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# EFFECT OF PARTICIPATION IN VILLAGE SAVINGS AND LOANS ASSOCIATIONS ON THE FINANCIAL PERFORMANCE OF RURAL HOUSEHOLDS IN NORTHERN REGION, GHANA

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## *ABSTRACT*

It is always important to evaluate the performance of interventions that can help in the financial inclusion of rural households since most are excluded in the formal financial sector due to collateral requirements. This paper examined the effect of participation in VSLA (village savings and loan associations) programme on the financial performance of rural households in the Northern region of Ghana. Data from a cross-section of rural farmers were analyzed using the Heckman treatment effects model. The results showed that participants in the VSLA programme had better financial performance than the non-participants by about GH₵ 457.239 per month. However, farmers mentioned critical challenges to include absenteeism to meetings, the poor database in terms of contributions and disbursement as the major challenges obstructing their progress. Therefore, the government through the district assemblies as well as concern NGOs that are interested in rural development should step in to help enhance their operations. Finally, absenteeism should be made a disincentive to the participants through the payment of some fines when one fails to attend a meeting without a genuine reason.

**Contribution/ Originality:** This study is the first to contribute to literature on the importance of participating in Village Savings and Loans Associations on the income of rural farm households in the northern region, Ghana. Using the Heckman model, we realized that participants in VSLAs programme had higher income than the non-participants.

## 1. BACKGROUND AND PROBLEM

Poverty reduction has been a major concern by Government and Non-Governmental Organizations (NGOs) in Ghana. Whilst there is a significant reduction of poverty levels in all regions of the country, the case of Northern Ghana is different as evidence show significant levels of poverty in Northern Ghana (Lambongang, Ansah, & Donkoh, 2019). However, access to credit by the poor, especially in rural areas is being constrained by a lack of collateral security usually required by most financial institutions in Ghana. But achieving sustainable development goals (1& 2) of ending hunger and poverty require that, access to finance be enhanced for households to have the financial capability to invest in their agricultural and other economic activities in order to come out of abject poverty.

Agriculture remains the major economic activity and serves as an avenue for employment and a source of revenue to most rural households in Ghana (Ansah, Lambongang, & Donkoh, 2020). This sector is dominated by the smallholder farmers who contribute significantly to the food security status of the country through their subsistence production (Lambongang et al., 2019). Yet, their ability to access credit from financial institutions is limited, if not inaccessible. Low productivity, limited access to markets for their products and lack of adequate risk management strategies further exacerbates their situation. Village Savings and Loans Associations ( VSLAs) attempt to overcome the difficulties of offering credit to the rural poor by building on a Rotating Savings and Credit Associations (ROSCA) model to create groups of people who can pool their savings in order to have a source of lending funds (Abdulai, Adams, & Abdulai, 2014). Village savings and loans are a group of people who save together and take small loans from those saving (Aaron, Yussif, & Anang, 2019).

Based on collateral requirements, when people are faced with challenges in accessing credit from the financial institution, they tend to depend on informal sources. The pervasive use of ROSCAs, Susu-collectors, and similar informal financial networks is a testament to this (Christen & Mas, 2009). Credit has proven to be a necessary tool for economic development which affects positively the welfare of households and individuals (Owusu, Abdulai, & Abdul-Rahman, 2011). However, Fletschner and Kenney (2014), noted that farm households, especially in sub-Saharan Africa, are credit constrained. This normally forces households to take adverse decisions such as selling their assets, withdrawal of children from school and also a reduction in food consumption (Jayne, Mather, & Mghenyi, 2010). But with the introduction of the village savings and loans, communities can support each other in their quest for Agribusiness ventures. The activities of the group run in cycles of one year, after which the accumulative savings and the loan profit share is distributed back to members. The main aim of a VSLA is to provide simple savings and loan facilities in a community that does not have easy access to formal financial services (Beyene & Dinbabo, 2019).

It is prudent to know that this scheme has been identified by participants to be the more transparent, structured and democratic version of the informal savings groups found in villages and slums in many parts of the developing world. Another distinguishing feature between formal finance and VSLA is that the latter in terms of the methodology is a well-organized and more accountable system that provides an opportunity to even the least literate member of the group to understand.

