

Socio-Economic Determinants of Credit Service Utilization by Smallholder Households at Wolaita Zone, Ethiopia

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Abstract

The objective of the study was to identify the determinants of credit service utilization in the study area. In this study multi-stage sampling techniques were used to select 5 kebeles out of 42 kebeles of the study area and 150 sample households were randomly selected, of which 82 were credit users and 68 of them were non-users. Primary data were collected through structured interview schedule. Various documents were reviewed to collect the secondary data. In the study Econometric model (binary logit model) was used to identify the determinants of credit service utilization. A total of fifteen explanatory variables were included in the model. Out of these, seven were found to be statistically significant and most of the coefficients of these variables exhibited the expected signs with the hypothesis. These variables include total income, saving habit, collateral type, training and technical advice, possession of fixed assets, risk fearing and lending procedure. Therefore, credit service providers should give attention to factors that significantly influence credit service utilization in order to improve the performance of microfinance service provision and credit service utilization.

Keywords: Credit, binary logistic regression model, Determinants, Credit Utilization, Smallholder Households, Wolaita Zone

INTRODUCTION

In Ethiopia, credit service has been one of the most prominent instruments in the development programs and strategies. Over the past 40 years, millions of Birrs have been provided in the form of credit to support agricultural production, increase agricultural productivity and create employment in urban and semi-urban, and rural areas. However, financing the poor, particularly the rural poor have been characterized by poor loan repayment rates and unsustainable subsidies (Assefa, 2009). Several studies noted different causes of poverty and some argued one of the causes of poverty is deprived access and lack of utilization among the larger community group to credit and other microfinance service to be used for the purpose of working capital as well as investment (Jean-Luc, 2006). Various approaches have been employed in alleviating poverty of which provision of credit that targets the poor is the main one. Credit service was discovered as an area of priority in the fight against poverty and ensuring sustainable development. To this end, many developing economies have been providing credit services to the poor in the urban, rural and sub-urban area through microfinance schemes (Mulat, 2004).

The microfinance institutions (MFIs) of Ethiopia have been exerting commendable efforts in the provision of sustainable financial services to the poor in the urban, semi-urban and rural areas of the country for more than a decade. Despite, the continued hard work and effort of microfinance providers, government, donors, and development partners to increase outreach in financial services, there is still a huge amount of unmet demand for such services in both urban and rural areas of the country (MFI, 2012). According to the report from MFDR (2011), even with consecutive reforms and efforts by the organization to sustain the credit service, utilization of the service among the community is affected by a number of factors.

Rural households' access to and utilization of formal credit has been difficult due to high transaction costs, risks of small-scale lending and lack of collateral (World Bank, 1989). The situation has not been different in Ethiopia. Formal financial institutions have not developed to expectations and/or have hardly reached the rural populations (Teressa, 1997). The provision of credit depended upon political decisions and interests (Sisay, 2008). Moreover, the irregular availability of loan funds, requirement of collateral and initial saving, the setting of interest rate ceilings, lack of training and technical advice, group lending and risk fearing seriously affects the effectiveness of MFIs and credit service utilization. Therefore, this study is concerned with the identification of factors affecting credit service utilization among smallholder households in the study area.

Conceptual Framework of the Study

A number of related literatures were reviewed to reveal socio-economic and institutional factors affecting credit service utilization. Literature review on socio-economic and institutional factors affecting credit service utilization indicated that uses of credit service influenced by overall socio-economic, demographic and institutional issues in rural areas. Based on literature reviews and the researcher's observation in the study area, potential socio-economic and institutional determinants which were assumed important in influencing credit service utilization were identified (Figure 1). Therefore, the researchers try to identify and analyze the

relationships among factors affecting credit service utilization in the study area.

