



Mekelle University  
School of Graduate Studies



Faculty of Dry Land Agriculture and Natural Resources

Study on factors affecting Agricultural input loan repayment of members' of  
cooperatives at Kiltewawulalo Wereda, Tigray, Ethiopia

By

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A Thesis

Submitted in partial fulfillment of the requirements for the

Master of Science degree

In

Cooperative marketing

Advisor

Dr. Kelemework Tafere

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## BIOGRAPHY

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# Table of Contents

Title	Page
Abstract	Viii
Acknowledgement	i
Acronyms	iii
List of Tables	iv
List of Figures	IV
Chapter I-Introduction	1
1.1. Back Ground	1
1.2. Statement of the Problem	5
1.3. Purpose of the study	7
1.4. Research hypothesis	8
1.5 Objectives of the Study	8
1.6. Scope and limitation of the Study	8
1.7. Chapter scheme	9
Chapter II: Literature review	10
2.1. concepts and definitions	10
2.2. The Need for Credit	11
2.3. Agricultural credit in developing countries	13
2.4. The emergence and evolution of formal credit in Ethiopia	15
2.4.1. Rural credit before 1975	15
2.4.2. Rural credit during the Dergue period	18
2.4.3. Rural credit after the reform period	20
2.5. The Role of Cooperatives in Agricultural Development	23
2.6 Empirical Studies on Loan Repayment Performance	25
2.6.1 Empirical studies on other Countries	26
2.6.2. Empirical Studies Related to Credits in the Ethiopian Context	31
Chapter III: Materials and Methods	35
3.1. Description of the study area	35

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3.1.1 Description of the Tigray region	35
3.1.1.1 Location demographic and natural condition	35
3.1.1.2 The economy of the region	38
3.1.1.3 Access to social services and infrastructures	39
3.2. Description of Kilegeawulalo wereda	40
3.2.1 Geographical Location and Climate of Kilegeawulalo wereda	40
3.2.2 Population Characteristics of Kilege Awlaelo	41
3.2.3 Economic Activities, Social Services and Infrastructure of the Wereda	41
3.2.3.1. Agriculture	41
3.2.3.2. Infrastructure and Social Services	43
3.2.4. Cooperatives in the Wereda	44
3.2.4.1. Multi-Purpose Cooperatives in the wereda	44
3.2.5. Agricultural Credit Provision in the wereda	48
3.2.6. Loan Repayment Mechanism in the wereda	50
3.2.7. Status of demand and supply of credit	52
3.3 Sampling Technique and sample size	54
3.3.1. Sampling technique	54
3.3.2. Sampling frame	55
3.3.3. Sample size	55
3.4 Data Source and Methods of data Collection	56
3.4.1 Secondary Data	56
3.4.2. Discussion	56
3.4.3 Primary Data	56
3.5. Methods of data Analysis	57
3.5.1 Descriptive Statistics	57
3.5.2. Non-linear models (logit model)	57
3.5.3 Sensitivity analysis	61
3.5.4 Test for multi-collinearity	62
3.6 Definition of Variables	63
Chapter V: Results and Discussion	70
4.1 Loan repayment nature of members MCPs in the study area	70

4.1.1.Type of credit and nature of repayment	70
4.1.2 Repayment pattern borrowers in the study area	71
4.1.3. Borrowers perception on interest rate of MPCs	72
4.1.4 Progress in amount of loan borrowed and repaid by members of MPCs	74
4.2 Factors affecting loan repayment performance of members of MPCs	75
4.2.1 Descriptive Statistics Results	75
4.2.1.1Age of the sample household head	76
4.2.1.2.Educational status of the sample households	76
4.2.1.3.Family size of the sample households	78
4.2.1.4.On-farm and non-farm income of sample households	79
4.2.1.5 Land holding size	80
4.2.1.6.Expenditures on social ceremonies	81
4.2.1.7.Livestock ownership of sample households	82
4.2.1.8 Oxen ownership of sample households	84
4.2.1.9.Sources of credit of sample households	85
4.2.1.10 Amount of inputs used by the sample households	87
4.2.1.11.Duration of cooperative membership of the household	89
4.2.1.12.Experience of credit usage of sample households in year	90
4.2.1.13.Amount of credit forwarded to the sample households	91
4.2.1.14.Amount of other credit	92
4.2.1.15.Diversion of input credit for other purpose	94
4.2.1.16 Distance from service institutions	94
4.2.1.17 Perception of borrowers on Interest rate of cooperatives	95
4.2.1.18.Supervision of credit beneficiaries by loan committee of MPCs	95
4.2.1.19.Appropriate ness of the repayment period	96
4.2.1.20 Health care expenditure	98
4.2.1.21 Occurrence of natural calamities and income loss	98
4.2.1.22 Training	100
4.2.1.23 Adequacy and timeliness of credit	101
4.2 Results of Econometric Analysis	102
4.2.1 Factors Influencing input Loan Repayment of members of MPCs :	102