The importance of considering VSLA is further heightened by the fact that most studies on farm households' access to credit or credit constraints in sub-Saharan African have generally focused only on those who apply for formal credit (Awotide, Abdoulaye, Alene, & Manyong, 2015; Swaminathan, Du Bois, & Findeis, 2010). But Logan (2016) revealed that poor households in Ghana have little or no shelter, inadequate food supply resulting in food insecurity among many other challenges. While Hendricks, Jacobs, and Singhal (2020) says the situation is compounded by weak infrastructure and market linkages, it is, however, important to note that in many situations, there is also a lack of access to financial services. This enables incomes to increase both by improving and expanding their production and establishing small enterprises (IFAD, 2012). This confirms (Hendricks et al., 2020) observations that, for the poorest and most marginalized households in Africa, financial inclusion has long been a major hurdle to rural dwellers. Few institutions exist to serve the rural areas with financial services and where they exist, they often have inappropriate products that are not well-tailored to the prevailing context/activities. This includes support to agriculture which is seasonal and yet the main sources of income for the rural poor. Also, the rural poor do not have what it takes to access formal credit because asset ownership as collateral is often a key determinant for financial access. Although the government of Ghana recognizes that the biggest proportion of its population is agricultural and rural, and has recently introduce policy like the planting for food and jobs programme, much is still needed from the government to make agricultural and other rural programs effective in terms of the returns accrued from farming activities.

As a result of inadequate assistance, the rural population in Ghana continues to live in poverty and in high-risk environments that do not promote human welfare. Over time, people try to discover ways to progress their situation within their capacities by saving amongst themselves and assisted by various NGOs. With such support, community efforts have been transformed into better programs that promise hope for rural households. According to Adepoju and Obayelu (2013) there is the need to diversify household income sources especially nonfarm activities and increased employment to enhance the welfare of rural households. This can be supported by the creation of saving clubs into Village Savings and Loan Associations (VSLAs), which often is referred to as "microfinance services for the poor". VSLA promoters argue that this methodology should be seen solely as a tool for economic and social empowerment (Alerigesane, 2012). Considering the high incidence of poverty and the difficulty involved in accessing credit from formal financial institutions, this study first and foremost looks at the determinants of participation in village savings and loans associations. Moreover, the study also seeks to unravel the level of the financial performance of the VSLAs participants. When these are known, it will help guide policy decisions in improving rural folks' welfare through the institution of appropriate policies that will help shape their operations for the financial sustainability of the associations.

### *1.1. Literature Review on the Role of VSLAs*

Village Savings and Loans Association (VSLA) program operates in poor rural communities in developing countries to establish groups that save and further lend out the accumulated savings to each other. In a cluster-randomized evaluation spanning three countries in Africa (Ghana, Malawi, and Uganda), it was found that the promotion of Village Saving and Loans Association groups leads to raising the self-respect of individual members and helps to build up social capital within communities, particularly among women who represent approximately 70 percent of members (Karlan, Savonitto, Thuysbaert, & Udry, 2017). It helps members move away from low status and low-income engagements and helps in the alleviation of poverty and improves the welfare of members particularly women who make the majority in the VSLA groups. It also makes members to have more food because they expand their farms with income from their collective savings. Furthermore, the relevance of VSLA program membership is evident that female members have in many a time shared their testimonies regarding the benefits they have derived from it (Aaron et al., 2019). Women have always acknowledged increases in their savings which gives them the ability to purchase whatever inputs they need to invest in other economic activities. It is pertinent to know that over the years, the VSLA model has thrived and evolved into its current state. By accelerating growth and building local capacity since their members have access to highly responsible and safe financial services making them upscale economic activities (Karlan et al., 2017).

This service mostly targets low-income households in rural areas. The capacity of one to take a loan is usually not governmental like the formal sector.

Certainly, the concept of microfinance is not new in Ghana because it has always been a common practice for people to save or take small loans from individuals and groups within the context of self-help to engage in small retail businesses (Addae-Korankye, 2012).

However, VSLA is an emerging informal financial service in Ghana which offers savings, insurance and credit service in markets outside the reach of formal institutions. Prior and Argandoña (2009) acknowledged that informal financial institutions play a complementary role in the formal financial system by servicing the lower end of the market, and should be given the needed consideration.

Also, the vast mainstream of the world's poor lives in rural areas of developing countries with a miniature entree to monetary services. Setting up Village Savings and Loan Association (VSLA) has become a progressively common involvement intended at enlightening local financial intermediation. Studies have discovered an indication of a positive and significant number of results including the number of meals consumed per day and household

expenditure as measured by the United States Agency for International Development (USAID) Poverty Assessment Tool.

Assefie (2014) stated that, in Zimbabwe, membership of a VSLA contributes to an increase in household productive and non-productive assets levels among the majority of participants, as well as to some improvement in the quality of housing. The findings also revealed that program participation has led to an increase in the number of incomes–generating activities (IGAs) and stability of such activities.

