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FACTORS THAT AFFECT LOAN REPAYMENT PERFORMANCE OF SMALLHOLDER FARMER BORROWERS FROM MICROFINANCE INSTITUTIONS IN ETHIOPIA: A SURVEY STUDY OF AMHARA CREDIT AND SAVING INSTITUTION (ACSI)–FOGERA WEREDA, AMHARA

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ABSTRACT

This study was conducted with the objective of identifying and analyzing the factors of loan repayment performance of smallholder farmer borrowers of ACSI-Fogera Wereda. In order to achieve this objective, primary data collected from 136 smallholder beneficiaries of ACSI by using structured questionnaire. Probit model was used to identify and analyze the effect of explanatory variables on the dependent variable. A total of thirteen explanatory variables were included in the regression. Out of these, nine variables were found to be significant for the probability of being defaulter. The variables that have significant relationship with loan repayment performance of the micro finance credit users are: age, dependent ratio, saving habit, social ceremony expenses, on farm income, size of cultivated land, number of livestock, suitability of repayment period and interest rate had significant effect on the probability of being defaulter. The rest explanatory variables namely, sex, education level, off farm income and loan diversion had no significant effect on the probability of being defaulter. Hence, the institution should give follow up and supervision for young borrowers; motivate the savers to save more and attract the borrowers who do not save by creating awareness; increase the size of loan for the borrowers by considering the purchasing power of money; make flexible the repayment period according to the clients need. Finally, these results cannot be generalized to other ACSI branches. Further study may be conducted by considering sample respondents from all branches.

KEYWORDS

Loan, Microfinance, Performance, Probit model, Repayment.

1. INTRODUCTION

The central provision of microfinance is delivery of small loans (Beaudry, 2008). Microfinance has long-dated history. In 1720 Ireland launched loan funds to provide small interest free loan to the poor. The borrowers were come in group and they had to pay money back every week (Smoradova, 2010). In 19th century European state (German) followed the Irish example. That caused birth of credit and savings institutions of various types, mostly among rural and urban poor. In the early 1970s, a team of international aid workers association in Latin America issued small loans to a group of poor individuals in Brazil (Beaudry, 2008). The modern the microfinance idea was generated in Bangladesh by Yunus in 1947. The Grameen Bank of Bangladesh was founded by Yunus, and it provides a loan to the poor. The Grameen Bank defined microcredit as small loans given to the poor for undertaking self-employment projects that would generate income and enable them to provide for themselves and their families. Microfinance is an engine to alleviate poverty in developing countries, by providing a loan for the economic benefit of the poor to be participating in income generating activities (Sengupta & Aubuchon, 2008).

After 1947 onwards the Microfinance Institution (MFI) idea was disseminate in to different continents for 973 MFIs in 105 different countries across the globe (Sengupta & Aubuchon, 2008). Even if microfinance institutions are expanded, most of sub – Saharan Africa countries have very limited access to deposit and credit facilities and other related financial services which are provided by formal financial institutions. For instance, in Ghana and Tanzania, only 5-6 percent of the population has access to the financial sector (Basu, Blavy, & Yulek, 2004)). To meet this unsatisfied demand a variety of microfinance institutions (MFIs) have emerged over time in Africa.

The Microfinance Sector in Western Africa has been existence in these countries for many years ago, about 30 years in Benin, Burkina Faso, Côte d'Ivoire and Togo and 10 years in Mali, Niger and Senegal. Today, there are over 400 MFIs in Western Africa (Roy, 2003).

The microfinance industry in Eastern Africa, especially in Kenya and Uganda, credit unions have not experienced the successful growth and reputation as Western Africa. In Kenya credit and saving cooperative organizations are started in 1965-70. The credit system were focused on cash crop products particularly coffee (Sherief, 2007). The Microfinance business started in Kenya around 1980 and was effectively supported by the government. Today, it involves a wide range of different players and institutions (Paur, 2006).

In Ethiopia microcredit started as a government and Non-Governmental Organizations (NGOs) motivated scheme (Anbes, 2003; Jemal, 2003). Following the 1984/85 severe drought and famine, many NGOs had started to provide microcredit along with their relief activities. The government also provided loans largely for the purchase of oxen through its rural finance. But the loan was not based on proper need of assessment (Getachew, 2006). During 1974-1991, the Development Bank of Ethiopia (DBE) and Commercial Bank of Ethiopia (CBE) were extending loans to cooperatives largely in response to the government's pressure. Since 1991 the CBE has continued to provide loans for the purchase of fertilizers and improved seeds on the basis of regional government guarantees (Alemayehu, 2008). The DBE has also been providing loans to micro and small-scale operators in some selected towns. Before the formalization of the MFIs, micro credit used to be provided in a fragmented and unplanned manner. The failure of the CBs to provide banking facilities and the unsustainability of the NGO's credit scheme leads the government to issue a legal framework for the establishment and operation of MFIs. The Ethiopian government started the formal microfinance industry in 1994/1995 with the government's the licensing and supervision of microfinance institution proclamation designed to encourage Microfinance institutions (MFIs) to extend credit to both the rural and urban poor of the country. And the government gives a special attention for microfinance to play a great role for reducing poverty in rural areas of the country (Anbes, 2003).