4.2.2 Discussion on the Significant Explanatory Variables	104
4.2.3 Sensitivity Analysis	109
4.3. Farmers' suggestion to improve loan repayment	111
Chapter V conclusion and recommendation	113
6.1 Conclusion	113
6.2. Recommendation	117
References	121
APPENDICES	127
Appendix	I
Appendix	II
Appendix	III
Appendix	IV
Appendix	V
Appendix	VI
Appendix	VII
Appendix	VIII
Appendix	IX
Appendix	X

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**Study on Factors Affecting Agricultural input Loan Repayment of Members’  
of Multi-Purpose Cooperatives at Kilte Awulaelo Woreda, Tigray region,  
Ethiopia**

**ABSTRACT**

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. This is because low repayment performance discourages the lender to promote and extend credit. Then investigation of the various aspects of loan defaults is of great importance both for policy makers and the lending institutions. Therefore, the major concern of this study was to identify the major socio-economic and institutional factors that affect loan repayment capacity of members of multi-purpose cooperatives of Kilteawulalo wereda in Eastern Zone of Tigray National State.

In the course of this study, primary data were collected from 130 sample households and secondary data also collected from respective organizations in the study area. Moreover discussions were held with concerned bodies. An analysis was made using descriptive statistics and logit model. Descriptive statistics such as mean, standard deviation and percentage were used for analyzing the data. In addition, t-test and  $\chi^2$  test were employed to compare non-defaulter and defaulter groups with respect to the hypothesized and other related variables. Logit model was used to identify the factors influencing loan repayment performance of smallholder farmers in the study area. Twelve explanatory variables and four dummy variables were included in the logit mode, out of which, six were significant and the rest were insignificant to explain the dependent variable. Results of Variance Inflation Factor (VIF) and

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contingency coefficient showed that the continuous and dummy variables have no serious problem of multi-collinearity and high degree of associated. The Amount of input credit of the household is highly significant at less than 1 percent. Educational status, Experience of the household in credit utilization, off-farm and non-farm activity of household, suggestion of household on appropriateness of the repayment period are significant at less than 5 per cent. The number of livestock of the household is also another variable which is significant at less than 10 percent significant level. Farther more respondents suggest that government, cooperatives and other NGOs to play their own role in reducing the price of input. Therefore, taking this into consideration, these factors and suggestions in designing agricultural programs may assist cooperatives and policy makers to introduce strategy for alleviating the serious problem and strengthening the loan repayment performance of smallholders. .

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# Acronyms

AIDB	Agricultural and Industrial Development Bank
AISCO	Agricultural input supplier Enterprise
MPCs	Multi-Purpose Cooperative
CACC	Central Agricultural Census Commission
CBE	Commercial Bank of Ethiopia
CSA	Central Statistical Authority
DBE	Development Bank of Ethiopia
DECSI	Dedebit Credit and Saving Institution
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GTZ	German Technical Cooperation
LLF	Log Linear Function
LPM	Linear Probability Model
ML	Maximum Likelihood
NBE	National Bank of Ethiopia
PCs	Producers' Cooperatives
RBARD	Regional Bureau of Agriculture and Rural Development
TCPO	Tigray Cooperatives Promotion Office
TNRS	Tigray National Regional State
USD	United State's Dollar
WBARD	Wereda Bureau of Agriculture and Rural Development
WVE	World Vision Ethiopia
WKM	Wukro Kidist Mariam
RCID	Regional Cooperative and Input Division
FSP	Food security programmes

