An analysis of determinants of access to and use of credit by smallholder farmers in Suakoko District, Liberia

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Agricultural credit has been argued to be very important for sustainable agricultural development and poverty reduction in rural areas. This study seeks to identify and to analyze the determinants of smallholder farmers’ access to and use of credit in Suakoko district, Bong County, Liberia. This research is quantitative using a survey questionnaire distributed to 105 smallholder farmers. Data was analyzed using descriptive statistics and causal analysis was performed using a binary Logit regression model. Results from regression indicate that 39% of the farmers were credit users. The marginal effects of bank account and other sources of income show significant and positive effects on access to credit. However, education, occupation and group membership are significant but have negative effects on access to credit by smallholder farmers. The results also show that 38% of credit users applied credit received for agricultural activities, while the rest utilized it for non-agricultural activities. It is recommended that a policy should be established to ensure older farmers get adult literacy while younger farmers get formal education. Moreover, the government should issue a policy aimed at increasing opportunities for off-farm activities through creation of jobs and motivating self-employment. Finally, the government should promote the creation of development groups geared towards providing collateral support for members and also serve as guarantors for farmers to receive banks credit/loans in order to increase agricultural productivity in the study area.

Key words: Credit access, rural, farmers, smallholder, Suakoko district, Liberia.

INTRODUCTION

Agriculture is critical for global economic growth and it accounted for one third of the world’s gross domestic product (GDP) in 2014. In 2016, analyses found that 65% of poor working adults relied on agriculture to live. Agricultural development is projected to feed 9.7 billion people by 2050. It is considered the most powerful poverty reduction tool (World Bank, 2017). In most developing countries, agriculture is the most important economic activity providing food, employment, foreign exchange and raw materials for industries (Tadesse, 2008).

In Africa, steady progress is being made towards...
agricultural transformation. Expenditures on agriculture have taken an upward trend and there is evidence of faster growth in agricultural productivity and improved nutrition. There is also increase investment by private sectors in agriculture evident by farmers who have options in seeds planted, fertilizers used and produce markets (AGRA, 2016). However, factors such as war, lack of agricultural financing, climate change, floods, and global warming still pose major threats to Africa’s agricultural productivity (World Bank, 2017).

Agriculture in Liberia has contributed 42% of the national Gross Domestic Product (GDP) in 2016 (CBL, 2016). The food crops sub-sector dominates agriculture’s contribution to the national GDP. Rice is the main staple food grown by over 74% of the population on uplands (CFSNS, 2008). Cassava is the second most important food crop grown by about 62% of the population (CAAS-Lib, 2007). Paddy rice and cassava production and area harvested increased by more than 3% per annum during the period 2001 to 2016. Rice and cassava have contributed 22 and 23% of the agricultural GDP, respectively. Tree crops, especially rubber, cocoa and coffee make an important contribution to the economy, accounting for 34% of the agricultural GDP in 2016.

Diao (2010) asserts that “agricultural development requires a comprehensive long term strategy and such a strategy needs to be supported by long term commitment both from the government and international development partners. While opportunities for agricultural growth are there, challenges to realize them are huge”. For example, agricultural credit has been argued to be very important for sustainable agricultural development and poverty reduction in rural areas. This study therefore sought to identify and to analyze the determinants of smallholder farmers’ access to and use of credit in Suakoko district, Bong County, Liberia.

LITERATURE REVIEW

Khan et al. (2011) contend that agricultural credit is defined as financial support that a farmer can get in order to bridge the gap between his/her income and expenditure in the field and noted that it is an essential ingredient in the growth strategy of agricultural sector. According to Mohan (2006), agricultural credit is a loan advanced to farmers for purchase of improved seeds, fertilizer, modern implements and may also include liquid capital for financing the harvesting, haulage of produce and other similar farm activities. Dethier and Effenberger (2012) perceive agricultural credit as any other credit facility in the market but confined to agricultural development. Salami and Arawomo (2013) described agricultural credit as a facility that is extended from a lender to a borrower, which is repaid at maturity ranging from few days to several years.