Furthermore, Anyango et al. (2007) reaches a similar finding when studying VSLA in Malawi. He found that program participation has helped improve the livelihoods of its members and to alleviate poverty. Since VSLA associations are thought to play a critical role in bringing financial services to rural areas of developing countries where access to formal financial service is typically very limited. In Ghana, Innovations for Poverty Action (IPA) worked with researchers and Cooperative for Assistance and Relief Everywhere (CARE) to rigorously evaluate the impact of village savings on small farm households. The promotion of the groups led to an improvement in financial inclusion, household business outcomes and women empowerment in most situations (Karlan et al., 2017).

## 2. MATERIALS AND METHODS

### *2.1. Study Area and Data*

The Northern Region is one of the sixteen regions of Ghana. It is located in the north of the country and was the largest of the sixteen regions, covering an area of 70,384 square kilometres or 31 percent of Ghana's area until December 2018 when the new regions, the Savannah Region and North East Regions were created from it. The Northern Region is divided into 14 districts. The region's capital is Tamale (Tahiru, Sackey, Owusu, & Bawakyillenuo, 2019). It shares boundaries with the Upper East and the Upper West Regions to the north, the Brong Ahafo and the Volta Regions to the south, and two neighbouring countries, the Republic of Togo to the east, and Cote d' Ivoire to the west. The region has also been identified among the poorest regions in Ghana, with poverty levels of about 50% (Ghana Statistical Service (GSS), 2014). Two climatic conditions pertain to the northern part of Ghana. The rainy season begins lightly in April and rises steadily to a peak in August/September and gradually decline by October/November. With regards to data collection, five districts and a metropolis were randomly chosen from the Northern region. The districts were: Savelugu Nanton District, Tolon District, Kumbungu District, Sagnairigu District and Tamale Metropolis. Three communities were randomly selected from each district and the metropolis. Finally, data was taken on ten persons, each of the participants and non-participants in each community of the five districts making a total sample size of 150 respondents (75 each of the participants and non-participants). The data collection took place in May and June 2018. with a structured questionnaire used as the research instrument. Information on socioeconomic characteristics, land ownership, income level, access to extension, the value of assets among others were solicited.

### *2.2. Econometric Model on the Effect of Participation in VSLA on Financial Performance*

We assessed the effect of participation in the VSLA programme on financial performance using the Heckman treatment effect model, given in Equation 1.

$$y = b_0 + + b_2\, age + \ b_3 labour + b_4 gender + b_5 assets + b_6\, fbo + \ \ \gamma VSLA + e \qquad (1)$$

We employed this approach because we suspected that the participation variable may not be strictly exogenous due to several reasons. First, participation in the VSLA might be influenced by unobserved factors, such as risk behavior and entrepreneurial ability on the part of the participants or farmers. This would mean that $cov\ (VSLA, e_i) \neq 0$, a case of endogeneity due to sample selection bias. Some farmers are naturally risk-averse, and for the fear of the unknown, might be unwilling to participate. It is also possible that farmers who may participate

are naturally better at farming, and therefore might get higher outputs and for that matter incomes, even if they do not participate in the VSLA programme. If these unobserved effects are not properly handled, we might not be able to measure the true effect of the VSLA programme on the financial performance of the participants. Financial performance in this study is the average monthly income realized by a VSLA participant.

Due to endogeneity from sample selection bias, a probit model in Equation 2 is first estimated to generate an inverse mill ratio (IMR) which is then included as an estimator in the outcome equation to correct for the sample selection bias.

$$VSLA^* = \alpha_0 + \alpha_1 age + \alpha_2 gender + \alpha_3 Marital + \alpha_4 labour + \alpha_5 acreage + \alpha_6 land\ size + \alpha_7 experience + \alpha_{10} number\ of\ years\ of\ education + v_i \quad (2)$$

The dependent variable in the probit, VSLA assumes a dummy with participants coded 1 and 0 for non-participants. The latent dependent variable ($VSLA^*$) is observed through the decision to participate or not such that

$$VSLA = \begin{cases} 1 & if\ VSLA^* > 0 \\ 0 & if\ VSLA^* \leq 0 \end{cases}$$

Where $\alpha_0$ is the constant term, $\alpha_1$-$\alpha_{10}$ are independent variables and $v_i$ is the error term. In the probit analysis, the effects of variables that influence participation decisions are estimated.

Table 1 shows the explanatory variables with hypothesized effects.