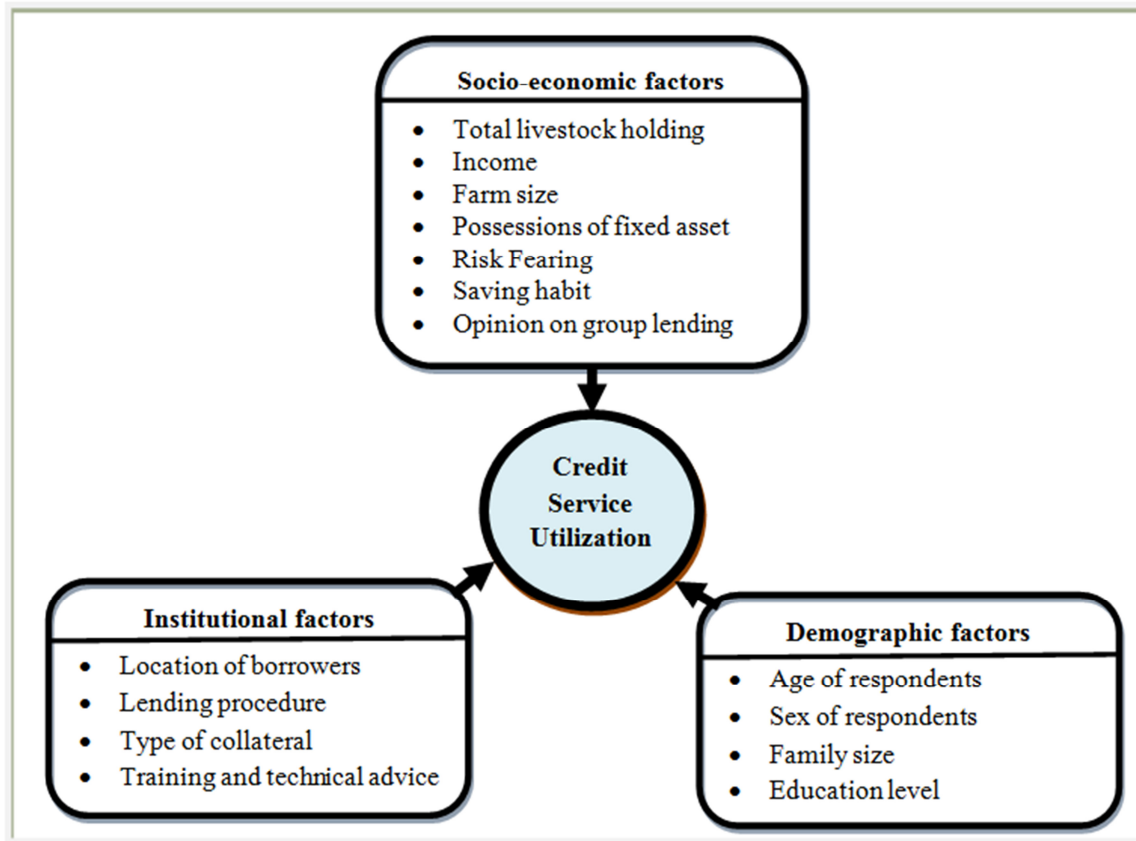


Figure 1: Conceptual framework of the study

RESEARCH METHODOLOGY

Sample size and Sampling techniques

In this study multi-stage sampling techniques were used; in the first stage Humbo woreda was purposively selected based on easy access to transportation and it is the largest woreda among the 12 woredas in the zone; in the second stage, five kebeles were selected randomly out-of the total kebeles in the woreda, and finally using simple random sampling techniques and probability proportional to size, 150 households were selected from the five kebeles.

Data type and sources

Both primary and secondary data were collected. The primary data were collected from the primary sources such as sample respondents, key informant interview and focus group discussions. The secondary data were collected from relevant sources such as books, woreda annual report documents, internet, and journal articles.

Data collection methods

Data for this study were collected by employing interview schedule, which was administered by enumerators to gather relevant data on various socio-economic and institutional factors influencing credit service utilization among respondents.

Methods of data analysis

The collected data were compiled by using SPSS Version 20. Since the dependent variable of this study is credit service utilization, which is dichotomous, binary logistic regression model was used to determine the factors influencing credit service utilization among respondents and the data were analyzed by using this model.

Model specification

Following Gujarati (2003), the functional form of logit model can be specified as follows where p_i donates the probability of credit service used by household that is $Y_i = 1$ and $\exp(Z_i)$ stands for the irrational number e to the power of Z_i .

The model can be written as:

$$P_i = E\left(Y = \frac{1}{x_i}\right) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x_1)}} \text{-----(1)}$$

For the case of explanation, equation 1 is written as;

$$P_i = \frac{1}{1 + e^{-z_i}} \text{-----(2)}$$

The probability that a given household is decided to use credit service is expressed as by equation 2, while the probability of not using credit service is expressed by equation 3;

$$1-P_i = \frac{1}{1+e^{z_i}} \text{-----(3)}$$

Therefore, equation 3 can be expressed as follow;

$$\frac{P_i}{1-P_i} = \frac{1+e^{z_i}}{1+e^{-z_i}} \text{-----(4)}$$

Now $(P_i/1-P_i)$ is simply the odds ratio in favor of credit service utilization; the ratio of the probability that a household will use credit service to the probability of that it will not use credit service.

Finally, taking the natural logarithm of equation (4) we obtain:-

$$L_i = \ln\left(\frac{P_i}{1-P_i}\right) = Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \text{-----(5)}$$

Where P_i is a probability of using credit service ranges from 0 to 1, Z_i is a function of n explanatory variables (x), β_0 is an intercept, $\beta_1, \beta_2, \beta_n$ are slopes of the equation in the model, L_i is log of the odds ratio, which is linear in the parameters, X_i is vector of relevant household characteristics.

