Adama Science and Technology University

School of Business and Economics

Department of Economics

Factors Affecting Loan Repayment Performance of Smallholder Farmers Gondar Woreda Amhara Region

A Thesis Submitted to the School of Business and Economic of the Adama Science and Technology University in Partial Fulfillment of the Requirement for the Degree of Master of Science in Development Economics

By

Yemesrach Aklilu

Advisor: Dr. Solomon Alemu

January, 2015

ADAMA, ETHIOPI

BIOGRPHY

Yemesrach Aklilu was born in Amhara region North Gondar, on the town that Fasil Castel founded in October 1968. She attended her elementary education in school of Mesert .After completion of the elementary education she joined Fasiledes Secondary School and she completed high school in 1984 . After that she joined TTI and graduated in 1985 and in 1986 she started work as a teacher and getting marriage with Ato Kiflie Chanie and served for about 13 years side by side getting birth of about four female children and in 2001 she completed diploma in mathematics.

After few years she joined University of Gondar and obtained her BA Degree in Economics in2010 Currently she is working in Fasiledes Preparatory School as a teacher since 2012.

AKNOWELDEGMENT

I would like to forward my grateful thanks to my advisor Dr Solomon Alemu for his unreserved assistance and professional advice for this research work.

I would like to extend my great fullness to my daughter kidist kiflie and Getahun Abreham for their strong commitment for supporting me by showing technical things that is necessary for my study.

Finally I would like to thanks all individuals in a department of economics that assisted me in the course of my study.

Table of Contents

LIST OF TABLES

Page

Table

ACRONYMS

ACSI; Amhara Credit and Saving Institution

AIDB; Agricultural and Industrial Development Bank

BRD; Bureau of Research and Development

CBE; Commercial Bank of Ethiopia

CSA; Central Statistical Authority

DBE; Development Bank of Ethiopia

DPPC; Disaster Prevention and Preparedness Commission

FMSC; Farmers Multipurpose Service Cooperative

HSB; Housing and Saving Bank

MOFED; Ministry of Finance and Economics Development

NBE; National Bank of Ethiopia

PA; Peasant Association

WOA; Woreda Office of Agriculture

ABSTRACT

Informal discussion, group interview and field observations were held to generate qualitative data. Binary logit model (to identify factors affecting loan repayment performance of farmers') and descriptive statistics (to assess the main sources of rural credit) were used for analyzing the required data. The result of the logit model revealed the fact that from the total of twelve explanatory variables, six of Smallholder farmers need improved agricultural technologies such as, improved seeds, fertilizer, pesticides and others that facilitate agricultural production and productivity. In Ethiopia, improved agricultural technologies cannot be used easily by small farmers because of financial problems. They need credit to implement the new technologies. Although there are attempts to solve these rural financial problem by the government through extending rural financial institutions, because of social, economic and institutional factors, a number of farmers can not able to repay their loan for the specific lender institution i.e. loan default is a critical problem of rural financial services. Therefore, the study focused on the analysis of determinants of loan repayment performance of smallholder farmers in Gonder woreda, Amhara National Regional State. In this study, primary data was collected from 300 randomly selected borrowers using semi-structured questionnaire. Structured interview schedule was developed, pre-tested and used for collecting quantitative data for the study from the sampled farm households. They were found to be significant factor affecting the loan repayment performance of the household head in the study area. These are age of the household head (age), sex of the borrower (sex), family size, irrigation used (irrigation used), fertilizer used (fertilizer used) and educational status).And the main sources of credit for small holder farmers in the study area were found to be only one that is cooperatives. When we see the recommendation parts, when loan is provided to the older borrowers, additional support mechanism should be designed to enhance their repayment performance. Extension agents should provide more attention to encourage farmers to use fertilizer and provide necessary training to small holder farmers for effective utilization of fertilizer and to increase the number of non-defaulters. The concerned bureaus and the government have to do the necessary efforts to create access to education to farmers in a form of adult education in the study area to enhance their loan repayment performance. Concerning on sex, the creditors and other concerned body need to provide additional supportive services to female borrowers in addition to the loan they provide to enhance the success of female borrowers. Therefore the concerned person should work more on gender participation .And also regarding to irrigation used, extension agents and policy makers should provide more concentration and have to work more on irrigation system.

CHAPTER ONE: INTRODUCTION

1.1. Background of the study

The economic growth of developing countries depends to a great extent on the growth of the agricultural sector. Ethiopia is a country typified by a predominantly subsistence agrarian economy. Its agricultural activity is also characterized by its very low productivity with average grain yields 1.2 tons per hectare in 2003/4 period (W/Selassie, 2008). The country covers 1,120,000 square kilometers and the population is estimated at about 77 million in 2005, which makes it the third most populous country in Africa. Ethiopia has reasonably good resource potential for agricultural development biodiversity, water resources, minerals, etc. Yet, it is faced with complex poverty, which is broad, deep, and structural. The proportion of the population below the poverty line in Ethiopia is 27.8 in 2004/5 (MoFED, 2004).

Even though Ethiopia has huge agricultural potential, the growth in agricultural production has not been able to keep pace with that of the demand. In the past several years a lot of efforts have been made to reduce poverty. However these efforts could not come up with a remarkable outcome at grass root level. The same sources showed that, thus formulating policies on human development (educating the society), building sustainable institutions and fostering financial accessibility are crucial for the self-driving and sustainable eradication of poverty.

Rural finance or credit has been recognized as an important socio-economic and financial mechanism for poverty alleviation, promoting entrepreneurial development and increasing the agricultural productivity of farm business in rural farmers and thereby increase their income. Agriculture lending or access to rural credit has become a vital function in financial operations as it facilitates the economic growth, agricultural development and improves efficiency. The major changes that have directly impacted the agricultural sector are financial sector reforms, decontrolling of fertilizer prices, freeing of imports of agricultural commodities, etc. Of these, the financial sector reforms have been crucial in view of its influence on rural credit delivery. The rural credit plays a very crucial role in agriculture and rural economy. Credit plays a vital role in economic transformation and rural development. Agricultural or farm credit is a crucial input required by small holder co-operative farmers to establish and expand their farms with the

aim of increasing the income of the households and the nation in general while augmenting the individual borrower's ability to repay borrowed funds(Idoge,2013).

In spite of the importance of loan in agricultural production, its acquisition and repayment are fraught with a number of problems especially in the small holder farming (Awoke, 2004). Most of the defaults arose from poor management procedures, loan diversion and unwillingness to repay loans. Hence, the objectives of this paper were to describe some farmers' socio-economic characteristics as well as determining which of these characteristics significantly influence loan repayment. The study in justified because understanding of factors of loan repayment will provide basis for policy maker in developing appropriate policy mix which will ensure prompt loan repayment by small holder farmers as well as increasing agricultural production in the study area in particular and in Ethiopia in general.

Therefore, this study tried to assess the major factors affecting the loan repayment performance of rural households Gondar woreda.

1.2. Statement of the Problem

Credit provision is one of the principal components of rural development, which helps to bring rapid and sustainable growth of agriculture. Rural credit is a temporary substitute for personal savings, which catalyzes the process of agricultural production and productivity. To boost agricultural production and productivity farmers have to use improved agricultural technologies. However the adoption of modern technologies is relatively expensive and smallholder farmers could not afford to self-finance.

The accessibility to credit in developing countries enables them to mobilize capital which supports them in starting businesses. This leads to increased productivity and ownership of assets which eventually improves their household income (Olujide, 2008).

In the formal credit system, rural credit is distributed without thoroughly assessing the socio-economic condition of the community. Most of the programs were supplied and mostly attached to agricultural technology package programs. Rural credit is delivered without sufficient information about the farmers in relation to their attitude towards rural credit.

It is obvious that the cycle should repeat itself to have sustainable and viable improvement system through loan recovery arrangements. That is, loans advanced for farmers should be repaid to have a continuous improvement year after year in agriculture. However, the loan repayment performance of the beneficiaries was found to be very low, with an average loan recovery rate of 23.5%for the last three years (WoA, 2014).

Even though a study has been taken on the related to determinants of loan repayment in around that area, the reason why this research has been done is to assess different determinants of loan repayment of small holder farmers which was not addressed or addressed by the previous study. In short, the study has been undertaken to give more emphasis for the findings that affect loan repayment of farmers of the previous study and also to identify factors which are not addressed by the previous study.

Therefore, what socio-economic, institutional and natural factors are found that affect loan repayment performance small holder farmers, to what extent of defaults in the repayment of formal source of credit loans offered to small holder farmers in the study area and what are the sources of rural credit in the study area do have are some of the questions which will been addressed in this study.

1.3. Research Question

The research tried to answer the following three key questions

What factors are found that affect loan repayment performance of small holder farmers in the study area?

What is the status of loan of loan repayment performance in the study area?

1.4. Research hypothesis

The loan repayment performance of household is positively related with sex, family size, loan supervision, education, farm size, livestock, irrigation used and fertilizer used and it has a negative or positive relationship with variables such as age, off farm income, loan size and loandiverstion.

1.5. Objectives of the Study

The general objective of this study is to examine the status and factors affecting loan repayment performance of smallholder farmers in the study area.

Specific Objectives

- To identify socio-economic, institutional and natural factors that are affecting loan repayment performance of smallholder farmers in the study area

1.6. Significance of the Study

The lack of capital and the absence of attractive investment opportunities are considered to be important reasons behind inadequate economic development in many developing countries. An analysis of factors impeding smallholders' loan repayment performance used to help policy makers to formulate successful rural development programs. The formulation of successful credit policies and programs is of paramount importance because it enables the policy makers to allocate scarce resources for the development of the basic sector of the economy as well as to effect repayment according to agreement between lenders and borrowers. In general, the significance of the study refers the following points:

It will help policy makers to formulate successful credit policies and programs.

It enables the policy makers to allocate the scarce resources for the development of the basic sectors of the economy.

Helps the lenders to enhance the repayment performance of their clients by taking necessary measure based on the identified factors affecting loan repayment performance of their borrowers

It provides valuable input for lenders in formulating their credit policy.

The findings and recommendations provided here will be helpful to present and future scholars, researchers and students.

1.7. Scope and Limitation of the Study

Scope of the study

The study is mainly focused on at identifying factors that affect loan repayment performance of smallholder farmers. It is considered the rural credit loan repayment factor in Gondar Wereda. The scope of the study was limited to three rural kebeles in Gondar Woreda.

Limitation of the study

In this study, it was very difficult to state about issues related to determinants of Micro finance as a whole. The study only concerned on what it stated in the scope section because of limited availability of resources and times to undertake the study on a wider scale.

1.8. Organization of the Study

The thesis was organized in to five chapters. Chapter one deals with what the study covers in the background information, statement of the problem, research objective, significance, research questions and scope and limitation of the study. Chapter two contains the review of literature which deals with the theoretical and empirical review of factors that affects loan repayment performance of small holder farmers. Chapter three presents research methodology and in this section description of the study area, sources and method of data collection, sampling technique and also definition of variables were discussed. Chapter four described the results and discussions of the study using both descriptive statistics and econometric models. Finally in chapter five conclusion and recommendation of the study are presented.