**Table-1.** Definition of variables with their a priori expectations.

| Variable | Definition and measurement | A priori expectation | |
|---|---|---|---|
| | | Participation | Outcome |
| Education expenditure | Amount of money spent on education in Ghana cedis | + | |
| FBO membership | 1 if participant belongs to an FBO, 0 otherwise | | + |
| Labour | Number of man-days employed for the production activities | | +/- |
| Farm size | Size of land cultivated or own (acres) | + | + |
| VSLA participation | 1 if farmer I a participant of VSLA, 0 otherwise | | + |
| Age | Age of a farmer in years | + | +/- |
| Gender | if male, 0 otherwise | -/+ | +/- |
| Experience | Number of years spent in farming | + | + |
| Household size | Number of people eating from the same pot in a household | | + |
| Distance to the farm | Walking distance in minutes | _ | _ |
| Assets | Asset owned by a respondent in Ghana cedis | + | |
| Marital status | Marital status of a respondent | | + |

## 3. RESULTS AND DISCUSSIONS

### *3.1. Socio-Demographic Characteristics*

Considering the age of the respondents, Table 2 below indicates that, 33.1% were in the age group of 20-29, 48.1% between 30-39, 12.3% in the range of 40-49, 3.2% between 50-59 and finally 6% fell between the ages of 60-69 years. The age distribution undoubtedly communicates that majority of the respondents were within the working class and can engage themselves in major economic activities when they can do so.

On the educational status of the respondents, the results show that a great number of survey respondents (48.7%) have no access to formal education. This is immediately followed by heads with a primary level of education (26.6%), Some secondary level education (12.3%), senior high level of education (5.8%), and finally tertiary

education (3.9%) been the least. The result of this survey is similar to the findings of Akaguri (2014) that about half of adults in Ghana neither attended school nor completed middle school (JHS). This could pose a challenge to the financial sector especially in a country like Ghana where the majority of the population has no access to financial services. This could equally have a negative repercussion on the financial sector in terms of participation in financial programs as well as understanding the dynamics in the financial sector.

Education creates a platform and paves a way for people to save or have access to financial services. With a majority of household heads in the district without formal education, it is a fact that the majority of the people will not be able to engage in formal financial institutions but instead, might be able to engage in informal financial institutions where VSLA forms part of it. Therefore, we are left to say that the low level of education could also affect the level of participation in the VSLA program.

With marital status, the results show that the majority of the household heads were married (81.2%), whiles about 11.7% were unmarried, distributed into single household heads (11.7%), divorced household (1.3%) and widowed household heads of (3.2%). It was found that married heads have the advantage of deciding to participate in the VSLA and can save much than unmarried heads since couples are likely to bring their thinking together for an improved livelihood outcome. This alone can improve an individual's ability to participate in the VSLA programme.

**Table-2.** Socio-demographic features of respondents.

| Variable | Frequency | Percentage (%) |
|---|---|---|
| 20-29 | 51 | 33.1 |
| 30-39 | 74 | 48.1 |
| 40-49 | 19 | 12.3 |
| 50-59 | 5.0 | 3.2 |
| 60-69 | 1.0 | 6.0 |
| **Educational Status** | | |
| No Education | 75 | 48.7 |
| Primary | 41 | 26.6 |
| Some Secondary | 19 | 12.3 |
| Completed Secondary | 9.0 | 5.8 |
| Higher | 6.0 | 3.9 |
| **Marital Status** | | |
| Married | 125 | 81.2 |
| Widowed | 5.0 | 3.2 |
| Divorced | 2.0 | 1.3 |
| Single | 18 | 11.7 |

**Source:** Field survey, 2018.

### *3.2. Summary Statistics of Major Explanatory Variables used in the Models*

This section provides insights into the socio-economic and production variables of the VSLA participants and non-participants. The characteristics considered are found in Table 3. The mean age of the participant and non-participant was 34.32 years and 32.77 years respectively. This means on average the participants are older in years than the non-participants. Also, on average, a participant had 5.21 years of education while that of non-participants is 3.91 years. This shows that the participants are somewhat better than the non-participants when it comes to access to education. The mean income of participants and non-participants are 1055.26 and 711.72 which means that the participants averagely have a higher income than non-participants. This is not surprising as participation in the VSLA programme is hypothesised to have a positive influence on the income of the beneficiaries. Considering the acreage owned by participants and non-participants as well as the minimum acreages owned, the mean acreage owned by participants is 4.69 with 2 acres as a minimum. Also, the non-participants had an average acreage of 3.05 with 0 being the minimum, meaning some of the non-participants didn't own any land at the time of the data collection. With experience in farming, the mean number of years of experience for the participants is 10 while that