Farmers’ access to and efficient utilization of financial resources including credit is very vital in increasing farm productivity, rural household incomes and reducing poverty levels in agrarian societies. Rural credit has proven to be a powerful instrument against poverty reduction and development in rural areas. In the developing countries, the role of agricultural credit is closely related to providing needed resources which farmers cannot source from their own capital. Credit is viewed as more than just another resource such as labour, land, equipment and raw materials but rather, credit can be considered from its ability to energize or motivate other factors of production. Most often, credit determines access to most of the resources on which smallholder farmers depend for agricultural production because of lack of adequate capital to access these resources (Auma and Mensah, 2014).

Smallholder farmers have become an important contributor to the Liberian economy (Republic of Liberia, 2010). The sector contributes to the national objective of creating employment opportunities, generating income and providing a source of livelihood for the majority of low-income households in the country (CARI, 2015). Liberian small holder farmers who have the potential to feed the nation are actually the poorest and most food insecure in the population. They are principally subsistence farmers with limited outlets to market surplus production or to participate in the cash economy. As a group, they are geographically dispersed and therefore are often marginalized. The smallholder farmers in Liberia do not have access to value chain processes such as processing machines, driers, storage and other post-harvest facilities (Hilson and Van Bockstael, 2012).

In the last decade, Liberia’s agricultural productivity has been decreasing, consequently threatening food security as well as increasing poverty rates. The government of Liberia and other stakeholders has attributed the decline in agricultural productivity to the cost of local financing services and poor credit access (USAID, 2015). Farmers still face constraints in accessing financial help. As a result most of them are discouraged to continue ensuring the productivity of their farms as acknowledged by Liberian government through smallholder agricultural productivity enhancement commercialization (SAPEC) (CARI, 2015).

Microfinance institutions such as Liberian Entrepreneurial and Asset Development (LEAD), United States Agency for International Development- Food and Enterprise Development program (USAID-FED), Bangladesh Rural Advancement Committee (BRAC), and Progressive Farmers Organization (PFO), have been providing credit, extension services, business training, and input (hand tools and seeds) in order to improve the situation of access to credit by smallholder farmers and low income earners in Liberia (McNamara et al., 2011). Despite these efforts, most smallholder farmers still do not access the credit; the reasons for this lack of access are not precisely known.
RESEARCH METHODOLOGY

Study site

This study was conducted in Bong County which is in the north-central region of Liberia. Bong County was envisioned to be very important for this study because there is intensive smallholder farming, which tends to be the dominant economic activity, serving as a source of sustainable livelihood for the population. The central Agricultural Research Institute (CARI) is also situated in Suakoko, Gbarnga in Bong County, creating an opportunity for farmers in this region to serve as the direct recipients of CARI research products. This therefore encourages farmers to undertake production and marketing of agricultural products in order to increase agricultural productivity and access to income for better living standards.

Sampling

There are 4000 smallholder farmers in Bong County. Five hundred of the farmers are in Suakoko District, Bong County, Liberia. According to Gray (1983) and Kothari (2004), 10 to 30% is a good representative sample of the population for studies that are descriptive in nature which can help in reducing sampling errors. This study therefore sampled 105 smallholder farmers in Suakoko District, Bong County, Liberia. Respondents were sampled using a simple random sampling method by randomly selecting smallholder farmers from the list given to the researcher by agricultural extension officers in Suakoko District.

Research Instrument

This research is quantitative and primary data were collected using a structured survey questionnaire. The questionnaires were administered using a face-to-face interview approach because immediate follow up clarification is possible unlike the mail or telephone survey.

Data analysis

Data collected from the survey questionnaires were input to SPSS. Analysis was performed using descriptive statistics as well as causal analysis using Logit regression model. T-test and Chi-square test statistics were employed to compare credit users and no credit user with respect to the hypothesized explanatory variables.

The model

Access and use of credit' in this study, means receiving and spending credit received from a given loaning source. The reaction variable for this situation is dichotomous variable. The most utilized way to deal with these assumed spurious variable relapse models are the logit, the straight likelihood models (LPM) and the probit (Gujarati, 2003). The LPM is basic however conflicting because of blemishes. It is established on the supposition the odds of an occasion happening is identified with an arrangement of clarified factors directly. This model is approximated utilizing customary slightest square technique. A financial problem with the LPM is that it creates chances that lie between 0 and 1. This makes truncation of the chances at 0 or 1 necessary, hence creating very many observations for which the approximated chances are 0 or 1.