# List of Tables

No	Title	Page
		No
1	Land use/land cover type of Tigray region	37
2	Number of cooperatives in kilteawulalo wereda with their members and family	47
3	Sample cooperatives, their total members and their sample respondents	55
4	Time of loan repayment of borrowers	72
5	Interest rate and rate of repayment	73
6	Amount of birr borrowed and repaid by members from 1999/0-2006/7	74
7	Age distribution of sample household heads	76
8	Educational level of sample farmers	77
9	Family size of sample households	78
10	Varying income sources of the sample farmers	80
11	Land holdings of the households (ha)	81
12	Amount of money spent to celebrate holidays and social occasions	82
13	Livestock ownership of the sample households	83
14	Oxen ownership of the sample households	84
15	Sources of credit in the study area	86
16	Reason for priority to select source of credit	87
17	Proportion of the sample households in using commercial inputs	88
18	Years of experience of sample households as members of cooperatives	90
19	The experience of sample households using credit	91
20	Amount of credit taken by non-defaulter and defaulters sample households	92
21	Amount of other credit taken by sample households	93
22	Borrowers' response on loan diversion by group	94
23	Summary statistics of defaulters and non-defaulters	95
24	Perception of borrowers on interest rate of input loan	95
25	Supervision credit beneficiaries by loan committee of MPCs	96
26	Appropriateness of the grace period of MPCs	97
27	Health care expenditure by group of borrowers (Birr)	98
28	Borrowers' response on natural calamity problems	99
29	Income loss due to natural calamities	99
30	Borrowers' response on availability training on credit	100
31	Borrowers' responses on adequacy of credit by borrowers group	101
33	VIF of the continuous explanatory variables ( $X_j$ )	102
34	Contingency coefficient for discrete variables	103
	Summary of statistics of variables used in the logistic regression	103
35	Logistic regression estimate of loan repayment performance n Kilteawulalo Wereda	105
36	The effect of significant explanatory variables on probability of loan Repayment	111

# List of Figures

No	Title	Paige number
I	Conceptual frame work	34
II	Map of Tigray National Regional State	36
III	Map of Wereda KilteAwlaelo	41
IV	Time of repayment of borrowers	72
V	Growth trend in the amount of borrowed and repaid loan	75

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# CHAPTER I: INTRODUCTION

## 1.1 Back ground

Ethiopia is predominantly an agricultural country with the vast majority of its population directly involved in the production of crops and livestock. The agricultural sector accounts for nearly 45% of the GDP and provides employment for 85% of the population. It also accounts for 90% of the export revenue and satisfies 70% of raw material requirements of the country's industries (Abrare, 2004). However, Ethiopia's agriculture is characterized by its very low productivity with average grain yields 1.2 tons hectare in 2003/4 period (Bekele, 2005).

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, 1993).

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).

As Wolday (2003) stated, in Ethiopia, among other things, lack of finance is one of the fundamental problems impeding production, productivity and income of rural and urban households. Since access to institutional finance is very limited, the majority of the poor obtain

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financial services through informal channels, such as money lenders, 'Ikub', relatives and others.

Deliberate government effort at accelerating socio-economic development in Ethiopia may date back to the immediate post-Italian occupation period: the establishment of the Ministry of Agriculture in 1943 and the Agricultural Bank of Ethiopia in 1945 among others may be an indication. In line with the dominant development approach of the period, the Imperial Ethiopian Government intervened in the allocation of resources in order to accelerate national development. The intervention took various forms including: interest rates, establishment of public commercial as well as specialized banks and giving priority to productive projects in the use of foreign credits. Public banks were supposed to mobilize resources and channel them in accordance with the plan. However, just like what happened in most directed programmes of other countries, benefits mainly accrued to the non-target groups. Overall, the extent of exclusion was well recognized by the AIDB board so much that in 1974 it decided to introduce a small farmers credit programme on pilot basis but was not implemented as it was overtaken by events of the revolution (Assefa, 2004).

