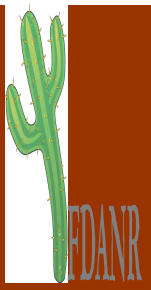

MEKELLE UNIVERSITY

THE SCHOOL OF GRADUATE STUDIES

FACULTY OF DRY LAND AGRICULTURE AND NATURAL RESOURCES

IMPACT OF REVOLVING CREDIT FUND IN NORTHERN ETHIOPIA: THE CASE OF ATSBI-WOMBERTA, TIGRAY

By

ETBAREK GEBREMEDHIN

A THESIS SUBMITTED IN

PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE

IN COOPERATIVE MARKETING

ADVISER: DR. G. VEERAKUMARAN

March, 2008

Declaration

This is to certify that this thesis entitled "**Impact of Revolving Credit Fund**" submitted in partial fulfillment of the requirements for the award of the degree of M.Sc., in Cooperative Marketing to the School of Graduate Studies, Mekelle University, through the Department of Cooperatives, done by Mr. Etbarek Gebremedhin, Id.No. FDA/GR 014/98 is an authentic work carried out by him under my guidance. The matter embodied in this project work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Name of the student Etbarek Gebremedhin Signature & date

Name of the supervisor(s) Dr. G. Veerakumaran, Signature & date

Acknowledgments

My special gratitude goes to Dr. G. Veerakumaran, my advisor, for all his sacrifice, encouragement, suggestions, guidance and overall assistance.

I am deeply indebted to the members of the survey households, who during survey gave of their precious time and who responded to numerous questions, some of which touched on very sensitive issues, such as their possession of assets, access to credit, and others. I thank them for their trust and their contribution to what is essentially a public good that does not create any direct and immediate benefit for them.

Foremost, I am grateful for the assistance of my organization, Nile College and also the staff of the Tigray food security Coordination bureau and Bureau of Agriculture of Atsibi who contributed to the successful implementation of the field survey.

Finally, I would like to express my sincere appreciation and gratitude to all my best friends for their encouragement, inspiration and help, who made the study a success.

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ABBREVIATIONS AND ACRONYMS

ACSI	Amhara Credit and Saving Institution
ADBP	Agricultural Development Bank of Pakistan
CBB	Construction and Business Bank of Ethiopia
CBE	Commercial Bank of Ethiopia
CBO	Community Based Organization
CDD	Community Driven Development
CSA	Central Statistical Authority
DA	Development Agent
DBE	Development Bank of Ethiopia
DECSI	Dedebit Credit and Saving Institution
EIC	Ethiopian Insurance Corporation
FAO	Food and Agricultural Organization
Ha	Hectare
IGAs	Income Generating Activities
km	Kilometer
MFI	Micro Financing Institution

MOA	Ministry of Agriculture
NBE	National Bank of Ethiopia
NGOs	Non-Governmental Organizations
PA	Peasant Association
SCGs	Savings and Credit Groups
SNNPR	Southern Nations and Nationalities People's Representative

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Impact of Revolving Credit Fund, Northern Ethiopia, the case of Atsibi Womberta Woreda.

By Etbarek Gebremedhin

Abstract

Providing credit to the rural poor has been a continuously perused undertaking through out the country to help them solve their economic problems. One of this is the revolving credit fund delivered to poor farmers by World Bank through cooperatives and other governments institutions like the food security coordination bureau. The final outcome of credit delivery should be superior enough to change the well being of the rural poor. This is because it may not give confidence for the lending institutions to extend additional credit. Hence, this study is undertaken to analyze the extent and impact of revolving credit fund on the rural poor in A/Womberta Woreda, Tigray region, Ethiopia.

During the study, primary data were collected from 120 members and 60 non members of a multi purpose cooperative. In addition secondary data were collected from the relevant institutions.

For the data analysis, descriptive statistics such as frequency distribution and percentages were used to describe institutional and socio-economic characteristics of the respondents. In addition, the t and Chi-square tests were employed to test the relationship of dependent variables with respect to some explanatory variables. A Multiple and logistic regression model were used respectively to analyze factors influencing average annual income of respondents and their repayment performance. Different explanatory variables were included in the empirical model and were tested their statistical significance.

Therefore, consideration of the factors influencing average annual income of respondents and their repayment performance is critical because it helps lending institutions to have understanding as to how and where to channel their credit.

The amount of loan authorized to beneficiaries is not disbursed on time which may discourage farmers to demand revolving fund. About 54.00 percent of the sample respondents utilized the loan fully for the purpose initially intended. Further, respondents revealed that lack of awareness; expenditure for consumption purpose and ceremonial expenditure were the main reasons for mis-utilization of the revolving credit fund. Variables such as number of oxen owned, extension contact and clients credit experience were found to have influenced the average annual income of the respondents. It was also identified that out of the total respondents 80.00 percent were non defaulters and only 20.00 percent were defaulters. According to the estimates of the regression model the variables which greatly affect the repayment performance by clients include age of borrowers, extension visit, off farm income of the borrowers and loan diversion.

CHAPTER–I INTRODUCTION

1.1 Background of the Study

1.1. Background

Ethiopia is an agrarian economy based country where the agricultural sector plays an important role in the national economy, livelihood and socio-cultural system of the country. The sector supports employment of over 80% of the population, accounts for 45-50% of the National GDP, and makes the largest contribution to raw materials for agro-industries, food security and foreign exchange earnings.(Canadian Food security Policy Group, 2006) However, Ethiopia's agriculture is characterized by its very low productivity.

Among the various reasons for the low agricultural productivity in the country are: traditional agricultural practices and implements; small landholding as each generation splits; insufficient resources; population growth in rural areas is high; underdeveloped rural infrastructure; Unpredictable weather patterns; the decrease in rainfall and periodic droughts; dependency on foreign grain; little access to information, training, tools and skills to improve their farming methods and to diversify their crops. Recurrent drought and the accompanying degradation of the natural resources and political instability as well as wars have also contributed to the persistence of poverty and frequency of food insecurity in Ethiopia. (CDA, 2006)

As agriculture is the major sector of the economy and the peasant sub-sector is dominant within agriculture, strengthening and developing the peasant sub-sector is bound to stimulate the agricultural sector, which in turn will trigger the rest of the sectors of the economy, the cumulative effect of which will be a net increase in the GDP (AIDB, 2001)

The development of the agricultural sector calls for, among others, the introduction of modern technologies. However, with the introduction of new production technologies, the financial needs of farmers increase manifold. Steady agricultural development depends upon the continuous increase in farm investment. Most of the time, heavy investment cannot be made by the farmers out of their own funds because of their low level of incomes. Moreover, there exists no significant margin of income that can be channeled into the agricultural sector to undertake developmental activities. Thus, here comes the importance and significance of the availability of rural credits to bridge the gap between owned and required capital (Singh *et al.,* 1985).

It is important, however, that these borrowed funds are invested for productive purposes and then the generated additional incomes be used to repay to the lending institutions to have sustainable and viable production process. Delivering productive credit to the rural poor has been a hotly pursued but problem-plagued undertaking. Providing low-cost, efficient credit services and recovering a high percentage of loans granted are the ideal aims in rural finance (Wenner, 1995).

The Commercial Bank of Ethiopia (CBE) is the largest source of agricultural credit in the country. During the year 2005, for example, more than 2.5 million farmers, accounting for 25 percent of total smallholder agriculture, obtain credit annually for the purchase of inputs, mainly fertilizer. The bulk of this credit was provided by the commercial banks with the intervention of the state governments to underwrite the loans. (FAO, 2005)

Therefore it is believed that provision of credit helps farmers to solve their economic problems. Currently different programs are continually arranged to alleviate poverty in the country. One of this is the revolving credit fund or credit given to farmers (members and non members of

cooperatives) through cooperatives and other non government institutions like the World Bank Food Security Coordination Bureau. Hence this study is undertaken to analyze the impact of revolving credit fund in Atsbi Womberta Woreda, Tigray, northern Ethiopia.

1.2 Statement of the Problem

In subsistence agriculture and low income countries like Ethiopia, where the smallholder farming dominates the overall national economy, small peasant farmers often face scarcity of capital (saving) due to low level of production to adopt new agricultural technologies. Hence, short and medium term credits with favorable terms for seasonal inputs like fertilizer, improved seeds, pesticide and herbicides would generally be favored because better return would be achieved quickly within the cropping season. Moreover, achieving household food security remains a major objective of rural development. This can be materialized by increasing agricultural productivity and off-farm income and by improving the ability of households to stabilize their income and food purchasing power.

Making poor farmers the beneficiaries of credit schemes is a targeting technique to supplement subsistence level of agricultural production. Micro-finance interventions may lead to empowerment of farmers by increasing their incomes and their control over that income, enhancing their knowledge and skills in production and trade

To realize the aforementioned objectives the World Bank in cooperation with Tigray Food Security Coordination Bureau and cooperatives in each tabias[1] have been extending reasonable amount of revolving credit fund to farmers of low income group. These farmers could be members or non members of the cooperative societies in the tabias. However studies on the

impact of revolving credit fund on the *livelihood of the farmers* have not yet been made in the woreda.[2]

1. 3. Objectives of the Study

Credit is integral parts of development, which enable people to be engaged in economic activities that enhance self-reliance. Credit schemes increase the productive potential of poor farmers especially those of the poor households. Credit plays a crucial role in agricultural production. It is said to be the lifeblood of agriculture and hence, the need for adequate farm finance is obvious. To generate a substantial income from agricultural production, the provision of credit for rural people must be associated with the provision of technical advice and loan advanced should be utilized efficiently in order to have an improvement in living condition year after year. Therefore, the ***general objective*** of this study is to investigate the impact of revolving credit fund on *livelihood of the farmers* in Atsbi Womberta woreda, eastern Zone of Tigray and the ***specific objectives*** are:

- To assess the credit needs of the borrowers;
- To evaluate the utilization of the revolving credit fund;
- To determine the socio-economic impact of revolving fund utilization;
- To identify the loan repayment performance of borrowers.

[1] Tabia is a small village
[2] Woreda in the Ethiopian context is an administrative district.

1.4. Hypothesis of the Study

- Credit improves income and food security of households through income smoothing and asset creation
- Participation in credit leads to improve in personnel well- being and empower for women participation

1.5 Scope and Limitations of the Study

The study aims at assessing the impact of revolving fund on the livelihood of farmers who are considered to be beneficiaries of the fund. More specifically, it refers to the household of Atsbi Womberta woreda of eastern Tigray. However, not all the beneficiaries were included in the survey. This limitation is attributable to the financial, time and other resource limitations as well as the possible non response of respondents. Therefore, the study was undertaken to meet its objectives within the limitations mentioned.

1.6 Significance of the Study

A study on impact of revolving credit fund on farmer's livelihood is vital because it provides information that will enable to measures the impact of loan in creating additional assets by farmers and the success of revolving fund program. It will also enable lenders such as non-governmental organizations and policy makers to have knowledge as to where and how to channel funds or credits in order to minimize poverty. The study is also expected to contribute towards better credit administration.

CHAPETR–II LITERATURE REVIEW

Introduction

Under this section the review of different literatures on previous studies has been made in order to see its findings and appreciate the current studies. The researcher has used different secondary source such as annual reports of financing agencies and government organizations, dissertations, websites, and other to review previous studies.

2.1 Financial Institutions in Ethiopia

2.1.1 Formal Financial Sector

The formal financial institutions operate in areas where they perceive lower risks, where enforcement and transaction costs are least while the informal financial sector operates in areas and sectors where the former financial institutions fail to provide lending and deposit services. The formal financial institutions include the National Bank of Ethiopia (NBE), Commercial Bank of Ethiopia (CBE), Development Bank of Ethiopia (DBE), Construction and Business Bank of Ethiopia (CBB) and the recently proliferating private commercial banks like Dashen, Wogagen, Abysinia, Awash International, Nib International, etc; Oromia cooperative Bank and the non-banking financial institutions like the public and private insurance companies (Ethiopian Insurance Corporation (EIC), NICE, NYALA, Africa, Awash, etc.). The Ethiopian formal financial sector had in the past been subjected to exogenous credit rationing; i.e., credit rationing which is legally imposed through heavy regulation such as interest rate ceilings and sectorial credit allocation. At present, however, the sector is operating through endogenous credit rationing principles and hence the financial shortage that the sector used to suffer from before government

and policy changes took place, has been mitigated. Currently, financial intermediation by the formal financial sector seems to have grown as more financial sector operators have joined the sector. However, the poor and the marginalized who are operating as peasant farmers and/or informal sector operators do not access credit from the formal financial institutions unless the government intervenes. (Belay, 2002)[3]

2.1.2 Informal Financial Sector

The bulk of the population falling in the low to medium income-bracket in Ethiopia, secures lending and deposit services from the informal financial sector. The formal sector is urban and income biased as well as too procedural particularly for the poor and uneducated majority of the country's population. It is estimated that 78% of the total agricultural credit in Ethiopia stems from the informal financial sector (Dejene, 1999)[4]. According to the same source, of the surveyed households 66% secured financial services from friends and relatives, 15% from money lenders and the rest (19%) from other sources. The same source indicates that only 1% of the households possessed bank accounts.

2.2 General Credit Situations in Tigray

As indicated earlier above 83% of the Tigray people's economic activity depends on agriculture majority of which is subsistence living. In order to improve the existing situation the government has designed rural focused economic strategy, especially expansion of extension activities are

[3] Belay Abebe, Factors Influencing Loan Repayment of Rural Women in Eastern Ethiopia: The Case of Dire Dawa Area, April 2002.

[4] Degene Aredo, 1999. Informal Credit and Insurance Markets in Developing Countries: A Preliminary Survey of the Literature, Addis Ababa.

continuously undertaken to increase farm output. Moreover efforts are being undertaken to improve the living condition of farmers through package program. (Effects are being undertaken, to improve the living condition of farmer through package programs). Despite the above situation, the farm input distribution and introduction of package are low and therefore, it was considered necessary to have agencies involvement in providing fund in order to purchase and distribute farm inputs. In Tigray region the alternative are very few. (Revolving Fund Manual, 2004)[5]

As most of the commercial banks are few in rural areas and the population is highly detached they are not in a position to benefit from credit. In addition to this the criteria for eligibility of credit is difficult to be fulfilled by the present situation of the farmers. However, due to collateral (budget security) given by the Tigray region government credit were arranged from commercial Bank of Ethiopia to farmers to purchase and distribute inputs and cereal. On the other hand, activities are being undertaken to launch rural banks in different parts of the region. However, they are unable to sufficiently satisfy the high demand for credit for different reasons, some of which are:

- In some places they are located far away from the beneficiaries(western Tigray)
- Interest is high in relation to payment ability of farmers.
- Bureaucratic activities.
- It requires “group collateral.”

[5] Revolving Fund Manual prepared by the Tigray Food Security Coordination Bureau for the World Bank Food Security Project

Given the above state of affairs credit service is expanding through out the region and the reimbursement experience is encouraging.

2.2.1 Role of Cooperatives in Credit Activities in Tigray

Cooperatives are voluntary associations of individuals, owned and administered democratically by its members to solve economic problems. Cooperatives are playing greater role by providing inputs and credits to farmer to improve productivity and market the produce at reasonable price.

One of the main constrain in solving the economic problem of farmers is financial problem. To solve this problem many activities are being undertaken in the region. As cooperatives are established to solve basic problem of farmer they are number one choice of farmers in credit service. Based on this they are acting as facilitators of credit provision for both members and non members for the purchase of inputs, agricultural activity and for package programs and other activities.