The objective of almost all microfinance institutions is poverty alleviation (Alemayehu, 2008). Ethiopia is one of the poorest countries in the world. The country plans to reduce poverty are central to the government's development agenda, and many policies, goals and objectives are focused on targeting the most disadvantaged households. Microfinance is considered by the government to be one of the important tools in fighting poverty. Microcredit was introduced in Ethiopia as part of poverty eradication programmes in the country.

According to National Bank of Ethiopia Annual Report, (2006/07), there are 28 licensed microfinance institutions in Ethiopia. Among the microfinance institutions, the Amhara Credit and Saving Institution (ACSI) is the largest in terms of its capital and number of clients. Amhara credit and saving institution started its operations in 1995 as a department of the Organization for the Rehabilitation and Development of Amhara (ORDA), a local non-governmental organization, and was licensed as a separate microfinance share company in April 1997. The primary objective ACSI is to improve the living standard of the population by increasing lending and saving services. ACSI has a good linkage with the government, to ensure faster reduction of poverty and the achievement of the millennium development goals in the country (Bamlaku, 2006).

According to Ojiako and Ogbukwa (2012), providing loans to the low income groups of the society play a great role in economic transformation and rural development. Providing loan is a crucial input to smallholder farmers to establish and expand their farm with the aim of increasing production, enhance food sufficiency and national income and it facilitates capital formation. Lack of adequate amount of credit is among the major factors of production reduction in the economy. To overcome this, ACSI makes predominantly agricultural loans using the group lending methodology. Credit risk in agriculture borrowers are higher, because the income of rural households depends on seasonality of agriculture and agriculture production may be affected by natural disasters like, flood, drought, plant diseases, and fluctuation of weather (Islam & Tenaw, 2009). In addition to this, loan repayment by the farmers to the financial institutions is influenced by high interest rate, climate change, price of input, amount of loan, miss-utilization of loan and death/ accident of loanee farmers (Mehmood, Ahmad, & Anjum, 2012). The reasons of low performance of loan repayment in rural borrowers are taking of loan without considering their capacity of repaying the loan and unwillingness to repay the loan (Girma, Tadesse, & Seid, 2004). Rural households are exposed to many sources of risks like, drought, pests, flooding, frost, livestock diseases; own illness, and products market access are all important reasons why households face difficulty during loan repayment (Dercon, 1999). Farming is a risky business. Crops may fail, weather condition may influence the productivity, and sale prices fluctuate and are difficult to predict when the crops are planted. If productivity is lower than expected, farmers may not be able to repay loans. Agricultural yields are generally uncertain, as natural hazards such as the weather, pests and diseases and other production calamities impact on farm output. During this situation, loan repayment performance of the borrowers may decline (Geihler, 2004).

According to Wolday (2010), under farming sector the variance of cash flows compared with alternative businesses is high, making lending relatively more risky. Also, all borrowers are similarly affected by the same macro-risks, especially climate, which increases the individual and portfolio risk of lenders. About 95 percent of agricultural production in Ethiopia is rain fed. If the climate is changed, this may affect agriculture production as well as loan repayment performance.

2. RELATED LITERATURE REVIEW

The term, microcredit refers to the process of lending small amounts of seed money to groups rather than to one person, without collateral, to help poor people to establish their own business (Desta & Asayehgn, 2010). Microcredit is the lending side of microfinance. Microcredit loans help the poor to be involved in income generating activities that allow them to accumulate capital and improve their standard of living (Robinson, 2001).

The term "microfinance" became popular and widely used with the establishment of Grameen Bank by Muhammad Yunus in the 1970s. Microfinance can be defined as financial instruments, such as loans, savings, insurance and other financial products that are tailored only to the poor. Microfinance is created in the economy for the economic benefit of the poor and to alleviate poverty (Mokhtar, Nartea, & Gan, 2007). As argued by Doocy, Norell, Shimeles, and Burnham, (2005), Microfinance is a logical approach to development because it functions at the grassroots level, can be sustainable, is capable of involving large segments of the population, and builds both human and productive capacity.

Smallholder farmers are defined in various ways depending on context, country and ecological zone. This explains interchangeable use of the term smallholder with small scale, resource poor and peasant farmer. According to Berdegue and Fuentealba (2011), smallholder farmers were defined as a sector made up of farms that are operated by farm families, using largely their own labor. Smallholder farmer's production, which generally occurs on plots of less than two hectares, is characterized by low yields, low quality, poor linkage, and little access to finance (Nagayets, 2005). The World Bank's rural strategy defined smallholders as those with a low asset base, operating less than 2 hectares of cropland (World Bank, 2003). In this study, smallholder farmers are farm households with access to means of livelihoods in land relying primarily on family labor for farm production to produce for self-subsistence and market sale.

By definition, agricultural growth is the primary source of poverty reduction in most agriculture-based economies. The expansion of smallholder farming can lead to a faster rate of poverty alleviation, by raising the incomes of rural cultivators and reducing food expenditure, and thus reduces income inequality (Salami, Karma, & Brixiova, 2010). Credit is a major component of agricultural and rural development programmes and also considered as an important instrument in helping small farmers increase their income (Mohamed, 2003).