According to Assefa, (2004), the Derg regime reorganized the financial sector in a manner that reflects its declared communist ideology and its economic thinking as stated in the Declaration on economic policy of socialist Ethiopia. The result was marginalization of the private sector, forcing to depend on self-financing and informal credit. The share in domestic credit outstanding during 1986-90 of the private sector and cooperatives averaged 4.7 and 1.1 per cents, respectively. More than 89 per cent of AIDB agricultural loans went to state farms while the rest went to agricultural cooperatives, with the private peasant sector receiving negligible

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share. Moreover, NGO credit schemes generally disregarded domestic savings mobilization, mainly depending on donor funds.

These authors stated that financial liberalization in Ethiopia began at the end of 1992. The financial reforms undertaken in Ethiopia include elimination of priority access to credit, interest rate liberalization, restructuring and introduction of profitability criteria, reduced direct government control on financial intermediaries and limits bank loans to the government, enhancement of the supervisory, regulatory and legal infrastructure of the NBE, allowing private financial intermediaries through new entry of domestic private intermediaries (rather than privatization of the existing ones) and introduction of treasury bills through auction markets. Prior to 1992, the interest rate charged to farmers' cooperatives was 5%, which is below the rate of savings deposit (6%). Financial institutions were obliged to pay interest margin on deposits from their own sources. Lending rates that were between 4.5 and 9.5% were raised to 11-15% depending on the sector until September 1994.

Discrimination of credit access and interest rates by type of ownership (i.e. between state owned enterprises, cooperatives and private firms) was eliminated. Sectoral interest rates discrimination was reduced, and domestic establishment of private financial institutions was allowed and encouraged through proclamation number 29/1992. Since January 1995, the NBE switched to a policy of floors on deposits and ceilings on lending rates, allowing banks to set interest rates. The NBE revised the floor for saving deposits downwards to 3% from 6% in 2001/02 with an intention of encouraging investment and boost economic activity. Lending rates quickly followed suit as the minimum-lending rate changed by commercial banks went down from 10.5% to 7.5% in the same period.

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

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

The main reason why formal financial institutions such as commercial and development banks fail to provide the required capital to small enterprises and farmers is due to involuntarily and voluntarily default. It is very difficult for formal banks to monitor what has been done with

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loan. A loan may be taken for productive reasons, but may be used for other purposes (such as consumption) that cannot be easily transformed to money repayment. A loan may be put into risky activities that might fail to repay the loan. These create a problem of involuntarily default. Voluntarily or strategic default can arise when the legal system of loan enforcement is weak, or probability costly (Woldehanna, 2000).

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). This is because low repayment performance discourages the lender to promote and extend credit to large and fragmented farm households. Therefore, investigation of the various aspects of loan defaults, nature and conditions of loan provision are of great importance both for policy makers and the lending institutions. Hence, this study was designed to study the nature of loan repayment, to identify the factors which affect loan repayment performance of members of MPCs and also to determine their relative importance.

## **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

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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.

Since, Ethiopia is one of the developing countries; smallholder farmers have been facing severe shortage of financial resources to purchase productive agricultural inputs and new technologies. Because of the fertility of crop land has decreased, the demand for agricultural inputs also increased. As a result, the dependence of smallholder farmers on their cooperative societies and other financial institutions for credit becomes substantially large.

The need of credit in case of all MPCs and their members arises from the fact that their own savings are normally inadequate to finance various activities on their farms. In addition, the smallholders' income is obtained during the harvesting period, whereas their expenses are spread throughout the year. As a result, the contribution of MPCs in loan disbursement and loan collection increases from year to year. The main objective of the flow of credit through such institution is to accelerate the agricultural input use of the farmers and to increase agricultural production and productivity.

At present, in TNRS agricultural credit is disbursed to farmers through MPCs and Dedebit Micro Finance Institution. Commercial bank against regional government collateral is the main source of fund for the input credit administered by the two institutions. The main reason for the government intervention in the credit market and diversion of valuable time of extension workers to administrative affairs is due to lack of effective credit institutions.