Especially, as they have good relationship with farmers, and it costs less for them, many farmers choice of credit is cooperative. At the same time cooperatives are known for their proximity and for low bureaucratic complexities in taking and repayment of credit. Further the credit requirement procedure of cooperative considers the repayment ability of farmers. Therefore, for these and other reasons the yearly repayment level has reached 97%. Moreover, they are extracting their highest effort to return the remaining amounts properly. But this doesn't mean that the credit procedures or activities of cooperatives are undertaken with out difficulties.

2.2.2 Source for Cooperative Credit

Cooperative institutions get funds for credit from different sources such as:

- Members share capital

- Commercial bank of Ethiopia
- Dedebit Credit and Saving Institution (DECSI)
- International Funding Agencies such as world Bank, UNDP, FAO, etc

Especially in the past five years cooperatives have been vigorous and responsible in administering fund extended by non-governmental organizations. Similar to this many saving and credit cooperatives (SACCOs) have been established in different parts of Tigray collecting significant amount of money from farmers as saving. Currently efforts are being done in Tigray to strengthen such cooperative and farm unions and further establish cooperative Bank.

Problems of Cooperative Credit

Interference in credit giving, lack of adequate recording, lack of inadequate administering of repayments, inadequate follow up of credit and regulations of credit, inadequate knowledge of financial procedures by the administrators, lack of professionals, inadequate recording of debited and credited amount especially arrears, problem in identifying individuals who are willing to take loan based on their wishes, and lack of temporary treasury are all the main problems in cooperative credit.

2.3 Revolving Fund Management and Loan Repayment

2.3.1. Definition: What is a Revolving Fund?

The idea behind a revolving fund is that an organization (or sometimes an individual) has a reserve of money (the fund) which is used to lend to one or more borrowers. Over a given period of time, the borrower is expected to repay the original sum that replenishes the fund. Usually, an additional sum is charged (interest) to the borrower that acts as a fee for providing the service

(administrative costs) and helps to protect the fund from being depleted. These include inflation, non-payments and the cost to the lender of getting outside finance. (Equator initiative, 2003)[6]

Revolving funds are often used in developing countries to provide affordable access to credit for those wishing to borrow money for anything from buying food and productive inputs, to businesses and services.

2.3.2 Differences between Formal and Informal Revolving Funds

The main differences between an informal rotating credit scheme (a traditional co-operative for example) and a formal revolving fund, lies in the source of the initial fund, the scale of lending and the structure of the credit management.

Informal Funds

A traditional co-operative is an example of an informal revolving fund. Informal funds are usually those found in developing countries at the local or community level, in poor areas where access to formal bank credit is virtually impossible. Members of a group put their savings into a commonly held fund, which is then lent to other members when they need a loan. Informal revolving funds do not usually earn any interest, unlike more formal schemes.

An important feature of such schemes is that they depend on social organization to ensure loan repayment. Peer or group pressure is a critical aspect of this kind of fund as it is used to ensure repayment, improve understanding between group members and can also be used to strengthen social networks publication

[6] Equator Initiative – a publication, August, 2003 series 3.

Formal Funds

Whilst informal revolving funds are based on money generated by community savings, a formal revolving fund usually uses 'seed' money from an outside organization or agency. The capital fund is managed by a local organization or NGO and not the community themselves.

The seed money is used to pay for the operational structure (buildings, office equipment and vehicles for example) and also to loan money to many small borrowers. Repayments by the original borrowers over an agreed period of time, puts money back into the fund for other people to borrow. If managed well, revolving funds are an excellent means of making affordable credit available to the poor and can help a small amount of capital benefit many people.

Formal loans are those disbursed by financial institutions that are set up legally and engaged in the provision of credit and mobilization of savings. In the Ethiopian context, these institutions are regulated and controlled by the National Bank of Ethiopia (NBE). On the contrary, informal loans are those provided by individuals, organizations and institutions that operate outside the legal banking system and control of the National Bank.

2.3.3 Revolving Fund Management

Community driven development of the World Bank food security project with out “income generation” components are often unable to address the poor peoples’ lack of opportunity to earn a livelihood. Credit service enables poor people to start or expand small business, improves their income, acquire asset and manages cash flow. It is with this intention that the bulk of the community support grant is being utilized for revolving loan for households’ asset building. Loan repayment is the most critical issue that has to be addressed right from the inception of projects.

Revolving fund is managed by local cooperatives in each kebele[7] and in areas where there is no service cooperatives, the kebele development committee will take care of the community support fund. (Federal Cooperative Agency, 2006)[8]

Process of Revolving Fund

- The revolving fund used for package program is given to woreda finance by the food security bureau further the woreda finance gives it to tabia Administration.
- At woreda level, the woredas development committee administers the revolving fund.
- Contract is arranged between tabia administration and cooperatives, and cooperatives with users.
- Cooperatives have to collect repayments from users and return it to tabia administration, and if they need it again the same procedure is pursued.
- Cooperatives are not allowed to spend the fund in programs other than the specified / agreed package program.
- Cooperatives are liable for loss created due to their handling problem. However if there are defaulters they have to follow up, and bring them in to court; other wise; if it is beyond their capacity they are not liable.
- Nine percent of interest is being paid by users.
- Primary cooperatives (unions) don't pay interest to funding agencies i.e interest earned is an income to the cooperative

[7] Kebele is similar to what is called county

[8] Federal Cooperative Agency, Procedure for the Administration of revolving fund, 2006.

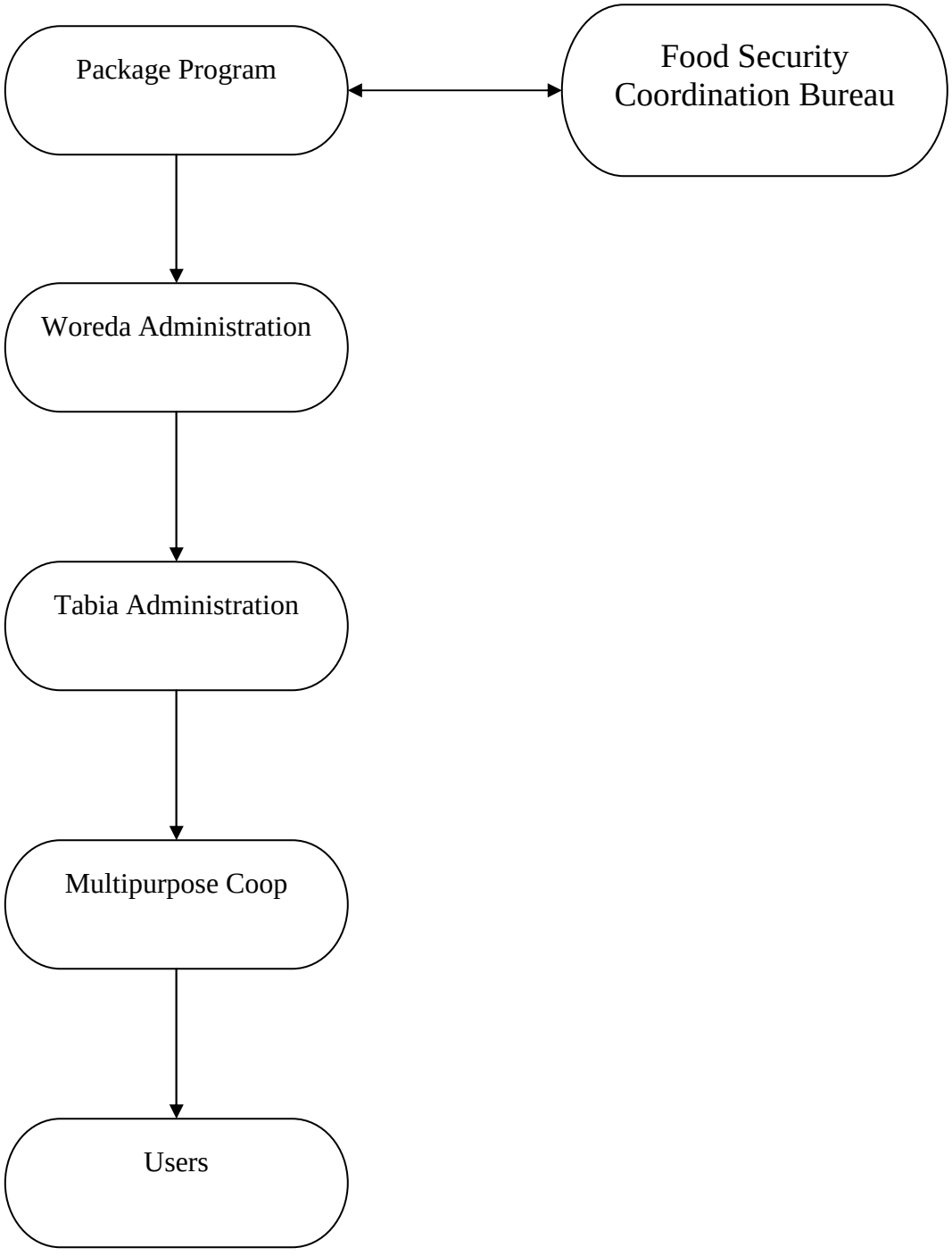


Chart 1: Process of Revolving Fund

End User Evaluation

The Tigray Food Security Coordination Bureau has been undertaking end user evaluation during the year 2004 and 2005. Similar end user evaluation was conducted in the year 2006 for 162 projects from the second and third year project woredas. The evaluation was made in 38 selected sample Kebeles.

Results of End User Evaluation

The findings of end user evaluation indicate that 84.6% of the evaluated projects have shown a positive impact while 15.4% indicate mixed impact. In terms of beneficiaries out of the total 1004 households who show positive impact 728 of them were men 276 were women. Positive impact are manifested in terms of improvement in livelihood, asset building and increase in consumption, income and wealth ranking: (Food Security Report, 2006)

Interest Rate, Grace period and Repayment period Determination

In any Community Driven Development (CDD) approach projects; the community has to involve in all aspects of project management decisions. They have to involve in planning, proposal preparation, targeting and allocation of resource and decision making process. This is what community development mean and this is what CDD is all about. Similarly in this project, the community has to fix the grace period, the interest rate, and the repayment time. Almost in all woredas the interest rate is nine percent. Communities accept this interest rate as fair decision because it will not discourage the household package beneficiaries, food insecure households at grass root level and it will not also distort the credit norms. With regard to the grace period it is a common practice to fix one year of grace period and people will repay back after harvest since there is one harvest in a year.

Process of Repayment

- There should be proper record of type of loan, amount, repayment period, place, repaid amount, and interest
- Users should be informed by notice one month before due date to repay the amount left.
- A group of tabia and cooperatives loan committee undertakes the repayment procedure.
- Defaulters are forced to pay penalties based on the agreement with the cooperatives.
- If users are not willing to repay it back they are accused by the chairman of cooperative in a social court.
- Loan collectors should be literate.
- Users have the right to get clean document of their repayments.
- Interest is calculated based on simple interest.

Problems Encountered

The awareness on the revolving fund management system was not sufficient in all implementing agents. As a result,

- There was no satisfactory attention of the region, woreda and community level.
- There was no reliable repayment plan in other woredas like in Tanqua Abergele and Ofla.
- The woreda development committee did not properly follow up the progress of repayment.
- Negligence of cooperatives to serve the community and get the 9% interest by collecting the repayment.

Measure Taken to Improve the Situation

- The regional project staff has made quick field visit to create awareness and initiate the woredas.
- Follow ups have been made continuously.
- Conducting performance evaluation

2.4 The Need for Credit

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. Access to capital in the form of either accumulated savings or a capital market is necessary in financing the adoption of many new agricultural technologies (Feder *et al.*, 1985).[9]

The importance of credit facilities to smallholders of less developed countries has been underlined by several authors (Adams and Graham, 1981; FAO, 1996; Gonzalez-Vega, 1977; Pischke, 1980). Governments of less developed countries and aid agencies have extended a large amount of money in the form of agricultural loans. The loans are essential part of various input packages that are prescribed as part of agricultural investment projects designed to introduce modern technologies and thus stimulate change and growth in agriculture.

Kumar *et al.,* (1978)[10] indicated that the need for credit in the case of majority of cultivators arises from inadequate savings to finance various activities on their farm. Moreover, while their income accrues during limited period of the year, their expenses are spread throughout the year.

[9] Feder, G. Just, R.E., and Zilberman, D. 1985. Adoption of Agricultural Innovation in Developing Countries: A Survey World Bank Staff Working Papers.

This implies that expenditures on inputs have to be incurred much in advance of the income from resulting outputs. Producers meet these expenditures out of their past savings; and when these savings fall short of the requirement, they borrow.

Generally, credit removes a financial constraint and helps accelerate the adoption of new technologies, increases productivity, and improves national and personal incomes. In addition, it constitutes an integral part of the process of commercialization of the rural economy and a convenient means of redressing rural poverty (MOA, 1995).[11]

2.5. Empirical Review

2.5.1 Approaches of Impact Analysis: The Conceptual Framework

According to Ledgerwood, 1999[12] there are three types of impact of a program. These are economic, sociopolitical or cultural and personal or psychological. Thus, large micro finance institutions (MFIs) reaching hundreds of thousands of clients may aim at bringing changes in economic growth in a region or sector, a shift in the political aspect of a particular district and improvement of borrowers' sense of self. These impacts are evaluated from two perspectives. The first one is the financial system approach and the second one is the client oriented impact analysis approach. The first one focuses on changes in the organization (MFI) and its operations. And as such, outreach and sustainability of the program are taken to be important proxy

[10] Kumar, P., Joshi, P.K., and Muralidharan, M.A. 1978. Estimation of Demand for Credit on Marginal Farms A Profit -Function Approach.
[11] MOA (Ministry of Agriculture), 1995. Agricultural Credit Policies. National Agricultural Workshop. Addis Ababa, Ethiopia

[12] Ledgerwood, J. (1999) Sustainable Banking with the Poor: Micro finance hand Book, An Institutional and Financial Perspective, Washington, D.C.

indicators of the impact of the program on the clients (Goetz and Gupta, 1996)[13]. As far as impact assessment is concerned, Hulme (2000)[14] indicated that there are two schools of thought. These are *the intended beneficiary school* and *the intermediary school*. Hulme argued that *the intended beneficiary school* focuses on the impact of a program basically on the clients (households or individuals), whereas, the second school of thought focuses on institutional outreach and sustainability. According to this school of thought, if outreach and sustainability are achieved, the intervention is said to have brought beneficial impact, as financial markets are expected to have been widened. However, this assumption is found to be a failure since it *does not reveal borrower cross financing of loans* (Hulme, 2000). Thus, what clearly indicates 'who benefits' and 'how' is *the intended beneficiary school*, which is the focus of this study. Many microfinance programs have attained the objective of reaching a large number of clients with small amounts of resources. Studies indicate that women are believed to be the main participants and beneficiaries of microfinance programs in many countries. Yet, many women lack enough power within households to use their loans to improve productivity and welfare (Goetz and Gupta, 1996)

The above model indicates that the independent variable is the program lending. The mediating variables indicate that there are modified behaviors and practices over a period of time. These behaviors are depicted under the idea that program clients will engage in income generating activities. Compulsory saving and group monitoring are adjunct variables.

[13] Goetz, A.M., and R. Sen Gupta. (1996). Who takes credit? Gender, power, and control over loan use in rural credit program in Bangladesh.

[14] Hulme D (2000) "Impact Assessment Methodologies for Micro Finance: Theory, Experience and Better practice".

