METHODS OF DATA ANALYSIS

The data analysis started with verification (the clean-up process involved correcting wrongly spelt villages, towns, names of savings groups, incorrectly allocated responses, operation types, and GPS coordinates) of the data. Quantitative and qualitative data collected using questionnaires were analysed using the Statistical Package for Social Sciences (SPSS) version 25.

The research questions and various descriptive indicators such as frequency distributions, averages, percentages, and cross-tabulations were reported and presented from the field survey data to draw appropriate inferences. Furthermore, appropriate statistical tests such as the T-test and P-values were computed to evaluate the statistical significance of the mean difference between the savings and non-savings members' values. The results from the descriptive statistics also served to develop and specify the appropriate variables to be used in the econometric analysis. As a result, logit and propensity score matching models were applied to determine factors that affect rural community dwellers' decision to participate in rural community savings systems and estimate its impact on rural livelihood in provincial Sierra Leone.

The researchers employed the propensity score matching (PSM) technique to measure the impact of the rural community savings system on the livelihood of savings members. The most frequently estimated parameter for such studies is the average treatment effect on the treated (ATT), which is the difference between the observed mean outcome of the savings members and the constructed counterfactual [22-23]. A logit model was used to estimate the p-score and t-tests using composite pre-intervention characteristics of sampled rural community dwellers [23].

## 3.1 Specification of Econometric Models

The researchers adopted two econometric models to analyse the data. These are the logit regression and propensity score matching (PSM) models. The logit model was used to identify and analyse the factors determining rural community dwellers' participation in the rural community savings systems. The PSM was applied to estimate the average treatment effect on the treated group (ATT) compared to the non-savings members.

## 4. RESULTS AND DISCUSSION

### 4.1 Socio-demographic Characteristics of Rural community Dwellers that Influenced participation in Rural Community Savings Systems

Socioeconomic characteristics are one of the most important determinants of participation in rural savings systems, as they are associated with asset accumulation and rural livelihoods [13, 24]. Table 2 presents the selected socioeconomic characteristics of rural community dwellers across the selected districts in Sierra Leone. The study revealed the gender composition of the rural community dwellers in the three districts, which shows that females (81.9%) dominate their counterparts (28.9%). Since the sampling procedure strictly followed a random selection principle with gender blindness, the outcome captured more females than men, indicating that more females enlisted into the rural savings system programs in Sierra Leone [13]. This result is similar to [13] findings that women dominate microcredit groups in Sierra Leone. Table 2 shows that though access to rural community savings services is open for both genders, more women than men encouragingly participated, supporting [25] the general membership profile of rural savings systems that 52.2% of the members are female clienteles. The study revealed that the average age of rural dwellers in the three districts was 43.6 years. This finding implied that most of the district's rural community dwellers were young and energetic to actively participate in rural savings systems and play a significant role in production processes. According to [26], skills obtained from education are essential in increasing working efficiency and enhancing rural community dwellers' income. It also plays an important role in running a business and can affect possibilities for growth and development. The study records education higher for savings members group compared to non-saving members. On one side, a substantial proportion (51.0%) of the non-savings members had no schooling. The high illiteracy rate indicates that most respondents do not know how to read and write. This information implies that the level of education in rural Sierra Leone is still low. This high illiteracy rate results from the less effort by the past governments and other stakeholders in expanding access to primary education all over the country since independence [27,28]. On the other hand, most of the savings members had attained primary (27.2%), secondary (42.6%) and tertiary education (25.9%) in all three districts compared to the non-savings members. The distribution of respondents by Marital Status showed that over 25.7% of the rural community savings members interviewed were married, and 27.2% were single. The number of non-savings members that were single and divorced overnumbered those of the savings members in the three districts. This result conforms to the typical characteristic of most rural areas in Sierra Leone [20,29] observed that a stable family concentrates more on production than an unstable one, making them highly productive. The distribution by household size shows that 28.6% of the savings members had between three to five dependents, while 17.9% of non-members had between nine to eleven dependents. Many dependents (family size) could pressure rural community dwellers' access to credit and meagre resources for thrift. Large household size has a propensity to expose savings and non-savings members to consumption shocks. In this case, they may need additional resources to stabilise. According to [30], large family sizes are likely to borrow compared to smaller ones because they have a higher dependency ratio. Similarly, [31-32] stated that household size increases household expenditure on food and other consumption items. There is a high tendency for larger household sizes to experience more resource constraints and be forced to borrow from microfinance institutions to fill the gap. The study indicated that indicates that savings members' households are composed more of youths (24.8%) and adults (23.2%), while non-savings members' households contain a higher number of children (27.9%) and ageing (15.8%). This higher number of children indicates that savings members have a substantial source of labour for increased labour productivity, while the non-savings members possess a high dependency rate. There is a tenacity for a household with a high dependent class of people to spend more on food and other healthcare-related provisions than on asset accumulation. As such, these hardly participate in savings systems. Another important finding in the study was the length of time respondents have stayed in the community [15]. The result showed that more than 41.7%, and 18.0%, of the savings members have stayed for 6-10 years and 16-20 years, respectively, in the communities, while most of the non-savings members have spent less than six years (27.0%) in the community. A person's time in a rural area grants them some opportunities for permanent residency. During this stay, other rural

community members have the chance to understand the character of the individuals. The distributions of respondents by gender household headship reveal that there were fewer male-headed (72.2%) savings members than non-savings members' household headship (50.6%) in the study area. This high percentage of male-headed households portrays the normal pattern of rural life. Men are breadwinners of most Sierra Leoneans and maybe in the rest of West African homes. Even when a household in most rural areas is female, they may be under the control of a man in disguise. Under such conditions, the head of the household may decide which household member participates in savings and the number of shares to buy [31-32]. Land and farm ownership are important assets for determining rural households' social and economic status [1,33]. T.distribution of respondents by farmland ownership showed that more savings members (80.2%) than non-savings members said they own farmlands. Farmers who have land leased to them during the farming period have extra income that can enable them to pay their contributions to savings groups. Rent received from leased land helps landowners in loan repayments.