2 CHAPTER TWO: LITERATURE REVIEW

2.1. Theoretical Literature

The Concepts of Credit and Related Terms

According to Ololade and Olagonjo (2013), credit is defined as follows: credit is a loan able fund which permits the purchasing of services, money or goods in the present, based up on the promise to pay for time at some time in the future. In this definition it can be inferred that credit provide the means for the temporary transfer of assets or the use of such assets from a man or organization that has them, to a man or organization that has not. Similarly, it is a power or ability to obtain money by the borrowing process, in return for a promise to repay the obligation in the future.

Financial institutions are private or governmental organizations, which serve the purpose of accumulating funds from savers and channeling them to individual households, and business looking for credit. Financial institutions are composed of deposit-type institutions (bank and non-bank contractual saving institutions), personal and business financial companies, government and quasi-government agencies, and miscellaneous lenders.

Financial institutions can be divided in to two that is formal and informal. Thus, formal sources are financial institutions that are set up legally and engaged in the provision of credit and mobilization of savings. These institutions are regulated and controlled by the National Banks. In the Ethiopian context formal financial sector includes National Bank of Ethiopia (NBE), commercial banks (owned by private and public), Development Bank of Ethiopia (DBE), credit and savings cooperative, insurance companies (both public and private) and microfinance institutions (owned by regional governments, NGOs, associations and individuals), (NBE, 2003).

On the other hand, because of the inability of the formal financial sector to provide adequate financial services to small farmers and the poor in general continued even after the reform to choose the informal sources (Assefa 2004). The bulk of financial services provided to small and micro-enterprises in rural and urban areas, therefore, mostly originated from the informal sector such as Iqqub, moneylenders and friends" (Sisay, 2008). This sector is neither regulated nor

counted for in the country's financial intermediation process. It provides timely and user-friendly loans both in size, rates of interest (save usurers' rates) and terms to maturity. As opposed to the formal financial system, which is typically known for its high costs per transaction, bureaucratic lending procedures, elaborate paper work, high collateral requirements and delays, the informal financial sector provides better services to small-size loan demanders with less cumbersome procedures and at lower transaction costs (Amare, 2005).

Default is defined as failure to pay a debt or a loan at the right time. On the contrary, non-default is defined as payment of a debt or a loan at the right time. The same sources defined credit worthy (synonymous to non-defaulter) borrowers as those who satisfy the entire loan contract conditions and repay their loans without ever going into arrears. Non-credit worthy (defaulters), as opposed to non-defaulters, is those who breach their loan contracts and have repayment problems. Moral hazard is the problem that arises in the credit market when lenders fail to discern the actions of borrowers. It can also arise in credit markets when the behavior of the borrower is influenced by the terms of the loan contract.

2.2. Empirical review

Different studies, which are shown in below, have been carried out concerning loan repayment performance of borrowers in various countries by different authors. These empirical studies identified that loan repayment performance is affected by a number of factors, some of which are believed to negatively influence while others have positive impact on repayment of loans.
Major socioeconomic variables that affect credit repayment include education, age of household head, family size, gender of household head etc. Family size is expected to affect loan repayment performance positively. This is because farmers with more families may have more labor force for more diversified sources of income.

A research which was conducted on the title of impact of farm and farmers characteristics on loan repayment of agriculture credit and which was analyzed by the probit model in Pakhtoonkhawa showed that age has a negative effect on the dependent variable (Saleem et al,2009). This means According to the researcher as the age of the respondent increases the loan repayment performance of respondent's decreases in the study area.

The study made by W/selassie (2008) on factors affecting Agricultural input loan repayment performance of borrowers in Tigray region obtained a significant positive relationship between household's asset/income position/ and its loan default status. In his analysis, he related this situation to a very strong demonstration effect where borrowers having relatively small loan sizes behave in the same way as those who have larger loans. The education status of the household was reported to have strong negative effect on default status irrespective of the household's income position. The total operated land holding of the household was the other variable, which was negatively associated with default after a certain level.

A study found that the subsidized interest rate level did not have a significant effect on repayment behavior among rural borrowers in Pakistan. He concluded that a subsidized interest rate was not the best way to ensure good repayment by borrowers and also the research study found a significant negative relationship between repayment period and loan repayment (Hanim, 2009).

A research which was taken in Tigray Region found that the loan characteristics influence loan repayment performance. The result suggests that, the larger the size of the loan, the lower the probability of repayment default (Etay, 2013). Similarly the research showed that increase in repayment period the more likely it is that farmers would not default in loan repayment.The relative loan default was higher in case of large farmers as compared to other categories of borrowers in spite of their better study also reported that, on the average, the defaulters in almost all the categories of farmers had taken more loans than non-defaulter from all the financial institutions except commercial banks. The economic and social conditions like households and farm assets, consumption expenditure and repaying capacity, which affect the repayment of loans, were found to be favorable to defaulters.

2.2.1. Rural Credit in Ethiopia

Agricultural credit institutions can increase the rate of economic development by facilitating the injection of capital into agriculture which otherwise would not have been generated within the sector. Credit is the key input in every development program; this is particularly true for rural development because so long as sufficient credit is not provided to the development programs of poor sections of the society, the goal of development cannot be achieved. According to Chemei

(2013), agricultural credit is an essential element for agricultural growth in developing countries. It is a temporary substitute for personal savings. It accelerates technology changes to stimulate agricultural production by enhancing small holder farmers' productivity asset formation, food security and subsequently, rural agricultural income. Like other developing countries rural finance in Ethiopia, has dualistic features. There exist both formal and informal credit institutions in the country.

2.2.2. Agricultural Credit Institutions in Pre-Derg Period

In Ethiopia, the origin of the first agricultural credit institution goes back to the Agricultural Bank of Ethiopia, established in 1945, which was targeted primarily to meet the needs of farmers who had suffered and whose farms were damaged during the Italo-Ethiopian war. In 1949, the Bank's name was changed into the Agricultural and Commercial Bank which in turn gave way to the establishment of the Development Bank of Ethiopia (DBE) in May 1951 (Amare, 2005). The researcher also stated that, following the creation of the Ministry of Agriculture in 1943, the Agricultural Bank of Ethiopia was established to accelerate agricultural development by assisting small landholders whose farms had been devastated during the Italian occupation through loans for purchase of seeds, livestock and implements and to repair or reconstruct their homes and farm buildings.

Credit during the pre-Derg period was characterized by concentration of bank operations in few urban centers (Addis Ababa alone accounted for 64% of the bank branches), high collateral, and minimum loan requirements which favored big businessmen, and the virtual neglect of the agricultural sector. Besides the DBE, the Investment Bank of Ethiopia, later known as the Investment Corporation, was established in September 1963 to perform functions broadly similar to that of the development bank.

2.2.3. Agricultural credit during the Derg Period

During this period institutions were nationalized and consolidated into specialized banks. At the apex of all financial institutions were the National Bank of Ethiopia (NBE), the Commercial Bank of Ethiopia (CBE), the Agricultural and Industrial Development Bank (AIDB) and Housing and Saving Bank (HSB). The National Bank, being the central bank of the country, is

responsible for issuing currency, planning and coordinating all banks activities, formulating monetary policies and acting as the financial arm of the government. It was first established in 1963 as State Bank of Ethiopia and was reorganized in 1976 by the monetary and banking proclamation (Amare, 2005).

In many instances, banks have been directed by the NBE to lend for nonviable investments in the public sector. As a result, most of the funds disbursed to the public enterprises, particularly state farms, have remained uncollected, leaving the banks with low rate of growth of capital and reserves. Among the financial institutions, the AIDB suffered serious capital depletion, with its net capital becoming negative by the end of the 1990 fiscal year. Repayment problem of the AIDB was so severe (highest 68% in 1988 and lowest of 11% in 1993) that it had to terminate its agricultural inputs loans to rural households just as its predecessor, the DBE, did in 1961 (Wolday, 2003). Therefore, the outcome with regard to reaching small rural borrowers with financial services was disappointing both during the Imperial and Derg regimes. Within the agricultural sector, registered FMSCs and producers' cooperatives were eligible for bank credit except for agricultural input loans. Lack of registration of these cooperatives was the main impediment to the expansion of credit. For instance, as of May 1990, the percentage of registered Service Cooperatives was only 48, while that of the producers' cooperatives was only 14. So, the chance of getting credit by small producers was very low. This is evident from the amount of rural credit that went to the peasant sector, out of the overall supply of rural credit through both AIDB and CBE during the period 1982 – 1992 only Birr 792 million (9%) went to the peasant sector. Considering the large number of rural population, the size of land under cultivation and the demand for credit, the volume of loan extended to this sector was insignificant. Credit delivery systems have been insufficient to serve the rural people.

2.2.4. Agricultural Credit During the post-Derg Period

After the fall of the Derg regime Ethiopia has followed free market economy that promotes financial liberalization which was began at the end of 1992. The free market economic policy created conducive environment for the involvement of private individuals to take part in the development of financial institutions. Some private banks and insurance companies have been established and have already commenced banking activities in major towns of the country

especially in commercial sector of the economy. According to National Bank of Ethiopia 2012 report, during fiscal year 2011/12, there were eighteen private and three government-owned banks, fourteen private and one government owned insurance companies, and thirty one MFIs. The above source also show that, foreign entry in to the financial sector is not allowed until domestic banks attain a certain degree of desired competitiveness and the National Bank's supervisory and regulatory capacity is adequately strengthened.

According to Assefa, (2004) Banks have been decentralizing loan decision making in order to reduce transaction costs of borrowing and reducing screening hence transaction costs of lending. Entry restrictions into banking were lifted for domestic banks. Entry rules and guidelines have been drawn. The lending approaches of banks to target beneficiaries could be both a direct type and a two-tier system. The direct type is in which the Bank extends credit directly to the end user. This could be an individual person or organization such as cooperatives, government or private enterprises, which have legal entity. In the two-tier approach, the Bank transfers its financial resources to end users through other bodies such as cooperatives and peasant associations. In the case of the first type, the credit beneficiaries enter loan agreements with the bank and are responsible for repayment of the borrowed loan, whereas in the case of the latter other intermediaries such as cooperatives or associations sign a loan contract with the bank and channel the borrowed fund to their members or end users.

In the case of rural Ethiopia, regional governments act as intermediaries between banks and farmers. These governments use their federally allocated budget as collateral to borrow from banks and lend these funds to farmers for the purchase of agricultural inputs. This procedure has enabled banks to lend a great deal of money to farmers. Nevertheless, there have been cases of default, which have necessitated repayment out of the budget allocations of the regional administrations. However, the inability of the formal financial sector to provide adequate financial services to small farmers and the poor in general continued even after the reform.