2.5.2 Literature on Ethiopia Cases

Studies undertaken in Ethiopia on impact assessment of income generating activities have been given in the following paragraph.

Prospect for Scaling up and Scaling out

The impact assessment has made it clear that through the implementation of most of the 16 micro projects, the target household's livelihood has significantly improved in terms of increasing both household consumption level and resilience against risks of food insecurity on a sustainable basis. This in turn has provided evidence that there is a promise potential for scaling out such income generating activities (IGA's) and thereby improve the wellbeing of increasing number of food insecure households. (Alemayehu 2006)[15]

However the finding of the assessment has made it evident that implementation of few micro projects was less successful than expected in bringing about the desired result. It was learned during the assessment that such not successful schemes were due to economic, social, or even political factors, both internal and external to the target households.

Impact of loan on household livelihood

An attempt was made to assess the economic impact of the loan provided for ginger marketing in three woredas of the SNNPR. The study surveyed household heads first to understand the purpose for which the gross profit if any was used. Nearly all household heads mentioned that the gross profit was used to meet more than one household needs such as consumption, asset building, saving, and education of own children.

[15] Alemayehu Gebrehiwot , A study on the Impact assessment of Income generating activities in Ethiopia ,August 2006.

The study found that a portion of the gross profit was found for the purchase of food items including cereals, cooking oil, sugar, and kerosene. Moreover, the result of the assessment indicate that a number of the target households were likely to have saved, on average, seven percent of their gross profit mainly in Ekubs (traditional revolving fund). Further, it was also indicated that an increasing number of the target households have been inclined to invest a portion of their gross profit in building productive assets mainly poultry, donkeys and dairy cows. On average, the value of such assets was 24 percent of the average gross profit.

Other studies undertaken in Ethiopia shows that credit provision to small farmers increases their productivity and improves their standard of living. For instance, Assefa (1987)[16] reported the need for the expansion of rural credit to all areas of the country. Likewise, Berhanu (1993)[17] and Getachew (1993) pointed out the need for agricultural credit to increase productivity and accelerate adoption rates.

Agricultural credit, many argue, should not only be available to finance short-term farm expenditures but also long-term investment activities cutting across different livelihood domains, both on- and off-farm. Smallholders need access to credit for long-term land improvement and capital expenditures that include expenditure for irrigation facilities, farm machinery and post-harvest technologies, as well as to meet short-term seasonal needs. Private rural-based and small-town businesses could also be encouraged and supported to engage in the processing of agricultural products and in transport and input-supply operations through providing the required credit for long-term investment and working capital which will also strengthen the efficiency of

[16] Assefa Admassie, 1987. A Study of Factors that Affect the Use of Agricultural Credit among Peasant Farmers in Ethiopia: A case of two District. M Sc. Thesis

[17] Berhanu Taye, 1993. An Analysis of Factors Influencing Fertilizer Consumption and Access to Fertilizer Credit in Ethiopia. M.Sc. Thesis, Alemaya University of Agriculture, Ethiopia.

the smallholder sector. However, medium to long-term investment finance is non-existent in most rural areas due to structural problems in the rural financial sector, including issues related to the land policy like lack of collateral and the smallness of farm sizes.

2.5.3 Empirical Studies on Loan Repayment Performance

Loan repayment performance is affected by a number of factors, some of which are believed to negatively influence repayment while others have positive impact. Different studies have been carried out concerning loan repayment performance of borrowers in various countries by different authors.

Jama and Kulundu, (1992)[18], in their study on smallholder farmers' credit repayment performance in Kenya considered some variables which they 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. They 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. In addition, delay in disbursement, inadequate supervision and advice to farmers were positively related to the proportion of loan diverted and were statistically significant at 1% and 5% probability levels, respectively.

[18] Jama, M.A. and Kulundu, D.M. 1992. Smallholder Farmers Credit Repayment Performance in Lugari Division, Kakamega District, Kenya

Borrowers' anticipation of a change in credit policies and lack of confidence in the credit institutions' ability to provide credit in the following year were reported as the principal reasons for non-repayment of loans in Africa (Miller, 1977).[19]

Belay (1998) considered in his study twenty eight demographic and socio-economic variables which were hypothesized to influence repayment of fertilizer credit among smallholder farmers in the central highlands of Ethiopia, Alemgena District. Out of these variables nine were found to have a statistically significant potential power to discriminate between non-defaulter and defaulter groups of the fertilizer loan. More specifically, five continuous variables, namely health care expenditure, amount borrowed from formal sources, experience in credit, total number of livestock owned and the number of days per year a farmer pays visit to a development agent for technical guidance and four discrete variables namely, perceived price of the output (good or bad), adequacy of holding as perceived by the household, celebration of social ceremony and loan diversion were found to be significant using t-and chi-square (χ^2) tests, respectively.

Fantahun (2000) also indicated that if the size of loan issued to a borrower is greater than his project cost, it is possible that the borrower might spend that part of the loan proceed which is in excess of what is required to cover his business costs. This in turn could affect repayment negatively. On the other hand, the rate at which a borrower diverts funds and the nature of diversion affect repayment in one way or another. If a sizable amount of loan is diverted for productive ends by the borrower, then repayment will be affected positively and vice versa

[19] Miller, L.F. 1977. Agricultural Credit and Finance in Africa. The Rockefeller Foundation. U.S.A.

otherwise. The author emphasized that, since loan repayment performance is an issue to carefully follow-up, the factors that determine full loan repayment have to be taken care of.

2.6.4 Literature on International Cases

Revolving fund Principles in Rural Development: Indonesia, Kenya and Vietnam

The principle of revolving funds is simply that a community is given a credit to buy what they deem most needed and then pay in a certain manner to enable others to benefit. (International Feed Resources Unit, 2004)[20] In goats projects in Indonesia and Kenya the principle is that the farmers receiving the goats must pay back to the community 1.5 to 2 of the offspring of the first two pregnancies. These are then given to other members of the community. When the goat population is sufficient for the resources available they can turn the money into a type of village bank where money can be borrowed for purchases of other things e.g. poultry etc. and the interest can be used for village projects or events e.g. weddings, funerals etc.

In the pig project in Vietnam a loan is given to buy a pregnant sow. This money has to be paid back after one year and that money will be used by another community member to purchase a pregnant sow. Another quite unique but with similar endpoints is a couple of paddle tractors donated to two villages in Lombok Island in Indonesia. The paddle tractors are used to speed up cultivation but farmers pay for the service to the community. Sixty percent of the income is used to purchase calves or cattle which are then given to farmers on an agreed revolving fund basis effectively a dual purpose revolving fund

[20] International Feed Resources Unit, publication , 2004

CHAPTER–III MATERIALS AND METHODS

Introduction

In this section the study area has been described in order to give clear picture of the woreda and its over all opportunities in terms of agriculture and other sectors. Moreover, the data collection methods, techniques of sampling and data analysis method have been discussed.

3.1 Farming System, Crop and Livestock Priorities

3.1.1 Description of Study Area

Tigray is located at the northern part of the country. It has an estimated area of 80,000 square kilometers. The State consists of four administrative zones, 35 woredas and 74 tabias. The study is planned to be carried out in the Atsbi wonberta woreda, eastern zone of the region. The woreda consisted of 16 tabias, with an area of 24.44 square Kilometers and a total population of 166, 090. (ILRI and MOA, 2004)[21]

Atsbi Wemberta is located about 65 km north east of the Tigray regional state capital of Mekelle. There are 16 peasant associations and 2 town dwellers associations in the woreda with a combined total of 41,398 household heads. The total population of the woreda was 110578 in 2003/04. Altitude in the area ranges from 918 to 3069 m and 75% of the woreda is upper highlands (2600 masl or above) and only 25% is found in midlands (between 1500 and 2600 masl) and lowlands (below 1500 masl). Lithic Leptosols are the soil types covering nearly 100% in the woreda except in some parts where Vertic Cambisols are also observed.

[21] Atsbi Wemberta Pilot Learning Site Diagnosis and Program Design, The International Livestock Research Institute (ILRI) and the Ministry of Agriculture(MoA), October 2004

This woreda is one of those woredas in Tigray that border the Afar Regional State. Shortage of rainfall is a major constraint of agricultural production in the woreda. Rainfall is usually intense and short in duration.

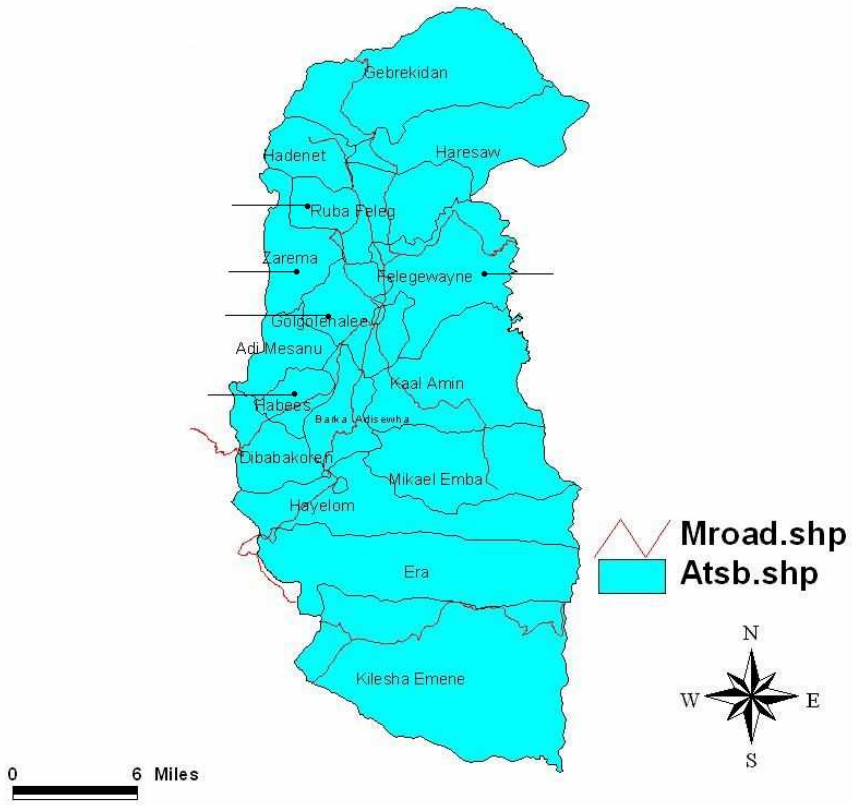


Figure 1 Map of Atsbi Womberta Woreda

Livestock are integral component of the farming system. Oxen provide almost the entire traction and threshing power. Despite the large population of livestock, especially sheep, livestock productivity is low as in many other parts of Tigray. As most of the woreda is in the upper highlands, it is suitable for sheep production. Livestock feed is a major limiting factor in the area.

3.1.2 Priority Farming Systems

Two major farming systems are identified in the woreda

1. Barley, wheat, pulses and small ruminants farming system (hereafter referred to as pulse/livestock system). Nine of the 16 peasant associations belong to this farming system and are found starting from the central southern parts of the woreda to the tip north. Barley is the dominant crop in the area followed by wheat and pulses.

2. Teff[22],wheat, barley, livestock and apiculture system (hereafter referred to as apiculture/livestock system).This is a farming system where altitude is below 2600 masl and the major crops grown in the area are wheat, teff and barley. This system is found starting from the middle of the woreda to the southern end. There are seven PAs that belong to this farming system.

3.1.3 Priority Crop Commodities

Field peas, lentils and chickpea are most important marketable commodities for Atsbi Wemberta as has also been identified in the woreda strategic plan. Horticultural crop production (fruits and vegetables) is another potential market oriented activity in the woreda. During the year 2003, there were about 8, 000 ha of cultivated land in the pulse farming system (PAs).

3.1.4 Livestock Priorities

The population of livestock in Atsbi Woreda during 2003/04 was 48,870, 72,471, 10,427 and 10,000 heads of cattle, sheep, goats and equines, respectively. The number of poultry was estimated at about 44 000. Out of the cattle population, the Woreda had an estimated 16,319

draught oxen. There were 6,729 beehives of which 2,000 were modern ones. Livestock productivity was very low. Livestock were left to freely graze during the dry season, but were restricted during the main rain season because of crops.

3.2. Major Institutions in the Woreda

3.2.1 Marketing Institutions

Cooperatives

The woreda cooperatives promotion office, works with three teams namely cooperatives organization, market credit, and audit and registration teams. The office has eight experts (including the office head) and a secretary. The organization of the cooperatives starts with convincing farmers to form the cooperative, followed by training on international principles of cooperatives, the development of bylaws etc.

As of 2003 the combined capital of the 16 multipurpose cooperatives is estimated to be only about half a million Birr, indicating that the financial capacity of the cooperatives is very low. The woreda cooperatives office considers seven of the cooperatives as model cooperatives in the woreda, and provides special focus to them.

Some of the problems faced by the cooperatives in the woreda include shortage of capital, low grain production and so low volume of grain available to buy, money embezzlement and low sense of ownership by members. For example, in 2004 all multipurpose cooperatives were

[22] Edible grain harvested in different parts of Ethiopia. Use: mainly food

audited and about Birr 47 000 was found missing, out of which about Birr 18 000 was recovered and the remaining in the process of collection.

Private Traders

Traders from the towns of Mekelle, Wukro and Adigrat buy honey, pulses and other products from the 2 towns of Endasselasie and Haikimeshal. It was reported that the 14 cooperatives have not been able to compete with private traders well.

Input Supply Unit of the Office of Agriculture

The input supply in the woreda is facilitated by the input supply unit of the woreda office of agriculture. Input demand (need) is first estimated by subject matter specialists, DAs, and farmers together. The tabia (equivalent to PA in other regions) administration is also informed of the input need estimate in its tabia. Estimates are made both for the household package and the regular extension programs.

3.2.3 Rural Finance

Dedebit Credit and Saving Institution (DCSI). The Dedebit Credit and Saving Institution (DSCI) is the major supplier of credit and saving services for the rural population in the woreda. Four sub-branch offices provide the service to the rural people. One of the sub-branch offices is located at the capital of the woreda, Endassellassie. The sub-branch offices are supervised by the branch office located in the nearby town of Wukro.

The credit given to the rural areas in the woreda can be classified into two types: Regular credit and household package credit. A farmer cannot get credit of more than one type. Moreover, a husband and wife can not get credit at the same time. The activities for which regular credit is given include the purchase of fertilizer and improved seeds, livestock fattening, poultry production, horticultural production, apiculture, handicraft, and small businesses. The household package credit is attached with the household package extension program.

Regular credit There is a credit committee in each PA. The committee is chaired by the loan officer and includes the PA chairperson and vice chairperson, and representatives of PA rural development, women's association, farmer's association, and youth association. The PA credit committee approves credit requests of farmers. The sub branch office then makes further screening of its own before it disburses credit. For example, farmers with outstanding debts may not be approved for new credit.

The Household Package Credit This credit is tied to the household package extension program. The office of agriculture gives training to volunteer farmers who opted to be involved in the household package extension program. Up to five production activities are included in one package. There is no group formation requirement for the package credit. Farmers take the credit individually. It was reported that 30% of the collateral is provided by the woreda and 70% by the regional administration. The fund for the credit also comes from Dedebit (50%) and the Regional Food Security Desk (50%).

3.2.4 Agricultural Extension

The woreda office of agriculture provides agricultural extension services in the woreda. The office has three teams: Crop production, livestock production and natural resources management teams. The crop production team also includes the input supply expert, an irrigation expert and home economics agent, in addition to other experts of crop production. The livestock production team includes experts in quality control (hides and skins, and dairy), and an apiculture technician, in addition to other livestock production experts. The natural resources management team includes soil and water conservation experts, a biological soil conservation expert, forestry and agro-forestry expert.