In Tigray, studies that attempt to identify factors influencing loan repayment performance of members of MPCs and their nature of repayment in different weredas of the region are scanty. The assessment that was taken by Tigray cooperative promotion office's (TCPO) experts on

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credit disbursement and loan collection was limited in scope and coverage. In the region, there is a shortage of information about the loan repayment performance of MPCs and their members.

According to Bekele (2001), loan repayment was not a serious problem prior to 1990. However, loan recovery became a serious problem after 1990. For instance, it has been reported that the recovery ratio declined from 54 per cent to 37 per cent in 1991 and only to 15 per cent in 1992. He underlined that default is progressively increasing and banks, particularly DBE, have been facing the prospect of incurring substantial losses.

In the past three years Failure by cooperatives and their members to repay their loan had observed in many parts of the region and the study area Kilegeawulalo is also one of the areas which have a problem in loan repayment by cooperative (TCPO report 2005). Hence this might be a serious problem to the regional government gives its budget as a guarantee for the bank on behalf of MPCs and their members and also to cooperatives to their future carrier. According to Hunte (1996) as cited in Gebrehiwot (2006), “loan default is a tragedy because failing to implement appropriate lending strategies and credible policies often result in demise of credit institutions”.

Therefore, to design appropriate lending strategies and procedures, information factors which affect loan repayment performance of members and their relative importance of the factors is necessary. Hence, the principal task of the study is to deal the nature of loan repayment, to identify the major socio-economic factors which affect members’ loan repayment and also to determine their relative importance of the factors.

### **1.3. Purpose of the study**

Identify factors which affect loan repayment performance of members of MPCs and to determine their relative strength is important at micro level, as studies made at regional and national level mainly depends on response parameter from individual members and

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cooperatives. Thus, the purpose of the study is to contribute to the analysis and study on the loan repayment performance members' cooperative at wereda and regional level. Moreover the study might serve also as a footstep for further studies in the area and as a reference material.

#### **1.4. Research hypothesis**

In order to analyze the proposed study the researcher formulate the following hypothesis

1. There is no relation ship between socio economic factors and loan repayment performance of members.
2. There is no any significant difference among factors in influencing loan repayment of members
3. Nature of repayment of members of cooperative didn't relate with harvesting and end of the repayment period of cooperatives.

#### **1.5 Objectives of the Study**

The overall objective of this study is to identify factors affecting agricultural input loan repayment of small farmers and determining their relative importance.

**The specific objectives are:**

1. To study the nature of repayment of agriculture loan by members of MPCs in the study area.
2. To identify socio-economic and institutional factors affecting input loan repayment performance of member farmers.
3. To determine the relative importance of the factors affecting loan repayment
4. To make suggestion for improving the repayment of agricultural input loan

#### **1.6. Scope and limitation of the Study**

This study will be limited to Kiltelalo Wereda of MPCs and the study will focus only to formal input (i.e fertilizer, seeds and chemicals) credit obtained from MPCs as it has wide coverage

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and diversified purpose with a good number of beneficiaries. Moreover, the study will limit itself to short term credit that will be distributed for agricultural production only. Also, it considers a cross-sectional data and it does not attempt to look into the inter-temporal variations that might occur with regard to loan repayment capacity. Since a one-year cross sectional data could not reveal the overall credit system, the study will mainly focus on credit of 2006/7 production year.

Regarding the limitation, due to the fact that most of the households do not keep records, the accuracy of most of the data collected depends on individual's ability to recall. However, it is believed that the data would provide a useful basis of information for identifying the important factors that affect smallholders' loan repayment performance and making suggestions to correct these problems.

## **1.7. Chapter scheme**

This thesis is organized in five chapters. The first chapter is the introduction part which presents the back ground, statement of the problem, objective, scope and limitation of the study. Chapter two is the literature part, which includes definitions of concepts, the role of cooperatives in agriculture, and empirical studies and others. The third chapter is material and methods which includes site selection, description of the study area, sampling design, data source, methods of data collection, definition of variables and working hypothesis. Chapter four is results and discussions which include descriptive statistics and econometrics analysis .chapter five is conclusion and recommendation moreover references, interview schedules and Annex are attached at the end.