As compared to other economic sectors the share of agricultural sector in the total credit disbursed by the banks has continued to be marginal. For instance, the share of agriculture in the total credit disbursed between 1991/92 and 1997/98 has only been 14.7%, while domestic trade had 32.2% and industry 13.2%. Recently, the share of agricultural credit stagnated at around 16%

and never exceeded 19% of the total credit disbursed. In addition, it is believed that almost all of the agricultural credit is of short-term nature, which will have little impact on long-term investment and transformation of agriculture. The financial resource that flows to the sector is in general low when compared to the sector's actual and expected contribution to the economy growth in agricultural versus non-agricultural Assefa, (2004).

The absence of an effective peasant institution for credit delivery is the other major problem associated with the existing credit system in Ethiopia. A typical service cooperative has over to 6 member peasant association or over 1000 member households. It is simply too large to provide effective screening of borrowers, identify genuine defaulters, generate reliable demand information, and/or exert any form of peer pressure on members to make timely repayment of debts. At present, local community participation in screening borrowers and filtering genuine defaulter is minimal. The authorities and the leaders of FMSCs have no objective means of assessing the extent of crop loss.

Empirical evidences on determinants of loan repayment performance of borrowers

Most of the empirical evidences on factors affecting loan repayment performance of borrowers have been carried out in different countries. These studies found that gender of the household head, farm size, education, repayment period, frequency of contact DA, income, marital status, lack of collateral, loan size, number of draft oxen, total livestock unit, family labor, cultivated area, total household expenditure, training period are the main factors affecting loan repayment performance of borrowers ((Dadson Awonye , 2012).

kiliswa nancy (2010) under take a research project using a regression model in kariobangi division, Nairobi, Kenya. The study conducted with aim of identifying major determinants of loan repayment in small scale enterprises. The study found that even though many factors can lead to loan defaults, some of the factors were regarded to be of higher impact. Business related factors were significant in influencing loan repayment of the respondents with increase in input prices as the major factor that led to loan defaults while death of spouse was seen as the least factor that led to loan default. In addition, education level, family size, amount of loan applied and business experience of the respondents were found to have a positive relationship to loan repayment. Age, interest rate and change in gender had an inverse relationship to loan repayment.

Empirical study conducted in Ghana by Dadson Awunyo (2012) on determinants of loan repayment default among farmers. The study showed that off farm income generating activities are less likely to default in loan repayment because they can use income from the off- farm income generating activities to support loan repayment. Farm size variable had the expected negative sign; significant at 5% and elastic. The researcher tried to show that as farm size increase loan repayment also increases. Increasing farm size by one acre would decrease the likelihood of loan repayment default by 40.4%. This may be due to the fact that increase farm size results in marketable surplus which increase earnings from the farm hence make funds available for repayment of credit (Dadson Awunyo, 2012).The same sources also investigated that as expected, cash crop variable was found to have negative coefficient which is significant at 1%. Farmers who cultivate cash crop have about 99.1% lower likelihood of loan repayment default as compared to their counterparts who do not cultivate cash crop. This is attributed to the fact that farmers who cultivate cash crop are commercially oriented and produce for market hence tend to earn higher income which support loan repayment. The coefficient for Amount of loan variable is also negative and significant. The result suggests that in terms of amount of loan, the higher the loan amount, the lower the probability for default.

Avery recent study by Norhaziah Binti (2013) in Malaysia also gives us some empirical evidences which is showed as follows: the data of this study is gathered from 401 respondents in Peninsular Malaysia through multistage random sampling. The data is analyzed by descriptive analysis and multinomial logit model. The results show that in terms of borrower characteristics, only micro entrepreneur's religious education level is statistically significant in the relationship between delinquent and good borrowers and between default and good borrowers. Whereas, in firm/business characteristics, the result shows that distance, business formality and total sales are statistically significant (Norhaziah Binti, 2013). The same result also showed that total loan received, loan type and repayment schedule are the loan characteristics that affect micro entrepreneur's loan repayment. In terms of institutional/lender characteristics, the finding shows that loan monitoring is statistically significant in the relationship between delinquent and good borrowers.

C.V.Wongnaa (2013) employed probit model analysis in his study about factors affecting loan repayment performance among Yam farmers in the Sene District, Ghana. His results revealed

that education, experience, profit, age, supervision and off farm income have positive effect on the dependent variable. Conversely, gender and marriage have a negative effect on the loan repayment performance of farmers while the effect of household size was found to be insignificant.

Oladeebo (2008) examined socioeconomic factors influencing loan repayment among small scale farmers in Agbamosa agricultural zone through a multistage random sampling technique were analyzed using descriptive statistics and ordinary least square multiple regression analysis. The results of the multiple regression analysis showed that, year of farming experience with credit use and level of education were the major factors that affect the dependent variable positively and significantly. However, age of farmers influenced the loan repayment performance of farmers negatively and significantly in the study area.

Kebede, (2002) studied the causes of medium term loan defaults among smallholder farmers in Salima Agricultural Development Division of Malawi and found that about 50 per cent of the borrowers who had defaulted assigned higher priority to non-farm uses of the income accruing from the use of loan assets. The income generated during the repayment period was used for non-farm purposes such as health problems, domestic needs, payment of school fees and tax, and payment of private loans. These cases took priority over loan repayment. The researcher also reported that the use of farm income for non-farm purposes led to defaults on loans offered to farmers. Too much rainfall, low rainfall and erratic rainfall could adversely affect farm productivity. This, in turn, may affect the repayment process.

A researcher that studied on smallholder farmers' credit repayment performance in Kenya considered some variables which he thought were related to loan repayment performance and found that loan diversion, farm income, farmers' attitude toward loan repayment, proper amount of purchased farm inputs and source of income from farming activity had statistically significant effect on loan repayment performance Kebede (2002). He also reported that the proportion of loan funds diverted to non-intended purposes was positively related to the proportion of arrears on loans and was significant at 1% probability level.

Oladeebo (2008) examined socio-economic factors influencing loan repayment among small scale farmers in Ogbomoso agricultural zone of Oyo State of Nigeria. He collected his data from

100 farmers from 10 villages in 2 Local Government Areas from the zone through multistage random sampling techniques were analyzed using descriptive statistics and Ordinary Least Square multiple regression analysis. Results of multiple regression analysis 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

Mohammed (2009) employed logit model in his study. The study evaluated the factors influencing on repayment performance of farmers in Khorasan- Razavi province of Iran. The logit model seeks to explain the probability of loan on time repayment as a result of any of the identified independent variables. The signs of the coefficient of independent variables and significance of the variables were used determining largely the impact of each variable on probability of dependent variable. Results showed 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 implies a negative effect on repayment performance of recipients. Comparison the elasticity's of significant variables indicated that loan interest rate is the most important factor in our model. Farming experience and total application costs are the next factors respectively

Abula et al.(2005) employed both descriptive and econometrics analysis to evaluate the amount of credit obtain by rural farmers and its determinants from the Microfinance Banks in Kogi State, Nigeria. . Descriptive statistics was used to analyze the socio-economic characteristics of the respondents while multiple regressions were used to quantitatively determine the factors that influence the amount of credit obtained by the farmers in the state. Empirical results revealed that, Annual Household Income, Interest Rate Charge and Volume of Loan Repayment influence the amount of loan obtained and were significant.

This ultimately improve the loan repayment performance of the farmers in addition, those farmers that are regular participants in the extension package are aware of the consequences of loan default on the availability of credit for the next production season and are likely to make conscious decision to repay loan timely.

Iteanye et al. (2012) studied about economic analysis of loan repayment capacity of small holder cooperative farmers in Yewa North Local Government Area of Ogun State, Nigeria. The study found that smallholder farmers within the study area sourced their credit from both formal and

informal credit institutions. The results of the Tobit model also indicated that the agro-ecological zone, off-farm activity, production loss, informal credit, celebration of social ceremonies, number of contact days of the farm household head with extension agents and loan income ratio, determined repayment performance. Based on these findings, the study recommends that increasing the number of development agents to change the farmers' attitude toward agricultural transformation and timely settlement of debt; Rural development strategies should not only emphasize increasing agricultural production without simultaneous attention to promote off-farm activities in the rural areas;

Z. Magali was conducted a research in (2013). This study aimed at assessing the factors affecting the credits default risk for the rural Savings and Credits Cooperative Societies in Tanzania by using qualitative, descriptive and analytical approach. The results from the multivariate regression model reveal that only the amount of loans received by borrowers and years of schooling influence positively on loans default. However, other factors such as age, marital status, loan activity, interest rates, loan duration, value of borrowers' collateral and experience were found to have no linear effects with the loans default.

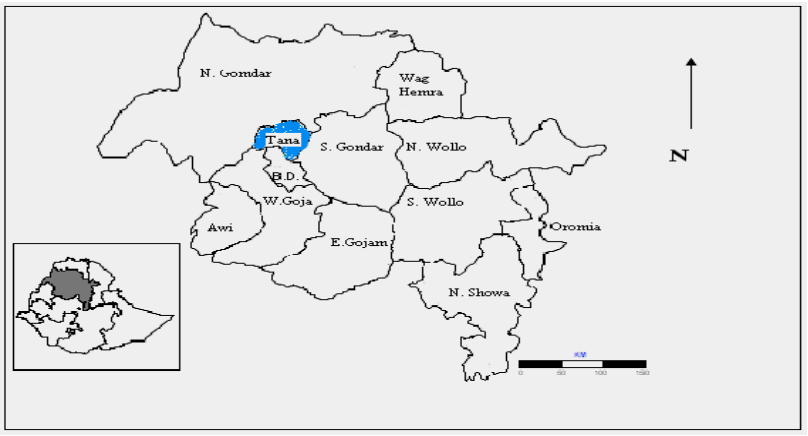
3. CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Description of the Study Area

Geographic Location

North Gondar Administrative Zone, in which the study site is found, is located in the north – western part of the country (Figure 3.1) between $11^0$56' and $13^0$45' North latitude and $35^0$11'and $35^0$50' East longitudes, 725 km. from Addis Ababa. The total area of the Zone is 50,970 square km most of which is located in the North Central area of the high lands. The city has 11 rural and 13 urban kebeles (Gondar Wereda office of Agriculture, 2013).

Figure 1: Location of North Gondar zone in the Amhara region



Sources: http://www.ethiodemographyandhealth.org, 2013

According to the data obtained from Gondar Woreda office of agriculture, the total population of the woreda is 233,757 of which 123357 or 52.8% are females. In the Woreda there are about 7810 rural agricultural household heads, out of which 84.3% and 15.7% are male and female headed households respectively.

Except under few instances, altitudinal differences in the Woreda are not significant. However, some areas in the southwest seem to have lower elevations. The farming system of the area is mixed farming composed crops and livestock based farming system.

Livestock production is an integral part of the production system. Production of cattle (milk, meat), goat (meat) and poultry is a common practice.

There are multipurpose co-operatives established to serve the rural farmers. Some of the functions of the cooperatives include: coordination of credit for purchase of inputs like DAP, Urea, etc in collaboration with Agricultural Input Supply Corporation (AISCO).

The Amhara Credit and Saving Institution (ACSI) is the major provider of credit and saving service for the rural population in the region. The credit repayment schedule varies from one investment type to the other.