There has not bee an extension team organized at the woreda office of agriculture. It was reported that the absence of such a team has resulted in weak supervision, control and follow up of the extension services. Now an extension team leader position has been approved and will be responsible for coordinating the extension activities.

3.3 Data Source, Sampling and Collection

3.3.1 Data Collection and Methods

For this study, primary and secondary sources were used to collect quantitative and qualitative data. The primary sources were used to collect data from the selected samples. The target respondents represent farmers who could be members or non members of the cooperatives as well as officials of the cooperatives.

Information pertaining to a farmer's socio-economic characteristics like family resource level such as land size or holding, experience/awareness in credit use, marketing infrastructure, access to extension service, access to credit service, education status, sources of credit, access to off-farm activities, calamities of nature, investment opportunities, cultural factors, response to loan repayment etc., and individual characteristics like age, family size, personal behavior were obtained directly through a *structured interview schedule.*

In addition to conducting individual interview with the beneficiaries, the officials of the five multipurpose cooperatives were interviewed using interview schedule prepared for this purpose. It was developed in English and later translated in to Tigrigna the local language of the region. The interview schedule was further pre-tested before final administration.

The secondary data were collected from records of different institutions such as the cooperatives in the woreda, Tigray Food Security Coordination Bureau, Atsbi woreda agricultural office, websites, and other related dissertations. They were used for analyzing different data which are relevant to the study. Moreover, these data helped to appreciate the experience of other countries and try to apply to our research work.

3.3.2 Sampling Techniques

According to the Atsbi woreda bureau of cooperatives there are 16 Multipurpose Cooperative Societies (MPCS) operating in each tabia. These cooperative societies undertake different activities, one of which is distributing revolving credit fund. Out of 16 MPCS five were randomly selected for the study taking in to consideration the number of beneficiaries i.e. cooperatives having more than 50 beneficiaries. The target members represent farmers who are members of

the cooperatives. The following table provides information on population and sample size of the selected MPCS. The total sample size of member respondents were 120.

Table 1: Sample Size of Respondents

S.No	Sample Coop	Beneficiaries			Sample (40%)
		Men	Women	Total	
1	Habees	42	10	52	21
2	R.Feleg	46	24	60	24
3	Zarema	55	15	70	28
4	F.Wayne	46	5	51	20
5	G.Nalee	60	4	64	27
Total		**249**	**58**	**297**	**120**

Source: own sample

Moreover 12 non- members from each area were selected at random for the study for comparison. Hence, the total non –members were 60. Further, 6 officials namely members of Board of Directors were selected purposively from each area. Thus the total number of officials was 30. This is because only those individuals whose activities are associated with revolving credit fund were contacted.

3.4. Methods of Data Analysis

The researcher used an interview schedule containing both close and open-ended questions. In accordance with the situation of the study area, some modifications were made. Besides, focus group discussions and Key informant interviews were made. After collecting the data, cross tabulation and test for statistically significant differences between mean values were used. This test included Paired T-test, and besides, regression models were also employed so as to

investigate the impact credit might have brought on the life of clients as well as to test the factors affecting repayment performance.

The first and second objectives are simply descriptive analysis where as for the third and fourth objectives the researcher has used multiple regression and logistic regression models respectively.

3.4.1 Empirical Model: Multiple Regression Model

3.4.1.1 Specification of the Multiple Regression Model

This study is intended to analyze which and how much the hypothesized regressors are related to the impact credit might have brought on livelihood of clients. From the mathematical point of view the multiple regression model is used due to its simplicity and flexibility in the analysis of dichotomous outcome variable. (Montgomery, 1998)

Therefore, the multiple regression model is specified as follows:

$$Y = \beta_o + \beta_1 x_1 + \beta_2 x_2 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \beta_k x_k + \epsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where: Y = represents the dependent variable

β_o = denotes the intercept of the regression which is constant.

β_j, j = 0,1,……k, are called the regression coefficients

x_1 , x_2…..x_k = refers to the regressor variables

ϵ = is the error or deviation between **y** value and the expected value of y given by

$$\beta_o + \beta_1 x_1 + \beta_2 x_2 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \beta_k x_k$$

It is a multiple linear regression model with k regressors. The parameters β_j , j= 0,1,….k, are called the regression coefficient. This model describes a hyper plane in the k-dimensional space of the regressor variables $x_{j.}$ The parameter β_j represents the expected change in the response y per unit change in x_j when all the remaining regressor variables x_i ($i \neq j$) are held constant. For this reason the parameters β_j , *j =1,2,….k,* are often called *partial* regression coefficients.

Multiple linear regression models are often used as approximating function. That is, the true functional relationship between y and x_1, x_2,..…x_k is unknown, but over certain ranges of the regressor variables the linear regression model is an adequate approximation.

3.4.1.2 Test for Significance of Regression

In multiple regression problems certain tests of hypothesis about the model parameter are useful in measuring model adequacy. The test for significance of regression is a test to determine if there is a linear relationship between the response y and any of the regressor variables x_1, x_2, …..x_k. Separate tests of the null hypothesis that individual coefficients are zero can be computed using t-test of the multiple linear regression models (Gujarati, 1988). This test can be used to see the statistical significance of each coefficient. An overall test of the null hypothesis that all the parameters associated with the explanatory variables in these models are equal to zero is an F-test based on the Ordinary Least Square (OLS) estimation procedure. The Chi-square tests the null hypothesis that the coefficients for all terms in the current model except the constant which is zero.

The appropriate hypotheses are :

$$H_{o:}\ \beta_1 = \beta_2 = \dots\dots\beta_k = 0$$

$$H_{1:}\ \beta_j \neq 0 \text{ for at least one } j\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

Rejection of Ho in the above hypothesis implies that at least one of the regressors x_1, x_2……..x_k contributes significantly to the model

3.4.1.3 Coefficient of Multiple Determinations

The coefficient of multiple determinations R^2 is defined as

$$R2 = SS_R/S_{yy} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

The multiple coefficient of determination represents the percentage of variability in y that is explained by the estimated regression equation. We have $0 < R^2 < 1$ as in the case of simple regression case. However, a large value of R^2 does not necessarily imply that the regression model is a good one. Adding a regrossor to the model will always increase R^2 regardless of whether or not the additional regressor contributes to the model. Thus it is possible for models that have large values of R^2 to perform poorly in prediction or estimation.

The positive square root of R^2 is the multiple correlation coefficient between y and the set of regressor variables $x_1,x_2,\ldots..x_k$. That is, R is a measure of the linear association between y and x_1, x_2, …x_k.

The functional relationship between the probability of improvement in income and explanatory variables is specified as follows:

$$Y = \beta_o + \beta_1 x_1 + \beta_2 x_2 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \beta_k x_k + \epsilon \ldots\ldots\ldots\ldots (4)$$

Where: Y is average yearly income of respondents

β_o is Constant or intercept

$\beta_1, \beta_2, \ldots\ldots\ldots\ldots\ldots\beta_k$ refers Regression coefficients

$x_1, x_2\ldots\ldots\ldots\ldots x_k$ refers vector of explanatory variables that include: age of the respondents, sex of the respondents, educational status of the respondents, family size, number of oxen owned, number of extension contact, ceremonial spending, amount of credit taken, access to credit and ownership of land.

3.4.1.4 Working Hypotheses and Definitions of Variables: Socio-Economic Impact

Review of literatures on factors influencing to increase the annual income of borrowers, past research findings and the author's knowledge of the credit schemes of the study area were used to establish working hypotheses of this study. In this study, the following demographic, socio-economic and institutional factors were hypothesized to explain impact of revolving credit fund on increasing borrower's revenue or income.

Dependent variable

Income (Revenue) is defined as the income of borrowers, which is the income derived by borrowers after they become beneficiaries.

Independent Variables

Age of the borrower (Age): is defined as the period from the respondent's birth to the time of the interview and was measured in years. Through time borrowers acquire experience in credit use. Moreover, older borrowers may accumulate more wealth than younger ones. Therefore, this variable is hypothesized to have positive impact on increasing post income of borrowers.

Sex (Sex): Represents whether the client is men or women. Given the current situation in our country (Ethiopia) men have favorable environment than women to increase their income. Therefore, men headed households are expected to affect income positively.

Educational Status (Edstat): Education empowers individuals to perceive new ideas and opportunities and also increase tendency to adopt new technologies. Therefore, it is hypothesized that education has positive effect on income of clients. It measured in terms of the educational level of the borrower.

Farm size (Famsz) in hectares: Refers to the total farm size owned by the respondent. Since farm size reflects ownership of land to be cultivated it is expected that it would enhance the income of borrowers. Thus, borrowers with large farm size would be expected to have better income than those with small land to cultivate (Belay 2002)

Oxen (Nuoxen): It is defined as the number of draught oxen owned per household after they become beneficiary of the revolving credit fund. Oxen are the most important source of traction power in the area. Therefore, borrowers who own more oxen would be in a position to undertake farm activities on time and when required. Ownership of more oxen power is expected to be positively related to income.(Bamlak 2006)

Access to Credit (Accred): This refers to distance in kilometers to the lending institution Borrowers nearby to the lending institutions have a location advantage and can contact the lender easily and frequently than those who live in more distant locations. Therefore, location advantage is expected to increase income of clients.

Family Size (Famsz): This refers to the number of members of a family. Households with many number of dependant children can have lower income than households with many number of

children working in farm areas. Therefore, family size is expected to increase or decrease income of borrowers.

Extension Contact (Visext): This refers to number of supervisory visit by extension agents or credit officers after disbursement of loan. It is expected that repetitive supervisory contacts increase the income of clients. Therefore, an extension contact is hypothesized to have positive impact on income.

Credit Experience (Creexp): When a client stays in touch with credit for en extended period of time he/she develops experience in properly utilizing credit and hence is more likely to increase his/her income. Therefore, experience in credit is expected to have positive effect on income. It is measured in terms of the number of years a client became beneficiary from a revolving credit fund.

Credit Amount (CredAm): When the supply of credit is equivalent to the demand for it, there is no rationing problem and borrowers acquire the amount they demand. Therefore they are likely to invest more and increase their income. On the other hand, rationing of credit implies a higher level of unfulfilled demand. Hence, this variable is hypothesized to affect income either positively or negatively. This is measured in terms of amount of Birr disbursed.

3.4.2 Empirical Model: Logistic Regression Model

Regression models in which the regressand evokes a yes or no response are known as dichotomous, or dummy. The dependent variable in this section is 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 or discrete.

The loan repayment performance is a dependent variable, which is dichotomous taking on two values, one if the borrower is a non-defaulter and zero otherwise. Estimation of this type of relationship requires the use of qualitative response models. In this regard, the non-linear probability models, viz., logit and probit models are the possible alternatives.

Probit and logit models are similar and yield essentially identical results. Aldrich and Nelson (1984) indicated that in practice these models yield estimated choice probabilities that differ by less than 0.02 and which can be distinguished, in the sense of statistical significance, only with very large samples. The choice between them therefore, revolves around practical concerns such as the availability and flexibility of computer programs, personal preference, experience and other facilities.

3.4.2.1 Specification of the Logistic Regression Model

This study is intended to analyze which and how much the hypothesized regressors are related to the loan repayment performance of beneficiaries. As already noted, the dependent variable is a dummy variable, which took a value zero or one depending on whether or not a borrower defaulted. However, the independent variables are of both types, that is, continuous or categorical.

Hosmer and Lemeshew (1989) 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. Hence, the logistic model is selected for this study.

Therefore, the cumulative logistic probability model is econometrically specified as

$$P_i = F(Z_i) = F(\alpha + \beta_i X_i) = 1/1 + e^{-z} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(5)$$

Where, P_i is the probability that an individual will make a certain choice (defaults or does not default) given X_i;

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

X_i represents the i^{th} explanatory variables; and

α and β_i are parameters to be estimated

Hosmer and Lemeshew (1989) pointed out that the logistic model could be written in terms of the odds and log of odds, which enables one to understand the interpretation of the coefficients. The odds ratio implies the ratio of the probability (P_i) that an individual would choose an alternative to the probability ($1-P_i$) that he/she would not choose it.

$$(1-P_I)=\frac{1}{1+e^{Z_I}} \quad \text{..... (6)}$$

Therefore,

$$\left(\frac{P_I}{1-P_I}\right)=\left(\frac{1+e^{Z_I}}{1+e^{-Z_I}}\right)=e^{Z_I} \quad \text{..... (7)}$$

Or,

$$\left(\frac{P_i}{1-P_i}\right)=\left(\frac{1+e^{Z_i}}{1+e^{-Z_i}}\right)=e^{\left(\alpha+\sum\beta_i\chi_i\right)} \quad \text{..... (8)}$$

Taking the natural logarithm of equation (8)

$$Z_i Ln\left[\frac{P_i}{1-P_i}\right]=\alpha+\beta_1\chi_1+\beta_2\chi_2+...+\beta_m\chi_m \quad \text{..... (9)}$$

If the disturbance term (u_i) is taken into account, the logit model becomes

$$Z_i=\alpha+\sum_{i=1}^{m}\beta_i\chi_i+u_i \quad \text{..... (10)}$$

3.4.2.2. Parameter Estimation

To fit the logistic regression model, the estimation of the values of the unknown parameters α and $ß_i$'s are required. In linear regression, the Least Square Estimation (OLS) method is used to estimate the parameters of the model. In this method, those values of α (constant) and $ß_i$ (coefficients of explanatory variables), which minimize the sum of squared deviations of the observed values of Z_i (dependent variable) from the predicted values are determined. Under the assumptions of linear regression, the method of least squares yields estimators with a number of desirable statistical properties.

Before taking the selected variables into the logit model, it is necessary to check for the existence of multicollinearity among the continuous variables and verify the degree of association among discrete variables. The reason for this is that the existence of multicollinearity will affect seriously the parameter estimates. Accordingly, a Variance Inflation Factors ($VIF(X_j)$) technique was employed to detect the problem of multicollinearity for continuous variables (Gujarati, 1995). Each selected continuous explanatory variable (X_j) is regressed on all the other continuous explanatory variables, the coefficients of determination *(*R_j^2*)* being constructed in each case. If an approximate linear relationship exists among the explanatory variables then this should show up as a 'large' value for R_j^2 in at least one of the test regressions. A popular measure of multicollinearity associated with the VIF (X_j) is defined as:

$$VIF(X_j) = (1-R_j^2)^{-1}$$

Where, R_j^2 is the coefficient of multiple determination when the variable X_j is regressed on the other explanatory variables. A rise in the value of R^2_j that is an increase in the degree of multicollinearity does indeed lead to an increase in the variances and the standard errors of the OLS estimators. A VIF value greater than 10 is used as a signal for the strong multicollinearity

(Gujarati, 1995).Similarly, there may also be interaction between two qualitative variables, which can lead to the problem of high degree of association between two variables. To detect this problem, contingency coefficients were computed from the survey data. The contingency coefficients are computed as follows:

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

where, C= coefficient of contingency, χ^2 = Chi-square random variable and N=total sample size.