of the non-participants is 9. This indicates that there is a very minimal disparity between the years of experience between the participants and the non-participants. The average amount of income spent on food per day was also analyzed. The results show that the amount spent on food by a participant per day is GH₵ 3.12 while that of the non-participants is GH₵2.04, indicating households that belong to a VSLA are food secured than that of the non-participants. The minimum and maximum amount in terms of food consumption by the participants are GH₵ 2 and GH₵ 4 respectively whiles that of the non-participants is GH₵ 2 and GH₵ 3 respectively. The average household size for both the participants and non-participants was 8 people at the time the data was taken. The standard deviations of both categories were 3.64 for participants and 4.1 for the non-participants. With the health expenditure of the respondents, the participants spent about GH₵105.6 with a deviation of 65.54 while the participants spent about GH₵ 58.68 with a standard deviation of 5.68. Since labor acquisition is important in every agrarian society, data that was taken on labor revealed that the mean amount of hired labour acquired by the participants was 29 with a deviation of 15.31 while the non-participants had mean labour of 28 with a deviation of 13.31. The results show that there is no significant difference between the labour hired by the participants and non-participants. Information on health expenditure was also taken into consideration. The results revealed that the participants averagely spent about GH₵ 269.00 on health while the non-participants spent an amount of about GH₵ 161.00. Though there isn't any justification, the results tell that the non-participant spends much lesser in terms of health expenditure than the participants.

**Table-3.** Summary statistics of explanatory variables used in the models.

| Participants | | | | | Non-Participants | | | |
|---|---|---|---|---|---|---|---|---|
| **Variable** | **Mean** | **Std. Deviation** | **Min** | **Max** | **Mean** | **Std. Deviation** | **Min** | **Max** |
| Age | 34.32 | 6.71 | 25 | 53 | 32.77 | 6.54 | 24 | 62 |
| Years of education | 5.21 | 5.46 | 0 | 19 | 3.91 | 5.94 | 0 | 19 |
| Income | 1055.26 | 427.09 | 152 | 2200 | 711.72 | 701.67 | 0 | 3500 |
| Acreage | 4.69 | 2.41 | 2 | 12 | 3.05 | 2.67 | 0 | 14 |
| Experience | 10 | 5.11 | 3 | 25 | 9 | 4.81 | 2 | 20 |
| Food consumption | 3.12 | 0.36 | 2 | 4 | 2.04 | .19 | 2 | 3 |
| Household size | 8 | 3.64 | 1 | 16 | 8 | 4.13 | 1 | 25 |
| Health expenditure | 105.6 | 65.54 | 0 | 300 | 88 | 58.68 | 0 | 300 |
| Labor | 29 | 15.31 | 10 | 80 | 28 | 13.31 | 5 | 70 |
| Educational expenditure | 269 | 158.94 | 50 | 800 | 161 | 112.94 | 0 | 600 |

**Source:** Field survey, 2018.

### *3.3. Results from the Heckman Treatment Effect Model*

Results of the variables used in determining the effect of farmer participation in the VSLA programme on Financial performance is shown in Table 4. The Lambda is negative and significant indicating that there are sample selection bias and that unobserved factors that make participation more likely tend to be associated with financial performance. From the analysis, the Wald chi-square test at 15 degrees of freedom is 51.95 and an associated p-value of 0.0000. This indicates that the model gives a good fit for the data. Out of the six variables in the probit selection equation, age, gender, educational expenditure and asset value were all significant in determining the decision to participate in the VSLA programme. Also, out of the ten variables used in the outcome equation, gender, marital status, distance to the farm, labour and VSLA participation were statistically significant determinants of income.

### *3.4. Determinants of Participation in the VSLA Programme*

From Table 4, four variables out of seven are significant as determinants of participation in the VSLA programme. Specifically, age, gender, educational expenditure and asset value are significant determinants of

participation in the VSLA programme. While age and educational expenditure had a positive effect on participation in the VSLA programme, the gender and asset value of a respondent negatively affects participation in the programme. Aaron et al. (2019) had a similar finding in the Awutu Seya West district of Ghana when their result showed that both age and educational status were significant determinants of participation in the VSLA programme. Also, Kimaro and Towo (2015) found that socio-economic characteristics were crucial in determining whether an individual would participate in agricultural activity or not. The positive and significant effect of age could be attributed to the fact that elderly people might have over the years participated in a similar agricultural programme and understood its contribution to higher agricultural performance. Such experienced farmers may also have reliable channels of selling produce and therefore have better hopes of continuity of belonging to the VSLA programme.