More savings members (48.6%) than non-savings members are engaged in mixed farming. Fewer proportions are also rearing livestock (22.0%) and crops (29.4%). The finding indicates that most rural farmers raise livestock and cultivate crops. Mixed farming acts as insurance against hazards such as crop failure, flooding, etc., that may result in economic losses for rural community dwellers in Sierra Leone [25, 34]. The distribution of respondents by farm sizes showed that more non-savings members (64.7%) than savings members (44.8%) have small farms. However, more savings members (36.2%) than non-savings (15.2%) have medium-size farms. Farmers with larger farm areas likely have additional financial obligations due to risks and the scales of farms [30]. The result indicated that most savings (67.1%) and non-savings members (30.1%) have livestock rearing as an alternative income-generating activity for emergencies. Most of them consider livestock keeping as a way of saving. According to [23estock commonly enhances coping with vulnerability and food insecurity. Due to the risks that might happen in agricultural production, farmers in the study area are involved in off-farm income-generating activities such as cottage industries, including blacksmithing, clay brick making, pit and machine sewing, masonry, tailoring, carpentry, and petty businesses [32, 1 and 16].

Furthermore, 31.5% of savings members were engaged in cottage industries such as weaving, basket making, gara tie-and-dying, and coping skills like carpentry, mason, and black smothery. In comparison, 43.3% of non-savings members did hire labour work. These results agree with [6,10], who emphasised that income from off-farm activities influences farmers' decisions on using financial services. The mean income of the savings members is also higher than that of the non-savings members' households. The economic state of an individual is one of the indicators for someone making a choice of the labour force or other input choices for production. The study demonstrates that with more savings members, the average earnings of the rural dwellers in three districts are Le. 580,000.00, with the savings members earning more than the non-non-savings members. Physical housing characteristics are a valuable indicator of the socioeconomic status of rural community dwellers [13,15,34,22]. A comparison of the essential housing characteristics between the savings members and non-savings members showed that for the savings members, cement was either used for plastering walls or joining bricks [16]. The study's findings showed that more savings members (84.8%) than non-savings members (22.6%) own houses. Most savings members (16.0%) live in homes built with mud bricks, while 15.9% dwell in cement brick houses. A large proportion of the savings members (13.6%) own houses with corrugated zinc roofing with toilets, and most non-savings members (14.8%) live in places with grass roofing without pit latrines (16.3%) near them. Based on the distribution of respondents by micro enterprises (Petty Trading***),*** more savings members (79.4%) than non-savings members (38.1%) are involved in micro-enterprise operations within the study area. Petty traders join savings groups more quickly than those not engaged in businesses. Thus, access to finance, especially by the rural dwellers, is a prerequisite for economic growth, poverty reduction, and social cohesion.

**Table 3. Frequencies and percentages of savings members and non-members of rural community savings systems on their socioeconomic characteristics**

| Variables | Rural Community Dwellers | | | | | |
|---|---|---|---|---|---|---|
| | Bo District | | Bombali District | | Kenema District | |
| | SM | NSM | SM | NSM | SM | NSM |
| | No. | % | No. | % | No. | % |
| **Gender** | | | | | | |
| Male | 18.1 | 33.7 | 28.4 | 36.3 | 27.2 | 41.1 |
| Female | 81.9 | 66.3 | 71.6 | 63.7 | 72.8 | 58.9 |
| **Age (Years)** | | | | | | **Mean = 43.6** |
| < 15 | 11.2 | 3.2 | 3.3 | 6.4 | 8.0 | 4.3 |
| 16- 35 | 34.5 | 38.3 | 25.4 | 18.3 | 22.1 | 18.2 |
| 36- 45 | 43.2 | 49.2 | 33.2 | 36.5 | 45.3 | 38.6 |
| 46- 55 | 6.4 | 4.6 | 23.2 | 21.4 | 15.2 | 33.4 |
| 56- 65 | 3.6 | 2.5 | 10.4 | 11.1 | 6.3 | 3.5 |
| 66 and above | 1.1 | 2.2 | 4.5 | 6.3 | 3.1 | 0.2 |
| **Educational Level** | | | | | | |
| Illiterate | 4.3 | 43.6 | 6.6 | 39.1 | 5.2 | 41.8 |
| Primary | 32.2 | 24.2 | 48.7 | 37.2 | 34.7 | 16.9 |
| Secondary | 37.6 | 29.4 | 27.3 | 14.3 | 37.9 | 21.5 |
| Tertiary | 25.9 | 2.8 | 17.4 | 9.4 | 22.2 | 2.3 |
| **Marital status** | | | | | | |
| Married | 39.7 | 25.8 | 22.5 | 14.2 | 29.8 | 22.1 |
| Single | 22.1 | 27.2 | 28.9 | 21.6 | 22.1 | 28.1 |
| Separated | 11.8 | 14.6 | 14.1 | 18.1 | 13.2 | 14.3 |
| Divorce | 15.2 | 18.6 | 17.5 | 25 | 19.4 | 18.1 |
| Widow | 11.2 | 13.8 | 17.0 | 21.1 | 15.5 | 17.4 |
| **House Size (# of people in the house)** | | | | | **Mean = 7** | |
| **≤ 3** | 12.1 | 15.7 | 15.2 | 18.8 | 27.1 | 17.2 |
| 3-5 | 33.2 | 28.6 | 16.4 | 15.3 | 25.2 | 22.0 |
| 6- 8 | 30.2 | 13.8 | 26.3 | 32.5 | 17.1 | 23.1 |
| 9- 11 | 12.2 | 15.1 | 19.5 | 17.9 | 16.3 | 16.5 |
| ≥ 11 | 12.3 | 26.8 | 22.6 | 15.6 | 14.3 | 21.2 |
| **Household composition (kind of people)** | | | | | | |