Target Population

Since Gondar woreda administration were selected purposively where the problem of this study was already observed .For the study two stage sampling method were employed. In the first stage 3 out of 11 rural kebele administrations were selected using simple random sampling method. In the 2^{nd} stage formal agricultural input borrowers or credit users were identified from each kebeles then random sampling on the basis proportional to sizes were selected.

The target population of the study was the total number of borrowers or heads of households in 3 selected rural kebeles. Those were about 1208 and that consists of 202 female headed and 1006 male headed households residing in Kilil Eyesus, Bilajig, and Azezo Teklehaimanot.

In the sample selection process mixed sampling designs (probability and non probability) sampling methods were employed. The selected sampling techniques were two stage sampling techniques i.e. simple random and purposive sampling.

3.2. Types of data and Source

For this study primary and secondary data were used. The primary data was collected from the sample of formal credit borrower's farmers through structured questionnaires which was prepared for the study and information pertaining to respondents' socio economic characteristics, institutional situation etc were obtained directly through the interview which was conducted at household level. Secondary data was obtained from the Woreda Agricultural Office and Cooperative Office and published documents such as journals and books.

3.3. Methods of Data Collection

The primary quantitative data were collected by employing three enumerator's fluency in the local language Amharic, experienced in the data collection and had a good knowledge about research kebeles or villages were considered in recruiting enumerators.

One enumerator was assigned to each kebele. Appropriate training including field practice was given to the enumerators to develop their understanding regarding the objective of the study, the content of the questionnaire, how to approach the respondent and conduct the interview. Pretesting of the questionnaire was carried out with the enumerators and depending on the result some adjustments were made to the final version of the questionnaire.

In this study, different instruments of collecting data were employed. Data were collected using questionnaires, personal observations, and informal discussions with borrowers were used to generate primary information. And secondary data was obtained from government offices and other relevant organizations.

Structured questionnaire were prepared to collect quantitative data for the study. Primary data sources could be the sample farm households both credit users. Secondary sources were office of agriculture, Amhara credit and saving institution and cooperative office. Farmer's multipurpose service cooperatives and other relevant offices were also assessed as a secondary data source. The questionnaire was pre-tested to evaluate for consistency, clarity and to avoid duplication and to estimate the time requirement during data collection.

3.3.1. Sampling Techniques and Size

In order to select respondents for the questionnaire survey, researcher used two stage random sampling techniques. At the first stage, 3 kebeles (Bilajig, Azezo Teklehaymanot and Kilil Eyes us) out of the 11 kebeles of the study area were randomly selected. In the second stage, probability proportional to sample size sampling technique was employed to draw sample households from the selected sample kebeles. The numbers of heads of households in the selected sample kebeles were 1208 (Bilajig 568, kilileyesus 456, and azezo tekelhayemanot 184)

out of this, 202 were female headed households (Bilajig 168, Kilil Eyesus 26, and Azezo Tekelehayemanot 8).The researcher deemed necessary to take independent sample from 3 selected kebeles to ensure equal representation of households as all sample kebeles had different number of households. The sample size from the target population who were credit users residing in 3 rural kebeles was determined using Yeman's formula as indicated on Yeman's (1967).

The study used the following formula to calculate sample size

$$n = \frac{N}{1 + (e)^2}$$

Where n = is sample size the research used

N= number of credit users in all 3 selected rural kebeles (target population)

e=lower accuracy level of margin of error 5% (0.05)

1= probability of event occurring

Therefore, when this formula was applied to this study the following result was obtained i.e.

$$n = \frac{N}{1+N(e)^2} = \frac{1208}{1+1208(0.05)^2} = 300.5$$

Accordingly, the required sample size that was chosen to fill questionnaire was 300 heads of households residing in 3 sample kebeles. Hence 300 heads of households were proportionally selected based on the number of heads of households residing in each 3 sample kebeles (Kilil Eyesus 113, Bilajig 141, and Azezo Teklehaymanot 46).From these households250 were males (Kilil Eyesus 94, Bilajig117, Azezo Tekelhayemanot 39) and 50's were females(Kilil Eyesus 19, Bilajig 24, Azezo Teklehaymanot 7).

Table3. 1: Distribution of sample households by kebeles

Kebele	Rural credit user	Sample size
Kilil Eyesus	456	113
Bilajig	568	141
Azezo Teklehaymanot	184	46
Total	1208	300

Sources: own summary, 2015

In case of qualitative method non probability sampling was chosen due to the rationally that it was used to identify the relevance to the focus of the study rather than representativeness of the population. Purposive sampling was working well in selecting knowledgeable experts, professionals, stakeholders and the local community leaders to be key informants using this sampling technique researcher made interview for six individuals that were knowledgeable about communities who residing in these three selected kebeles.

Moreover key informant interview were selected with purposively selected community representatives or community leaders. These representatives of local community were the first group of key informants they were residents of villages where the research kebeles were. Their perception about the impacts of socio economic condition of the society on loan repayment performance was seen based on the population size and time spent to interview one villager and with resources available to cover three kebeles that determined the sample for each kebele should be two community representatives.

The experts from government offices at different level were the second group of key informants. These were four experts who were selected in different offices (Gondar city environmental protection, land administration and use office).

All these key informants were selected purposively with respect to their roles, knowledge and experience, the subject of the study for this qualitative survey. In order to make the size

manageable, researcher decided to limit the total number of key informants not to be more than ten.

3.4. Methods of Data Analysis

3.4.1 Descriptive Analysis

Both qualitative and quantitative techniques were used to analyze the data. Qualitative data that was obtained by observation and focus group discussion was organized and described on the process in the field. Quantitative data was analyzed using descriptive statistics such as mean, percentage, standard deviation, tabulation, ratio and frequency distribution.

3.4.2. Econometrics Analysis

In addition, the t- and Chi-square test statistics were employed. The binary logit, econometric model which best fits the analysis for determinant factors that affects small holder farmers loan repayment was conducted.

3.4.2.1. Model Specification

In the analysis of studies involving qualitative choices, usually a choice has to be made between Logit and Probit models. The Probit probability model is associated with the cumulative normal probability function whereas the logit model assumes cumulative logistic probability distribution and the choice between them is difficult. There is a statistically similarity between logit and probit models. However, many authors tend to agree in that the logistic and cumulative normal functions are very close in the mid-range, but the logistic function has slightly heavier tails than the cumulative normal functions (Sissy, 2008).

Logistic and probit formulations are quite comparable. Whether to use logit and probit is a matter of computational conveniences. The logit model has been widely used in many fields, including economics as (Gujarati, 2004).

probit and logit model are different due to the specification of the distribution of the error terms as logit models assumes that the underling distribution of the error terms is logistic. While probit

assumes the distribution to be normal but both are almost converges to each other with increase in the sample size.

Anbes (2003) pointed out that a logistic distribution (logit) has got advantage over the others in the analysis of dichotomous outcome variable in that it is extremely flexible and easily used model from mathematical point of view and results in a meaningful interpretation.

Logit model is useful for the analysis of variables which are dichotomous in nature such as default and non-default, yes or no. Regression models in which the regress and evokes a yes or no or present or absent response are known as dichotomous, or dummy, dependent variable regression models. They are applicable in a wide variety of fields and are used extensively in survey or census-type data (Gujarati, 2004). The dependent variable in this study is also a dummy variable, which takes a value of zero or one depending on whether or not the borrower defaults. However, the independent variables are of both types that are continuous or categorical. When one or more of the explanatory variables in a regression model are binary, we can represent them as dummy variables and proceed to analysis. Binary choice models assume that individuals are faced with a choice between two alternatives and their choice depends on their behavior. Thus, one purpose of a qualitative choice model is to determine the probability that an individual with a given set of attributes will make one choice.

A possible problem with the use of the dichotomous variable instead of the actual continuous variable is that it causes a loss of information in the dependent variable. In this case the models have in common a dependent variable as an indicator of discrete choice such as yes or no decision. In this study the dependent variable is a binary choice, either the householders is defaulters (Y=1) or none(Y=0). It is believed that a set of factors such as age, family size, education of household, household income, farm land holdings, oxen holdings, etc. gathered in a vector X affects the probability of being in either of the group.

$$prob \quad (Y = 1 / X) = F(X, \beta)$$

$$prob \quad (Y = 0 / X) = 1 - F(X, \beta) \quad \text{.....1}$$

The set of parameters β reflects the impact of changes in X on the probability. In this case what interests us is the marginal effect of explanatory variables on the probability of being default.

A binary Logit model is chosen for this study. The model enable us the determination of the factors affecting loan repayment of rural householders in the case of individual specific data including household attributes, nature of their agricultural practice, and their asset holdings. In this method, individuals are classified as default and non default based on their ability to repay their debt. Therefore, the cumulative logistic probability model was econometrically specified as follows:

Following Gujarati (2004), the Logit model, for binary choice, variable Y_i takes value 1 $(Y_i = 1)$ if the household is default, $Y_i = 0(Y_i = 0)$ otherwise. The Probability of being default is a function of Z_i. Where $Z_i=\beta 0+\beta_i X_i$

In explaining occurrence of an event given the explanatory variables, the LPM is

$P_i=E(Y=1|X_i) = \beta i + \beta_i X_i$ ……..……..……..…*2*

Where X_i is the different determinants of repayment and $Y = 1$ means the person is default. But for ease of expression we consider logit model, (Gujarati, 2004)

$$P_i=E(Y=1/X_i) = \frac{1}{1+e^{-(\beta_1+\beta_2 X_i)}} \text{ ---------- (3)}$$

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

Given $Zi=\beta_0+ \beta_1X_1+ \beta_2X_2+\ldots\ldots\ldots + \beta_{15}X_{15}+ u_i$

Where Pi is the probability that an individual will make a certain choice (defaults or non default) given X_i

e denotes the base of natural logarithms, which is approximately equal to 2.718;

$\beta 0, \beta_1, \beta_2 \ldots \beta_{15}$ are parameters to be estimated

U_i is error term and

X_i is explanatory variables and is described on table 3.3 below.

Equation 4 above represents what is known as the (cumulative) logistic distribution function. It is easy to verify that as Z_i ranges from $-\infty$ to $+\infty$, P_i ranges between 0 and 1 and that P_i is nonlinearly related to Z_i(i.e., X_i). This may create an estimation problem because P_i is nonlinear not only in X but also in the β's as can be seen clearly from (equation 4). This means that we cannot use the familiar OLS procedure to estimate the parameters. But this problem is more apparent than real because (4) can be literalized as follows.

If *Pi,* the probability of being default, is given by (equation 4), then (1 − *Pi)*, the probability of being not default, is 1 − *Pi.*

$$1 - Pi = \frac{1}{1+e^{zi}} \quad \text{.....5}$$

Therefore, we can write

$$\frac{pi}{1-pi} = \frac{\frac{e^{z}}{1+e^{z}}}{\frac{1}{1+e^{zi}}} = e^{z} \quad \text{---------- (6)}$$

Now *Pi/* (1 − *Pi*) is simply the odds ratio in favor of being default is the ratio of the probability that a person is defaulter to the probability that he/she is non-defaulter.