The probit and the logit are non-linear models both maximum likelihood method (ML), for estimations. This is because both models overcome the limiting aspects of using LPM by transforming the regression model in a way that the outcome is minimized to 0, 1 interval. More so, Wooldridge (2002) observed that the latter models guarantee the logical limit to lie between 0 and 1. Because of these advantages, they are the models that are most frequently used. The logit and probit models are very similar in various applicable ways, while the major difference between these models is the way they are distributed, as recorded in the Cumulative Distribution Function (CDF). Probit exhibits a standard distribution. Logit, on the other hand, shows a logistic distribution. The selection between the two types of regression is highly dependent on the assumptions taken in regard to the distribution. The logit model is generally preferred by researchers because of its comparative simplicity.

The logit regression model is characterized by flexibility, convenience, and power, and is often preferred where the dependent variables are of a categorical nature or/and where it has a normal distribution. A binary logit model that is best for the analysis of determinants of small scale farmers’ access to credit was used. The dependent variable takes the value of 0 or 1 depending on small scale farmers’ use of credit or not. However the dependent variables were continuous and distinct. The Logit model was used for this study. The cumulative LPM was specified as shown below:

\[ P_i = F(Z_i) = F(\alpha + \beta X_i) = \frac{1}{1+e^{-Z_i}} \]  
(1)

Where, \( P_i \) is the probability of formal credit use by an individual or not; \( e \) denotes the roots of original logarithms, which is an estimated equal to 2.718; \( X_i \) stands for the \( i^{th} \) explanatory variables; \( \alpha \) and \( \beta \) are parameters to be approximated.

The logistic model can be noted down with reference to the log of odds as well as the odd which makes one gets an understanding of the coefficients. The ratio of the odds shows that the probability ratio \((P_i - P)\) which a person could choose as an option to the probability \((1 - P)\) of which they would not choose.

\[ (1 - P) = \exp^{Z_i} / [1 + \exp^{Z_i}] \]  
(2)

Therefore,

\[ P_i / (1 - P_i) = \exp^{Z_i} \]  
(3)

Taking the natural logarithm of Equation (3):

\[ Z_i = \ln \left( \frac{P_i}{1-P_i} \right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_m X_m \]  
(4)

Where \( Z_i \) is the indicator of smallholder farming household access to credit or not, \( P \) is the probability of the event’s occurrence, \( X_i \) is a vector of household socio-economic and institutional characteristics. \( \alpha \) or \( \beta \) is a constant, \( \beta_i \) are corresponding vectors of regression and \( \epsilon \) is disturbance term.

In specific terms, the Logit model suggested is stated as:

\[ Z_i \sim (1/0) = \beta_0 + \beta_1 (AGE \_HEAD) + \beta_2 (EDUC \_HEAD) + \beta_3 (MARI \_STATUS) + \beta_4 (OCC \_HEAD) + \beta_5 (GEN \_HEAD) + \beta_6 (HH \_SIZ) + \beta_7 (BANK \_ACCT) + \beta_8 (AC \_EXT \_SERV) + \beta_9 (FARM \_EXP) + \beta_{10} (GROUP \_MEM) + \beta_{11} (OTH \_INC \_SOUR) + \epsilon \]  
(5)

RESULTS AND DISCUSSION

Descriptive statistics

Results of the survey show that 39% of farmers have access to credit and 61% did not. Results also show that...
all credit sources in Suakoko district were informal. 50% of the respondents borrowed from savings and credit cooperative (SACCO), while 14% received credit from farmers’ society, 18% borrowed from friends and relatives, and 18% from moneylenders as shown in Figure 1. According to information gathered, the government does not give credit to smallholder farmers in Liberia. The only microfinance bank giving out credit to farmers in Suakoko has been closed since the war and banks in Suakoko have not started giving out agricultural credit.

The results in Table 1 show that out of small scale farmers who failed to access credit, 61% were male and 39% were female. Respondents who got access to credit comprised of 66% male and 34% female. The results further showed that there is a statistical indifference at 5% in both categories of farming households with p-value of 0.612. This implies that there are more male headed households whether user or non-user of credit.