| Variables | Rural Community Dwellers | | | | | |
|---|---|---|---|---|---|---|
| | Bo District | | Bombali District | | Kenema District | |
| | SM | NSM | SM | NSM | SM | NSM |
| | No. | % | No. | % | No. | % |
| Children | 20.5 | 25.5 | 22.6 | 27.9 | 23.1 | 26.7 |
| Youth | 35.1 | 24.8 | 33.8 | 18.3 | 26.9 | 21.5 |
| Adult | 22.8 | 23.4 | 18.3 | 22.6 | 27.1 | 22.9 |
| Ageing | 11.2 | 13.7 | 12.8 | 15.8 | 24. 8 | 14.8 |
| Aged | 10.4 | 12.6 | 12.5 | 15.4 | 22.9 | 14.1 |
| **Length of stay in the community (Years)** | | | | | **Mean = 38.2** | |
| ≤ 6 | 10.9 | 13.5 | 11.2 | 27.0 | 11.6 | 20.2 |
| 6-10 | 33.8 | 41.7 | 22.1 | 27.3 | 25.1 | 34.6 |
| 11- 15 | 29.1 | 12.5 | 21.0 | 13.6 | 21.1 | 13.1 |
| 16-20 | 14.6 | 18 | 24.3 | 17.7 | 18.9 | 17.7 |
| ≥ 20 | 11.6 | 14.3 | 21.4 | 14.4 | 23.3 | 14.4 |
| **Gender Household Headship** | | | | | | |
| Male | 77.5 | 72.2 | 58.3 | 50.6 | 67.5 | 61.4 |
| Female | 22.5 | 27.8 | 41.7 | 49.4 | 32.5 | 38.6 |
| **Land Ownership** | | | | | | |
| Landowner | 64.0 | 80.2 | 66.0 | 45.7 | 30.2 | 63.0 |
| Non-land owner | 36.0 | 19.8 | 34.0 | 54.3 | 69.8 | 37.0 |
| **Type of Farming** | | | | | | |
| Crop farmer only | 24.3 | 19.3 | 46.8 | 46.7 | 37.2 | 35.3 |
| Livestock farmer only | 23.6 | 26.5 | 11.8 | 14.5 | 27.6 | 18.3 |
| Both | 52.1 | 54.2 | 41.4 | 38.8 | 35.2 | 46.4 |
| **Farm Size (Ha)** | | | | | **Mean = 6.4** | |
| 1-5 | 35.4 | 19.0 | 12.3 | 20.1 | 11.2 | 19.5 |
| 6-10 | 28.3 | 36.2 | 35.3 | 15.2 | 31.6 | 25.7 |
| >10 | 36.3 | 44.8 | 52.4 | 64.7 | 57.2 | 54.8 |
| **Livestock Ownership** | | | | | | |
| Livestock owner | 37.8 | 22.0 | 34.8 | 14.6 | 36.6 | 18.3 |
| Non-livestock owner | 62.2 | 78.0 | 65.2 | 85.4 | 63.4 | 81.7 |
| **Other Sources of Income** | | | | | | |
| Permanent employment | 14.9 | 11.4 | 11.2 | 15.1 | 17.1 | 16.7 |
| Casual employment | 25.3 | 30.2 | 23.1 | 28.5 | 18.4 | 29.9 |

| Variables | Rural Community Dwellers | | | | | |
|---|---|---|---|---|---|---|
| | Bo District | | Bombali District | | Kenema District | |
| | SM | NSM | SM | NSM | SM | NSM |
| | No. | % | No. | % | No. | % |
| Hire labour | 15.3 | 18.9 | 35.1 | 43.3 | 20.4 | 31.1 |
| Cottage industry | 44.5 | 39.5 | 30.6 | 13.1 | 44.1 | 22.3 |
| **Household income (Leones (Le))** | | | | **Mean = 580,000.00** | | |
| Income Level, ≤ 200,000 | 48.0 | 86.2 | 52.0 | 92.3 | 38.0 | 86.0 |
| Income Level, 250,000-300,000 | 13.0 | 2.7 | 12.0 | 2.2 | 23.0 | 3.1 |
| Income Level, 300,000-350,000 | 10.0 | 2.5 | 10.0 | 1.9 | 15.0 | 4.2 |
| Income Level, 400,000-450,000 | 18.0 | 7.2 | 15.0 | 2.1 | 13.0 | 5.3 |
| Income Level, ≥ 500,000 | 11.0 | 1.4 | 11.0 | 1.5 | 11.0 | 1.4 |
| **House Ownership** | | | | | | |
| House owner | 97.2 | 76.7 | 84.3 | 68.3 | 90.7 | 65.0 |
| Non-house owners | 2.8 | 23.3 | 15.7 | 31.7 | 9.3 | 35.0 |
| **Housing Condition** | | | | | | |
| 1. **Type of House** | | | | | | |
| Cement brick-house | 22.9 | 29.1 | 20.3 | 15.0 | 39.6 | 13.2 |
| Mud brick-house | 55.3 | 40.7 | 43.3 | 34.6 | 37.8 | 55.6 |
| Rattle house | 21.8 | 30.2 | 36.4 | 50.4 | 22.6 | 31.2 |
| 2. **Type of Roofing** | | | | | | |
| Corrugated roofing-house | 66.2 | 54.5 | 53.3 | 29.7 | 57.2 | 42.6 |
| Grass roofing-house | 33.8 | 45.5 | 46.7 | 70.3 | 42.8 | 57.4 |
| 3. **Toilet Facility** | | | | | | |
| House with toilet | 76.3 | 69.8 | 72.0 | 29.7 | 61.2 | 51.2 |
| House without toilet | 23.7 | 30.2 | 28.0 | 70.3 | 38.8 | 48.8 |
| **Microenterprise ownership** | | | | | | |
| Microenterprise owner | 79.4 | 33.3 | 59.9 | 38.1 | 56.2 | 41.2 |
| Non-microenterprise owner | 20.6 | 66.7 | 40.1 | 61.9 | 43.8 | 58.8 |

*SM =Savings Members; NSM = Non-Savings Members, Source: Field Survey, 2019*

### 4.2 Characteristics of Operational Modalities of Rural Communities Savings Systems that Influence Asset Accumulation

Fig. 2 depicts the characteristics of operational modalities of rural savings systems and functions of the administrative structures. The Figure indicated that 11.4 % and 11.7% of the savings members identified levying of fines for deviant behaviour and rules for the proper functioning of the organisation, respectively, as characteristics of operational modalities of the savings systems. Furthermore, 11.0% and 10.2% of the savings members affirmed that members respect the equality of treatment and adhere to deadlines for payments of loans, respectively, indicating that rural community savings systems operate on modalities, rules, and regulations, which likely guide the membership. The study confirms Maddi's (2017) findings that informal savings organisations in Leone use powers to operate their organisations' documented bye-laws.

### 4.3 Influence of Characteristics of Operational Modalities on Asset Accumulations

Table 4 shows that 20.0%) and (16.2%) of the savings members indicated levying fines for deviant behaviour and that membership respect for equal treatment, respectively, have moderately and highly influenced asset accumulations.

Furthermore, (14.3%), (13.8%) and (13.5% of members claimed that their membership consisted of healthy people, more women, and operating on rules for the proper functioning of savings groups, respectively, have influenced asset accumulation in the savings groups. Membership is honest and committed, and adhering to deadlines of loan payments (12.0%, each) has influenced asset accumulation in the study communities (see Table 2).

### 4.4 Using Logit Regression to Determine Rural Community Dwellers' Participation in Rural Community Saving System

This section presents the results of the relationship between the socio-demographic factors and the participation of the rural community dwellers in the rural community savings system. It shows the fundamental relationship between the characteristics of the rural community dwellers and their participation in savings groups.