If the disturbance term (U_i) is introduced, the logit model becomes

$$Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + U_i \text{----- (6)}$$

In this study, the above econometric model (Equation 6) was used to analyze the data. The model was estimated using the interactive maximum likelihood estimation procedures. This estimation procedure yields unbiased, efficient and constant parameter estimation.

RESULTS AND DISCUSSION

In this section, the selected explanatory variables were used to estimate the binary logistic regression model to analyze the factors affecting credit service utilization. A binary logistic regression model was fitted to estimate the effect of hypothesized explanatory variables on the probability of being users or non-users of credit service. Consequently, the variable which shows credit service utilization was a binary dependent variable, taking a value of “1” for users of credit service and “0” otherwise.

Prior to running the logistic regression analysis, both the continuous and discrete explanatory variables were checked for the existence of multi-collinearity using variance inflation factor (VIF). As a rule of thumb explanatory variables having VIF of less than 10 are believed to have no multi co-linearity and those with VIF of above 10 are subjected to the problem and should be excluded from the model. So, as can be seen from the results presented in Table 1 there is no strong association among the variables. For this reason, all of the explanatory variables were included in the final analysis. Fifteen explanatory variables were included in the model. Table 2 shows the summary of the variables hypothesized to affect credit service utilization.

Once the decision was made regarding the variables to be included in the model, the maximum likelihood method of estimation (MLE) was used to elicit the parameter estimates of the binominal logistic regression model. Out of the fifteen explanatory variables hypothesized to affect credit service utilization in the study area, seven were found to be significant at less than or equal to ten percent probability level, shows the signs, magnitude and statistical significance of the estimated parameters and how much the observed values were correctly predicted by the logistic regression model (Table 2).

The model was assessed for its goodness of fit by examining how well the model classifies the observed data (in the classification table) or by examination of how likely the sample results actually are, given the estimates of model parameters (Hosmer and Lemeshow, 1989). The result indicates that (the model chi-square value) the parameters included in the model taken together were significantly different from zero at less than 1% level of significance. Thus, the hypothesis that the entire coefficients except the intercept are equal to zero was rejected. The value of chi-square (144.857) indicates also the goodness of fitted model (Table 2). Another measure of goodness of fit in the logistic regression model is seeing how much the observed value is correctly predicted. In other words, the observation is grouped as users if the computed probability of adoption is greater than or equal to 0.5 (50%), and as non-users, otherwise. Based on this, the result showed that about 89.7% of the non-users, and 95.1% of the users were correctly predicted using the cut off value of 0.5. Overall, the model correctly predicted 92.7% of the sample cases (Table 2). Thus, the model predicted both user and non-user groups of credit service accurately.

Table 1: Variance Inflation Factor (VIF) for explanatory variables (n=150)

Variables	Co-linearity Statistics	
	Tolerance	VIF
Sex of household head (SEXHH)	0.900	1.111
Age of household head (AGEHH)	0.704	1.420
Educational Status of household head (EDUHH)	0.737	1.357
Family size of the household (FAMSIZE)	0.772	1.295
Farm size of the household (FARMSIZE)	0.491	2.035
Total income of the household (TOTINC)	0.459	2.178
Number of livestock (TLU)	0.629	1.589
Saving Habit (SAVHAB)	0.835	1.198
Types of collateral required (COLLTYPE)	0.638	1.568
Training and Technical advice (TRAINING)	0.638	1.567
Distance to credit providing institution (INSTDIST)	0.858	1.165
Lending procedure (LENDPROC)	0.697	1.434
Risk Fearing (RFEAR)	0.896	1.117
Opinion on group lending (OPGLEND)	0.817	1.223
Possession of fixed asset (POFIXASS)	0.778	1.285

Table 2: Parameter Estimate of the Logistic Regression Model (n=150)

Explanatory variables	Estimated Coefficient (B)	S.E.	Wald statistics	Sig. level	Odds ratio Exp(B)
SEXHH	-1.662	1.144	2.111	0.146	0.190
AGEHH	-0.040	0.038	1.076	0.300	0.961
EDUHH	0.186	0.395	0.222	0.638	1.204
FAMSIZE	-0.134	0.224	0.356	0.551	0.875
FARMSIZE	0.387	0.445	0.755	0.385	1.472
TOTINC	0.000	0.000	7.304	0.007***	1.000
TLU	-0.411	0.255	2.592	0.107	0.663
SAVHAB	1.503	0.817	3.389	0.066*	4.496
COLLTYPE	-1.330	0.319	17.392	0.000***	0.264
TRAINING	3.807	0.879	18.743	0.000***	45.025
INSTDIST	-0.548	0.385	2.019	0.155	0.578
LENDPROC	-0.933	0.398	5.484	0.019**	0.393
RFEAR	-1.518	0.825	3.387	0.066*	0.219
OPGLEND	-0.843	0.853	0.977	0.323	0.430
POFIXASS	1.583	0.923	2.937	0.087*	0.205
Constant	10.460	3.232	10.475	0.001	34.412