Alleviation of poverty and promotion of economic development can therefore be facilitated through providing credit to the poor (Jemal, 2003). Credit to smallholder farmers can be a most effective way to promote food production and household food security (Nur, 2006).

Based on past literature, Nawi (2010), the factors affecting repayment performance of MFIs can be divided into four factors namely individual/borrowers factors, firm factors, loan factors and institutional/lender factors. Though Derban, Binner, and Mullineux (2005) grouped the factors of loan repayment into three main categories. Such as inherent characteristics of borrowers and their business, characteristics of the lending institution and suitability of the loan product to the borrower, and the systematic risk from the external factors, like the economic, political and business environment in each borrower operations.

Likewise, Mohamed (2003), most of the schemes or programmes that are involved in the provision of credit services to smallholder farmers have experienced poor repayment performance. The main reasons for this situation include attitude of people towards loans from government sources, poor loan appraisal systems, weak capacity, marketing problems, enterprise failures due to technical reasons and natural disasters, poor loan follow-up systems, and lack of collateral/security.

Samuel (2011), also divided the causes of default into two categories: (i) weaknesses from the lender side such as absence of post-disbursement monitoring system, lack of technical assistance given to the microfinance recipients, inexperienced field workers, burdensome immediate weekly payment system, lack of common accessible database of the microfinance recipients. (ii) moral hazard problem on the borrower side such as hiding business, family member's illness, lack of, over-stretched financial commitments due to multiple borrowings from MFIs: amid the increased competition among the MFIs and the absence of a common database to keep track of the microfinance recipients, many recipients borrow from more than one MFIs, resulting in the difficulty to meet the multiple payment installments.

According to Olomola (1999b), the delinquency and default problems observed among the borrowers can be categorized in four categories: (i) Borrowers related causes, (ii) causes related to loan utilization, (iii) lender related causes and (iv) extraneous causes.

In summary, the factors influencing loan repayment capacity of the borrowers can be classified into three broad factors: The factors are socio-demographic characteristics (age, sex, dependent ratio, education level, saving habit) of the borrower, socio-economic activities (on farm income, off farm income, size of land, social ceremony expenses) of the borrower and institution related factors (interest rate, repayment period, collection procedure, credit approval / screening mechanism).

In microfinance institutions credits are provided in group. The main characteristic of group lending is joint liability. This means that all group members are treated as being in default if any one member of the group does not repay the loan. In group liability, there are both positive and negative effects. The positive effect is that the successful borrowers may repay the loan of partners who obtain sufficiently poor returns to make repayment profitability. The negative effect arise if the entire group defaults, when at least some members would have repaid had they not been saddled with the weight of liability for their partners loans (Besley & Coate, 1993).

According to Geihler (2004), in any lender-borrower relationship, there is a general problem of moral hazard that is the result of specific personal characteristics and decisions of each individual borrower. It is obvious that the lender does not have the same information as the borrower. Several factors may undermine the repayment performance of group lending under joint liability. The risk of loan default by an individual is shared by his or her peers, a member may choose a riskier project compared to that in the case of an individual contract, and may count on other members to repay his or her loan. To avoid this adverse selection of risky projects, the peers can opt to assess the riskiness of each other's projects (Zeller, 1996).

Urban homogenous groups with good leadership and training and prior history of working in groups had the highest probability of repaying the loan. However, the domino effect and matching problem were significant factors influencing loan default, creating a destabilizing effect on overall repayment (Paxton, 1996).

On one side, borrowers might lose their capacity of repaying the loan or they might borrow without considering their capacity of repaying the loan. Even though the borrowers have the ability to pay, in some cases they are not willing to pay. On the other hand, the lenders might not get adequate information on about the borrowers; they simply provide credit without knowing the character of the borrower this may be the cause of low performance of loan repayment (Girma, Tadesse, & Seid, 2004).

Loan repayment performance is affected by a number of socio-demographic and socio-economic factors. While some of the factors positively influence the loan repayment, the other factors are negatively affecting the repayment rate. Regarding to the loan repayment performance of borrowers several studies have been conducted in many countries by different authors. Some of the studies are summarized below.

TABLE 1: EMPIRICAL STUDIES IN ETHIOPIA

Author (s)	Coverage	Methodology	Results
Abebe (2011)	East Shoa Zone, Oromia Region, Ethiopia	Tobit model was employed	The result of the model showed that family size, livestock ownership, on-farm income, non-farm income and saving habit were statistically significant factors influencing timely loan repayment performance positively
Jemal (2003)	Oromia Credit and Savings Share Company in Kuyu, Ethiopia	Employed a logit model	The result showed that education, income, loan supervision, suitability of repayment period, availability of other credit sources and livestock were important and significant factors that enhance the loan repayment performance, while loan diversion and loan size were found to be significantly increase loan default.
Abraham (2002)	Around zeway, Ethiopia	Employed a tobit model	The result showed other source of income, education, and work experience related economic activities before the loan affected loan repayment positively. On the other side, extended loan repayment period was influenced the repayment performance negatively.
Samuel (2011)	Microfinance Industry in Ethiopia	Probit model	Found out that education, income, loan supervision, suitability of repayment period and availability of other credit sources were important and significant factors that enhance the credit repayment performance, while credit diversion and credit/loan size were found to be significantly increase credit default.
Berhanu (2005, as cited in Fikirte, 2011)	North Gondar, Ethiopia	Employed the Probit model. A total of 17 explanatory variables were considered in the econometric model.	Out of these seven variables were found to be significantly influence the repayment performance. These were land holding size of the family, agro-ecology of the area, total livestock holding, number of years of experience, number of contacts, sources of credit and income from off-farm activities. The remaining variables (family size, distance between main road and household residence, purpose of borrowing, loan amount and expenditure for social festivals) were found to have insignificant effect on loan repayment performance of smallholder farmers.
Tnsue (2011)	Tigray	Probit model	He found that, sex, age, educational status, loan size, occupation, supervision, number of dependents supported by borrower, and income from the loan activities financed by institution were significant determinants of the probability of loan repayment.