Out of the smallholder households who failed to get credit, the majority or 75% had no formal education while 16% had primary education and 9% had secondary education. Out of those who had access to credit, 44% had no formal education while 36% had primary education and 20% had secondary education. The results further show that there is a statistical difference at 5% in both categories of farming households with p-value of 0.005. This shows that farmers with higher level of education are more likely to access credit because they are likely to get salaried employment and also can use their skills to increase farm productivity. These results are in agreement with Tang et al. (2010) who found out that many of the poor family providers worked in sector of the unskilled where educational qualifications does not influence demand for credit.

The results further show that there is a significant statistical difference in the marital status of farmers who had access to credit as shown by p-value of 0.004. Married farmers dominated non-users of credit by 62% while those who were not married were 38%. As of farmers who were able to access credit, 33% were married and 67% were not married.

In terms of occupation, results show that most farmers who qualified for credit are those who have other employment hence receive salaries and constituted 35% while those in self-employment comprised of 25%. Farmers who were unemployed and qualified for credit were 40%. As for farmers who did not get credit, they constitute 8% of the salaried employed, 6% of those who are self-employed, and 86% of the farmers were unemployed. There is a statistically significant difference between the two categories at 5% level of confidence with p-value of 0.000. The findings are similar to those by Kiplimo (2011) who found out that smallholder farmers with steady occupation can easily repay loans even when their agricultural income is low since they get salaries.

Other sources of income for the respondents with the household that accessed credit and those that did not were statistically different as illustrated by p-value of 0.000. Among credit users 32% did not have other sources of income while 68% had other sources of income. On the other hand, among the non-users of credit, 75% did not have other sources of income while 25% had other sources of income. The results suggest that respondents who had other sources of income are more likely to access credit due to the fact that they are not depending on farm productivity alone to repay loan.

Out of the households who did not access credit, 5% managed to access extension services while 95% did not. Out of those households who accessed credit, 40%
accessed agricultural extension services while 60% did not. This demonstrates that users and non-users of credit are statistically different in terms of extension services as shown by a P-value of 0.000 at 5% significant level. This means that farmers who accessed extension services are more likely to access credit.

The results further show, out of the smallholder farmers who failed to access credit, 52% were members of various groups while 48% were not members of any group. On the other hand, 85% of farmers who had access to credit have group membership while those who were non-group members constituted a total of 15%. Results on group membership for farmers show that there is a statistical difference between those who had access to credit and those who did not as shown by p-value of 0.000 at 5% significant level.

Furthermore, farmers who failed to access credit were distributed as: 98% did not have a bank account and 2% had a bank account. While, farmers who were able to access credit, 43% did not have a bank account and 57% had a bank account. Moreover, results indicate that those who had bank accounts were more likely to access credit because having a bank account serves as guarantee to lenders.

According to the findings in Table 2 the households that had access to credit had a number that ranged from 5 to 19 people while those who did not access credit ranged from 5 to 17 people. There was an insignificant mean difference for both categories. The findings of the study are not aligned to those of Marge (2000) who concluded

Table 1. Proportion of credit users and non-users defined across categorical variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Credit user</th>
<th>Non-users</th>
<th>Chi square</th>
<th>P-value</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>27</td>
<td>66</td>
<td>39</td>
<td>61</td>
<td>0.257</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>34</td>
<td>25</td>
<td>39</td>
<td>0.679</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-education</td>
<td>18</td>
<td>44</td>
<td>48</td>
<td>75</td>
<td>10.37</td>
</tr>
<tr>
<td>Primary</td>
<td>15</td>
<td>36</td>
<td>10</td>
<td>16</td>
<td>0.025</td>
</tr>
<tr>
<td>Secondary</td>
<td>8</td>
<td>20</td>
<td>6</td>
<td>9</td>
<td>0.001</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>12</td>
<td>33</td>
<td>43</td>
<td>62</td>
<td>7.96</td>
</tr>
<tr>
<td>Not married</td>
<td>24</td>
<td>67</td>
<td>26</td>
<td>38</td>
<td>0.001</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaried-employed</td>
<td>14</td>
<td>35</td>
<td>5</td>
<td>8</td>
<td>1.56</td>
</tr>
<tr>
<td>Self-employed</td>
<td>10</td>
<td>25</td>
<td>4</td>
<td>6</td>
<td>0.001</td>
</tr>
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<td>Other sources of income</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>32</td>
<td>48</td>
<td>75</td>
<td>19.2</td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>68</td>
<td>16</td>
<td>25</td>
<td>0.001</td>
</tr>
<tr>
<td>Agricultural Extension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>25</td>
<td>60</td>
<td>58</td>
<td>95</td>
<td>20.01</td>
</tr>
<tr>
<td>Yes</td>
<td>17</td>
<td>40</td>
<td>3</td>
<td>5</td>
<td>0.001</td>
</tr>
<tr>
<td>Group membership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>15</td>
<td>31</td>
<td>48</td>
<td>12.51</td>
</tr>
<tr>
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<td>35</td>
<td>85</td>
<td>33</td>
<td>52</td>
<td>0.001</td>
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<tr>
<td>Bank account</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>18</td>
<td>43</td>
<td>62</td>
<td>98</td>
<td>42.8</td>
</tr>
<tr>
<td>Yes</td>
<td>24</td>
<td>57</td>
<td>1</td>
<td>2</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Table 2. Summary statistics of continuous variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Credit user</th>
<th>Non-user</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Average HH size</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>Average age</td>
<td>28</td>
<td>76</td>
</tr>
<tr>
<td>Land size</td>
<td>0.5</td>
<td>6</td>
</tr>
<tr>
<td>Annual farm income</td>
<td>12,200</td>
<td>47,000</td>
</tr>
<tr>
<td>Years of extension</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Years of farm experience</td>
<td>5</td>
<td>30</td>
</tr>
</tbody>
</table>
that larger households are prone are more likely credit.