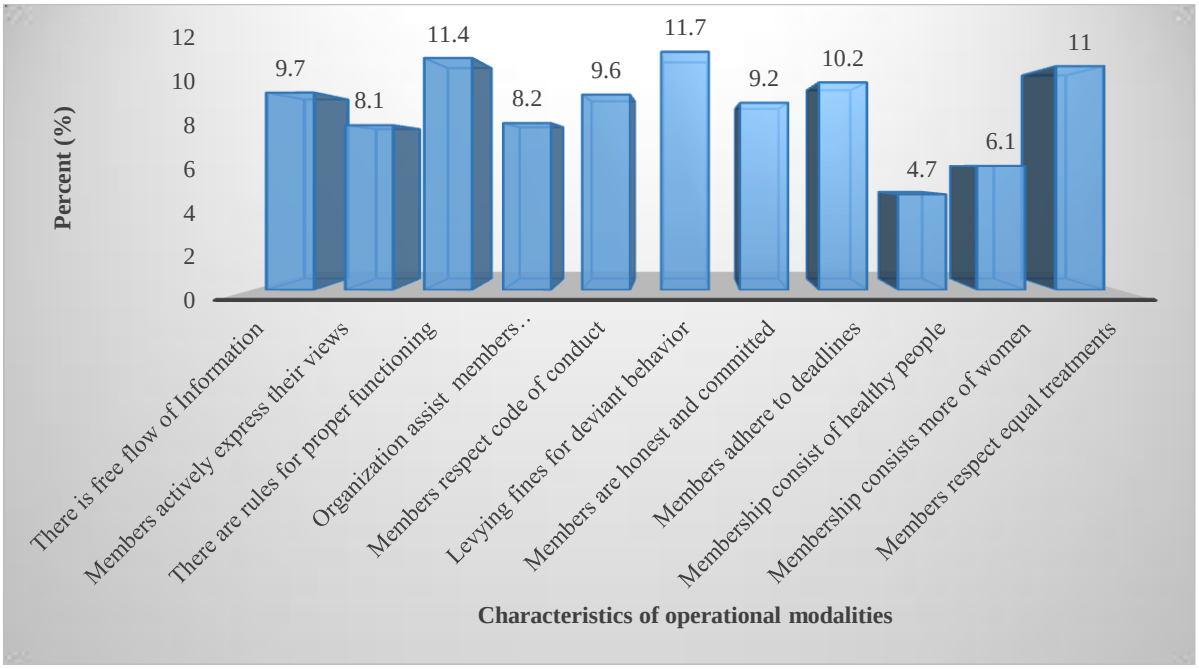


**Fig. 2. Percentages of characteristics of operational modalities of the rural community savings systems**

**Table 4. Frequencies and percentages of savings members on their perceived levels of influence of the characteristics of operational modality on asset accumulation**

| Characteristics of Operational Modalities of Rural Community Savings System | Levels of Influence of Characteristics of Operative Modalities on Asset Accumulation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Influenced Asset Accumulation? | | | | HPI | | MPI | | LPI | |
| | IAA | % | NIAA | % | No. | % | No. | % | No. | % |
| There is a free flow of information among members | 665 | 82.0 | 145 | 18 | 177 | 26.6 | 229 | 4.4 | 259 | 38.9 |
| Members actively express their views | 551 | 68.0 | 259 | 32 | 218 | 39.6 | 209 | 37.9 | 124 | 22.5 |
| Rules exist for the proper functioning of savings groups | 780 | 96.0 | 30 | 4 | 199 | 25.5 | 390 | 50.0 | 191 | 24.5 |
| Organisations assist members financially | 562 | 69.0 | 248 | 31 | 195 | 34.7 | 216 | 38.4 | 151 | 26.9 |
| Members respect the code of conduct | 567 | 70.0 | 243 | 30 | 167 | 29.5 | 199 | 35.1 | 201 | 35.4 |
| Levying fines for deviant behaviour | 594 | 73.0 | 206 | 27 | 193 | 32.5 | 151 | 25.4 | 250 | 42.1 |
| Members are honest and committed | 588 | 73.0 | 222 | 27 | 122 | 20.7 | 232 | 39.5 | 234 | 39.8 |
| Members adhere to deadlines of loan repayment | 655 | 81.0 | 155 | 19 | 189 | 28.9 | 252 | 38.5 | 214 | 32.7 |
| Membership consists of healthy people | 630 | 78.0 | 180 | 22 | 220 | 34.9 | 210 | 33.3 | 200 | 31.7 |
| Membership consists more of women | 595 | 73.0 | 215 | 27 | 173 | 29.1 | 221 | 37.1 | 201 | 33.8 |
| Members respect equal treatments | 616 | 76.0 | 194 | 24 | 210 | 34.1 | 202 | 32.8 | 204 | 33.1 |

*HPI = Highly Positive Influence, MPI = Moderately Positive influence, LPI = Lowly , PositiveInfluence*

**Demographic Characteristics of Rural Community Dwellers:** Table 3 presents the logit regression outcome. The data reveal a positive and highly statistically significant relationship between the *age* of the savings member and their Participation in RCSS at a one per cent significance level (P=0.008). All other things being constant, as the ages of the savings member increases, they are more likely to participate in the rural community savings system. This finding contrasts with the life cycle hypothesis, which predicts that younger people are more likely to engage in operational savings and borrowing activities for wealth accumulation to be used during their old age. The average age of respondents in the study area was 37 years old, and around 68 per cent of the respondents were 40 years and above. One possible explanation peculiar to the Sierra Leone situation could be that the young currently migrate to urban areas for greener pastures. Another reason could be those rural community dwellers in their middle 40s and above to establish a family and stable livelihood and thus may demand microcredit to engage in income-generating activities and smooth consumption during periods of low agricultural output and farm income shortfalls. This study is in line with [30] studies, which found that older farmers in China demand more credit because of their social network and social capital [31] also argue that older borrowers are more likely to repay their loans and thus become favoured clients of lenders [32] argued that even though age has a positive relationship with the probability of borrowing from microfinance institutions. Moreover, age squared tends to negatively relate to credit demand, indicating an inverted "U" shaped relationship between the age of savings members and the probability of borrowing. *Household size* has a positive and statistically significant relationship with the probability of Participation in the RCSS (P=0.000) at a one percent significant level. This result reveals that as household size increases, their exposure to consumption shock also increases, making them more likely to use microfinance resources to normalise their exposure to shocks and risks. Households with more economically active members participate in borrowing with the expectation that the contribution of adult members to household income could support the repayment capacity to settle their debt and serve as collateral for borrowing. [35,31] also found similar results that household size positively correlates with the probability of borrowing. *Married individuals* had less probability of involvement in the savings group relative to widowed, divorced, or unmarried individuals. Their negative relationship is not statistically significant at a 5 percent confidence level (p=0.787). These savings members could be less privileged in terms of asset ownership, lack a diversified source of income, and the support gained from the presence of a spouse. On the other hand, the *educational qualification* of the respondents had a positive and significant relationship with the probability of borrowing from savings groups at a 5 percent confidence level (p=0.038). The relationship functions literate rural community dwellers tend to have more exposure to the external environment. Rural community dwellers with some years of schooling can also have the confidence and the skill to initiate and run income-generating activities taking advantage of the opportunities offered by microfinance intuitions in their areas. This finding is in line with [13] assertion that levels of education such as primary and secondary may positively affect the rural community dwellers' participation in microfinance, particularly in rural areas. Nevertheless, [18,26] note that rural community dwellers with higher education expected to have formal jobs and thus higher income and collateral are more likely to use credit from formal financial institutions such as banks. One of the essential features of rural livelihood systems in Sierra Leone is livestock production. Respondents' *livestock ownership* showed a positive and statistically significant relationship with the probability of participating in savings groups at a 5 percent significance level (P=0.008). Savings members who owned livestock were better off than those who did not own. This difference is so because livestock can be considered collateral for individuals in acquiring a loan. Thus, savings members who own livestock can easily access more loans than those non-livestock owners. The most common farming practice in Sierra Leone is mixed farming, where crop cultivation and livestock production complement each other. This livestock asset allows the farmers to borrow money from financial institutions even when their crops fail. They can also easily sell their livestock to have liquid money during emergencies. In the study area, sample respondents and interviewed informants confirmed that most savings members borrow from organisations to purchase food for their families. The formation and expansion of microenterprises require the availability of financial capital. In the logit regression, contrary to expectations, *microenterprises' ownership had a* statistically significant negative probability of