3.4.2.3 Interpretation of Parameter Estimates

In multiple linear regression, the interpretation of the coefficient is straightforward. It tells the amount of change in the dependent variable for a unit change in the independent variable. The interpretation of logistic regression coefficients ($ß_i$) is considered by using odds ratio $[\frac{P_i}{1-P_i}]$ and log of the odds ratio $[Ln(\frac{P_i}{1-P_i})]$ (Liao, 1994). The odds value gives the expected change in the odds ratio of non-defaulting versus defaulting per unit change in an explanatory variable, other things being equal. The same interpretation applies to both dummy and continuous variables (Liao, 1994). The logistic regression slope coefficient can be interpreted as the change in the log odds associated with a unit change in the independent variable (X_i), i.e., it tells how the log odds in favor of non-defaulting changes as X_i changes by one unit. The α is the log odds in favor of being non-defaulter if X_i is zero.

3.4.2.4 Working Hypothesis and Definition: Loan - Repayment Performance

Review of literatures on factors influencing loan repayment performance of borrowers, past research findings and the author's knowledge of the credit schemes of the study area were used to establish working hypotheses of this study. In this study, the following demographic, socio-economic and institutional factors were hypothesized to explain loan default situations of borrowers in the study area.

Dependent variable

Loan Repayment (Loanrp): It is defined as the loan repayment performance of borrowers, which is a dummy variable taking a value one if the borrower is non-defaulter and zero otherwise.

Independent variables

Age of the borrower (Age): Age is defined as the period from the respondent's birth to the time of the interview and was measured in years. Through time clients acquire experience in credit use. Moreover, older borrowers may accumulate more wealth than younger ones. Therefore, this variable is hypothesized to have positive impact on the loan repayment performance.

Loan diversion (LNDV): Sometimes borrowers use production credit for consumption purpose since credit may not be used for intended purposes. Defaulters would tend to divert production credit into consumption purpose than non-defaulters group. Therefore, loan diversion is expected to increase the rate of default, *ceteris paribus*. This variable takes a value one if loan is diverted and zero otherwise.

Distance (Accred): Borrowers nearby the lending institution have a location advantage and can contact the lender easily and frequently than those who live in distant locations. Therefore,

location advantage is expected to increase the loan repayment performance. This variable is measured in terms of kilometers required to travel from the respondent's residence to the lending institution.

Farm size (Farsz) in hectares: Refers to the total farm size owned by the respondent. Since farm size reflects ownership of an important farm asset it is expected that it would enhance the capacity of the borrower to repay on time. Thus, borrowers with large farm size would be expected to repay on time than those with small land to cultivate (Belay, 1998).

Celebration of social ceremonies (Cermosp): These are ceremonies celebrated occasionally such as wedding, burial (funeral) and others. The expenses on these ceremonies are some times too large relative to borrowers' economic status. If a person has celebrated one or more of these, cermosp takes a value one, but zero otherwise. As this variable can be a proxy for use of income for non productive purposes, it is expected to have a negative impact on loan repayment performance.

Extension Contact (Visext): This refers to the number of supervisory visit made by extension agents. Visit by extension workers increase the awareness of borrowers on how and where to spend the money and when to repay back it. Therefore, supervisory visit are expected to have positive effect on the repayment performance of borrowers.

Credit Experience (Creexp): Credit experience is one factor that can affect the repayment capacity of borrowers. As clients credit experience increase they develop the experience of managing it properly. Therefore, it is expected that credit experience has positive effect on the repayment performance of borrowers.

Oxen (Numoxen): defined as the number of draught oxen owned per household during the survey period. Oxen are the most important source of traction power in the area. Therefore,

borrowers who own more oxen would be in a position to undertake farm activities on time and when required. Ownership of more oxen power is expected to be positively related to repayment performance of the loan (Belay, 1998).

Off – farm income (Offinc): Off-farm income is income generated from activities other than crop and livestock production. These include petty trading, firewood selling and others. These additional sources of income would encourage the borrowers to settle their debt. On the contrary, off-farm income may increase default, as income is generated from various sources, the borrowers may become reluctant and not give more emphasis to loan repayment (Zeller and Sharma, 1996 as cited in Belay, 2002). Therefore, off-farm income, as a variable is hypothesized to have either positive or negative impact on the loan repayment.

Concluding Remark

From the above discussion, it can be understood that the researcher have used structured interview schedule to collect information from the 120 sample respondents who were selected at random. Models including multiple regression model and logistic regression model were used to analyze the data. Moreover, the researcher has developed working hypothesis to show the relationship between the dependent and independent variables.

CHAPTER–IV RESULTS AND DISCUSSION

Under this section, the general socio – economic characteristics of the sampled respondents such as age, sex, marital status, educational level, family size, land holding, livestock situation etc are discussed. This is intended to provide general understanding about the status of the borrowers.

5.1. Demographic and Socio-economic Characteristics of the Sample Households

5.1.1. Age of the respondents

Age is a major demographic feature used to characterize the borrowers. Age is an important factor in proper utilization of revolving credit because through time individuals develop experience in credit use. Moreover, older individuals develop more wealth than younger ones. The table below depicts that 46 percent of the sample respondents incorporated in the study are found in the age of 41 and above years of old. But only 1.7 percent is in the range of 18-25 years of age.

Table 2 Distribution of Respondents by Age Group

Age Category	No of Respondents	Percentage (%)
18-25	2	1.7
26-33	20	16.7
34-42	43	35.8
43+	55	45.8
Total	**120**	**100.0**

Source: Field survey – October 2007

5.1.2. Marital Status of Respondents

The table below reveals about the marital status of respondents. It indicates that 76.00 percent of the sample respondents are married while 10.00 and 13.00 percent for divorced and widowed respectively and only 2.00 percent of the household in the sample are not married.

Table 3 Distribution of Marital Status of Respondents

Marital Status	No of Respondents	Percent
Married	91	75.8
Unmarried	2	1.7
Divorced	12	10.5
Widowed	15	12.5
Total	**120**	**100.00**

Source: Field survey – October 2007

5.1.3. Education and Gender

Education is believed to contribute positively towards the improvement of livelihood of individuals. The ability of rural poor to transform their life through access to financial resources depends on many factors of which education is one of the most important. Better education helps farmers in the identification of better business opportunities. The survey results revealed that 74.00 percent of the sample borrowers are illiterate, whereas only some 21.00 percent of them attended primary school (Table 7). This result calls for the necessity of basic education for rural people in the area.

Table 4 Education and Gender Distribution

Educational Status	Gender		Total
	Men	Women	
No formal education	61(88.54%)	28 (31.46%)	89 (74.17%)
Below six Grade	25 (100%)	0 (0.00%)	25 (20.83%)
7-12	1 (100. %)	0 (0.00%)	1 (0.83%)
Certificate	5 (100. %)	0 (0.00%)	5 (4.17%)
Total	92	28	120 (100.00%)

Source: Field survey – October 2007
* % represents percentage

But only 4.00 percent have certificate. In addition to this it also shows that 24.00 percent of the households in the sample are headed by women. Analyzing gender of respondents helps to show the participation of women in credit activities.

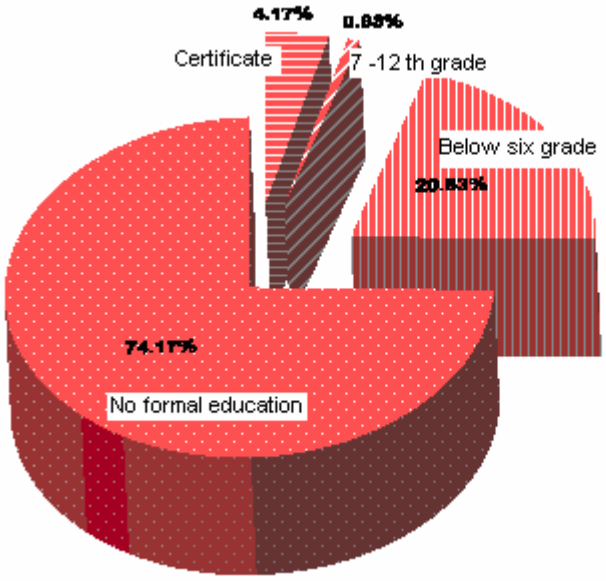


Figure 2 Educations of Respondents

5.1.4. Household Profile

Household profile means the number of family members in a house. The household size of a family indicates the level of dependency in the household, or the number of dependents in the household. The average family size of the sample borrowers is found to be 4.7 persons. Most of the family members except the parents are not of working age. 25.00 percent and 27.00 percent of the household in the sample have a family size of four and five respectively, while the percentage of borrowers having only one is 2.00 percent. Large family size could be a burden when there are many dependants and could be favorable if people are employed to serve in farm and off-farm activities in the household, especially after the loan.

Table 5 Distribution of Family size of Respondents

Family size	No of Respondents	Percent
1	2	1.70
2	6	5.00
3	14	11.70
4	30	25.00
5	32	26.70
6	22	18.30
7	6	5.00
8	8	6.70
Total	**120**	**100.00**

Source: Field survey – October 2007

5.1.5. Experience in Credit Use

The more the borrowers used to take credit; the better is the potential for investment. This is because as borrowers take credit very often they experience proper handling to it. With reference to the type of clients in the sample households; 71.00 percent of the clients were taking credit for at least two years, which indicated that farmers who took credit to raise their income and get access to more food and other basic necessities are increasing from time to time. Only 6.00 percent clients were joined in the year 2007 G.C.

Table 6 Client Credit Experience

Experience in credit	No of respondents	Percentage
1 year	7	5.8
2 years	85	70.8
3 years	16	13.3
4years	12	10.0
Total	**120**	**100.0**

Source: Field survey – October 2007

5.1.6. Occupation of Respondents

Occupation is an important factor as it provides income to households. The type of occupation a household head engages determines the living condition of the household itself. Off-farm

activities such as petty trading, selling home made drinks, firewood selling etc provide additional income and help borrowers settle their debt if any. Table 9 shows the primary occupation of household heads in the sample. Farming dominates as the first occupation of most household heads with 95.00 percent. This is true for both male heads and female ones with 62.00 percent and 57.00 percent, respectively. However, male household heads are more likely than male heads to list trader as their first occupation (10.00 percent compared with 0.00 percent). The opposite is true for wage labourer (40.00 percent of female household heads versus 31.50 percent of male heads).

Table 7 Respondents Occupation

Type of Occupation	No of Respondents		Percentage (%)	
	Men	Women	Men	Women
Farming	90	24	61.70	57.10
Wage labourer	46	13	31.50	41.00
Trader	10	0	6.80	00.00
Household work	0	5	0.00	11.90
Total	**146**	**42**	**100.00**	**100.00**

Source: Field survey – October 2007

5.1.7. Farm Income

Farm income is the other crucial factor in determining the well being of the borrowers. Moreover, the higher the farm income the better is the loan repayment performance of borrowers. Livestock, crops and off-farm activities are important income sources for the sample borrowers. The average revenue earned by a borrower from all crops, vegetable production and livestock in 2006/2007 was 3,137.93 Birr per annum. The minimum and maximum amount is 580 and 10,500 Birr respectively. Table 10 below showed that 28 percent of the respondents obtain an annual

income of more than Birr 6500. But only 6 percent of sample respondents gets below Br 2000 annually.

Table 8 Annual Incomes

Annual Income	No of Respondents	Percent
Br 500 -1999	7	5.8
2000-3499	30	25.0
3500-4999	31	25.8
5000-6499	19	15.8
6100+	33	27.5
Total	**120**	**100.0**

Source: Field survey – October 2007

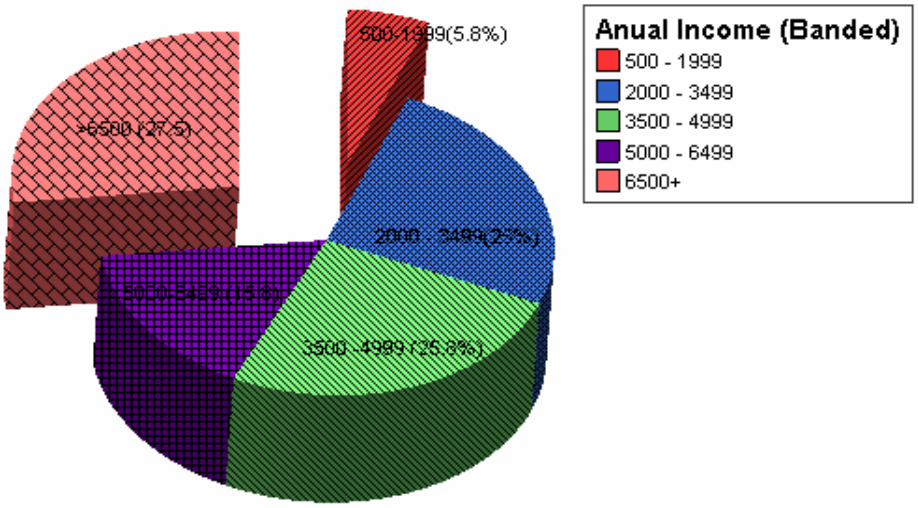


Figure 3 Annual Incomes of Respondents in Birr

5.1.8. Livestock Situation

Farmers in the study area undertake both crop and livestock production activities. Though, the holding size varied among the sample borrowers al respondents owned livestock. In the area, livestock are kept for various economic and social reasons. The major economic reasons include

provision or supply of draught power, generation of cash income and food. Table 9 shows livestock type held by the sample borrowers. It is evident from the table that respondents in the area keep more sheep than other categories of livestock. Oxen are the most important source of draught power for cultivation of land in the area. The total livestock owned by sample respondents were 1356 in number and 295 in TLU[23].

Table 9 Average Size of Livestock (TLU/household) for Sample Respondents

Livestock Type	Head	TLU	Mean	Average/ H.H
Goat	91	9.1	0.76	3.37 (27)*
Sheep	798	79.8	6.65	7.60 (105)
Cattle	262	183.4	1.02	2.98 (88)
Donkey	43	21.5	0.36	1.43 (30)
Poultry	169	0.845	1.35	4.57 (37)
Total	**1356**	**294.645**		

Source: Field survey – October 2007
* Represent the valid observation

5.1.9. Decision on the Borrowed Fund

Women have been vulnerable to poverty due to different social and cultural believes in the country and so their access to credit is limited. Therefore, having women decide on the borrowing is significant for the family and the country as a whole. The sample respondents were asked whether or not women had equal or more right to decide on the borrowed fund. The table below shows that about 68.00 percent of the respondents reported that they made decision together with their partners on how the borrowed fund should be used. But 18.00 percent of women respondents reported that they made decisions by themselves.

[23] TLU (Tropical Livestock Unit) is a unit of measurement of livestock commonly taken as 250 kg live weight. 1TLU = 1 camel; 0.7 cattle; 0.1sheep or goat; 0.5 donkey; 0.005 poultry.

Table 10 Decision on Credit usage as Perceived by the Borrower Group

Decision Maker	Frequency	Percent (%)
Men	18	15.00
Women	21	17.50
Both	81	67.50
Total	**120**	**100.00**

Source: Field survey – October 2007

5.1.10. Social Ceremonies

Celebrating social ceremonies could affect the proper utilization of credits. Borrowers celebrate social ceremonies the probability of mis-utilization is very high and the possibility of utilizing the revolving credit for such purpose is definitely high. Concerning social ceremonies in the study area, of the total respondents 35.00 percent reported that they had celebrated one or more of these occasional ceremonies and 65.00 percent stated that they had not celebrated any of them during 2007 G.C.

Table 11 Social Ceremonies as Reported by Respondents

Ceremonial Celebration	Frequency	Percent (%)
Yes	42	35.00
No	78	65.00
Total	**120**	**100.00**

Source: Field survey – October 2007

5.1.11. Adequacy of Credit

Adequate credit is essential for rural poor to expand their investment. Inadequate credit was reported as one main reason for borrowers not to repay their loan on time (focus group discussion). Inadequate revolving credit retards the potential expansion of investments by

borrowers as it is limited to a certain level and matured with in a year. The survey results reveal that 58 percent of the borrowers stated that the disbursed loan are inadequate while 42 percent reported that the opposite.