The positive effects of educational expenditure in participation in VSLA programme were also envisaged. This result shows that participants are mostly those who have the financial burden on them to take care of exorbitant fees of their wards. The result is in line with *a priori* expectation because it is a fact that once an individual expenditure increases, a rational person will seek the means of making extra incomes to cater for the increase in expenditure. All else equal, females are likely to participate in savings and loan associations as compared to their male counterparts. This is in line with *a priori* and similar to the finding of Bannor, Oppong-Kyeremeh, Derkyi, Adombila, and Amrago (2020) who also found out that women participated in VSLA programmes than their males. This is because apart from their involvement in agricultural activities, especially in the Northern region of Ghana, females are those who mostly participate in other petty trading activities in the local economy. For that matter, it isn't surprising that females participated in the VSLA programme than males.

Also, the negative effect of asset value on participation in the VSLA programme meets a priori expectation. Holding all else fixed, farmers who owned assets of a higher value are likely to have good financial standing and might be reluctant in participating in VSLA programmes which might not give them higher returns.

### *3.5. Effect of VSLA Participation on Financial Performance*

The key objective of this study was to evaluate the effect of participation in the VSLA programme on the financial performance of rural households in the Northern region. The result in table 4 shows that not only that participating influenced financial performance, but it also confirms *a priori* expectation that VSLA participation will have a positive influence on the financial performance of the beneficiaries. Agricultural sector development is a major priority for the Government of Ghana. This means that any activity or initiative that will likely influence the agricultural activities of the population will be welcomed. The result indicates that participants of the VSLA programme had better financial performance in terms of monthly income than their counterparts who didn't participate, ceteris paribus. This result justifies the benefits one can gain from being part of a VSLA programme. The finding is also consistent with Mwansakilwa, Tembo, Zulu, and Wamulume (2017) who asserted that participation in VSLA influenced the off-farm income of the survey respondents. It is also in line with the government's priority of increasing agri-food production since farmers mostly use the benefit derived to reinvest in their farming activities. From the results, out of the ten variables that were included in the outcome model about five of them are statistically significant and meet *a priori* expectation. The gender of the respondent was found to have a positive influence on financial performance at 10% level of significance. This is not surprising because the participation equation also showed that females see the incentive to participate in interventions such as VSLA than their male counterparts. This result is consistent with Mumin, Razak, and Domanban (2013) who found that females had a higher propensity to save with financial institutions in Ghana than males. However, is inconsistent with the finding of Aaron et al. (2019) who found that Participation in VSLA was higher for male respondents, indicating that men have higher propensity to join Village Savings and Loans groups than females in Awutu Senya West in the south of Ghana. The latter is inconsistent with the result of this study partly because women lack

control of resources in Northern Ghana as compared to their colleagues in the south. So, it is not surprising if they participate in interventions that can help raise their income levels. Holding all else constant, marital status was also found to have a significant positive effect on financial performance at 10% level of significance. This finding corroborates earlier research by Musinguzi (2016) and meets *a priori* expectation because married bring people together to think together to make better decisions to improve their livelihoods. Again, a plausible reason for such a phenomenon might equally be due to the reason that most married women share the responsibility of taking care of the family in terms of provision of meals, payment of school fees, medical bills etc., hence, are mandated to be part of the VSLA scheme to be able to generate meaningful savings to support the family, which is not the case for unmarried women. Furthermore, distance to the farm was found to have a negative effect on the financial performance of the respondents at a 5% level of significance. All else equal, the findings meet *a priori* expectation and consistent with Lambongang et al. (2019) because the farther the distance of home from the farm, the more likely that much will be spent in transporting inputs and farm produce to and from the farm. The results showed that respondents who expended more labour either through family or hired labour tend to have reduced income levels. All other things being equal, farmers or respondents who used more labor, especially hired labour might have spent a lot of money in the labour acquisition which can result in a decrease in their financial performance.

**Table-4.** Heckman sample treatment model results.

| Variable | Coefficient | Std. Error |
|---|---|---|
| *Selection equation (VSLA participation)* | | |
| Farm Size | 0.0754 | 0.050 |
| Age | 0.0323** | 0.016 |
| Gender | -0.733*** | 0.247 |
| Edu-expenditure | 0.0035*** | 0.001 |
| Distance to the farm | -0.0026 | 0.004 |
| Experience | 0.0135 | 0.010 |
| Asset_Value | -0.001** | 0.001 |
| Cons | -1.623** | 0.708 |
| *Outcome equation (Income)* | | |
| Gender | 183.35 * | 85.554 |
| Experience | 3.760 | 2.588 |
| Marital Status | 149.067* | 83.459 |
| Age | -5.0032 | 4.684 |
| FBO_Membership | 40.449 | 64.952 |
| Distance to the farm | -2.372 ** | 1.048 |
| Farm size | 5.6048 | 14.618 |
| Household Size | -5.5119 | 8.003 |
| Labour | -5.721*** | 2.202 |
| VSLA Participant | 457.239*** | 185.502 |
| _cons | 725.68*** | 196.567 |
| Constant | -1.2960 | 1.0739 |
| *Rho* | *-0.195* | |
| *Sigma* | *368.278* | |
| *Lambda* | *--72.15* | *0.8572* |
| ***Model diagnostics*** | | |
| Wald chi-square (15) =51.94, p> chi2=0.0000, N=150 | | |

**Note**: ***, ** and * denotes 1%, 5% and 10% significant levels respectively. 1 US dollar ($) = 5.79 Ghana Cedis (GH¢).