borrowing from savings groups. Respondents owning microenterprises were fewer borrowers. Moreover, they participate more in savings groups compared to those who do not own microenterprises. The financial operations in most microenterprises in rural areas are not sophisticated. These microenterprises include small shops, value addition merchandising, petty trade, cookery selling, and cottage industry. It implies that those who already own enterprises might be less credit-constrained and likely not to borrow from savings groups. Having a *business or entrepreneurial experience* as a variable affects respondents' decision to participate in savings groups. Entrepreneurial experience such as the ability to explore marketing opportunities, the ability to mobilise and organise productive resources to generate income, and some skills on how to handle and operate any activity towards generating income determines individuals' decision to participate in savings groups at rural levels. In the study areas, business experience demonstrated a statistically significant effect on the rural likelihood to participate in savings groups at a 5 percent significance level (P=0.021). This level means that savings members with a business focus and know-how are more likely to participate in the savings groups. It is so because individuals with experience running a business venture can initiate or expand their enterprises. The study's findings align with Fatimah-Salwa et al.'s (2013) study in Malaysia, in which experienced business members were more successful than inexperienced ones in handling problems due to their previous experience. Here, the characteristics of RCSS refer to features of the programs undertaken by the savings groups. These include loan size, type of loan product offered, perception of members on mandatory deposits, and how this influx influences community dwellers' decision on participating in RCSS. Loan size granted to members somehow controls the decision of rural community dwellers, whether or not to borrow from savings groups. The *Amount of the First Cycle Loan* granted to memberships significantly negatively affects the probability of borrowing from savings groups at a 5 percent significance level (P=0.013). Some savings groups apply an interest rate to loans they give out. Usually, all savings members decide on the interest rate on loans issued. In this research, the logit regression outcome suggests that the amount of the first cycle loan adversely affects the likelihood of participation in the savings group. Most members perceived that the loan in the first cycle was too low for startup capital. Solidarity group loan amount of Le 350,000 was insufficient for the purpose. The finding is in line with [10], who found that the smaller the loan size offered by savings groups, the lesser would be the capital to start any income generation activity. Researchers analysed t*he type of Loan* savings group offered to their members to evaluate its effects on the likelihood of households borrowing from savings groups. Most savings groups offer only one type of loan-individual loan. From the logit regression, the probability of rural community dwellers' participation in the savings group had a significant positive relationship with the individual loan at a five percent significance level (P=0.005). This value implies that savings members are high to participate in savings groups if the loan is available to the individual. *Mandatory Savings* has been considered an integral part of accessing credit in many microfinance institutions. It was introduced with the intention that the poor must learn how to save. It has the advantage of instilling financial discipline in membership. However, mandatory deposits have the disadvantage of locking resources and restricting the withdrawal and use until full repayment is made, effectively serving as a collateral substitute [33,36]. Savings groups mobilise two types of mandatory deposit savings deposits – security deposit and normal deposit. Saving members use the normal deposit for accessing credit, while the secured loan is for emergencies. Some savings members consider the mandatory deposits as additional costs to access credit. The decision to borrow a loan can be affected by those who perceive mandatory loans as a requirement to access the loan. The logit regression evaluation of mandatory deposits depicted a statistically positive influence on the possibility of borrowing (P=0.009). Furthermore, the result showed that some savings members evaluated mandatory deposits fairly reasonably. Savings members who perceive mandatory deposits as beneficial and long-term resources are also the main opportunity to increase the probability of borrowing [37]. *Rural Infrastructural Facilities*: affect the livelihood activities of rural community dwellers. For instance, electricity, good drinking water sources, healthcare services, roads, and communication networks influence the use of productive assets/resources in rural communities. This research shows that access to electricity and road affects respondents' participation in savings groups. According to [5,22], these activities improve welfare, increase productivity, generate income, and reduce production costs. During the focus

group discussion, most interviewees expressed that lack of electricity and a good road network has neither enabled them to sell outside their communities nor preserve farm products. Some said they sell their livestock at a meagre cost because they cannot preserve the meats. There is a statistically significant relationship between a good road network and participation of rural dwellers in savings groups at a five percent confident level (P=0.006). This study used the maximum likelihood method to estimate logit regression coefficients. The coefficients, however, express only the course of change of the predicted probability of the dependent variable to a change in one or more of the explanatory variables. According to [33], one cannot base direct economic interpretation on logit regression coefficients. Researchers use the marginal effect to address the limitations of the logit model. According to [36], marginal effects measure how the predicted probabilities of the dependent variable change in response to a