Table 12 Adequacy of Credit as Perceived by Respondents

Credit Adequacy	Frequency	Percent (%)
Adequate	50	41.67
Inadequate	70	58.33
Total	**120**	**100.00**

Source: Field survey – October 2007

5.1.12 Institutional Factors

5.1.12.1 Extension Contact

Supervisory visit by extension agents is the other important input for the proper usage of credit. Extension contact help the borrowers how to utilize the amount properly. It is also believed that the more the extension contact the better is the outcome. The results of the survey indicate that 79.20 percent of the respondents had extension contact, while 20.8 percent did not have any contact with extension agents. More specifically majority of them had contact with extension agents twice in a year.

Table 13 Visited by Extension Workers

Extension Contact per year	Frequency	Percent (%)
No visit	25	20.8
1 times	24	20.0
2 times	38	31.7
3 times	29	24.2
4 + times	4	3.3
Total	**120**	**100.00**

Source: Field survey – October 2007

5.1.12.2 Sources of Credit

The sources of credit for most of the sample respondents in the study area are the formal and non formal financial institutions. For about 90.00 percent of the total respondents cooperative credit was their main source during the year 2007 G.C. Dedebit Credit and Saving Institution (DECSI) was reported as second choice (40.00 percent) of credit source.

Table 14 Source of Credit as Reported by Respondents

Source of Credit	No of Respondents	Percentage
Cooperatives	108	90.00
DECSI	48	40.00
NGOs (World Bank)	14	11.70
Commercial Bank of Ethiopia	2	1.70
Relatives	18	15.00
Total	190	

Source: Field survey – October 2007

5.2 Assessment of Credit Needs of Borrowers

This part is aimed at assessing the credit needs of the rural poor located in each of the selected towns. In order to assess the need for credit respondents were asked about the environmental potential such as enough land, fertile soil etc; awareness to credit; availability and accessibility of credit and other inviting conditions that would trigger off respondents to demand credit.

5.2.1. Size of Land Holding

Asset ownership is arguably an important determinant of access to credit, especially if creditworthiness is judged on the basis of wealth. Land, traditionally the most important form of collateral, has been recognized as one of the major constraints in the agricultural sector of Ethiopia. This is because land insecurity is high in the Ethiopian land policy.

Table 15 Size of Land Holding

Land Size(Hectares)	Frequency	Percent
0 – 0.25	36	30.0
0.26 – 0.5	39	32.5
0.51 – 1	35	29.2
1.1+	10	8.3
Total	**120**	**100.00**

Source: Field survey – October 2007

Concerning the size of land holdings majority of the sample respondents (33 percent) have less than half (0.5) hectare of land. But only 8.00 percent of the household sample responded that they have more than one hectare. The average holding is 0. 66 ha of land. Small cultivated land would have its own effect on the output of the farmers given other situations constant and so they may limit their credit demand for the purpose of buying agricultural input supplies such as improved seeds, fertilizers and other. Also given other factors constant the larger the cultivated land the highest is the inclination to demand credit. Therefore, as dominant numbers of households in the sample are with small cultivated land their demand for credit may be negatively affected.

5.2.2. Soil Fertility

Soil potential is important factors that have positive relationship with demand for credit. This is because soul suitability encourages more expansion and diversification particularly in the area of grain production. On the other hand lack of good soil potential may motivate individuals to demand credit for the purpose of undertaking non agricultural investments.

Table 16 Soil Fertility Status and Character as Perceived by the Respondent

Soil Fertility	Frequency	Percent
Good	4	3.30
Medium	85	70.80
Poor	31	25.80
Total	**120**	**100.00**

Source: Field survey – October 2007

Table 18 reveals that 71.00 percent of the respondents claim the soil fertility of their land is medium, while 26.00 percent of them say it is poor and only about 3.00 percent are pleased about fertility of their soil. Therefore, the situation may positively affect the individual farmers to demand more credit for the purpose of undertaking activities outside land cultivation and for the purchase of fertilizer to improve productivity.

5.2.3. Accessibility to Multipurpose Cooperatives

Closeness of the borrowers to the lending institutions is a major determinant factor affecting credit demand as well as for regular settlement of their debt. This is because borrowers can contact the lender easily and frequently than those who live in more distant locations. The more the proximity to the credit institutions the highest the demand for credit and the opposite is true.

Table 17 Accessibility to Multipurpose Cooperatives

Accessibility(Km)	Frequency	Percent
0 – 1	42	35.00
1.0 – 2	46	38.30
2.1 – 3	20	16.70
3.1+	12	10.00
Total	**120**	**100.00**

Source: Field survey – October 2007

With regard to the degree of accessibility, 38.00 percent of the clients travel for about two kilometers to get access to credit. And significant numbers (35.00 percent) of the borrowers walk for about only one kilometer. On average some one has to walk for about 1.99 km to get to the lending institution. Therefore, it shows that majority of client do not have problem of approachability to credit and the tendency for credit demand is high.

5.2.4. Extent of Credit Authorized

The amount of credit authorized to poor farmers is also another significant factor affecting the credit demand by farmers. The amount of credit farmer's borrower determines the level of investment. Borrowers with higher amount of credit can have better opportunity to expand larger investments. The level of credit authorized also determines their demand for it. The lower the credit the less would be the demand for it and vise versa. Therefore, Respondents were asked whether the credit they get is enough or not. The table below shows that 59.00 percent of the borrowers do not get enough amount of credit.

Table 18 Amount of Credit Authorized

Authorized Credit	Frequency	Percent
Enough	34	28.3
Moderate	15	12.5
Not enough	71	59.2
Total	**120**	**100.00**

Source: Field survey – October 2007

33.00 percent of the sample household respondents responded that the credit allowed was between Br 1000 to Br 2000 (table 21) which is not enough for the clients to expand their business. This indicates that the credit availability to the borrowers is limited to a certain maximum amount above which they can not borrow. The average amount of credit authorized to

the poor farmers in each of the sample areas is about Birr 1500 and this amount is not based on the credit need assessment of the borrowers.[24]

Table 19 Amount of Credit Borrowed

Amount of Credit (Br)	Frequency	Percent
1000 -1999	39	32.50
2000 – 2999	33	27.50
3000 – 3999	29	24.20
4000+	19	15.80
Total	**120**	**100.00**

Source: Field Survey – October 2007

5.2.5. Timely Disbursement of Credit

Timely credit disbursement is necessary for any type of business activity particularly for individuals in the business of agriculture in Ethiopia as the production time is seasonal. It is believed that if credits are not delivered on time, borrowers can not invest it and further they may spent it for the purpose not initially intended including for personal consumption such as Food items and clothing, educational and health expenditures. Sample household heads were asked whether the credit offered by the multipurpose cooperatives is disbursed on time or not. The researcher found that 86.00 percent of them replied it was not disbursed on time.

Table 20 Timely Disbursement of Credit

Timely Disbursement	**Frequency**	**Percent**
Yes	17	14.20
No	103	85.80
Total	**120**	**100.00**

Source: Field survey – October 2007

[24] Tigray Food Security coordination Bureau mid term report, 2006

5.2.6. Interest Rate

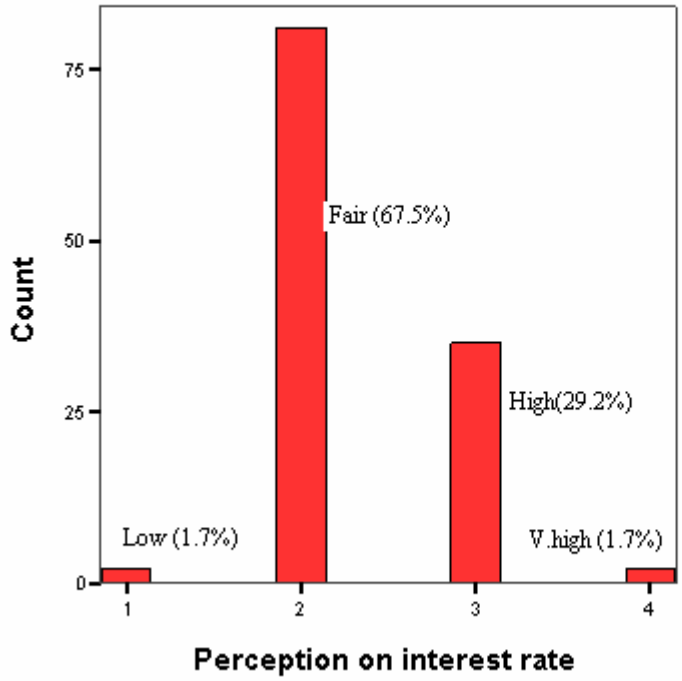
The rate of interest charged by the credit institutions has an effect on the number and size of borrowing. The lower the interest rate that individuals pay the higher is the tendency to take more loans. According to the focus group discussion with the officials of the multipurpose cooperatives the interest rate charged to the borrowers is 9.00 percent which is higher than 6.00 percent charged by commercial bank and lower than 15.00 percent charged by DECSI. The main reasons for having higher charge than the commercial banks are distance of the rural poor from cities and its associated costs and the higher risk of non repayment of loan. Table 28 shows 67.50 percent of sample household respondents perceive that the interest charged is fair; another 29.20 percent replied that it is high. Only 1.70 percent of them responded the interest they pay is low

Table 21 Perception on Interest Rate

Perception on interest rate	Frequency	Percent
Low	2	1.70
Fair	81	67.50
High	35	29.20
V. high	2	1.70
Total	**120**	**100.00**

Source: Field survey – October 2007

Figure 4 Perceptions of Respondents on Interest Rate



Concluding Remark

From the above given factors it can be understood that the demand for credit is higher. According to majority of the sample respondents the average amount of fund disbursed currently, Birr 1500, is not fairly enough to expand their investments and so demands more. In addition to this the authorized amount is not disbursed on time which may discourage farmers to demand it. Accessibility to the current lending institutions is also a serious problem. With this facts, the researcher attempts to present the utilization of credit in the next unit.

5.3 Assessment of Revolving Credit Utilization

This section deals with evaluating the proper utilization of revolving credit fund by the clients of the rural poor located in each of the selected villages. In order to assess whether borrowers utilized the revolving credit properly or not, respondents were asked about how much they borrowed, how much they utilized for the purpose for which they borrow the loan, mis-utilization of the loan if any and reasons for mis-utilization.

5.3.1 Amount of Loan Borrowed

Table 22 Distribution of Loan Borrowed by Clients

Loan Borrowed	Frequency	Percent
1000-1999	39	32.50
2000-2999	33	27.50
3000-3999	29	24.20
4000+	19	15.80
Total	**120**	**100.00**

Table 22 above showed that majority of the sample respondents borrowed an amount of Birr 1000-1999. Only 16.00 percent of them borrowed to the level of Birr 4000. Moreover, it showed that the average amount of loan borrowed was Birr 2642.08.

5.3.2. Usage of Borrowed Loan

Loan disbursed to clients are usually based on their needs to participate in different projects. Respondents were asked the purpose for which loan was used. The table below shows that majority of the respondents used the loan for purchasing seeds followed by fertilizer and farm tools

Table 23 Purpose of Borrowed Loan

Purpose of Borrowing	Frequency	Percentage
Seed Purchase	57	47.50
Fertilizer Purchase	28	23.33
Livestock Purchase	20	16.67
Farm tools	15	12.50
Total	**120**	**100.00**

Respondents were also asked if there was mis-utilization of the borrowed fund for the purpose not intended. The table below shows that 54.00 percent of the sample respondents revealed that they utilized the borrowed loan for the purpose initially intended.

Table 24 Distribution of Mis-utilization of Borrowed Loan

Mis-Utilization	Frequency	Percentage
Yes	55	45.83
No	65	54.17
Total	**120**	**100.00**

5.3.2 Reasons for Mis-Utilization of Borrowed Loan

Respondents who mis-utilize the loan partially were asked to list down the reasons for mis-utilization of borrowed fund. The following are some of the reasons they explained,

Lack of awareness: Many farmers thought that the revolving credit fund is for aid not just to be repaid back and their tendency for investment was weak.

Spending for consumption purpose: Significant number of the beneficiaries also spends the amount for consumption purposes such as clothing and food items; for educational fee of their children and health care.

Ceremonial Expenditure: In addition to the above reasons they also revealed that expenditure for ceremonial purpose was the cuase for mis-utilization of the borrowed fund

Concluding Remark

Efficient utilization of credit is crucial for improving the living condition of poor farmers. Moreover, the amount of loan borrowed is key determinant for expanding business. The study showed that the average loan borrowed was about Birr 2642.08. About 54.00 percent of the sample respondents utilized the loan fully for the purpose initially intended. Further, respondents revealed that lack of awareness; expenditure for consumption purpose and ceremonial expenditure were the main reasons for mis-utilization of the revolving credit fund.

5.4. The Socio-Economic Impact of Revolving Credit Fund

This section discusses the socio – economic impact of revolving credit fund of the household sample respondents in relation to the frequent borrowers and new clients. Socio – economic impact is expressed in terms of improvement in income, housing improvement, savings, empowerment and others. Due to the memory bias of respondents the researcher couldn't use before and after data.

5.4.1 The Impact on Income

One of the primary objectives of the revolving credit program is to improve the income of the beneficiaries through the provision of organized financial services. This is accomplished by engaging participants in income-earning activities at the household and community level. From the frequency analysis below, it is possible to observe variation in the trend of income between frequent borrowers and new clients.

Table 25 Income Distribution of Respondents

Annual Income	Client Credit Experience				Total
	1 year	2 years	3 years	4 years	
< 500	2	5	0	0	7
500-1999	1	24	3	1	29
2000-3499	0	28	1	2	31
3500-4999	2	10	6	2	19
5000-6499	2	6	4	6	18
6500+	0	2	6	8	16
Total	**7**	**75**	**20**	**19**	**120**

5.4.1.1 Analysis of Factors Influencing Average Annual Income of Respondents

The regression model is selected for analyzing the factors influencing the average annual Income of Respondents. Prior to running the regression analysis the continuous explanatory variables are checked for the existence of relationship or association using contingency coefficients.

Table 26 Contingency Coefficients of the Continuous Variables

Variable Code	Variables	P-value	Result
Age	Age of the respondents	NS	.060
Sex	Sex of respondents	NS	-.072
Edstat	Educational status of respondents	NS	-.062
Famsz	Family size of respondents	NS	.123
Farsz	Size of land holdings	SF	.218*
Nuoxen	Number of oxen owned	SF	.370**
Visext	Extension contact	SF	.216*
Creexp	Credit experience of respondents	SF	.398**
Accred	Access to financing institutions	NS	.099
CredAm	Amount of credit taken	NS	.157

Note: SF : Significant
NS : Not significant
* SF at 5%
** SF at 1%

Source Own source

The coefficient of determination R^2 provides a measure of goodness of fit of the estimated regression equation to the data, which indicates the number of sample observations correctly predicted by the model.