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# CHAPTER II: LITERATURE REVIEW

Research studies regarding loan repayment performance members of cooperatives under Ethiopia condition are scarce. So the researcher tries to find out the limited resource as much as possible, but mainly used research works made outside the country and literatures of microfinance and other research papers on loan repayment made by different institutions under Ethiopia condition.

The objective of the review was to assess the findings of earlier related studies so that gaps could be identified. The review touches published and unpublished sources that have been presented as follows.

## **2.1. concepts and definitions**

**Credit:** - The Concise McGraw-Hill Dictionary of Modern Economics defines credit as an exchange of goods and services for a promise of the future payment. It also indicates that credit is necessary in a dynamic economy because of the time that elapses between the production of a good and its ultimate sale and consumption and credit bridges this gap. The risk in extending credit is the probability that future payment by the borrower will not be made (Greenwald & Associates, 1983).

**Loan repayment:** - The time that a borrower or debt holder takes to repay his debt or loan, the minimum payment that has to be made in a period or penalties levied for late payment ( McGraw-Hill Dictionary). In the study loan repayment refers to the period which member borrowers repay their agricultural input loan to their cooperatives.

**Cooperative:** - The International Cooperatives alliance (ICA) defined cooperatives in 1995 as a cooperative is an autonomous association of persons united voluntarily to meet their common

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economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise (ICA, 1995).

**Agricultural Multi-Purpose Cooperative Societies:** -multipurpose cooperatives unlike single purpose cooperative undertake diversified activities. Multipurpose cooperatives, which functions on the basis of a fully integrated framework of activities, planned according to member's requirements identified at the grass root level, taking the socio-economic life of the farmer members in its totality.

**Default and non default:** - Default is defined as failure to pay a debt or a loan at the right time. On the contrary, non-default is defined as payment of a debt or a loan at the right time. Hunte (1996) defined credit worthy (synonymous to non-defaulter) borrowers as those who satisfy the entire loan contract conditions and repay their loans without ever going into arrears. Non-credit worthy (defaulters), as opposed to non-defaulters, are those who breach their loan contracts and have repayment problems.

**Agricultural input credit:** -In the study, Agricultural input credit refers to short term credits extend to farmers for purchase of agricultural inputs like fertilizer, chemicals, seed etc.

## **2.2. 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).

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;

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Pischke, 1980). Governments of less developed countries and aid agencies have extended a large amount of money in the form of agricultural loans. The motivation has been the belief that loans are an 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.

According to Shahidur and Rashid (2003) Credit is important for development. It capitalizes farmers and entrepreneurs to undertake new investments or adopt new technologies. It helps smooth consumption by providing working capital and reduces poverty in the process. Both formal and informal lenders are active in rural credit market. Collateral-free lending, proximity, timely delivery and flexibility in loan transactions are some of the attractive features of informal credit. However, informal finance may not be as conducive to development as formal finance because; (i) it is expensive; (ii) it is short-term and largely used for consumption; and (iii) it is not generally large enough to spur investment and growth.

Recent theoretical and empirical work in economics has established that credit markets in developing countries work inefficiently due to a number of market imperfections. The literature cites a number of market imperfections which lead some potential borrowers to be rationed out of the credit market. These imperfections include: (1) interest rate ceilings usually imposed by the government; (2) monopoly power in credit markets often exercised by informal lenders; (3) large transaction costs incurred by borrowers in applying for loans; and (4) moral hazard problems. In many cases a number of these imperfections combine to ration farmers out of the loan market (Jeremy, 2004).

Foder (1985) as quoted in Belay (2002) stated that credit is Important in every development program; this is particularly true for rural development because, so long as sufficient credit is

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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 new agricultural technologies.

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

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)

### **2.3. Agricultural credit in developing countries**

Fertilizer consumption in developing countries is closely linked with access to input credit. 70-90% of the annual fertilizer sales in these countries is on credit bases as compared to less than 30% in the developed nations (K.Wierer & J.C.AbboTT, FAO, 1995). Among other measures, unless otherwise input credit is made available for farmers, the low level of fertilizer consumption will not be improved as required.