TABLE 2: GLOBAL EMPIRICAL STUDIES

Kohansal (2009)	Iran	Employed logit model	The result indicated that farmer's experience, income, received loan size and collateral value have positive effect while loan interest rate, total application costs and number of installment implied a negative effect on repayment performance of recipients. Comparison the elasticity of significant variables indicated that loan interest rate was the most important factor in the model. Farming experience and total application costs were the next factors, respectively.
Oladeebo, & Oladeebo (2008)	Nigeria	Used ordinary least square multiple regression analysis	The results showed that amount of loan obtained by farmers, years of farming experience with credit use and level of education were the major factors that positively and significantly influenced loan repayment. However, age of farmers influenced loan repayment negatively but significantly. However, other socio economic factors which did not have significant influence on loan repayment Were gross farm income earned by respondents and cultivated farm size.
Mehmood et al. (2012)	Pakistan	Descriptive statistics	The result showed that miss-utilization of loans, high interest rate and change in business/residential place of the borrowers caused delay in repayments of agricultural credit.
Afolabi (2010)	Oyo State, Nigeria	Used ordinary least square multiple regression model	He obtained that the amount of loan granted to farmers, farming experience, farm size, gross farm income, interest rate charged and non farm income were the major significant socio-economic characteristics that determine loan repayment. However, family size and non-farm expenses had negative influence on the level of loan repayment.
Onyeagocha, Chidebelu, Okorji, Ukoha, Osuji, & Korie (2012)	Southeast states of Nigeria	Multiple regression	Among the determinants of loan repayment of microfinance institutions were shocks, training duration, loan size; however, and credit officer's experience had negative impact on loan repayment.

The above different authors reported different outcome on determinants of loan repayment. Among the demographic factors age, sex and education had significant and positive impact on loan repayment (Tnsue, 2011), and (Abraham, 2002). But Oladeebo, & Oladeebo (2008), concluded that age had negative impact on loan repayment. Related with economic factors, farming experience, farm size, gross farm income and non farm income had significant factor on loan repayment (Afolabi, 2010), (Berhanu, 2005, as cited in Fikirte, 2011)) and (Abebe, 2011). But, on Oladeebo, & Oladeebo (2008) findings, there is no significant impact on loan repayment. Thus, this difference calls a research to examine the relationship among the factors for loan repayment and the loan repayment performance.

3. STATEMENT OF THE PROBLEM

According to Samuel (2011), the default rate of ACSI is greater than Addis Credit and Saving Institution (ADCSI), because ACSI provides large share of loan to the farmers. According to Abraham (2002), borrowers involved in the agricultural sector are more defaulters compared with other sectors like industry and service. Likewise Jamal's (2003) research result shows that urban borrowers have better repayment rate than rural borrowers.

One of the key issues facing the micro finance industry today is the high percentage of loans that are in arrears. In order for micro finance institutions (MFIs) reach scale and move towards operational and financial sustainability, arrears rate must be reduced. High delinquency rates in credit programs for the poor were often blamed on poor market infrastructure, deficient business income and client's misallocation of loan funds in to consumptions activities (Rural Financial Intermediation Program [RUFIP], 2005)

According to annual report of the ACSI-Fogera Wereda, an amount of birr 15,916,837.44 was disbursed in 2009 from this 298,629.18 birr is the total contaminated loan and 232,592.90 birr is the net amount which is not collected within the year. Likewise, during 2010 & 2011 the branch disbursed 13,003,363.59 and 12,602,684.02 amount of birr, but 403,950.40 and 871,972.57 birr is the net contaminated loan and 146,446.86 and 166,218.94 birr was uncollectible during the period, respectively (Fogera Wereda, 2011).

When we see the disbursed loan in relation to contaminated and the net arrear, the total disbursed loan has decreased from time to time but the total contaminated and the net arrear shows an increasing. Thus, the study has tried to conduct a study on factors for loan repayment performance of smallholder farmer borrowers from microfinance institution in ACSI-Woreta Sub-Branch.

4. OBJECTIVE OF THE STUDY

The principal aim of the study was to identify and analyze the major factors for loan repayment performance of smallholder farmer borrowers in Amhara Credit and Saving Institution (ACSI)-Fogera Wereda. Its specific objectives were:

1. To identify the determinant factors for loan repayment performance of ACSI borrowers
2. To analyze the relationship between loan repayment and factors of loan repayment

Accordingly, the following research hypotheses were formulated to test the relationship among the factors of loan repayment and loan repayment performance.