In terms of age, there was a slight difference between the two categories of those who had access to credit and those who did not since their age difference was 44.56 and 38.82 years respectively. The mean on the other hand, was different at 5%. In those households that accessed credit, the oldest farmer was 76 years old while the youngest was 28 years old. For those who did not access credit, the age range was 24 to 64 years. These findings are in agreement with those by Tang et al. (2010), who concluded that the likelihood of old farmers to seek credit was higher as opposed to younger farmers due to their expanded social networks and social capital. Nwaru (2010) however argued that the difference in age was insignificant for access of credit.

The findings show that the land size difference ranged from 0.5 to 6 acres for farmers who accessed credit and 0.25 to 4 acres for those who did not. The mean for the land size was insignificant, as the average size of land for farmers who accessed credit was 2.04 and 1.56 acres for those who did not. All farm land in the study area were customarily owned. This study contradicts Diagne’s (2006) study on determinants of household access to and participation in formal and informal credit markets. Diagne (2006) found a significant difference in land size and also found that those who used credit were able to cultivate large land as opposed to those who did not. This implies as size of cultivated land increase the operational expense for labour, input and technology use increase, which require cash capital, it leads to high demand for credit.

All the farmers who participated in this study had access to a certain amount of income which was different in both categories of farmers. The mean yearly farm income level was Ld (Liberian Dollar) 26,000 with the minimum of Ld 12,000 and a maximum of Ld 47,000. On the other hand, families who could not access credit had an average yearly income of Ld 21,000 with a minimum of Ld 10,800 and a maximum of Ld 35,500.

As for the years of receiving agricultural extension services, the results show that smallholder farming households in the study area who accessed credit had a mean of 1.55 years with a minimum of 1 year and a maximum of 3 years. Smallholder households who did not get credit had a minimum and a maximum of 1 year each. This implies that an agricultural extension service in the area of study is significantly low. Most of the farmers lack access to agricultural extension services. Of the few who accessed these services, it has not been for many years.

In terms of year of farming experience, farming households who accessed credit had a mean average of 15.82 years with a minimum farming experience of 5 years and a maximum of 30 years. Those who failed to access credit had a mean average of 13.33 years with a minimum farming experience of 3 years and a maximum of 26 years. This implies that smallholder farmers who accessed credit had more years of farming experience.

**Binary logit regression**

A Logit regression was performed to ascertain the effects of marital status, occupation, gender, age, education, household size, bank account, agricultural extension services, farming experience, group membership, and other sources of income on the likelihood that participants have access to credit. The results show that the Logit model was statistically significant, $\chi^2 (13) = 35.978, p < .001$.