Now if we take the natural log of this equation, we obtain a very interesting results shown as below;$Li = In\left(\frac{-pi}{1-pi}\right) = zi$----------*(7)*

$Zi = \beta_1 + \beta_2 X_i$

Li is the log of the odds ratio and it is not only linear in x, but also linear in parameters. The intercept $\beta_1$is the value of log odds in favor of being default.

β_2, the slope of coefficient, measures the change in L for α unit change in X, that is, it tells how the log odds ratio in favor of being defaults.

Unlike the standard regression analysis, the parameter value (β_i) is not directly interpretable as the effect of a change in the explanatory variable on the mean or expected value of the dependent variable. The coefficients need to be adjusted to be marginal effects in the case of logit model. In other words, the marginal effect, which gives the partial derivatives indicating the change in the probability of the dependent variable relative to a unit change in one of the independent variables, need to be computed. As the relationship between the regressor and the absolute probabilities in nonlinear, marginal effects vary according to the choice of X and, consequently, they will vary among individuals according to the point of evaluation.

If the error term (ε) is taken in to account, the logit model becomes:

$$Y_i = \alpha + \sum_{i=1}^{k} \beta_i X_i + \mu_i \text{ ---------- (8)}$$

Where: K=the number of explanatory variables; Xi= vector of independent socio-demographic, socio-economic and institutional variables of households and μ=the error term of the model. For continuous variables, the marginal effect is the probability change in response to an increase in the value of the independent variable by one evaluated at the mean value.

3.4.2. 2.Description of Variables

I. Dependent Variable: the dependent variable of this study is loan repayment performance of the rural household. It is a binary or dichotomous variable representing there re payment status of households. This study was assessed based coding 0 if the household is defaulters and 1 for non defaulters.

II. Independent Variables of the model: a number of variables may affect the households' loan repayment status. These are factors like, household demographic characteristics and socio-economic and institutional factors that affect loan repayment performance of rural households. The variables expected to affect the loan repayment performance are:

Age (age): With increase in age, it is usually expected that borrowers get more stability and experience. So we expect this variable to have a positive impact on repayment performance.

However, since as people get older, their ability to effectively use finance and generate income declines, the variable could also have a negative impact. A study which was conducted by Oladobo and Oladoboh (2008) showed that age of the respondents has a negative effect on the farmers' loan repayment performance.

Sex of Borrower (sex): There is a belief among many microfinance specialists that female are better payers than male borrowers, taking into consideration their being more entrepreneurial that results from assuming more responsibilities in the internal affairs of a household. However, the others expected that female-headed households are less experienced in formal credit and hence could be defaulters for they know little about the consequences of loan default. Idoge (2013) showed that sex of the respondent has a positive effect on the dependent variable if sex is male.Hence this variable might be assumed positive sign.

Family size (family size): defined as the total number of dependents in the family and elsewhere that depend on the borrower for their livelihood expressed in percentage. As the number of dependents increases, the borrower needed more money to fulfill their requirements in addition to the obligation of loan repayment. As a result he/she may divert the loan to meet the needs of the dependents. Hence we expect this variable to have a positive impact on loan diversion.

Educational Level of Borrower (education): This variable is expected to have a positive impact on repayment performance in general. Considering normal circumstances, a educated borrower is expected to use the loan effectively as compared to a non –educated one. This result that is the positive relation between educational status and loan repayment performance is obtained by C.V.W ongnaa (2013) employed probit model analysis in his study about factors affecting loan repayment performance among Yam farmers in the Sene District.

Off farm Income (off farm income): Some borrowers may have other sources of income like income from employment in government or private organizations of the borrower or other members of the family, pension, etc. Such sources of income are expected to have positive contribution towards loan repayment performance. But if availability of such sources creates carelessness on the part of borrowers in fulfilling their obligation of repayment possibly

considering the next loan unnecessary, it may well undermine repayment performance. Hence this variable may assume positive or negative sign.

Number of Oxen owned (TLU): The more number of oxen owned a borrower has, the higher capacity he/she has to settle loan obligation in face of income fluctuation. Bekele et al. (2003) found out that farmers who owned more oxen were able to repay their loans.

Farm size (farm size): Refers to the total farm size (in hectares) owned by the family. A farmer with more hectares of land is expected to be better off in loan repayment performance. This is - because, if augmented with other factors of production, large farm size gave higher production that enabled the borrower to repay his/her loan. Therefore, this variable would be expected to have positive relation with the dependent variable.

Loan size (loan size): If amount of loan released is enough for the purposes intended, it would have a positive impact on the borrower's capacity to repay. The result of a research suggests that, the larger the size of the loan, the lower the probability of repayment default (Etay, 2013). If on the other hand the amount of loan exceeds what the borrower needs and can handle, it would be more of a burden than help, thereby undermining repayment performance. Also positive or negative sign may be expected.

Loan diversion (money spent on festival) (loan di): The impact of this Variable depends on what use the diverted loan is putto. If the used for productive purposes than the intended ones then repayment would be enhanced. If on the other hand the loan is diverted to non-productive uses, it will have a negative impact. Therefore the sign of this variable can't be predetermined.

Loan supervision (loanspr): If there is a continuous follow up and supervision visit to evaluate the loan utilization and repayment, this makes borrowers to observe their obligation and improve the proper utilization of the loan thereby improving repayment performance. A researcher has found that loan supervision has a positive effect on the dependent variable (C.V.Wongnaa, 2013).Therefore we expect a positive relationship.

Irrigation used (irrigatinused): Irrigation enable farmers to diversify their production, practice multiple cropping, and supplement moisture deficiency. In doing so, it helps the farmer to increase production, income and consumption. It is assumed to have a positive relationship with household loan repayment performance.

Fertilizer used (fertilizerused): The wise usage of fertilizer is one of the best investments a farmer can make. That means, with efficient use of fertilizer, the farmer expects a higher return on each unit of money spent on fertilizer. Therefore, this variable is expected to have positive relation with the dependent variable.

Table 2.3: The expected sign of independent variables

List of Variables	Label /Description/	Variables types	Proposed sign
Age	Age of household head	Discrete	+/-
Sex	Sex of Borrower	Binary	+
Family size	Family size	Discrete	+
Education	Educational level of borrower	Discrete	+
Loan spr	Off farm income	continuous	-/+
TLU	Number of Oxen owned	continuous	+
Farm size	Farm size	continuous	+
Loan size	Loan size	continuous	-/+
Loan di	Loan diversion/money spent on festival	Binary	-/+
Loan spr	Loan supervision	Binary	+
Irrigation u	Irrigation used	Binary	+
Fertilizer u	Fertilizer used	Binary	+

Sources: own summary, 2015

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Demographic and Socio-economic Characteristics of the Sampled Households'

4.1.1 Demographic Characteristics

Age of Respondent

As shown in the table below (table4.1), out of the total respondents who were found in the age group of 65 and above years, the high percentage of them (18.24%) were defalters but only approximately 5.3% of them were non defaulters. This implies that the loan repayment performance of farmers decreases as the respondents' age increases while the remains were constant.The chi2 testfor the association between age of a sample borrowers and their repayment performance was staistically significant below 1% significant level.The negative value of coefficient also showed that further disbursement of loans should be targeted at younger farmers than their counterparts to adopt new innovations in agricultural production their by to increase thier income and to repay their loan on time and in full..

Table 3.1: Age .of sample respondents

Age class	Age	Non defaulter		Defaulter		Total		$Chi^2(5)$	$Prob>chi^2$
		Freq	%	Freq	%	Freq	%		
Young	**18 -45**	54	35.5	51	34.46	105	35	19.6202	0.001
Matured	**46-65**	90	59.21	70	47.297	160	53.3		
Old	**=>65**	8	5.263	27	18.243	35	11.7		
	Total	152	100	148	100	300	100		

Sources: own computation data, 2015

Sex of Respondents and Loan Repayment

The sample respondents were composed of both male and female headed households. In table 4.2 below the proportion of female headed households (19.3%) and this was less than that of male headed households (80.7%). Out of the total non-defaulter households 86% and 14% of respondents were found to be male and female respectively. On the other hand 75% and 25% were found to be male and female defaulters respectively. The chi square test for association between sex of borrowers and their repayment performance was statistically significant below 1% significance level. This implies that there was a significant difference in loan repayment between male and female borrowers. Male borrowers had better loan repayment performance than their counter part female borrowers. This was because households whose gender was male can produce or generate higher income by working at different work places and in different work types than females. This implies that male borrowers most likely to repay their loan in full and on time as compared to their counterparts female borrowers.

Table 4.2. Sex of sample respondents

Sex	Non defaulter		Defaulter		Total		$Chi^2(1)$	$Prob>chi^2$
	Freq	%	Freq	%	Freq	%		
Male	131	86	111	75	242	80.7	6.0144	0.014
Female	21	14	37	25	58	19.3		
Total	152	100	148	100	300	100		

Sources: Computed by the researcher based on primary data, 2015

Educational Status and Loan Repayment

Regarding the educational level of respondents, about 44.3 percent of household head were illiterate where as 55.7 percent were literate indicating that most of the household head can read and writes. Of total sample respondents, 36.8 percent of the non-defaulter and 52 percent of the defaulters were illiterate whereas 63.2 percent and 48 percent of non-defaulters and defaulters could read and write respectively. The chi square test for association between the variable educational status and loan repayment performance was significant below 1% significant level. The test indicates the positive strong relationship between educational status and loan repayment performance of respondents. That means as the borrower's educational level increases loan repayment performance also increases. This result is consistence with the result of C.V.Wongnaa

(2013) who employed probit model analysis in his study about factors affecting loan repayment performance among Yam farmers in the Sene District.

Table 4.3 Educational status of respondents

Educational status	Non defaulter		Defaulter		Total		$Chi^2(1)$	prob >chi^2
	Freq	%	Freq	%	Freq	%		
Illiterate	56	36.8	77	52	133	44.3		
Literate	96	63.2	71	48	167	55.7	7.0062	0.008
Total	152	100	148	100	300	100		

Sources: own computation data, 2015

Family size and Loan Repayment

It was hypothesized that house hold size will have a negative influence on the loan repayment performance of household. In other words as the number of house hold size increases the consumption level of the house hold head expected to increases and this leads to decreases in loan repayment performance. Table 4.4 revealed that proportion of house hold becoming non defaulters' increases as the family size increases.

The average family size of the non-defaulters and defaulters was 2.269737and 1.986486 with standard deviation of 0.56346and 0.6899373 respectively with below 1% significance level. This implies that, the variable family size and loan repayment performance had strong positive relationship. The same result was obtained by Kiliswa Nancy who undertakes a research project using a regression model in Kariobangi division Nairobi, Kenya to identify major determinants of loan repayment in small scale enterprises.

Table 4.4: Family size of respondents

Family size	Non defaulter	Defaulter	Total	$Chi^2(3)$	$Prob>chi^2$
Mean	2.269737	1.986486	2.13		
Std dev	0.56346	0.6899373	0.6438025		
Minimum	3	2	2	34.823	
Maximum	8	10	10		0.000

Sources: own computed data, 2015

4.1.2 Socio economic characteristics of house holds

Farm size

Land is one of the most important inputs for households whose primary means of livelihood is farming. As shown in the table below (Table4.5) the average farm size of the non defaulter's and defaulters was 1.53 and 1.57 respectively. The T test result showed that the relationship between farm size and loan repayment performance was not statistically significant. This implies that households were not different as much as farm size concerned.