1. The socio-demographic factors of the borrower (age, sex, education, dependency ratio) have statistically significant effect on loan repayment.
2. The socio-economic activity of the borrower (on farm income, off farm income, saving habit, size of cultivated land, social ceremony expense) have statistically significant factor on loan repayment.
3. Institutional related factors (interest rate, repayment period, collection procedure, credit analysis procedure) have statistically significant impact on loan repayment.

5. RESEARCH METHODOLOGY

5.1. RESEARCH DESIGN AND STRATEGY

The study used quantitative (survey) research approach. The primary data used to analyze the effect of the factors of loan repayment on loan repayment performance of the smallholder farmers.

5.2. DATA TYPE, SOURCE, AND COLLECTION

Primary data was used in this study. The primary data was collected by questionnaire and interview. The following data were obtained from the respondents:

- ✓ Borrower demographic characteristics like age, sex, level of education, household size
- ✓ Socio-economic characteristics of the borrowers such as cultivated land size, on farm income, non-farm income, saving habit, units of livestock, social ceremonies
- ✓ Institutional related issues such as interest rate and repayment period

5.3. SAMPLING DESIGN

Simple random sampling was applied to select the sample respondents from the whole population. The reason for choosing this sampling technique was that there was available list of borrowers from rooster or master of register book of the ACSI's Fogera branch and the homogeneity characteristics on culture and language of the target households. The total number of farmer borrowers that were getting service in ACSI, at Fogera Wereda was 5027.

To determine the sample size from the total population, Yamane (1967) formula was applied. Confidence level of 92% and 8% level of precision was considered in order to select manageable sample size. Accordingly, the study determined 150 borrowers as a sample size from the 5027 households; of which 136 questionnaires were filed and returned.

5.4. DATA PROCESSING AND ANALYSIS TECHNIQUES

Probit regression model was used to analyze the primary data which was collected from the respondents. Probit model is one of the regression models that are appropriate for dichotomous dependent variable. Besides, it is simple to get the marginal effect of the coefficients. To identify factors that influence the ability of the borrowers to repay the loan to financial institutions, probit model is appropriate (Sarkar & Thomas, 2010).

Loan repayment is dependent variable, whereas socio-demographic, socio-economic and loan related factors of the borrowers are independent variables. Based on the repayment performance of the borrowers, the study classified the dependent variable in to two groups, such as non-defaulter and defaulter. In this case values of the dependent variables are 1 and 0. 1 stands for non-defaulter if the borrower paid fully and 0 stands for defaulter if the borrower not paid fully. Hence, loan repayment is dichotomous variable.

The dependent variable has binary results, which are non-defaulter (1) and defaulter (0). The equations of loan repayment factors of i^{th} borrowers were drawn based on the assumption that the borrower makes the payment on time or not. The borrowers that make payment on time called non defaulter (1). On the other side, the borrowers that do not make payment on time are called defaulter (0). Based on unobservable utility index (U_i) and U_i is associated with predictor variable X_i . According to the linear regression equation, the dependent variable explained by independent variables is as follows:

$$U_i = \beta'X_i + \epsilon \quad (1)$$

Where U_i = utility index, β = Vector of coefficients for variables associated with loan repayment, X_i = Vector of explanatory variables, ϵ = error term (Maddala, 1983). Thus, the model for loan repayment can be constructed as follows:

$$Y = \alpha + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_6 + \beta_7x_7 + \beta_8x_8 + \beta_9x_9 + \beta_{10}x_{10} + \beta_{11}x_{11} + \beta_{12}x_{12} + \beta_{13}x_{13} + e_i \quad (2)$$

Where y = loan repayment performance of borrowers; α = constant; β = coefficient of explanatory variable; x_1 = age of respondents; x_2 = sex of respondents; x_3 = education level; x_4 = dependent ratio; x_5 = saving habit of the respondents; x_6 = social ceremony expense; x_7 = on-farm income; x_8 = Off-farm income; x_9 = size of cultivated land; x_{10} = number of livestock owned

x_{11} = loan diversion; x_{12} = suitability of loan repayment period; x_{13} = interest rate; and e_i = error term.

To draw the regression relationship of the unobservable Utility index with the decision of loan repaying, it was assumed that:

$$R_i = 1, \text{ if } U_i > 0 \text{ (borrower repay fully); or } R_i = 0, \text{ if } U_i \leq 0 \text{ (borrower did not repay fully); or} \quad (3)$$

Before running the probit model, the model was tested for existence of multicollinearity and heteroskedasticity. Multicollinearity is a serious problem if the VIF is greater than 10. But, the variables measured by VIF, value of the explanatory variables are not greater than 10. Hence, they haven't Multicollinearity problem; the VIF result found to be below 10. Besides, heteroskedasticity problem was checked, but there is no problem, i.e., the probit regression model was tested for heteroskedasticity through Breusch-Pagan heteroskedasticity test and the result showed that Prob > chi2 was 0.2547 (25.47%), which is greater than that of the significance level of 1%, 5%, and 10%. This result indicated that there is no heteroskedasticity problem and there is equal variance among the error terms and the model properly specified and well fitted.