The results in Table 3 indicate that, the marginal affects for bank accounts and other sources of income highlight an important positive impact on access to credit in Suakoko district. However, education, occupation and group membership re-significant but have negative impact on access to credit. The results further indicate that gender, agricultural extension and farm experience were statistically insignificant on access to credit in the study area. This implies that increase in ownership of bank accounts and having other sources of income increase the chances of accessing credit from several credit sources in the study area. This finding concurs with Marge (2003) who indicated that a transitory change on income is necessary for a positive effect on access to credit because of its effect on consumption. Kumar (2005) cited income to be among the important determinants of access to credit but also concluded that there was a negative relationship between access to credit and household income due to the fact that the more income farmers generate, the more they tend to be self-sufficient and shy away from credit. Moreover, Leavy and Poulton (2007) concluded that most of the small scale farmers generate income from other sources which are unrelated to their farms. The outcome reveals that what increased the chances of access to credit was the farmers’ availability of other sources of income other than farming. This is because those households that would get more income from other sources are able to possess assets that would act as collateral when seeking loans. These results were aligned to those by Ojo (2003) who had drawn the conclusion that farmers ought to increase the sources of their income so as to increase their chances of qualifying for credit uptake. The result shows that level of education was significant with a negative influence on access to credit by smallholder farmers in the study area. This implies that an increase in level of education will reduce the probability of credit access. The study conforms with Chen and Chivakul (2008) who found that education has a positive effect on credit access at lower levels of education but negative effect at higher level of education. Tang et al. (2010) and Kiplimo (2013) found education to be significant but these studies also found that education has a positive impact on access to credit unlike the current study. The findings
of this study contradict those of Tien et al. (2010) who found that most of the poor household heads in Vietnam work in unskilled sectors, where education does not influence demand for credit. While occupation was quite significant at 5% in explaining access to credit in the study area, it had a negative effect. An increase in a unit of occupation of the smallholder farmer reduces the chance of accessing credit by 0.19%. This implies that the more farmers are salaried or employed or self-employed, the less they will demand credit in the study area. This is because they will use their salaries or other sources of income to purchase farm equipment and hire labor for increased farm productivity. This study conforms to the findings of Laffont and N’Guessian (2000) who opined that most credit sources require generally shorter advance reimbursement periods. Hence, smallholder farmers with salaries from employment or a business tend to profit more from lenders.

Conclusions

Developing new demand-driven services that will address the needs of the poor communities is a required initiative that should be considered by policy makers. In addition, facilitating product markets for the small-scale farmers and offering training opportunities on agricultural products would enhance agricultural productivity. It is also necessary for policy makers to improve education systems so that the poor are equipped with the skill and knowledge to effectively access credit at less cost and use them wisely in order to generate more income. The more educated the household head, the more they will tend to use modern technologies and also credit which will bring about increase productivity which is really needed in Liberia. SAPEC and other policy makers need to ensure older farmers get adult literacy while younger farmers get formal education. Being educated will also help farmers to not only restrict themselves to farming but find other jobs to get other income which will enable them easily access credit. Other source of income and occupation were found to have influence on access to credit by smallholder farmers in Suakoko. Farmers who engage in off-farm activities earn more income and are able to get credit. Hence, other than focusing on increasing agricultural production only, the government should also emphasize on policies aimed at increasing opportunities for off-farm activities. This can be enhanced through creation of jobs and motivating self-employment. Farmers who are members of development groups were found to be more likely to access credit. This might be because of the fact that those farmers have group security in terms of collateral and high social capital that would increase access to credit use. In other words, encouraging farmers to form part of development groups would improve the availability of credit to the farmers. Hence, the government should promote development groups geared towards providing collateral for members in Suakoko district. In Suakoko, banking institutions do not give out credit to farmers.

The government of Liberia especially SAPEC need to bridge that gap. Having bank account has a significant influence on access to credit in the study area. To build the quantity of farmers that access credit, there should be policies put into place to help farmers get credit from these banking institutions. Government should serve as guarantor for farmers. When farmers in the study area are able to access formal credit, it will help greatly in increasing productivity. Credits received from informal sources are not sufficient to buy farming tools and fertilizers.

The research is limited in that it did not take into account risk attributes of smallholder farmers in the study area. A farmer who is risk adverse may decide not to get credit because of fear. The researcher will like other research to focus on risk attributes of farmers and also credit institutions that lend to smallholder farmers.
CONFLICTS OF INTERESTS

The authors have not declared any conflict of interests.

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