In developing countries there are a number of credit sources. Government banks (commercial and Agricultural), farmer cooperatives, credit and saving institutions, fertilizer retailers etc. are among the major ones. Though, public banks are the main sources of credit in many of the developing countries, unfortunately, in the greater number of cases, small farmers do not have easy access direct to bank credit as they lack land titles or other acceptable collateral. In the eye

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of banks, loans to small holders are too risky and costly to supervise (Zemen, 2005). Thus, banks to serve the small holders would have to lend to farmers cooperatives, rurally based micro credit and saving institution, fertilizer traders etc. since, these institutions are rurally based, they have the potential to reach small farmers that do not have access to the formal financial institutions (FAO, July 1995).

In countries where fertilizer distributors/ retailers play a prominent role in the marketing of agricultural inputs, they also provide efficient credit service to farmers. Unlike banks, they are mostly well placed to evaluate and judge the credit worthiness of farmers and to follow up repayment. Usually they are more flexible than institution in providing credit quickly and without bureaucratic procedures.

Fertilizer distributors/ retailers in order to extend sufficient credit to farmers; they should have been also financed by banks or fertilizer manufactures /importers.

Agricultural cooperatives established to perform a variety of activities are also one of the main sources of input credit for the small holders. Contribution of members, saving and income obtained from other activities of the cooperatives are the main source of credit funds. Some cooperatives also depend on external fund sources like the agricultural or commercial banks.

Although, cooperatives in the developing countries have a mixed record regarding their performance in input credit administration, they can efficiently administrate input credit extension activities at the gross root levels if bottom-up planning and decision making approach is followed; run by educated members, resolve organizational problems, ensure adequate infrastructure, management, and avoid government interference (FAO July 1995)

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Like cooperatives, institutions established by share holders specifically to extend credit and to mobilize saving in the rural areas of developing countries can also perform credit extension activities for the small farmers from own fund sources or from external sources.

In general cooperatives, fertilizer dealers and micro credit and saving institutions are well placed in the rural areas as compared to banks to evaluate and judge the credit worthiness of farmers to follow up repayment, to work with minimum overhead costs and to avail input credit timely especially for the small holders in the developing countries. In fact, these institutions should have reliable fund source, managed by educated personal, have good organization structure etc. to perform their duties efficiently.

## **2.4. The emergence and evolution of formal credit in Ethiopia**

The formal sources are financial institutions that are set up legally and engaged in the provision of credit and mobilization of savings. These institutions are regulated and controlled by the National Bank of Ethiopia (NBE).

Here we can categorize evolution of formal rural credit services in Ethiopia by three period of times; i.e. rural credit in Ethiopia before 1975, during the Derge period and after Derge regime

### **2.4.1. Rural credit before 1975**

The present banking systems and formal credits structure can be traced back to 1905 when the National Bank of Egypt established the Bank of Abyssinia, the first bank in Ethiopia. The Bank of Abyssinia was liquidated by the imperial decree of August 29, 1931 and was replaced by the Bank of Ethiopia with 60% of the capital owned by the government and 40% by the general public. The Bank of Ethiopia was also closed in 1935 following the Italian invasion, and Ethiopia had no banking system of its own until 1942 when the State Bank of Ethiopia,

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authorized by the imperial charter, was established with a capital of 1 million Maria Theresa, fully subscribed by the Ministry of Finance.

Following the creation of the Ministry of Agriculture in 1943, the Agricultural Bank of Ethiopia was established to accelerate agricultural development by assisting small landholders whose farms had been devastated during the Italian occupation through loans for purchase of seeds, livestock and implements and to repair or reconstruct their homes and farm buildings (Tesfaye, 1993). Public banks were supposed to mobilize resources and channel them in accordance with the Second Five years Development Plan. The Plan identified, which identified (i) agriculture as the leading economic activity, (ii) Mining, manufacturing and power as “the most propulsive sectors. The Plan made a distinction between credit for investment and current transactions and gave priority in investment credits to “directly productive” economic activities. The Plan also allowed for interest rate discrimination between borrowers favoring businesses that are in conformity with the Plan. Credit access was not to be discriminated by ownership. Instead, the Plan explicitly recognized the private and public sectors as equally important. Regarding rural finance, the share of agriculture reflected the importance attached to it in the Plan. Subsistence and large-scale and mechanized agriculture together were to receive about half of the bank credit. Subsistence agriculture was transformed through (a) the introduction of improved tools and implements, modern techniques, and better seeds; (b) credit, price and tax policies; and (c) land reform and agricultural services (Assefa, 2004).