## 4. CONCLUSION AND RECOMMENDATIONS

We aimed to ascertain the effect of participation in the VSLA programme on the financial performance of rural households in the Northern region of Ghana. Due to the potential endogenous nature of the participation variable, we used a Heckman treatment effect model to undertake this exercise. The results gave backing to the VSLA programme because participation in the VSLA has a statistically significant influence on the financial performance of the respondents. Specifically, holding everything else constant, participants of the VSLA programme realized an

average income of about GH₵ 457.239 than the non-participants per month. Despite this welcoming news, farmers spoke about several challenges that must be addressed so that the full benefits of the programme could be realized. This information was gathered through focus group discussions that were conducted at the time the data was collected. Farmers mentioned critical challenges to include absenteeism to meetings, poor database in terms of contributions and disbursement as the major challenges obstructing their progress. Policy-wise, one could argue that the VSLA programme is worth its investment, at least from a financial point of view. However, the youth should be encouraged to partake in the activities since is a good venture and can serve as a source of start-up capital for them to begin a business for their livelihood. Also, male farmers attached less importance to being members of the VSLA associations as shown in both the participation and outcome equations. But since males can contribute higher amounts due to their level of access to productive resources compared to their female counterparts in Northern region, they might be in a position to benefit more if they are encouraged to participate in the VSLA programme. Furthermore, the government through the district assemblies as well as concern NGOs that are interested in rural development can step in to guide the participants to keep a proper database to enhance their operations. Finally, absenteeism should be made a disincentive to the participants through the payment of some fines when one fails to attend a meeting without a genuine reason.

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## REFERENCES

Aaron, A., Yussif, K., & Anang, B. T. (2019). Determinants of village savings and Loans Association membership and savings amounts in Awutu Senya West District of Ghana. *Cogent Economics & Finance*, *7*(1), 1707004.

Abdulai, I. A., Adams, A. M., & Abdulai, M. E. (2014). Vulnerabilityin the face of climate change and variability: Perceptions and Off-FarmCopping Strategies amongFarm Households in Northern Rural Savannah. *Ghana. International Journal of Humanities and Social Science Invention*, *6*(5), 33-42.

Addae-Korankye, A. (2012). Microfinance and poverty reduction in ghana. The case of central region of ghana. *Asian Economic and Financial Review*, *2*(1), 135-141.

Adepoju, A. O., & Obayelu, O. A. (2013). Livelihood diversification and welfare of rural households in Ondo State, Nigeria. *Journal of Development and Agricultural Economics*, *5*(12), 482-489.Available at: https://doi.org/10.5897/jdae2013.0497.

Akaguri, L. (2014). Fee-free public or low-fee private basic education in rural Ghana: How does the cost influence the choice of the poor? *Compare: A Journal of Comparative and International Education*, *44*(2), 140-161.

Alerigesane, A. A. (2012). *A comparative study of the credit with education (CWE) and the Village Savings and Loans (VSLA) Methodologies of Microfinance Services on Rural Livelihoods*. Doctoral dissertation, University of Ghana.

Ansah, I. G., Lambongang, M., & Donkoh, S. A. (2020). Ghana's planting for food and jobs programme: A look at the role of capability in farmers' participation. *Journal of Human Development and Capabilities*, *21*(2), 161-182.

Anyango, E., Esipisu, E., Opoku, L., Johnson, S., Malkamaki, M., & Musoke, C. (2007). Village savings and loan associations-experience from Zanzibar. *Small Enterprise Development*, *18*(1), 11-24.Available at: https://doi.org/10.3362/0957-1329.2007.004.

Assefie, W. (2014). *Poor women and their Social Capital: An exploratory study of the village saving and loan groups' contribution to women's empowerment in Ethiopia, West Harergie*. Doctoral Dissertation.

Awotide, B. A., Abdoulaye, T., Alene, A., & Manyong, V. M. (2015). Impact of access to credit on agricultural productivity: Evidence from smallholder cassava farmers in Nigeria (No. 1008-2016-80242).