Table 4.5: Land (farm) size of sample house holds

Farm size	Non defaulter	Defaulter	Combined	T- value	Prob>t
Mean	1.529408	1.572297	1.550567	0.5752	0.5656
Std dev	0.6043411	0.6854981	0.6449283		

Sources: own computed data, 2015

Fertilizer use and Loan Repayment

The wise usage of fertilizer is one of the best investments a farmer can make. That means with efficient use of fertilizer the farmer expects a higher return on each unit of money spent on fertilizer. Therefore, this variable was expected to have positive relation with the dependent variable. Fertilizer used supposed to increases farm productivity which in turn increases farm income and with increased the level of farm income the probability of loan repayment will increases as well.

As we have seen from the below table out of the total sample respondents 76.3 percent were users of input fertilizer and the rest 23.7 percent were not users of fertilizer .Among those who were fertilizer users 45 percent and 31.3 percent were non-defaulters and defaulters respectively. On the other hand from nonusers 5.7 percent and 18 percent were non-defaulters and defaulters.. The chi square test for association between the variable fertilizers used and loan repayment performance was statistically significant at 1% significant level. This implies that there was a strong positive relationship between the variable fertilizer use and loan repayment performance.

Table4.6: Fertilizer use of respondents

Fertilizer used	Non defaulter		Defaulter		Total		Chi^2	$Prob>chi^2$
	Freq	%	Freq	%	Freq	%	26.5737	
Yes	135	45	94	31.3	229	76.3		0.000
No	17	5.7	54	18	71	23.7		
Total	152	50.7	148	49.3	300	100		

Sources: own computed data, 2015

The number of Farm Animals

Rural Ethiopia in general and Gondar Woreda in particular characterized by the practice of mixed farming .This also the case in the context of three rural kebeles around Gondar city administration namely Bilajig, Azozo T\haymanot, and Kelil Eyesus. Although livestock endowment expected to increase wealth and income, leads to repay the loan within a specified time. But the survey result in the Table below showed that the average farm animal holdings measured in TLU of the sample respondents were 3.2 and 2.8 units for non-defaulters and defaulters respectively. However, the difference between the two groups was not statistically significant this implies that households were not different as much as TLU concerned in the study area.

Table 4.7: Livestock endowment of the household

TLU	Non defaulter	Defaulter	Combined	T-value	Prob>t
Mean	3.212829	2.809122	3.013667	-1.5664	0.1207
std dev	2.183461	2.308738	2.251468		

Sources: own computed data, 2015

4.1.3 Institutional factors affecting loan repayment performance

Irrigation Use

Irrigation is a rare phenomenon of agricultural production in most parts of Africa (World Bank, 2007:15). What is now covered by irrigation is but a small proportion of what is potentially irrigable are in most countries (world bank, 2007:15), use of irrigation is one important way to enhance agricultural production and farm income this would in turn contribute to food security, increased income and house hold welfare.

Table4.8: Irrigation Use

Irrigation used	Non defaulter		Defaulter		Total		$Chi^2(1)$	$Prob>chi^2$
	Freq	%	Freq	%	Freq	%		
Yes	108	71.1	79	53.4	187	62.3	9.9767	0.002
No	44	28.9	69	46.6	113	37.7		
Total	152	100	148	100	300	100		

Sources: own computed data, 2015

As we have seen from the above table out of the total respondents 62.3% households were cultivating there land using irrigation technology and the remaining 37.7% households did not adopt this technology yet. From the users of irrigation technology 71.1% and 53.4% were non-defaulters and defaulters respectively. On the other hand among those who were not used irrigation technology 28.9% and 46.6% were non-defaulters and defaulters respectively. The chi square test for association between the variable irrigation used and loan repayment performance statistically significant below 1% significant level. This implies that there was a strong positive

relationship between the variable irrigation used and the loan repayment performance of the house hold.

Off farm Income

The average off farm income of the sample household head was 6071.05 and 6129.73 for non-defaulters and defaulters respectively. The T value (0.02) Birr showed that the relationship between off farm income and loan repayment performance of the household head was not significant. This implies that there was no statistically significant difference in loan repayment performance between borrowers having high off farm income and borrowers with low off farm income in the study area as shown in the table 4.9 below.

Table 4.9: Off farm income of the household

Off farm income	Non defaulter	Defaulter	Combined	T –value	Prosb >t
Mean (Birr)	6071.053	6129.73	6100	0.0258	0.9794
Std dev(Birr)	22060.64	16889.64	19647.47		

Sources: Own computation data, 2015

Loan size

The table 4.10 below indicates that the average Birr of the sample respondents were 2.87 and 3.15 for non-defaulters and defaulters respectively. The T value (1.4149) showed that the relationship between loan size and loan repayment performance of the household head was not statistically significant. This implies the variable loan size was not relevant determinant for the dependent variable loan repayment performance in the study area.

Table 4.10: Loan size (Birr)

Loan size	Non defaulter	Defaulter	Combined	T –value	Prob>t
Mean	2.868421	3.14527	3.005	1.4149	0.1581
Std dev	1.660544	1.728368	1.697177		

Sources: own computed data, 2015

Loan Diversion

Expenditure on social festivals includes expenditure for social ceremony such as wedding, circumcision, funeral of a family member or close relative and engagement.

Table 4.11: money spent for festivals

Loan diversion	Non defaulter		Defaulter		Combined		p –value	Prob >chi2
	Freq.	%	Freq.	%	Freq.	%		
Yes	32	21	40	27	72	24	1.4674	0.226
No	120	79	108	73	228	76		
Total	152	100	148	100	300	100		

Sources: own computed data, 2015

As we have seen from the above table among the total respondents who uses their money for un-intended purposes or for non-productive uses 21 and27 % were non defaulters and defaulters respectively whereas, 79 and 73 % non-defaulters and defaulters were those who use their money for intended or productive uses. In addition the association between loan diversion and loan repayment performance was found to be insignificant. This implies house hold head respondents were not different as much as loan diversion concerned in the study area.

Loan Supervision

Table 4.12: loan supervision

Loan super vision	Non defaulter		Defaulter		Total		$Chi^2(1)$	$Prob>chi^2$
	Frequency	%	Frequency	%	Frequency	%		
Yes	134	44.7	123	41	257	85.7	1.5573	0.212
No	18	6	25	8.3	43	14.3		
Total	152	50.7	148	49.3	300	100		

Sources: own computed data, 2015

As we have seen from the above table most of the sample respondents (85.7%) were officially supervised on how to use the loan and on repayment schedule, whereas the rest (14.3%) of

sample respondents were not supervised. When we say officially supervised which refers that; borrowers have a chance to be supervised by official supervisors however, by different problems related to both in borrowers and supervisors, supervision is not occurred for all borrowers. Out of those who were officially supervised 44.7% and 41 % were non defaulters and defaulters respectively and from those who were not supervised 6 %and 8.3% were non defaulters and defaulters respectively. Moreover the association between loan supervision and loan repayment performance was found to be insignificant. This implies household head respondents were not different as much as loan supervision concerned in the study area.

4.2. Econometrics Analysis

4.2.1 Analysis of Determinants of Loan Repayment Performance of Farmers

As discussed before, logistic regression was applied to identify the main determinants of loan repayment performance of the household. Before running the logistic analysis the variables which were included in the model were checked for the existence of multicolinearity and hetroschadasity problems. Multicolineaeity problem arises when at least one of the independent variables is a linear combination of the others. The existence of multiclinearity might cause the estimated regression coefficients to have the wrong signs and smaller t-ratios that might lead to wrong conclusions. There are two measures that are often suggested to test the presence of multicolinearity. These are VIF for association among the continuous explanatory variables and contingency coefficients for dummy variables. First it is checked the multicolinearity problems associated with the explanatory variables .There are two methods to check the multi co linearity problems. For continuous variables the first method used to detect the problems of multi co linearity is variance inflation factor (VIF).

$VIF = 1/1\text{-}R_i^2$

Where, Ri^2 is the square of multiple correlation coefficients that results when one explanatory variable (X_i) is regressed against all other explanatory variables. The larger the value of the variance inflation factor the more troublesome of collinear the variable x is, as a rule of thumb if the variance inflation factor of a variable exceeds ten, there is a serious multi co linearity problem. According to a researcher,

The VIF value less than five are believed no problem related to multi co linearity problem (Johnson ,A, 2013). As a result table of VIF showed that all continuous explanatory variables did not have multi co linearity problems.

Table 4.13: VIF- For continuous variables

Variables	VIF	1/VIF
Loan size	2.48	0.403771
Farm size	2.55	0.392535
Off farm income	1.05	0.955922
Tlu	1.01	0.989884
Mean VIF	1.77	

Sources: own computed data, 2015.

The second method of detecting multi co linearity problem is through contingency coefficients for high degree of association for discrete variables.

Contingency coefficient computed as:

$$C=\sqrt{\frac{X^2}{N+X^2}}$$

Where, c = contingency coefficients ranges from 0 to 1

X^2=chisqaured random variables

N= total sample size

As a rule of thumb, contingency coefficients less than 0.5 assumes weak association between discrete variables and indicates no sever multi co linearity (Shemelse, 2006).

Contingency coefficient approaches to 1 taken as indicator of multi co linearity. Since the result showed in the table below was less than 0.5 there was no multi co linearity problem between independent variables therefore all of the independent variables were included in the model.

Table 4.14: contingency coefficients for discrete variables

	Age	Sex	family size	Education	Loan supervision	Irrigation	fertilizer	Loan diversion
Age	1.000							
Sex	0.23	1.0						
family size	0.39	0.24	1.000					
Education	-.01	0.11	0.01	1.000				
loan supervision	0.09	0.04	0.11	-0.06	1.000			
Irrigation	0.21	0.04	0.10	0.05	0.04	1.000		
Fertilizer	-0.01	0.08	0.09	0.05	0.06	-0.01	1.000	
Loan div	-0.07	-0.04	-0.10	-0.25	-0.26	-0.11	-0.04	1.000

Sources: own computed data, 2015.

In the second, the problem of hetroschedasticity was tested by brush pagan test (hettest). The test indicated that there was no any hetroschedasticity problem in the model. Because, as the model result showed that, the null hypothesis showed that there was a constant variance but the alternative hypothesis was the reverse one with insignificant probability level; which indicates that the null hypothesis was accepted that means there was no hetroschedasticity problem in the model.

In the third the omitted variable problem was tested by using the Ramsay regression specification test (Ramsay RESET). As a rule of thumb the test includes both the null hypothesis and the alternative (F, statistic) hypothesis. The null hypothesis showed that there was no omitted variable but the alternative (F, statistic) hypothesis showed that there was omitted variable problem if the F, statistic was significant that means when the P, value of F, statistic was significant. Based on the rule of thumb, our result showed that there was no omitted variable in the model, because the alternative hypothesis (F, statistic) which said there was omitted variable problem was rejected and the null hypothesis which said that there was no omitted variable was accepted. Therefore, based on our results, there was no omitted variable problem in our model.