Description of the independent variables together with their expected signs:

AGE (AG)

At younger stage, people have ability to work and they expect to generate a higher income in the future. But they have not stability and business experience. On the reverse, people become older and older they develop more experience to run a business and have stability. They feel sense of responsibility; this may seem older people positively related to loan repayment or negatively related with default. Older farmers are less capable of carrying out physical activities while younger ones are capable. Younger farmers are more ready to adopt modern technology. Thus because younger people may be more adaptive and more willing

than older people to try new methods, age is expected to be an influencing factor. Farmers get older, they often become more conservative and reluctant to accept risk, they work fewer hours and have fewer non-farm employment opportunities. It may have negative effect on loan repayment and positive impact on default rate.

SEX (SX)

Most studies concluded that female borrowers are more payer than males. When we see Grameen Bank loan repayment performance, it is reported that female borrower's repayment rate was higher than their male counterparts (Khandker et al., 1995). This may not be true always, female in rural area not that much independent to run their business this may not be facilitate loan repayment activities of females on time. For instance, a research which was conducted in Ghana (Adusei, 2011), the loan repayment experiences of female borrowers are not better than their counterparts. Therefore, it may have positive impact on loan default.

Education (EDU)

It assumed that as the borrower more educated, he/she could acquire more knowledge so that his/her efficiency can allocate resources properly in to different productive uses than the illiterate ones. Therefore, it may affect default rate negatively.

Dependency ratio (DR)

If the family size is large, the household has more labor that works the farm. If the family members are old enough cannot perform the farm work as well. On the other hand, if the family members are children, they unable to work, farmers with large dependent may be less successful than small number of families because it increases the dependency ratio. Dependency ratio may have a positive impact on default rate.

Saving habit (SH)

If the Farmers adopt saving from their proceeds for consumption this increases the repayment of loan during bad harvesting time. Therefore, it has negative effect on default rate.

Social ceremony expenses (SCX)

If the social ceremony related expenses are more it may affects loan repayment performance of the borrowers negatively or default rate positively.

On-farm income (OFINC)

The higher the on-farm income, the greater the repayment capacity of the farmers and the higher the probability to be non-defaulter and vice versa. Therefore, this variable may affect default rate negatively.

Non-farm income (NFINC)

It refers the amount of income generated from activities other than crop and livestock productions. These include: petty trading, metal work, homemade drinks, handicraft (weaving, tannery). These additional sources of income may help the farmers to repay the loan during bad harvesting time or price agriculture product fall. During this time, farmers who practice non-farm activities can easily repay their loan on time than those who don't involved in non-farm income. Therefore, non-farm income is a very important source of cash for farm households especially to purchase inputs and repay their credits. It is assumed that the variable has a negative impact on credit default.

Size Cultivated land (CL)

It refers to the total cultivated land holding of the household. It is argued that farmers with large farm size have better chance of more production. This leads to more income. Hence, this variable is hypothesized to have negative impact on credit default.

Number of livestock owned (NLIV)

In farming area livestock are part of the operation. It may serve as a proxy for oxen ownership, which is important for farm production. It is expected that this variable have a positive influence on loan repayment performance or negatively influence default rate.

Loan diversion (LD)

The impact of this Variable depends on the use of the diverted loan. If the borrower used for productive purposes than the intended ones then repayment will be increase. If on the other hand the loan is diverted to non-productive uses, it will have a negative impact. Therefore, it may have positive impact on default rate.

Suitability of Repayment period (SRP)

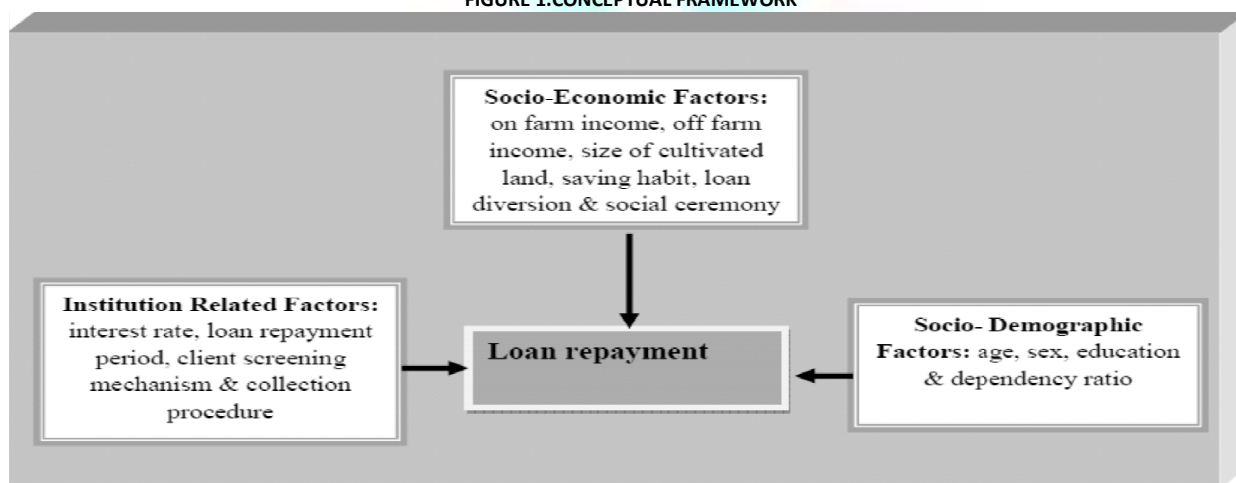
It is expected that borrowers who find the repayment period suitable, perform better repayment of loan. Therefore, this variable may affect loan default rate negatively.