**Table 5**. **Logit regression results on the determinants of rural community dwellers participation in rural community saving systems**

| Dependent Variable: Household Participants in CRSS (Binary) | | | | |
|---|---|---|---|---|
| **Independent variables** | **Estimated Coefficients** | **Standard Error** | **P-value** | **Marginal Effects** |
| **Demographic variables** | | | | |
| Age ($x_1$) | 0.045 | 0.013 | 0.008** | 0.005 |
| Gender ($x_2$) | 0.243 | 0.275 | 0.787 | 0.015 |
| Marital status($x_3$) | 0.124 | 0.387 | 0.064** | 0.132 |
| Household size($x_4$) | 0.345 | 0.045 | 0.000*** | 0.042 |
| Level of Education ($x_5$) | 0.783 | 0.084 | 0.038** | 0.014 |
| **Socio-economic Variables** | | | | |
| Land ownership ($x_6$) | -0.768 | 0.013 | 0.013 | -0.087 |
| Land Size($x_7$) | 0.207 | 0.249 | 0.312 | 0.022 |
| Ownership of cultivated | 0.195 | 0.352 | 0.643 | 0.044 |
| Livestock ownership | 0.867 | 0.134 | 0.085** | 0.054 |
| Microenterprise ownership | -0.821 | 0.061 | 0.517 | 0.174 |
| Income source: permanent employment | 0.532 | 0.042 | 0.186** | -0.122 |
| Income source: temporary employment | 0.145 | 0.012 | 0.331* | -0.116 |
| Income from remittance | 0.345 | 0.013 | 0.065 | 0.078 |
| Entrepreneur Experience | 0.426 | 0.105 | 0.021** | 0.065 |
| Exposure to negative events | 1.864 | 0.214 | 0.000*** | 0.176 |
| **Program-related variables** | | | | |
| Amount saved (First cycle) | -0.418 | 0.241 | 0.013** | 0.003 |
| Amount saved (second cycle) | -0.213 | 0.214 | 0.007*** | 0.008 |
| Loan Type (Individual) | 0.157 | 0.214 | 0.005*** | -0.131 |
| Perception of mandatory savings | 0.654 | 0.123 | 0.009*** | 0.0108 |
| **Infrastructure related variable** | | | | |
| Village access to electricity | 0.374 | 0.041 | 0.001*** | 0.006 |
| Village access to healthcare | 0.221 | 0.532 | 0.003*** | 0.208 |
| Village access to School | 0.279 | 0.143 | 0.007*** | 0.145 |
| Village access to good drinking water | 0.286 | 0.312 | 0.009*** | 0.094 |
| Village access to market facilities | 0.867 | 0.225 | 0.008*** | 0.107 |
| Village access to a good roads network | -0.246 | 0.312 | 0.006** | 0.024 |
| **Number of observations** | 900 | | | |
| Log-Likelihood | -395.342 | | | |
| LR Chi-square (200) | 547.44 | | | |
| Prob > $Chi^2$ | 0.00 | | | |
| Pseudo $R^2$ | 0.321 | | | |
| Multicollinearity check (Mean VIF) | 2.36 | | | |
| Specification error check (Linktest P-value) | 0.479 | | | |
| Model-to-data-fit check (Hosmer-Lemeshow P-value) | 0.864 | | | |

*Source: Field survey data, 2019; **= significant at 5%,*

**Table 6. Logistic regression results on the determinants of household participation in rural community savings system**

| Dependent variables | Odds Ratio | Standard Error | P-value |
|---|---|---|---|
| **Demographic variables** | | | |
| Age | 3.045 | 0.037 | 0.008** |
| Gender | 2.253 | 0.621 | 0.787 |
| Marital status | 0.142 | 0.523 | 0.064 |
| Household size | 2.415 | 0.051 | 0.000** |
| Level of Education | 2.623 | 0.063 | 0.038** |
| **Socio-economic Variables** | | | |
| Land ownership | -0.832 | 0.019 | 0.013 |
| Land Size | 2.432 | 0.125 | 0.312 |
| Ownership of cultivated | 3.276 | 0.112 | 0.643 |
| Livestock ownership | 4.689 | 0.321 | 0.085 |
| Microenterprise ownership | -1.423 | 0.072 | 0.517 |
| Income source: permanent employment | 0.369 | 0.063 | 0.186 |
| Income source: temporary employment | 2.243 | 0.024 | 0.331 |
| Income from remittance | 0.184 | 0.045 | 0.065 |
| Entrepreneur Experience | 2.213 | 0.312 | 0.021** |
| Exposure to negative events | 3.356 | 0.321 | 0.000*** |
| **Program-related variables** | | | |
| Amount saved (First cycle) | -0.243 | 0.125 | 0.013** |
| Amount saved (second cycle) | -0.243 | 0.342 | 0.007** |
| Loan Type (Individual) | 1.198 | 0.326 | 0.005** |
| Perception of mandatory savings | 4.246 | 0.251 | 0.009** |
| **Infrastructure related variable** | | | |
| Village access to electricity | 3.179 | 0.073 | 0.001** |
| Village access to healthcare | 1.135 | 0.462 | 0.003** |
| Village access to School | 2.225 | 0.645 | 0.007** |
| Village access to good drinking water | 0.142 | 0.410 | 0.009** |
| Village access to market facilities | 1.231 | 0.125 | 0.008*** |
| Village access to good roads networks | -0.197 | 0.211 | 0.006** |
| **Number of observations (810)** | | | |
| Log-Likelihood | -2676.31 | | |
| LR Chi-square (200) | 764.12 | | |
| Prob > $Chi^2$ | 0.000 | | |
| Pseudo $R^2$ | 0.432 | | |
| Multicollinearity check (Mean VIF) | 4.21 | | |
| Specification error check (Linktest P-value) | 0.152 | | |
| Model-to-data-fit check (Hosmer-Lemeshow P-value) | 0.432 | | |

***= significant at 5% Source: Field survey data, 2019*

change of these independent variables from 0 to 1 for binary or categorical independent variables. The author furthered that for continuous independent variables, marginal effects measure the instantaneous rate of change in the dependent variable due to a unit change in these variables. Consequently, the marginal effects measure the responsiveness of the change in the predicted probabilities of the dependent variable due to changes in the explanatory variables. The marginal effects are in the last column of Table.3. for example, age is a continuous variable, and the result of the marginal effects for the age indicates that a one-year increase in the age of the respondent would increase the probability of participation in the savings group by 0.5 percent. Similarly, an additional member in the household size results in an increase in the probability of participation in the savings group by 4.2 percent. One additional year of schooling in the respondents' level of education would increase the probability of participation by 1.4 percent.

The result of the type of loan proves that the probability of participating in the savings groups would decline by 15.8 percent for the available

loan. Concerning the effects of livestock ownership, the probability of participation increases by 4.4 percent when respondents livestock.