The estimated logistic model results was significant at less than 1% level of significance indicating that the estimated model was correctly fitted as shown in the table below (table4.15).

Table 4.15: Determinants of loan repayment

Logistic regression Log likelihood =-167.8599					No of obs. =300 LR chi2(12)= 80.12 Prob>chi2= 0.000 Pseudo R^2=0.1927		Marginal effect
Variables	Coef.	Std.err	Z	p>|z|	Odds ratio	Std.err	
Constant	-3.405081***	0.8438193	-4.04	0.000			
Age	-0.449405***	0.1359901	-3.30	0.001	0.6380073	0.0867627	-0.1123495
Sex	0.657995*	0.361945	1.82	0.069	1.930917	0.6988859	0.1612946
Family size	1.025472***	0.2570126	3.99	0.000	2.78841	0.7166566	0.2563637
Education	0.6400321**	0.2843694	2.25	0.024	1.896542	05393184	0.1585801
Loan supr	0.6083089	0.4463008	1.36	0.173	1.837322	0.8199982	0.1490623
Irrigation used	1.16038***	0.2958795	3.92	0.000	3.191145	0.9441943	0.2807414
Fertilizer used	1.534908***	0.3475678	4.42	0.000	4.640897	1.613026	0.3527676
Offfarmincome	0.0000126	$8.05e^{-06}$	1.56	0.118	1.000013	$8.05e^{-06}$	$3.15e^{-06}$
Livestock(inTLU)	0.0252941	0.0630775	0.40	0.688	1.025617	0.0646937	0.0063234
Farm size	-0.138382	0.3653841	-0.38	0.705	0.8707654	0.3181639	-0.0345951
Loansize	-0.083088	0.1366999	-0.61	0.543	0.9202699	0.1258008	-0.0207717
Loanddi	0.0639766	0.3393079	0.19	0.850	1.066067	0.3617251	0.0159925

Sources: own computed data, 2015

Where * , ** and *** refer to significance at 10%, 5% and 1% level of significance respectively. Source: Model output, 2015

Out of the twelve explanatory variables hypothesized to influence the loan repayment performance of the borrower farmers, six explanatory variables were found to be significant factors affecting the loan repayment performance in the study area.

The maximum likelihood estimates of the model showed that age of the house hold head, family size; sex of the household head, fertilizer used, irrigation used and education were the important determinants which influence the loan repayment performance of the farmer were presented as follows.

Age of the household head (AGEHH):- This is defined as the age of the borrowers at the time of interview measured in years completed. It was significant below1% significant level and negatively related to the loan repayment performance of the farmers. This relationship shows that as age of borrower increases the probability of loan default increases. This relationship is consistent with Oladobo and Oladoboh result obtained in 2008. The odd ratio 0.64 indicates as the borrower's age increase by one more year the probability of default of loan repayment increases by 0.64 factors. The marginal effect -0.11 also showed that as the age of the borrower increases by one more year, the probability of default of repayment would increase by 11% other things remain unchanged. This may be due to the fact that the older farmer might not be capable to accumulate enough income for repayment purpose of their loan than the youth ones.

Sex of respondents (gender): This was the dummy variable that takes a value of one if the households head was male and zero otherwise. There is a belief among money micro finance specialists that females are better payer than male borrowers taking in to consideration their being more entrepreneurial that results from assuming more responsibilities in the internal affairs of a house hold. However, the other expected that female headed households are less experienced informal credit and hence will be defaulters for they know little about the consequence of loan default. Hence this variable may assume positive or negative sign. But in this study, this variable was an important variable that was found to have a positive and significant relation with the dependent variable below 10% significant level. The same result was found by Idoge (2013). It was expected that sex of the house hold head has a good relation for loan repayment performance of farmers. This was because households whose gender was male can produce or generate higher income by working at different work places and in different work types than females. This implies that male borrowers most likely to repay their loan in full and on time as compared to their counterparts female borrowers. Keeping other variables constant, the odds ratio 1.93 indicates that as borrowers or sex of household head was being male the probability of default of

repayment decreases by a factor of 1.93.The marginal effect 0.16 also indicates that as sex of borrower being male the probability of default of loan repayment decreases by 16 %.

Family size (family size): defined as the total number of dependents in the family and elsewhere that depend on the borrowers for their livelihood express in percentage. The borrower's family size was a significant factor affecting the loan repayment performance of households in the study area. The result predicts that a household with large family size were most likely to repay their loan as compared to borrowers with smaller family size. The same result was found by Kiliswa Nancy (2010) who undertakes a research project using a regression model in Kariobangi division, Nairobi, Kenya to identify major determinants of loan repayment in small scale enterprises.
This was because, if there was a large family size, the probability of getting higher income was high and this helps them to repay the loan on time and in full. The odds ratio 2.79 indicates that as the family size increases by one more unit the probability of default of loan repayment decreases by a factor of 2.79. The marginal effect 0.26 also showed as the family size of sample borrower increases by one more unit the probability of defaulter of repayment decreases by 26 %.

Irrigation used (irrigation used): the variable irrigation used was a dummy variable that takes the value one if the sample respondents uses irrigation system and zero otherwise. Irrigation system enables farmers to diversify their production practice, multiple cropping and supplement moisture deficiency. In doing so it helps the farmer to increase their income and consumption. It is assumed to have a positive relationship with the household loan repayment performance. As it was hypothesized this variable was found to be significant factor positively affecting the loan repayment performance of households in the study area. Which means, households having access to irrigation had higher probability of repaying their loan as compared to households with no access to irrigation facilities? Other things remain unchanged, the odd ratio 3.19 indicates as the house hold head being irrigation users increases by one more unit the probability of default of loan repayment decreases by a factor of 3.19.The marginal effect 0.28 also showed as the household head being irrigation users increases by one more unit the probability of default of repayment decreases by 28 %.

Fertilizer used (fertilizer used): the variable fertilizer used was a dummy variable takes the value 1 if the sample borrowers use agricultural input (fertilizer) and 0 if not used fertilizer. As we know that fertilizer is one of the important agricultural inputs which are useful for increasing the production efficiency. However, there is a gap on the demand of fertilizer because of many factors. The first reason is due to being food insecurity. This means that they prefer selling the fertilizer for consumption purpose rather than using the fertilizer as input for agricultural activity. Farmers cannot get enough fertilizer due to shortage of supply of fertilizer. Because of this problem some farmers have not get chance to use the fertilizer. Even though there is an accessibility of it, the type of fertilizer also affects the demand of fertilizer because farmers prefer their fertilizer type based on the need of their soil type. In addition to that, if the access of fertilizer is not provided on time, the demand of fertilizer will be affected because agricultural production activity is mostly seasonal. In general, due to the above reasons there are fertilizer users and non user farmers or groups.

The wise usage of fertilizer is one of the best investments a farmer can make. That means with efficient use of fertilizer, the farmer expects higher return on each unit of money spent on fertilizer. As expected the fertilizer use was positively related to the loan repayment performance of borrowers in the study area as the model estimation result showed that the variable fertilizer used has a positive and significant effect below1 % significant level. Other things remains constant, the odds ratio 4.64 implies that as the use of fertilizer increases by one more unit the probability of default of repayment decreases by a factor of 4.64.The marginal effect 0.35 also indicate as the use of fertilizer increases by one more unit the probability of default decreases by 35 %.

Educational Status of borrowers (education): Education is an important factor in the proper utilization of loan as well as on its safe return. This implies that those households who are literate are expected to have better loan performance than their illiterate counter parts as more educated borrower is expected to use the loan effectively as compared to a less educated one. As expected the result showed that education had a positive and significant effect on loan repayment performance at less than 5% significant level. The odd ratio 1.89 indicates that as the level of education of borrowers increases the probability of loan repayment increase by nearly 1.9 factors, other things remain unchanged. The marginal effect 0.16 also indicates as the borrower

educational level increases the probability of default of loan repayment decreases by 16 %. This result that is the positive relation between educational status and loan repayment performance is obtained by C.V.W ongnaa (2013) employed probit model analysis in his study about factors affecting loan repayment performance among Yam farmers in the Sene District.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This study identified factors that affect the loan repayment performance of smallholder farmers' in Gondar Woreda, Ethiopia. For that purpose both primary and secondary data were collected from 300 sample respondents who were credit users from formal credit lending institutions in the study area using questionnaire. To identifying the main determinants of loan repayment performance status and for assessing the sources of credit of small holder farmers the binary logistic regression analysis and descriptive statistics with chi squared test were employed respectively. In the binary logistic regression model the dependent variable, loan repayment performance was a dichotomous categorical variable taking the value of '1' if the household is non- defaulter and '0' otherwise (defaulter).

As we have seen from the result of this study the main source of rural credit was found to be cooperative. In the econometric analysis, the findings indicated that, out of twelve explanatory variables hypothesized to influence the loan repayment performance of small holder farmers, six explanatory variables happened to be significant factor affecting loan repayment performance of households in the study area. These are; sex of the household head, family size, educational status, fertilizer used and irrigation used were found to have a positive and significant influence on small holder farmer's loan repayment performance. Whereas the only age of sample respondents were found to have a negative and significant influence on loan repayment performance of small holder farmers.

5.2. Recommendations

Based on the findings of the study, the following points are recommended.

1. Age of the sample respondents and loan repayment performance of small holder farmers were negatively and significantly related. Therefore, when the lending institution is giving credit for their customers it should give especial attention about the age level of respondents' or their customers'. When loan is provided to the older borrowers, additional support mechanism should be designed to enhance their repayment performance. (Training on financial management, more supervision, other technical support).

2. The variable fertilizer used and loan repayment performance were positively and significantly related. Therefore, extension agents should provide more attention to encourage farmers to use fertilizer and provide necessary training to small holder farmers for effective utilization of fertilizer and to increase the number of non-defaulters.

3. The variable education had a positive and significant factor affecting the loan repayment performance. Education is an important factor in the proper utilization of loan as well as on its safe return. Therefore the concerned bureaus and the government have to do the necessary efforts to create access to education to farmers in a form of adult education in the study area to enhance their loan repayment performance.

4. Sex of the sample respondents had a positive and significant effect on small holder farmers' loan repayment performance if the household head wasn't female. Therefore the study recommends the concerned body to give special attention on gender participation.

5. Sizes of the family and loan repayment performance were positively and significantly related. Therefore, the state should promote farmers who have relatively large family size to be more productive in their agricultural production to repay their loan easily than others.

6. The variable irrigation used had a positive and significant effect on loan repayment performance of small holder farmers. This result indicates sample respondents who use irrigation system can produce more amount of output and generate more income and can repay their loan easily and within a specified time than sample respondents who are not used irrigation system. Since irrigation system is better for effective loan repayment, using irrigation system has to encourage. Therefore extension agents and policy makers should provide more concentration and have to work more on irrigation system.