Bannor, R. K., Oppong-Kyeremeh, H., Derkyi, M., Adombila, A. Y., & Amrago, E. C. (2020). Village savings and loans association participation and impact on off-farm income among rural women. *Journal of Enterprising Communities: People and Places in the Global Economy*.

Beyene, N. L., & Dinbabo, M. F. (2019). An empirical evaluation of the link between women participation in village savings and loans association (VSLA) and Poverty Reduction in Ethiopia. *Journal of Reviews on Global Economics*, *8*, 566-580.

Christen, B., & Mas, I. (2009). It's time to address the microsavings challenge, scalably. *Enterprise Development and Microfinance*, *20*(4), 274-285.

Fletschner, D., & Kenney, L. (2014). Rural women's access to financial services: credit, savings, and insurance. In Gender in agriculture (pp. 187-208). Dordrecht: Springer.

Ghana Statistical Service (GSS). (2014). Ghana Health Service (GHS), and ICF International. 2015. Ghana Demographic and Health Survey 2014. Rockville, Maryland, USA: GSS, GHS, and ICF International.

Hendricks, K. B., Jacobs, B. W., & Singhal, V. R. (2020). Stock market reaction to supply chain disruptions from the 2011 Great East Japan Earthquake. *Manufacturing & Service Operations Management*, *22*(4), 683-699.Available at: https://doi.org/10.1287/msom.2019.0777.

IFAD. (2012). *The state of food insecurity in the world 2012: Economic growth is necessary but not Sufficient to Accelerate Reduction of Hunger and Malnutrition*. Rome: FAO.

Jayne, T. S., Mather, D., & Mghenyi, E. (2010). Principal challenges confronting smallholder agriculture in sub-Saharan Africa. *World Development*, *38*(10), 1384-1398.Available at: https://doi.org/10.1016/j.worlddev.2010.06.002.

Karlan, D., Savonitto, B., Thuysbaert, B., & Udry, C. (2017). Impact of savings groups on the lives of the poor. *Proceedings of the National Academy of Sciences*, *114*(12), 3079-3084.Available at: https://doi.org/10.1073/pnas.1611520114.

Kimaro, P. J., & Towo, N. N. (2015). Determinants of rural youth's participation in agricultural activities: The case of Kahe East ward in Moshi rural district, Tanzania. *International Journal of Economics, Commerce and Management*, *3*(2), 33.

Lambongang, M., Ansah, I. G. K., & Donkoh, S. A. (2019). Participation and yield effect of ghana's planting for food and jobs programme In Bunkpurugu-Yunyoo District. *Ghana Journal of Agricultural Economics and Agribusiness*, *2*(1).

Logan, A. L. (2016). Why can't people feed themselves?: Archaeology as alternative archive of food security in Banda, Ghana. *American Anthropologist*, *118*(3), 508-524.Available at: https://doi.org/10.1111/aman.12603.

Mumin, Y. A., Razak, A., & Domanban, P. B. (2013). Analysis of household heads' decision-to-save with financial institutions in Ghana. *Asian Economic and Financial Review*, *3*(11), 1466-1478.

Musinguzi, L. K. (2016). The role of social networks in savings groups: insights from village savings and loan associations in Luwero, Uganda. *Community Development Journal*, *51*(4), 499-516.Available at: https://doi.org/10.1093/cdj/bsv050.

Mwansakilwa, C., Tembo, G., Zulu, M. M., & Wamulume, M. (2017). Village savings and loan associations and household welfare: Evidence from Eastern and Western Zambia. *African Journal of Agricultural and Resource Economics*, *12*(311-2017-731), 85-97.

Owusu, V., Abdulai, A., & Abdul-Rahman, S. (2011). Non-farm work and food security among farm households in Northern Ghana. *Food Policy*, *36*(2), 108-118.Available at: https://doi.org/10.1016/j.foodpol.2010.09.002.

Prior, F., & Argandoña, A. (2009). Best practices in credit accessibility and corporate social responsibility in financial institutions. *Journal of Business Ethics*, *1*(87), 251-265.

Swaminathan, H., Du Bois, R. S., & Findeis, J. L. (2010). Impact of access to credit on labor allocation patterns in Malawi. *World Development*, *38*(4), 555-566.Available at: https://doi.org/10.1016/j.worlddev.2009.11.002.

Tahiru, A., Sackey, B., Owusu, G., & Bawakyillenuo, S. (2019). Building the adaptive capacity for livelihood improvements of Sahel Savannah farmers through NGO-led adaptation interventions. *Climate Risk Management*, *26*, 100197.Available at: https://doi.org/10.1016/j.crm.2019.100197.