Interest rate (INTRT)

If borrowers found the interest rate that they pays for the loan they took is too high or high, loan repayment could be very Pinching, especially if the income generated from the loan is not at least equal or greater than the principal plus interest payments. Therefore, the probability of being defaulter is can be high. So it is expected a positive sign for default.

Finally, the following conceptual framework was formulated based on the above variable definitions.

FIGURE 1. CONCEPTUAL FRAMEWORK



Source: Adapted from Afolabi (2010) and Kohansal (2009)

6. RESULTS AND DISCUSSIONS

Probit model was used to identify the factors of loan repayment performance of the borrowers. It is important, especially for analyzing the dichotomous dependent variable; it focuses on the significance impact of each variable on the dependent variable, i.e., loan repayment; the probability of getting a 1 or a 0.

TABLE 3: MAXIMUM LIKELIHOOD REGRESSION OF A ROBUST PROBIT MODEL FOR LOAN REPAYMENT

age	-1.690054	.954441	-1.77	0.077***
sex	-.5836484	.7800214	-0.75	0.454
educ.	-.3582589	.6890249	-0.52	0.603
dpdtratio	.6200687	.3359138	1.85	0.065***
Savhabit	-1.246949	.7490653	-1.66	0.096 ***
scexp	.0002038	.0000757	2.69	0.007*
onfarmincom	-.0001292	.0000527	-2.45	0.014**
offfarmincom	-.0000164	.000131	-0.13	0.900
sizclvtland	-1.871395	.7642926	-2.45	0.014**
livestock	-.4175016	.1471115	-2.84	0.005*
Loandiv.	-.1637385	.9314314	-0.18	0.860
suitrepayprd	-1.602752	.940295	-1.70	0.088 ***
intrate	1.380368	.7838419	1.76	0.078***
constant	6.529053	4.051725	1.61	0.107

*significant at 1%, **significant at 5%, ***significant at 10%

Source: Own Computation (2013)

TABLE 4: RESULT OF MARGINAL EFFECT

Probability Of Default	dy/dx	Robust Std. Err.	z	P>z
age	-.1576905	.954441	-1.77	0.077***
sex	-.0544573	.7800214	-0.75	0.454
educ.	-.0334273	.6890249	-0.52	0.603
dpdtratio	.0578555	.3359138	1.85	0.065***
Savhabit	-.1163466	.7490653	-1.66	0.096 ***
socexp	.000019	.0000757	2.69	0.007*
onfarmincom	-.0000121	.0000527	-2.45	0.014**
offfarmincom	-1.5306	.000131	-0.13	0.900
sizclvtland	-.1746104	.7642926	-2.45	0.014**
livestock	-.038955	.1471115	-2.84	0.005*
Loandiv.	-.0152776	.9314314	-0.18	0.860
suitrepayprd	-.1495448	.940295	-1.70	0.088 ***
intrate	.1287952	.7838419	1.76	0.078***

*significant at 1%, **significant at 5%, ***significant at 10%

Source: Own Computation (2013)

The estimates of probit model and the marginal effect (i.e., dy/dx) of each significant variable are shown in Table 3 and Table 4 above, respectively. A total of 13 independent variables were incorporated in to the probit model. Out of these, 9 variables were found to be significantly influence the probability of being defaulter at different significance level. The variables that have significant relationship with loan repayment performance of the micro finance credit users are: age, dependent ratio, saving habit, social ceremony expenses, on farm income, size of cultivated land, number of livestock, suitability of repayment period and interest rate had significant effect on the probability of being defaulter. However, the rest 4 explanatory variables namely, sex, education level, off farm income and loan diversion had no significant effect on the probability of being defaulter.

Age of the borrowers is one of the variables that were thought to affect loan repayment performance of the borrowers by different authors. Accordingly, age of the borrowers had effect on the probability of being loan defaulter. This independent variable significantly affects loan repayment performance at 10% significant level. This means that age increased by one year the probability of default rate reduced by 15.77%. It implies the age of the borrowers become older and older, they might get business experience on their activities and they take the responsibility of loan repayment. When we see the relationship between age and default rate, they have inverse relation, this may not be continued. As age increase the working ability of the borrowers' may decline, and it may be become a cause for default, by considering this the microfinance institution not provide loan for the borrowers age more than 60 years old.

As expected, dependent ratio influenced positively and significantly at 10% the probability being defaulter. A unit increase in dependence ratio also increases the rate of defaulter by 5.79%. This result shows that households with large dependent ratio there is large number of consumer and small number of productive labor force, the probability of default is high.

Saving habit of the respondent influenced the loan repayment performance negatively and significantly (significant at 10%). Sampled households who have saving behavior reduce the loan default by 11.63%. This indicated that households who save their money had ability to repay the loan on time than households who do not save.

Social ceremony expense affect the loan repayment performance of the households negatively and the probability of default positively and significantly (significant at 1%). One birr expense on social ceremony increases the probability of default by 0.002%. This implies that social ceremony expenses are unproductive; such like expenses reduces saving of individuals which may also lower investment, therefore, the loan repayment performance of the sampled households affected negatively.