REFERENCE

Abula (2013) "Repayment Performance of Rural Farmers Loan Beneficiaries of Microfinance Banks in Oyo State, Nigeria," international Journal of Farming and Allied Sciences 2-5/104

Amare Berhanu (2005) "Determinants of formal source of credit loan repayment performance of smallholder farmers: in the Case of North Western Ethiopia, North Gondar," M.Sc. Thesis, Alemaya University, Ethiopia.

Anbes Tenaye K., (2003) Pattern of credit use and its impact on small farmers' income in Dire Dawa area, Ethiopia," M.Sc. Thesis, Alemaya University, Ethiopia.

Assefa Admassie (2004)" A Review of the Performance of Agricultural Finance in Ethiopia", Pre-and Post-Reform Periods, Msc Thesis, Addis Ababa University, Ethiopia

C.V.Wongnaa (2013)"Factors affecting loan repayment performance among yam farmers in Ghana", Journal of Research in Economics and International Finance (JREIF) Vol. 5

Dadson Awonye (2012) "Determinants of loan repayment default among farmers in Ghana", MSc Thesis, Kwame Nkrumah University of Science and Technology, Kenya

Gujarati (2004) "Basic Econometrics. 2nd edition. McGraw-Hill Book Company. New York.

Ifeanyi A.Ojiako andBlessing Cogbukwa (2012)" Studied about economic analysis of loan repayment capacity of small holder cooperative farmers in Yewa North local government area of Ogun State"MSC Thesis,Olabisi Onabango university,Nigeria

Idoge (2013) "Regionalising Loan Repayment Capacity of Small Holder Cooperative Farmers in Nigeria, Asaba, Delta State, Nigeria

Joseph John Magali (2013)" Conducted a research to asses factors affecting the credit default risk for the rural savings and credits cooperative societies (SACCOS) in Mvonero,Morogoro rural and Kongwa district "PHD Scholar-Dongbei,University of Finance and Economics,Tanzanya.

J.Chemei (2013) "Determinants of access to credit by small holder farmers in eastern and Western Kenya" Thesis, Strathmore University, Nairobi, Kenya.

Kiliswa Nancy (2012) “Major determinants of loan repayment in small scale enterprises in kariobangi division” MSc Thesis, University of Nairobi, Kenya

National Bank of Ethiopia (2012)”Study on the Need for Establishing Rural and Urban Micro financial institutions in Ethiopia” Addis Ababa, Ethiopia

National Bank of Ethiopia (NBE) (2003) Annual report 2001/2002, Addis Ababa, Ethiopia

Norhaziah Binti (2013)” Determinants of Repayment Performance in Microcredit Programs: A Review of Literature”, University Utara Malaysia, Malaysia

Ololade R.A. & Olagunju F.I (2013) “Determinants of Access to Credit among Rural Farmers in Oyo State, Nigeria,” Global Journal of Science Frontier Research 13(2):2-3.

SisayYehuala (2008) “Determinants of smallholder farmers access to formal credit: the case of MetemaWereda, North Gondar, Ethiopia,” M.Sc. Thesis, Alemaya University of Agriculture, Ethiopia.

Solomon Etay(2013)”Factors influencing formal loan repayment performance of urban women in Tigray” MSc Thesis, Mekelle University, Mekelle, Ethiopia

Suraya Hanim(2009)” Determinants of microcredit loans repayment problem among microfinance borrowers in Malaysia”, Thesis, Lincoln University, Canterbury, New Zealand.

W/selassie (2008)”Factors affecting agricultural input loan repayment of members of cooperatives at Kilteawulalo Wereda, Tigray, Ethiopia ” M.Sc. Thesis, Mekele University, Ethiopia

Koopahi and Bakhshi (2002) used a discriminator analysis to identifying defaulter farmers from non-defaulters of agricultural bank recipients in Iran.

Mohammed Reza Kohansal (2009)” Factors influencing on repayment performance of farmers in Khorasan-Razavi province of Iran”Assistance proffeser,Ferdowsi University of Mashhad,Iran.

Oladeebo (2008) “Examined socio-economic factors influencing loan repayment among small scale farmers in Ogbomoso agricultural zone of Oyo state of Nigeria”in Nigeria

Salem et al (2009)”Impact off farm and farmers characteristics on repayment of agriculture credit in Pakatoonkhawa” Abaysn Journal of social sciences Vol. 4(1)

Zelalem et al (2013)” conducted a research to identify socio-economic and institutional factors affecting loan repayment performance in kalu district”MSC Thesis,Wollo Universitiy,South wollo zone

Appendix

Annex 1

Introduction

This is a research being conducted by a Master of economics (development economics) student of the Department of economics, Adama. The aim is to find out the factor which affects loan repayment in small holder farmers. The research is also expected to make recommendations on how to ensure the financial security of rural household.

You are respectfully requested to give your kind opinions. You are assured that all responses were treated with the confidentiality that they deserve and were treated with anonymity. Also be assured that your responses were used for academic purposes only. Thank you for devoting your precious time and superior cooperation.

General Information

Household survey identification: ----------

Name of the enumerator ---------- Date---------- Sign ----------

Name of the kebele ---------- Name of the Village----------

Distance to woreda----------

Part 1 DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

1.1. Address ----------

1.2. Age of the Household Head

1. 25 and below years
2. 26 – 35 years
3. 36 – 45 years
4. 46 – 55 years
5. 56 – 65 years
6. Above 65 years

1.3. Sex of household

1. Male 2. Female

1. 4. Educational status of household head

1. Illiterate 2.Grade 1-8 3. Grade9-12 4.Diploma and above

1. 5. Marital Statuses of household head

1. Married 2. Single 3.divoce 4. Widowed

1. 6. What is the Size of your family?

1. Three and less 2. Four to six

3. seven to nine 4. Above nine

1. 7. Occupation of the head of the household

1. Farming

2. Off-farm

1.8 If your occupation is farming, what type(s) of crops do you cultivate?

1. Cash crop 2. Food crop

3. Both

Part 2: Land Resources

2.1 Do you have land? 1 yes 2 no

2.2 If yes, for what purpose do you use?

1. Cultivated 2. Garzing 3. Forest 4) irrigation used

2.3 How much is the size of your land in hectare ----------?

2.4 Do you use chemical fertilizers ?

1. yes 2. No

2.5 If you say yes for question no 2.4 how many kg fertilizer have you been used for a hector ?

2.6 Do you use high yield varieties seed on your farm?

1. Yes 2. No

Part 3: Livestock production

3.1. Do you have your own livestock?

1. Yes 2. No

3.2. If your answer is yes, list livestock you have.

s\n	Types of livestock	Number owned
1	Ox	
2	Cow	
3	Donkey	
4	Sheep	
5	Goat	
6	Other	

Part 4: Loan and its repayment

4.1 Did you have any source of credit? 1. Yes 0. No

4.2 If yes, what is your source?__ 1) ACSI 2) cooperatives 4) Banks 5) others(specify)

4.3 How many times and how much quintals of fertilizer did you receive from these sources in 2013.

4.4 Have you finished repayment on loan from these source in 2013?____ 1. Yes 2. No

4.5 Is the repayment period set by creditors suitable in your opinion?___ 1.Yes 0. No

4.6 If no, recommend a suitable repayment period:_____

4.7 Was the loan issued timely? _____ 1. Yes 0. No

4.8 If no, what was the impact of the delay?_____

_____

4.9 What is the status of your recent loan? _____

1. Fully repaid 2. Half of the loan was paid 3. Absolutely not paid

4.10 What are the main problems affecting your saving and loan repayment in the 2013?

1. Extended family obligation 2. Rain fall shortage 3. Limited marketing opportunities 4. Low price of agricultural products 5. Others (specify)

4.11 Do you perceive the cost of default to be high ?1. Yes 2. No

Part 5: Loan utilization

5.1 Did you get enough input you request?

1. Yes 0. No

5.2 If you say yes, what was the amount of fertilizer and improved seeds you borrowed in 2013 _____

5.3 Did you spent the entire loan or borrowed inputs on purposes specified in the loan agreement? __

1. Yes 0. No

5.4 If no, state those non-intended purposes and the amount spent on them

Purpose Amount spent (Birr)

1_____ _____

2_____ _____

3_____ _____

Part 6: Supervision and Training

6.1 Have you ever been supervised regarding loan repayment by creditor staff?

1. Yes 0. No

6.2 Have you ever been supervised for loan repayment? ___ 1.Yes 2. No

6.3 If yes to either on. No. 6.1 or 6.2, how many times were you supervised? ___

6.4 If yes to either 6.1 or 6.2, was it adequate in your opinion? _____ 1.Yes 2. No

6.5 Do you consider supervision as being important for loan repayment? ___ 1. Yes 2. No

6.6 Did you get any training before receiving loan? _____ 1.Yes 2. No

6.7 If yes, what kind of training was it? _____

1. Business 2. Marketing 3. Saving 4. Loan repayment 5. Other (specify)

6 .8 Do you think that the training has helped to increase your income? ___ 1. Yes 2. No

Part 7 Access to off farm income

7.1 Do you or any member of your family have off farm job ?

1. Yes 2. No

7.2 If you say yes for Q.7.1 indicates the type of work and annual income ?

NO	TYPE OF WORK	AMOUNT EARNED (BIRR) ANUALLY
1		
2		
TOTAL		

Part .8.Loan diversion (money spent on festival)

8.1 Did you celebrated social ceremonies in 2013/2014 physical year?

1 .wedding, 2 . Funeral ceremonies 3. Engagement 4. Circumcisions 5. Others specify

8.2 How much did you spent on it?

PART 9. Impacts of weather condition

9.1 Do you think that the rain fall for the year 2013 were enough for cultivation? 1. Yes 2 No

9.2 If you say no what are the effects this drought 1.produt reduced 2.crop remain on the field

3. Land is not cultivated 4. Others specify

9.3 If your answer for Q.9.1 is no how does you cope up the problem?

1. Obtaining food aid 2.regrating to other place 3 by using loan for consumption 4. Others specify.

PART 10. Irrigation used

10.1. Do you use irrigation system, 1 .yes 2. No

10.2. If you say yes for Q.no.10.1. How much did you get from irrigation production in year 2013/2014?

1 .below one quintal 2. 1-2 quintal 3. 2-3 quintal 4 . Above 3 quintal 5. Others specify

Interviews check list for Agricultural experts and professionals

1. What kind of inputs has given (supplied) by lending organizations?
2. Can the farmers get the amount of inputs he/she request?
3. What kind of support given by experts and professionals for farmers to use the inputs properly?

4. What type of support and follow up given by the concerned persons for farmers in order to repay the loan properly?
5. What are the reasons that make farmers loan defaulter?

Interview check list for community leaders or representatives

1. From the total community how many of them are credit users?
2. When credit access starts to provide to small holder farmers in your kebele?
3. Is the loan repayment time favorable for small holder farmers?
4. What is your opinion on the general procedure of loan accusation and repayment condition?
5. What are the reasons that make farmers loan defaulter?