The model results show that the regression model correctly predicted 36.2 percent of the sample borrowers. In other words 36.20 percent of the variability in annual income is explained by the relationship with number of oxen owned, extension contact and credit seniority of borrowers

Table 27 Estimate of the Regression Model

Variables	Regression Coef	Std. Error	t-ratio	Sign
Constant	- 4417.640	2085.184	- 2.119	.036
Age	254.191	273.481	.929	.355
Sex	589.451	552.610	1.067	.288
Edstat	- 17.061	300.700	- .057	.955
Famsz	25.834	180.547	.143	.886
Nuoxen	1186.984	263.119	4.511	.000**
Visext	461.681	188.460	2.450	.016*
Creexp	1314.833	280.200	4.692	.000**
CredAm	.278	.196	1.416	.160
Farsz	-59.093	860.276	- .069	.945
Accred	154.503	206.984	.746	.457

* significant at 5%
** significant at 1%

R^2 = 0.362 DF=10 P= .000

Source – Field survey, Oct, 2007

The test statistic exceeds the Chi-square critical value with 10 degrees of freedom. The result is significant at less than 0.01 indicating that the hypothesis that all the coefficients except the intercept are equal to zero is not tenable.

5.4.1.2. Discussion on the Significant Explanatory Variables

Out of the ten variables hypothesized to influence the average annual income of the respondents only three were found to have statistical significance. The estimate of the regression model shows that number of oxen owned (Nuoxen), Extension contact or supervisory visit by credit agents after credit disbursement (Visext) and credit experience (Credexp) are the most significant factors affecting the average annual income of the clients. To be specific enough, number of oxen owned by respondents(Nuoxen) and credit experience of household respondents(Credexp) are statistically significant at less than or equal to 1.00 percent while the supervisory visit by extension agents(Visext) is significant at less than or equal to 5.00 percent. All other variables such as age of clients (Age), sex of borrowers (Sex), educational status (Edstat), household size (Famsz), credit amount taken (credAm) , farm size and access to credit(Accred) are not powerful enough in explaining the average annual income of respondents.

The results of the model estimates are interpreted in relation to each of the statistically significant variables.

Number of Drought Oxen Owned: Borrowers who own more oxen would be in a position to undertake farm activities on time and even when required. Ownership of more oxen power is expected to be positively related to income. The result of the regression model shows that the number of oxen owned is positively related to the average annual income which is consistent to what was hypothesized. It is statistically significant at 1.00 percent. Other things remaining constant, the t- ration favoring annual income increased by a factor of 4.511 for borrowers who owned oxen. This result does not agree with the findings of some other researchers. (Bamlak, 2006)

Extension Contact: The result of the regression model shows that supervisory visit by extension workers after the disbursement of loan is positively related with increase in income of the households in the sample. This is consistent to what the researcher has hypothesized at the beginning. This is due to the fact that extension staff assists farmers in credit management and also provide information on production and marketing. The t – ratio in favor of the annual income increased by a factor of 2.450 as the number of supervisory visit by extension workers increased by one visit *ceteris paribus.*

Credit Experience: The more individuals use credit, better they are in credit management. The regression model shows that credit experience have positive impact in increasing the income of borrowers. This is consistent with the prior assumption. This variable is statistically significant at 1.00 percent. The possible explanation is that when individuals borrow money continuously it may be a sign of progress because it is only if they are successful in their business activity that they get continuous or uninterrupted credit. Moreover, frequent clients can get additional more credit through time due to the relationship they create with the lending institutions. The t - ratio in favor of annual income, *ceteris paribus*, increases by a factor of 4.692 as client's credit experience increases from year to year.

5.4.2 Impact on Housing

It is a well-established fact that housing and its related investment is a key indicator of a country's development. This is because investments can serve a useful purpose both to increase the household's standard of living and to improve its income-generating opportunities. Apart from serving people as shelter, a house is the most valuable asset people should have. The findings clearly indicate that there is difference between the frequent borrowers and the new clients in improving or expanding their houses.

Clients were asked for the types of housing improvements they have made during the last two years. Most clients replied that house repair was the most common housing improvement they have made.

Table 28 Distribution of Housing

House Building	Client Credit Experience				Total
	1year	2 years	3 years	4 years	
Yes	3	33	9	12	57
No	4	49	7	3	63
Total	**7**	**85**	**16**	**12**	**120**

Source: Field survey – October 2007

5.4.4 Impact on Empowerment of Women Clients

Apart from economic and socio-cultural impacts, microfinance intervention is believed to boost the borrowers' sense of self. In this paper, the writer examined whether credit has helped the program women clients to achieve more power in the household or community decisions that affect their and their community's life. Respondents of the borrower group indicated that 67.5% of women take the loan together with their partners. Besides, borrowers discuss the matter together with their partners and spend the loan in an area where they both believe is important for their families' betterment.

Table 29 Decision on Credit as Perceived by Respondents

Decision on credit	Frequency	Percent
Men	18	15.00
Women	21	17.50
Both	81	67.50
Total	**120**	**100.00**

Source: Field survey – October 2006

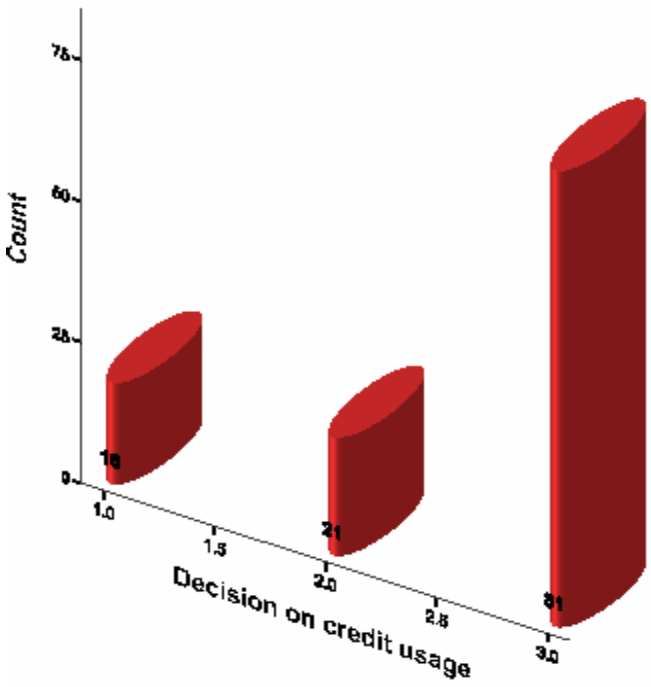


Figure 5 Decision on credit usage by family members

Concluding Remark

From the survey, it was possible to learn that the clients have used the loan for intended purposes. However, these 'intended purposes' may not help the poor to get sustainable assurance of income. Ten variables were hypothesized to check whether they influence the average annual income of the respondents or not. But only variables such as number of oxen owned, extension contact and clients credit experience were found to have statistical significance.

5.5 Repayment Performance of Clients

The various studies on loan repayment performance in different countries identified the most probable causes of loan default. Moreover, the major independent variables such as access to credit, farm size, age of borrowers, credit experience, loan diversion, weak supervision, etc; were analyzed using different models, which in turn would help to compare and contrast those findings with the results of the intended study so as to recommend remedies that might mitigate the problems to be identified. In this study, the researcher has identified different variables that would affect the repayment performance of respondents.

5.5.1 Analysis of Factors Influencing Loan Repayment Performance

As discussed earlier, the regression model is selected for analyzing the factors influencing the loan repayment performance of the borrowers. Prior to running the regression analysis both the continuous and discrete explanatory variables are checked for the existence of relationship or association using contingency coefficients and variance inflationary factor respectively.

Table 30 Description of the Variables

Variables	Description
Age	Age of the borrowers
Dailylab	Off farm income
Numoxen	Number of oxen owned
Extvist	Extension contact
Cermospe	Ceremonial spending
Credexp	Credit experience of clients
Farmsz	Farm size of borrowers
Accred	Distance from lending institutions
Diver	Loan diversion

Table 31 Contingency Coefficients for Continuous Variables

Variables	Age	Numoxen	Extvist	Cermospe	Credexp	Farmsz	Accred
Age		0.00	0.00	0.00	0.00	0.00	0.00
Numoxen			0.00	0.00	0.00	0.00	0.00
Extvisit				0.00	0.00	0.00	0.00
Cermospe					0.00	0.00	0.00
Credexp						0.00	0.00
Farmsz						0.00	0.00
Accred							0.00

Note: The coefficients are tested using Chi-square test
Source: Own computation

Table 32. VIF of the Discrete Explanatory Variable

Variables	Adjusted R^2	VIF
Dailylab	0.057	1.000
Diver	0.070	1.000

Source: Own computation

Table 33 Summary Statistics of the Variables in the Logistic Regression

Sample size	% with a values			Pearson R^2	-2 log likelihood ratio
	ND	D	Total		
120	96	24	120	66.048	54.048
	(.80)	(.20)	(1.00)		

Note: ND = non defaulter , D = defaulter
Source: Field survey

Table 34 The Maximum Likelihood Estimates of the Logit Model

Variables	Esp Coefficient	Odds ratio	Wald statistics	P Value
Constant	10.105	.250	5.593	.018
Age	-2.334	.097	11.365	.001***
Dailylab	2.451	11.596	5.790	.016*
Numoxen	. 380	.684	.795	.373
Extvisit	1.443	.236	5.338	.000***
Cermospe	.000	1.000	.184	.668
Credexpe	-1.530	.217	2.315	.128
Farmsz	.093	1.097	.004	.952
Accred	-.180	.835	.190	.663
Diver	-1.220	.295	1.279	.003**

* significant at 5.00 percent

** significant at 10.00 percent

*** significant at 1.00 percent

The test statistic exceeds the Chi-square critical value with 9 degrees of freedom. The result is significant at less than 0.01 indicating that the hypothesis that all the coefficients except the intercept are equal to zero is not tenable.

5.5.2 Discussion on the Significant Explanatory Variables

Given the nine variables hypothesized to influence the repayment performance, four of them are found to have statistical significance. According to the estimates of the regression model the variables which greatly affect the repayment performance by clients include age of borrowers (Age), extension visit (Visext), off-farm income of the borrowers (Dailylab) and loan diversion (Diver). From the given variables affecting loan repayment performance age of clients (Age), and extension contact (Visex) are statistically significant at less than or equal to 1.00 percent, off-

farm income (dailylab) and loan diversion (Diver), loan used for the purpose not initial intended like for social ceremonies and other consumption purposes, is statistical significant at less than 5.00 and 10.00 percent respectively. Other variables including landholdings of borrowers (Farsz), clients ceremonial expenditure (Cermosp), access to credit institutions(Accred), credit experience of borrowers(Credexp) and number of oxen owned (Numoxen) are not significant factors in explaining the dependent variable – loan repayment performance.

The results of the model estimates are interpreted in relation to each of the statistically significant variables in the following way

Age of Borrowers (Age): The result of the logistic regression model tells that this variable affects the loan repayment performance negatively. This is contrary to the expectations made earlier that through time as clients experience in using credit their repayment performance would be better. This may be due to the fact that as borrowers get old the tendency for diversification and investment decreases for fear of risk and through time they may use the amount for other purpose. This variable is significant at 1.00 percent. The odds ratio in favor of non-defaulting increases by a factor of .097 as the age of borrowers increases by one year, *ceteris paribus*.

Extension Visit (Visext): Supervisory visit by extension agents is hypothesized earlier to affect loan repayment performance positively. The result of the logistic regression is consistent with the previous assumption that the less the extension contact the higher the tendency for non repayment. The significant test for this variable is less than or equal to 1.00 percent. The odds ratio in favor of repayment performance, *ceteris paribus,* increase by a factor of 5.34 as the number of contacts with extension agent increase.

Off Farm Income of the Borrowers (Dailylab): The result of the logistic regression model reveals that income drawn from daily labour has positive effect on the repayment performance of

the borrowers. This is consistent with the a *priori* expectation. The variable is significant at less than 5.00 percent. Other things being kept constant, the odds ratio favoring loan repayment performance increased by a factor of 5.790 for borrowers who get additional income from daily labor.

Loan Diversion (Diver): The coefficient of this variable was hypothesized to influence the repayment performance negatively. The logistic regression model shows consistent result to the prior expectation. It is significant at less than 10.00 percent. The odds ratio in favor of loan repayment decreases by a factor of 0.295 as a borrower diverts the loan. This result is in complete agreement with the study made by Belay (2002).

5.6 Clients' Perception of the Program

From the focus group discussions, it was possible to learn that involvement in microfinance provisions would serve a useful purpose in narrowing the gender gap and in bridging the gap between the rich and the poor. However, there were a couple of points these people raised that need to be given due consideration. These were, among others, loan size, repayment period and group lending methodology. During the discussions, these people went to explain that despite the importance of the credit provision in creating income-generating activities, the amount of loan they were allowed to take at a time was below what they really needed. This, according to them, limited their capacity from engaging in activities that required high start-ups. As a result, they were simply confined to activities that asked them little effort and provided them with quick turn over that would enable them pay their debt timely. Itana (2002)[25] supported this idea by saying that the smaller the size of the loan, the less will be the chance to engage in profitable activities.

[25] Itana Ayana (2002) Micro financing and Poverty Alleviation in Ethiopia

In addition, he went on to explain that small loans discourage even those poor people whose credit requirement is higher than the maximum amount of money that could be permitted by the institution.

Regarding rating of loan repayment period, most people replied that the time was too short to be able to produce more and pay the money back. As we have seen somewhere above, most people, especially in the rural areas, were engaged in agricultural activities where they bought either ox or goat. In addition to the worry of the respondents, one could also observe the problem in that the repayment period is eleven months during which a client is supposed to repay the loan. Therefore, it is not that difficult to see how much problematic it is for those clients who have used the loan to buy sheep/goat. The reason is straightforward. In this regard, the following questions may be crucial: When do these sheep give birth to an offspring? When do these sheep become ready for the market? Is it convenient for these people to repay eleven months after they have taken the loan in a situation where they are found to use the sheep just to smooth their income?

Statements from Group Discussion Participants about Negative and Positive Impact of Revolving Credit Fund (loan).

Divorce, 3 children: “I took a loan in 2000 and 2001, first 200 Birr, then 400 Birr. Informally I was given an orientation that I should do trading, but I do not know how to do business. So I spent it all on food and had then problems of repaying in time. I do not want another loan, because now I am worse off than before and had to sell some livestock to repay.”

Married woman, mid 30’s, 6 children: “I took already three times a loan, between 1000 and 2000Birr. The first loan was used for house construction and trade with cereals. Next year I used it again for cereal trade and used the profit to secure the households food consumption. The third one will again be used for cereal trade. Through credit the household is food secure, I can send my children to school, buy clothes for us and have a nice house.”

5.7 Non - Member Response

For the purpose of control group, non-members and at the same time non clients were contacted through an interview schedule. They were asked question related to their membership, interest rate, contribution of cooperatives, challenges facing cooperatives and others.

Respondents were asked whether they though of enrolling as a member of the cooperatives society. According to table 35 below majority of the respondents have negative perception towards cooperative. Their main reason was that they do not see any benefit out of it.

Table 35 Perception of Respondents on Membership

Thinking of Membership	No of Respondents	Percentage
Yes	28	46.70
No	32	53.30
Total	60	100.00

Source: own source - October 2006

Moreover, they were also asked why they did not take revolving credit for the purpose of investment. The main reasons that they cited are ill-timed disbursement of loan, lack of awareness, unfair treatment of non members, and lack of resource potential for investment. Further, the respondents were also asked whether they have negative perception towards cooperatives. 80.00 percent of the households sampled responded that they do not have negative perception towards cooperatives.

Table 36 Perception of Respondents on Cooperatives

Perception of Respondents	No of Respondents	Percentage
Positive	48	80.00
Negative	12	20.00
Total	60	100.00

Source: own survey – October 2006

In addition to the above questions respondents were asked to list the main challenges to cooperatives. Majority of them revealed that corruption by officials, wastage of money by clients for consumption purpose, timely collection of repayments are the main challenges to the cooperatives.