General observation shows that rural dwellers' decision to use the savings groups depends on the number of contributions collected [38-39]. Furthermore, when the village where the respondent resides has access to electricity, the probability of participation increases by 12.7 percent, whereas when the respondent owns microenterprises, their decision to borrow declines by 14.3 percent. Moreover, when the respondent perceives that a verse event has affected their livelihood, they evaluate the amount required for mandatory deposit as the inability to participate in the savings groups increases by 18.6 and 10.6 percent, respectively [37]. On the other hand, the probability of participation in the savings groups negatively and strongly responds to changes in available loan types and membership of microenterprises [37-39].

Table 3 shows that the variables- age, household size, amount of the first loan, and business experience, significantly influence rural dwellers' probability of participating or borrowing groups. Furthermore, the type of loan, livestock ownership, and receipt of income from temporary employment affect participation. Participants' access to electricity, microenterprise ownership, and adversative events significantly influence the decisions to participate in savings groups. On the other hand, gender, land ownership, land size, permanent employment, availability of remittance income, and village access to roads do not significantly affect the household's participation in savings groups and therefore do not determine participation in savings groups.

**Using Logistic Regression Results on the Determinants of Rural Community Dwellers Participation in Rural Community Savings System:** A logistic regression that computes the odds ratio provides a more direct interpretation of the logit coefficients displayed in Table 6. The logit coefficients and the odd ratio essentially convey the same idea. Both report binary outcome estimates.

The logit model reports an estimate of coefficients, whereas the logistic model reports the exponentiated coefficients called odd ratios [20, 36]. According to the logistic model results in Table 3, when the ages of the rural community dwellers increase by one year, they are likely to participate in savings groups. Married individuals are 0.6 times less likely to join savings groups c than widowed, divorced, or unmarried individuals. When household size increases by one member, the rural community dwellers are 2.4 times more likely to participate in savings groups[36]. Similarly, when the rural dweller's level of education increases by one year, they are one time more likely to participate in savings groups. Concerning the socioeconomic variables, a rural community dweller owning livestock is twice more likely to join savings groups. In contrast, those who own microenterprises would be 1.4 less likely to participate in savings groups. Rural community dwellers earning temporary employment income are 2.2 times more likely to join savings groups [38]. Rural community dwellers with entrepreneurial experience are one times more likely to participate in the rural community-saving system than those without experience. Rural community dwellers that anticipate or experience adverse events (risks) are 2.2 times more likely to decide to participate in savings groups. As far as program-related variables are concerned, when the loan type available for an offer is an individual loan, rural community dwellers are 1.1times less likely to participate in the savings groups than when the loan type is a group-based loan. Similarly, rural community dwellers that perceive the mandatory deposit required by savings groups as positive would be 3.3 times more likely to join the savings groups. Rural community dwellers who reside in a village with access to electricity are two times more likely to decide to participate in rural savings [39]. Similarity exists between the P-values, significance level, as well as the standard errors in the logit model in Table 4.

## 5. CONCLUSION

This research set out three guidelines for achieving its purpose of comparing the impacts of rural community savings on rural livelihood in selected districts of rural provincial Sierra Leone. The result of the research revealed that their socio-demographic characteristics highly influence the participation of the rural dwellers in the rural community savings system. It also showed that the rural community savings system impacts rural livelihood differently.

## 6. RECOMMENDATIONS

1. Rural community savings systems should conduct basic training on savings and

financial management within their communities to raise awareness.

2. Rural community savings groups should conduct in-service training programmes to fully explain the guiding characteristics of the operations of the rural community savings systems. Operational modalities are appropriately monitored for their efficacy and let membership be committed to guiding roles of the savings groups in achieving the main objectives.
3. The savings system should set out sharing time to enable members to use their share-outs best and make more efforts to cater for those categories of rural dwellers, reducing the dependency rate within the rural communities.
4. The rural community savings systems should strategise to include many non-savings members in the organisation, and implementation programmes should, on a large scale, address the fundamental financial intermediation of the rural communities in Sierra Leone.

## CONSENT

Social science research activities must adhere to minimal ethical guidelines and acceptable behaviours. These guidelines include the principles of voluntary participation, informed consent, risk of harm, confidentiality, and anonymity [22]. Before the fieldwork, the researcher visited all three districts to get firsthand information on the districts, chiefdoms, and savings systems existing and operating within the chiefdoms. During the visits, the researcher held a series of meetings with paramount chiefs, community leaders, and stakeholders in the various districts and chiefdoms, whereby communities with savings systems were mapped out (identified and listed by the researcher). Participants of the research were informed of the purpose of the study, that their involvement was voluntary, and that should they wish to withdraw at any point during the interview, they could do so. The participants who consented signed the consent forms.

## ACKNOWLEDGEMENTS

The authors acknowledge the contributions of all the savings and non-savings members whose contributions made this study a success. We are also grateful to the University authority for permitting us to travel out of the University Campus for the fieldwork.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Agbola FW, Acupan A, Mahmood A. Does microfinance reduce poverty? New evidence from Northeastern Mindanao, the Philippines. Journal of Rural Studies. 2017;50:159-71.
DOI: 10.1016/J.Jrurstud.2016.11.005
2. Anyango E, Esipisu E, Opoku L, Johnson S, Malkamäki M, Musoke C. Village savings and loan associations: Experience from Zanzibar. Enterprise Development & Microfinance. 2007;18(1):11-24.
3. Banerjee A, Duflo E, Goldberg N, Karlan D, Osei R, Parienté W, Shapiro J, Thuysbaert B, Udry C. A multifaceted program causes lasting progress for the very poor: Evidence from six countries. Science. 2015;348(6236):1260799.
Available:http://dx.doi.org/10.1126/science.1260799.
4. Banerjee A, Duflo E, Glennerster R, Kinnan C. The miracle of microfinance? Evidence from a randomized evaluation. American economic journal: Applied economics. 2015;7(1):22-53.
Available:http://dx.doi.org/10.1257/app.20130533.
5. Brody C, Hoop T De, Vojtkova M, Warnock R, Dunbar M, Murthy P, Dworkin SL. Economic self-help group programmes for improving women's empowerment: A Systematic Review. Journal of Development Effectiveness. 2017;9(1).
Available:https://doi.org/10.1080/19439342.2016.1206607.
6. Bos JW, Millone M. Practice what you preach: Microfinance business models and operational efficiency. World Development. 2015;70:28-42.
DOI:10.1016/J.Worlddev.2014.2.01812715
7. Fafchamps M, Cassidy R. Banker My Neighbour: Matching and Financial Intermediation in Savings Groups; 2018.
8. Conteh BK. Financial Intermediation in Rural Development: Success/Failures of |Rural Banks in Sierra Leone; 2018.
9. Cronbach LJ. Coefficient alpha and the internal structure of tests. Psychometrika. 1951;16(3):297–334
10. Dabla-Norris ME, Kochhar MK, Suphaphiphat MN, Ricka MF, Tsounta ME.