On farm income is economic variable that influences loan repayment. As the result shown in the table, on farm income affects the probability of being defaulter negatively and significantly (at significant 5%). This means, one birr increase in on farm income, the probability of default rate reduces by 0.0012%. This indicated that the households that generated higher income from their farm activities give more emphasis to repay the loan.

Size of cultivated land (ha) is another socio-economic variable which influences loan repayment. As the probit model regression indicated, size of cultivated land had an impact on the probability of being defaulter negatively and significantly (significant at 5%). This means that one hectare (four tsmad) increase in cultivated land reduces the default rate of the borrowers by 17.46%. In the country side the main property is land, households who have large size of cultivated land had a probability to produce more agriculture products and the major source of revenue for rural households are by selling of farm out puts, because of this large cultivated land-more agriculture production and more income-low loan default rate.

Number of livestock are influenced the probability of households being defaulter negatively and significantly (significant at 1%). A unit increase in livestock there is also increase the probability of non-defaulter by 3.9%. This means that, in rural area livestock is one source of income and it is considered as security against crop failure. In addition to this, a proxy for number of oxen which is owned by the households and Farmers who had more livestock, can plough their land properly and can produce high yield- high agriculture income – easy to repay the loan. Suitability of loan repayment period and interest rate are institution related factors that affect loan repayment performance of the households. Both affects default rate at 10% significant level. But suitability of loan repayment period affects probability of default negatively and interest rate positively.

In summary, number of livestock, on farm income, size of cultivated land, age, suitability of repayment period and saving habit influenced the probability of default negatively and significantly. Likewise, social ceremony expense, dependent ratio and interest rate influenced default rate positively and significantly. The most serious factors of default are social ceremony expense and number of livestock next to on farm income and size of cultivated land.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1. CONCLUSIONS

Microfinance programs are now a key objective of poverty alleviation strategies by providing loan for poor part of the society. Smallholder farmers are part of the poor society that gets loan from the microfinance institutions. Because of this, the study was intended to analyze factors for loan repayment performance of Fogera Wereda smallholder farmer borrowers. To study the problem socio-demographic, socio-economic and institutional factors were included in the probit model. The primary data were collected from 136 respondents of the 150 samples; and probit model was used for analysis. According to the probit model result age, dependent ratio, saving habit, social ceremony expenses, on farm income, size of cultivated land, number of livestock, suitability of repayment period, interest rate had statistically significant impact at different significant level on the probability of being defaulter. The probit result is summarized in Table 5 below.

TABLE 6. PROBIT RESULTS ON THE HYPOTHESIS, AND EXPECTED AND PROBED SIGNS

Hypothesized relationship	p>z	Result of the analysis	Expected sign	Probed sign
Age vs. loan default	0.077***	Accepted	+	-
Sex vs. loan default	0.454	Rejected	+	-
Education vs. loan default	0.603	Rejected	-	-
Dependent ratio vs. loan default	0.065***	Accepted	+	+
Saving habit vs. loan default	0.096 ***	Accepted	-	-
Social ceremony expense vs. loan default	0.007*	Accepted	+	+
On farm income vs. loan default	0.014**	Accepted	-	-
Off farm income vs. loan default	0.900	Rejected	-	-
Size of cultivated land vs. loan default	0.014**	Accepted	-	-
Livestock vs. loan default	0.005*	Accepted	-	-
Loan diversion vs. loan default	0.860	Rejected	+	-
Suitability of repayment period vs. loan default	0.088 ***	Accepted	-	-
Interest rate vs. loan default	0.078***	Accepted	+	+

*significant at 1%, **significant at 5%, ***significant at 10%

Source: Own Computation (2013)

7.2. RECOMMENDATIONS

The following recommendations are forwarded based on the research finding so that the ACSI should consider them in its loan management.

- The institution should give special attention for young borrowers by continuous follow up and supervision. There are no continuous supervisions of clients by the institution; rural borrowers are live far from the institution and due to large number of clients.
- The institution should motivate the savers to save more and attract the borrowers who do not save by creating awareness about the importance of saving and by providing incentives like high interest rate.
- loan size of the borrowers are approved by the institution, most borrowers said that the loan size is not enough for intended purpose, because of this the institution should increase the size of loan for the borrowers by considering the purchasing power of money and the size of loan should be flexible.
- The repayment periods for rural borrowers are inflexible, and it is not match with the cash availability of the client. During the repayment period agriculture products are not demanded by the market and also all products are not harvested. By considering this the institution should make flexible the repayment period according to the clients need.
- In addition with the existing client screening criteria the institution should include conditional analysis like market and environment analysis.
- There is also unwilling borrowers to repay the loan, thus the institution should take series follow up and supervision on such clients.

7.3. LIMITATION AND SUGGESTION FOR FURTHER STUDY

The study targeted only Fogera Wereda smallholder farmer microfinance borrowers. Its result helps managers have a quick look at the factors that determine loan repayment performance. It cannot be generalized to other ACSI branches. Therefore, further study may be conducted by considering sample respondents from all branches in order to have a complete picture on the determinant factors for loan repayment.

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