Pearson- χ^2 value = 144.857*** df=15 P = 0.000

-2log Likelihood = 61.779

Prediction success(overall) = 92.7

Correctly predicted non user = 89.7

Correctly predicted user = 95.1

*, **, *** significant at 10%, 5% and 1% probability level, respectively

Source: Model output

Significant Explanatory Variables in Logit Model

The result of the logistic regression model is presented in Table 2. Out of the hypothesized fifteen explanatory variables seven were found to influence credit service utilization in the study area. These are total income (TOTINC), saving habit (SAVHAB), collateral type (COLLTYPE), training and technical advice (TRAINING), possession of fixed assets (POFIXASS), risk fearing (RFEAR) and lending procedure (LENDPROC). These significant variables are discussed in detail below.

Total income of the household: the variable was significant at 1% significance level and positively related to credit service utilization. This implies that all other things being kept constant, the odds ratio in favor of credit service utilization increases by a factor of 1.000 as the total income of the household increases by one birr. The possible reason for this is that having more diversified sources of income would encourage the households to settle their debt even during hard times.

Saving habit: the coefficient of this explanatory variable is positive as it was expected, and the variable was significant at 10% significance level and positively related to credit service utilization. This implies that all

other things being kept constant, the odds ratio in favor of credit service utilization increases by a factor of 4.496 for those households who have a saving habit. The possible reason for this could be those households who have a saving habit will have the possibility of utilizing credit service because initial saving is one of the basic requirements and criteria by microfinance institutions to give credit service.

Collateral type: the variable was significant at 1% significance level and negatively related to credit service utilization. This implies that all other things being kept constant, the odds ratio in favor of credit service utilization decreases by a factor of 0.264 for those households who are unable to meet collateral types/ security requirements. The possible reason for this could be microfinance institutions require different collateral type that are related to the types of household assets such as house, farm size, large number of cattle, higher household incomes, etc to give credit service. The result is similar with Matin (2000) who obtained a significant and negative relationship between collateral type and micro credit service utilization.

Training and technical advice: the variable was significant at 1% significance level and positively related to credit service utilization. This implies that all other things being kept constant, the odds ratio in favor of credit service utilization increases by a factor of 45.025 for those respondents who have got training and technical advice regarding farming activities. The basic assumption is that the more training and technical advice is provided by the extension agent to the farmers, the higher is the probability of farmers to use the available credit services.

Risk fearing: the variable was significant at 10% significance level and negatively related to credit service utilization. This implies that all other things being kept constant, the odds ratio in favor of credit service utilization decrease by a factor of 0.219 for those respondents who fear the risk of business failure. This could be fear of risks of inability to repay loans that come from loss of crops due to seasonal changes, pest and insect damage, and failure of proposed business plan. Vigano (1993) indicated that large numbers of residents do not take credit service fearing they might be in risk of losing their property.

Lending procedure: the variable was significant at 5% significance level and negatively related to credit service utilization. Negative relation shows the inverse relationship between lending procedure and utilization of credit service. This implies that all other things being kept constant, the odds ratio in favor of credit service utilization decreases by a factor of 0.393 for the respondents who considered lending procedure as a constraint. The study result is in agreement with the work of Sisay (2008).

Possession of fixed assets: the variable was significant at 10% significance level and positively related to credit service utilization. This implies that all other things being kept constant, the odds ratio in favor of credit service utilization increases by a factor of 0.205 for respondent having a resource considered as a fixed asset. The possible reason for this is that the possession of fixed asset would help the individual to easily meet the collateral requirement for the service. Miller and Ladman (2003) also indicated that borrowers were characterized by higher resource base, farm size, higher level of large number of cattle, higher household incomes, higher level of market integration, and greater use of improved technology, larger operating costs and investments. Matin (2000) also obtained a significant and positive relationship between ownership of fixed asset with micro credit service utilization.

CONCLUSION

The objective of the study was to identify the determinants of credit service utilization in the study area. In the study multi-stage sampling techniques were used. Primary data were collected through interview schedule. Various documents were reviewed to collect the secondary data. To analyze the data, binary logit model was used to identify the determinants of credit service utilization. The findings of the study revealed that among the fifteen explanatory variables entered into the model, seven of them were found to be statistically significant and most of the coefficients of these variables exhibited the expected signs with the hypothesis. These variables include lending procedure, total income, collateral type, training and technical advice, saving habit, possession of fixed assets and risk fearing. Therefore, to alleviate these problems and improve credit service utilization, credit service providers and other concerned bodies should attempt to address those factors influencing credit service utilization in the study area.

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