Causes and consequences of income inequality: A global perspective. International Monetary Fund; 2015.

11. Ksoll C, Lilleør HB, Lønborg JH, Rasmussen OD. Impact of Village Savings and Loan Associations: Evidence from a cluster randomized trial. Journal of Development Economics. 2016;120:70-85.
12. Davidson T, Sanyal P. Associational participation and network expansion: Microcredit self-help groups and poor women's social ties in rural India. Social Forces. 2017;95(4):1695-724.
13. Kumar N, Scott S, Menon P, Kannan S, Cunningham K, Tyagi P, Wable G, Raghunathan K, Quisumbing A. Pathways from women's group-based programs to nutrition change in South Asia: A conceptual framework and literature review. Global Food Security. 2018;17:172-85.
Available:https://doi.org/10.1016/j.gfs.2017.11.002.
14. Jetten J, Branscombe NR, Haslam SA, Haslam C, Cruwys T, Jones JM, Cui L, Dingle G, Liu J, Murphy S, Thai A. Having a lot of a good thing: Multiple important group memberships as a source of self-esteem. PloS one. 2015;10(5):e0124609.
Available:https://doi.org/10.1371/journal.pone.0124609.
15. Lopatta K, Tchikov M. Do microfinance institutions fulfil their promise? Evidence from cross-country data. Applied Economics. 2016;48(18):1655-77.
16. Ekirapa-Kiracho E, Paina L, Kananura RM, et al. Nurture the sprouting bud; do notuprootit. UsingSaving groups to save for Maternal and Newborn Health: lessons from rural Eastern Uganda. GlobHealth Action. 2017; 10:1347311.
17. Farm Credit System (FCS); 2016.
Available:https://www.fca.gov/ (Accessed December 2018).Google Scholar
18. Islam A, Maitra C, Pakrashi D, Smyth R. Microcredit programme participation and household food security in rural Bangladesh. Journal of Agricultural Economics. 2016;67(2):448-70.
19. Johnson L, Lee Y, Ansong D, Sherraden M, et al. Youth savings patterns and performance in Colombia, Ghana, Kenya and Nepal: YouthSave Research Report 2015, CSD Publication 15-01, St Louis, MO: Center for Social Development (CSD); 2015.
20. Shapiro DA. Microfinance and dynamic incentives. Journal of Development Economics. 2015;115:73-84
21. Krejcie RV, Morgan DW. Determining sample size for research activities. Educational and Psychological Measurement. 1970;30(3):607-10.
22. Mahdi I. Access to Credit, Indebtedness and Debt-refinancing amongst Microenterprises in Freetown, Sierra Leone. An Institutional Approach. School of Oriental and African Studies (SOAS), University of London. PhD Thesis (Unpublished). London; 2015
23. Mazumder MS, Lu W. What impact does microfinance have on rural livelihood? A comparison of governmental and non-governmental microfinance programs in Bangladesh. World Development. 2015 Apr 1;68:336-54.
DOI:10.1016/J. World dev.2014.12.002
24. Microfinance Barometer, Microfinance's global figures: the dynamics of a changing sector Convergences; 2017.
25. Nadolnyak D, Shen X, Hartarska V. Farm income and output and lending by the farm credit system. Agricultural Finance Review; 2017.
26. Musinguzi LK. The role of social networks in savings groups: insights from village Savings and loan associations in Luwero, Uganda. Community Dev J. 2015;51.
27. Raihan S, Osmani SR, Khalily MB. The macro impact of microfinance in Bangladesh: A CGE analysis. Economic Modelling. 2017;62:1-5.DOI:10.1016/J. Economy.2017 01.002.
28. Analysis of Jeevika in rural Bihar, India. (Policy Research Working Paper No. 7411), The World Bank, Washington DC. Statistic Sierra Leone (SSL). Population Census Report; 2015.
29. Tassew B, Dirribsa S. Analysis of Livelihood Diversification Strategy of Rural a case Study Ambo, Oromiya Regional State, Ethiopia. International Household: Journal of Current Research and Academic Review. 2015;3(8):406-426.
30. Weingärtner L, Pichon F, Simonet C. How self-help groups strengthen resilience: A study of Tearfund's approach to tackling food insecurity in protracted crises in Ethiopia. London: Overseas Development Institute; 2017.
Available:https://www.odi.org/sites/odi.org.uk/files/resource documents/11625.pdf

31. Wijesiri M. Weathering the storm: ownership structure and performance of microfinance institutions in the wake of the global financial crisis. Economic Modelling. 2016 Sep 1;57:238-47. DOI:10.1016/J. Economy.2016.05.011
32. Wireko-Manu FD, Amamoo C. Comparative studies on proximate and some mineral composition of selected local rice varieties and imported rice brands in Ghana. Agriculture and Food Sciences Research. 2017;4(1):1-7.
33. Mahdi I. Informal Finance in Sierra Leone: Why and How it fits into the Financial System; 2018.
34. Karlan D, Savonitto B, Thuysbaert B, Udry C. Impact of savings groups on the lives of the poor. Proceedings of the National Academy of Sciences. 2017;114(12):3079-84. Retrieved:www.pnas.org/cgi/doi/10.1073/pnas.1611520114. Kesanta
35. Sanyal P, Rao V, Majumdar S. Recasting culture to undo gender: A sociological analysis of Jeevika in Rural Bihar, India. World Bank Policy Research Working Paper. 2015;(7411).
36. Care International. An overview of the global reach of Care's village savings and Loans association Programming, Care; 2017.
37. Ganga G, Jain DK. Impact of Dairy Financing through Self-Help Groups on Income and Employment Generation in Jaipur District of Rajasthan. Indian Journal of Dairy Science. 2012;65(4).65(4):337-341.
38. Ganga Devi, Zala YC, Jain DK. Micro-finance: A tool for the fight against poverty in rural India through self-help group formation. African Journal of Agricultural Research. 2014;9(53):3864-3878.
39. Nilam Rathod, Ganga Devi. Economic Sustainability through Women Self-Help Groups in The tribal area of Gujarat. *Indian* Journal of Economics & Development. 2018;14(1a):463-467.



*Peer-review history:*
*The peer review history for this paper can be accessed here:*
*https://www.sdiarticle5.com/review-history/89373*