Finally, respondents were asked if they have any suggestion to forward. Majority of the sampled respondents suggested that there should be equal treatment to members and non members while

disbursing loan and they should educate clients on where and how to spend the revolving credit fund.

Concluding Remark

It was identified that out of the total respondents 80.00 percent were non defaulters and only 20.00 percent were defaulters. Nine variables that would affect the repayment performance of respondents have been discussed and four of these variables such as age of borrowers (Age), extension visit (Visext), off farm income of the borrowers (Dailylab) and loan diversion (Diver) were found to have statistical significance.

CHAPTER–VII

CONCLUSION AND RECOMMENDATION

6.1 Conclusion

In the subsistence agriculture and low income countries like Ethiopia, where the smallholder farming dominates the overall national economy, small peasant farmers often face scarcity of capital (saving) due to low level of production to adopt new agricultural technologies. Hence, short and medium term credits with favorable terms for seasonal inputs like fertilizer, improved seeds, pesticide and herbicides would generally be favored because better return would be achieved quickly within the cropping season. Moreover, achieving household food security remains a major objective of rural development. This can be attained by increasing agricultural productivity and off-farm income and by improving the ability of households to stabilize their income and food purchasing power.

Saving and credit is an integral part of development, which engages people in economic activities that enhance self-reliance. Savings and credit scheme increases the productive potential of poor individuals and particularly of poor farmers. Credit plays a crucial role in agricultural production. It is said to be the lifeblood of agriculture and hence, the need for adequate farm finance is obvious.

It is important, however, that the borrowed funds be invested for productive purposes and be able the farmers improve their well being and ensure sustainable food security. However, diverting the loan to non productive purpose remains major problems to the lending institutions.

Different programs are continually arranged to alleviate poverty in Ethiopia. One of these programs is the revolving credit fund given to farmers (members and non members of cooperatives) through cooperatives in cooperation with international lending institutions such as the World Bank and Tigray Food Security Coordination Bureau. Hence this study is undertaken to analyze the impact of revolving credit fund on poor farmers who were recipients of the revolving credit fund in Atsibi Womberta in Tigray region, northern Ethiopia. The main objective is to analyze which and how much the hypothesized explanatory variables are associated to the annual income of respondents

Proportional random sampling technique was employed to select a total of 120 sample borrowers from five multi-purpose cooperatives of the woreda. The survey results revealed that frequent borrowers have shown better improvement in income than new clients. The most important explanatory variables affecting average annual income were analyzed using multiple regression model. The model results show that among 10 explanatory variables, which were hypothesized to influence average annual income, three were statistically significant while the remaining seven were less powerful in explaining the variation in the dependent variable.

The estimate of the regression model shows that number of oxen owned (Nuoxen), Extension contact or supervisory visit by credit agents after credit disbursement (Visext) and credit

experience (Credexp) are the most significant factors affecting the average annual income of the clients. A closer look at the model results reveals that the variable, number of oxen owned (Nuoxen) is positively related to the average annual income which is consistent to what was hypothesized. It is showed that borrowers who own more oxen are in a position to undertake farm activities on time and even when required.

Credit experience is the other factor influencing significantly the average annual income of respondents. As expected or hypothesized this variable have shown positive impact on increasing the average annual income of respondents

In addition to the impact on average annual income the repayment performance of borrowers were also tested using the logistic regression model during the study. According to the applied model nine explanatory variables were hypothesized to influence the loan repayment performance of borrowers of which four of them were statistically significant to explain the variation in the dependent variable while the other five were less powerful to explain it. The significant variable includes age of borrowers (Age), extension visit (Visext), off-farm income (daily labour), and loan diversion (Diver).

The general result of the model shows that age of borrowers contrary to what was expected revealed negative relationship. This may be due to the fact that as borrowers get old the tendency for diversification and investment decreases for fear of risk and through time they may use the amount for other purpose.

Consistent with the previous assumption, the supervisory visit by extension workers was found to have positive relationship with repayment performance that the less the extension contact the higher the tendency for non repayment.

Moreover, the result of the model reveals that income drawn from daily labour has positive effect on the repayment performance of the borrowers which was consistent to what was hypothesized.

Further the result of the logistic regression model have shown that there is negative relationship between loan diversion and repayment performance i.e. as more loan is diverted for other purpose such as for social ceremonies the tendency for repayment decreases.

6.2 Recommendation

This research provides a basis for undertaking similar studies in similar environments. It could also contribute to the understanding of the factors influencing the increase in average annual income and loan repayment performance of borrowers. The study has the potential to assist agencies, *NGOs* and researchers involved in loan provision since it draw attention as to how to distribute and control the loan and indicate the most important factors affecting the increase in annual income of borrowers and borrowers' capacity to repay loan on time. Moreover, this type of research could be useful for policy makers whose duty is to improve the wellbeing of farmers and encouragement and promotion of the participation of rural farmers in development endeavors so that they could contribute their share toward food security of their families.

The possible recommendations could be:

The amount of revolving credit fund borrowed to individual clients should be authorized based on the credit need assessment o individual borrowers.

The revolving credit must be disbursed on the right time when the borrowers need it.

Continuous training and follow is necessary for borrowers in order to efficiently utilize the credit.

Lending Institution should give attention to the younger generation in providing their loan as age of borrowers is negatively related to the loan repayment performance of borrowers

The supervisory visit made by extension agents should be checked properly in order to arrive at healthier situation in improving the revenue of the borrowers and at the same time to improve the repayment performance of the borrowers.

Lending institutions should create awareness to farmers on usage of loan as loan diversion affects negatively the repayment performance of the borrowers.

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APPENDICES

Appendix Impact of Utilization of Revolving Credit Fund

MEMBERS INTERVIEW SCHEDULE

Area Identification		
1.	Zone: Eastern	Date:
2.	Wereda: Atsibi	Month:
3.	Tabia:	Year:

I. Background Information	
1. Name of Respondent	
2. Farmer's Cooperative	
3. Peasant Association	
4. Interviewer name	
5. Age of the household head	18-25 ☐ 26-33 ☐ 33-42 ☐ Above 43 ☐
6. Sex of the household head	Male ☐ Female ☐
7. Marital status:	Single☐ Married☐ Divorced ☐ Widowed ☐

II. Income of the Household

1.Your family size is_____in number

2. Please list the member of your family including you

No.	Family member starting from household head	Age	Sex	Educational Level	Main Occupation (Rank)	Status in the Family
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Remark: a) Level of education may be

1. No formal education
2. 6th grade or less

b) Main occupation may be

a. Farming
b. Hired elsewhere

3. 7th to 12th grade
4. Certificate
5. Diploma
6. Degree

c. Student
d. Work at home
e. Handicraft
f. Others

3.What is your major means of income generation?			
Sale of crop	☐	Horticulture production	☐
Grain and pulses production	☐	Grain trading	☐
Horticulture trading	☐	Livestock trading	☐
Livestock production	☐	Off-farm income	☐
Others (specify)			

4 Please list your cash income raised from farm operations in the following table in the year 1999 E. C.

S/N	Type of Crop	Amount (Quintal)	Income from crop	Type of Livestock	In Number	Income from Livestock	Total income From Agriculture
1							
2							
3							
4							
5							
6							

5 Farming experience in full years (head of household's) _____years

6. Cash income from off farm work reference year 1999 E.C

S/N	Operations involved	Total number of working days	Total Income received in year (Birr)
1	Daily laborer		
2	Trading		
3	Handicraft		
4	Firewood selling		
5	Home made drinks		
6	Other (specify)		

III. Expenditure

1. Would tell me the amount of money you have spent in buying different agricultural inputs during the last cropping year (in birr)? For the year 1999 E.C

a) For fertilizer	
b) For improved seed	
c) For farm tools and implement	
d) For chemicals	
e) For oxen	
f) Fuel and transportation cost	
g) For others	

2 Indicate the type and amount of money spent on your family for the year 1999 E.C

S/N	Type of Expenditure	Amount (Birr)
1	Purchased food items	
1.1	Crop products	
1.2	Animal and animal products	
1.3	Industrial products	
	Sub total	
2	Own produce consumed by the family	
2.1	Crop products	
2.2	Animal and animal products	
2.3	Fruits and vegetable products	
	Sub total	
3	Other Expenses	
3.1	Industrial goods consumed by household	
3.2	Medical and Education Expenses	
3.3	Farm inputs and farm implements	
3.4	Taxes and Social contribution/obligations	
3.5	Fuel and transportation costs	
3.6	Others	
	Sub total	
	Total Expenditure	

IV. Resource Characteristics

1. Do you own land? Yes ☐ No ☐

2. If your answer is yes, size and use of land holding in 1999 E.C crop year is: in Thimdi (ha)

a) Total cultivated land in 1999 E.C crop year	
b) Owned by the household	
c) Rented in	
d) Shared cropped in	
e) Owned land operated by others	

3 Allocation for different crops during 1999 E.C crop season

S/N	Types of crop	Amount Allotted in Timad
1		
2		
3		
4		
5		

4 Fertility status and soil character of the plots as perceived by the farmer.

Good ☐ Medium ☐ Poor ☐

5 .For which crops have you used fertilizer improved seeds etc. obtained from the loan

Types of Crops	Input used					Total Birr
	Seed /kg	DAP(kg)	Urea (kg)	Pesticide (liter)	Insecticide(liter)	
1. Teff						
2. Wheat						
3. Millet						
4. Barely						
5. Maize						
6.Sorghum						
7.Vegetable						
8. Beans						
9. Lentil						
10. Others						

6 Do you feel that your holding is sufficient to satisfy for home consumption and for other goods you need? Yes ☐ No ☐

7 If no, which of the following activities did you perform to raise your income?

Selling labor ☐ Weaving ☐ Local drink sale ☐

Trading ☐ Nothing ☐ Others (specify)_____

89 How many livestock do you have? Please fill in the following table Ref Year 1999 E.C

S/N	Types of Livestock	Number	Purpose used	Value of LS in Birr
1				
2				
3				
4				
5				
6				

V. Institutional and social factors

1The distance from extension agent (hrs)	
2.Distance from MPC (hrs)	
3.How many times MPC' management has visited you in the year?	
4 Did you celebrate social ceremonies in this year?	Yes ☐ No ☐

5 If Q 4 is yes, which one from the following?

Wedding ☐ Funeral ceremonies ☐ Engagement ☐

Circumcision ☐ Idir /Mahiber ☐ Others (specify) _____

6 What were you prepared for these ceremonies and how much do you estimate to have invested on it?

7. Do you send your children to school?	Yes ☐ No ☐
8. If Q 7 is no, what is the reason?	
7 Have you gone to health center for treatment?	Yes ☐ No ☐

8 If Q 7 is yes, how much did you pay? _____The source of the money you paid_____

_____

9 What institutional problems have in your kebele administration?

Land tenure	☐	Health service	☐
Credit institution	☐	Veterinary service	☐
Extension service	☐	Educational service	☐
Transportation problem	☐	other (specify) _____	

10 How could you get in to the channel of cooperative credit? _____

11 Did you have saving habit? _____, if yes in what form

In kind ☐ In cash at home ☐ In cash at bank ☐

In cash at saving and credit cooperative ☐ Other (specify)_____

VI. Input and Credit Availability

1 Did you get input (improved seed and fertilizer)	
during the last production season?	Yes ☐ No ☐
2 If your answer is yes, how many quintal used?	ql seed_____ql fertilizer
3. If your answer is not, why?	
4.Is there adequate number of input supplier?	Yes ☐ No ☐
5.If your answer is yes, how many were there?	
6.If your answer is not, from where did you get the input?	
7. Did you use improved seed on your farm?	Yes ☐ No ☐

If your answer for Q 7 is not, state your reason.

Not heard about it ☐ Not available ☐

Too expensive ☐ others (specify)_____

8 Did you share/sale part of the borrowed input to others (relatives and friends)?

Yes ☐ No, ☐ If yes how much?_____

9 Do you have the experience of using credit? Yes ☐ No ☐

If yes, for how long did you use credit?_____Years.

10 Did you face shortage of money to finance your production and consumption purpose and took credit to alleviate the shortage money during the year? Yes ☐ No ☐

11 If your answer is yes, for what purpose?

Purchase of seeds ☐ Purchase of fertilizer ☐ Purchase of chemicals ☐

Purchase of oxen ☐ Purchase of farm implements ☐ For family consumption ☐

Social obligation ☐ Others (specify)_____

12 From whom did you borrow money to alleviate the shortage of money?

From relative ☐ From NGO ☐ BOA ☐

From cooperative ☐ From Dedebit ☐ From CBE ☐

13 Why did you borrow from the above mentioned sources?

Less security required ☐ Easier to get loan ☐

Seemed more friendly ☐ Knew persons before hand ☐

Get terms to suit situation ☐ Previous business dealings ☐

Cheapest source of credit are found ☐ Other reasons (specify) _____

14 What are the main sources of credit accessible in your locality in order of importance?

i)_____ ii)_____ iii)_____ iv)_____

15 Did you get the amount of credit you requested for agricultural input credit purpose?	Yes ☐ No ☐
16 If Q 15 is yes, how much? If not why?	
17 Did you get credit service in time?	Yes ☐ No ☐

18 What types of credit did you received in 1999 E.C? Fill the following table correctly.

s/n	Source of credit	Times of credit			Types of credit		Amount of credit
		Short term	Medium term	Long term	In cash	In kind	
1	Cooperative						
2	Food security						
3	FAO						
4	BOA						
5	Relatives						

19 Have you been trained about credit, interest rate, and commitments that you had to fulfill?	Yes ☐ No ☐
20 Who have more responsibility to make decision on the credit taken?	Husband ☐ Wife ☐ Both ☐
21 How do you perceive the interest rate of the loan from the credit sources?	Low ☐ Fair/reasonable ☐ High ☐ Very high ☐
22 Did the credit bring significant change in your living standard?	Yes ☐ No ☐
23 Do you support the continuity of the cooperative's credit?	Yes ☐ No ☐
24 Did you meet credit expert for technical assistance?	Yes ☐ No ☐
25 If yes what were the major factors that made you to communicate with the credit expert?	

VII. Loan Repayment

1 Did you pay your debt? Yes ☐ No ☐

2 If yes at what time did you pay back your debt?

Before time of commitment ☐ On time ☐ After time of commitment ☐

3 For which source of loan did you give priority to repay?

Why?

4 If not repaid on the due date, what actions did the lending institution taken on you?

_____

5 Did you know the end of grace period? Yes ☐ No ☐

If yes, why you become late? _____

If totally not repaid, what were the major factors, which force you not to repay your loan?

_____

_____

_____

6 What major factors did you consider very essential next to consumption which were preferred to loan repayment? (Rank in order of importance)

Clothing ☐ Housing ☐ School fee ☐ Land use tax ☐

Recreation ☐ Others (specify) _____

7 If not repaid, how could you get input loan for the next production season?

Not to use improved inputs ☐

Share improved inputs from relatives who get through credit ☐

Get as others through negotiation to repay all loans next year ☐ other _____

8 What is your opinion on these questions and on the general procedure of loan acquisition and repayment conditions?_____

9. Do you perceive that the multipurpose cooperatives play vital role in credit provision

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐

Disagree ☐ Strongly disagree ☐

10 If your opinion on the above question is that they are not playing vital role what are your suggestions

_____

_____

_____

Multipurpose Cooperatives