Accordingly, farmers were to be assisted to produce more marketable surpluses, and thereby develop the subsistence agricultural sector into a monetized one. Credit for farm tools and implements were to be extended by the Development Bank of Ethiopia not directly but through

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the then Grain Corporation or Farmers' Cooperatives. These institutions were to receive credit funds and then buy the implements and supply them to farmers on credit (to be repaid in kind) or lease or sell them on credit if they are expensive - such as selectors, threshing machines, winnowers, etc... (to be repaid in cash). It was explicitly stated that credit was to be provided only in goods and services, the reason being to ensure that it is used only for productive purposes. These practices were expected to raise production as a result of rapid application of efficient implements and lead to commercialization of peasant agriculture due to increased marketable agricultural output. Priority for credit among farmers was to be determined by the co-operatives with advice from extension agents.

Banks were also to extend credit to commercial farms for modern tools, fattening, etc... and fishing co-operatives at favorable terms. High collateral as high as 200% of the loan, mainly in the form of real property and machinery, and guarantor requirements, in the face of widespread tenancy, land title problems e.g. communal land, *rist* system, etc..., proved to be the major hindrances. Of the total DBE loans disbursed during 1951-69, only 42 per cent went to agriculture, of which small farmers received only 7.5 per cent. The successor of DBE, the AIDB whose objective, among others, was to mobilize funds and extend medium- and long-term agricultural credit, did not do a better job in terms of reaching farmers with credit either.

In fact, its credit policy disqualified peasant farmers in areas away from the main road, without many borrowers, required property collateral (which should be insured at the borrowers expense) ranging 100 to 200% of the amount borrowed, and/or personal guarantor; and required borrower farmers to sell their output to its subsidiary at fixed prices as a means of enforcing repayment (Tesfaye, 1993). The implication of these on peasant farmers' credit access is clear. While the share of agriculture in AIDB total credit during 1970/71-74/75 was

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high, averaging about 65 per cent, peasant farmers did not benefit much. It mainly went to dairy development projects, large farmers, co-operatives of commercial farmers, etc....

The comprehensive and minimum Agricultural Extension package programs, which were intended to support small farmers by, among other things, organizing them in a way that makes it easier and less costly for the AIDB to provide credit, did not achieve much in terms of reaching small farmers partly due to the stringent requirements involved such as high down payment (25 to 75%), two reputable guarantors (one of them the landlord in case of tenant borrowers), and signed lease agreement and partly due to incentive problems associated with the share cropping arrangement that prevailed and marketing problems. Just like what happened in most credit programs of other countries, benefits mainly accrued to the non-target groups (landlords, large landowners/big cultivators, merchants, etc.). Overall, the extent of exclusion was well recognized by the AIDB board so much so that in 1974 it decided to introduce a small farmers credit program on pilot basis but was not implemented as it was overtaken by events of the revolution (Tesfaye, 1993).

#### **2.4.2. Rural credit during the Dergue period**

After the fall of Emperor Haileselassie government, the financial system in Ethiopia was nationalized and restructured based on the 1976 Banking Law. The credit policy was geared towards the overall policy of the country's centralized economic management. All elements of financial repression existed during this period in their severe form: controls on financial prices (i.e. interest rates and exchange rates) and restrictions/control on new entry into the sector as well as on the activities and portfolios existing financial institutions. Interest rates on loans to different economic and social sectors were administratively fixed. The rate structure bears little

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relationship with the opportunity cost of capital or the rate of inflation. All financial institutions were publicly owned and entry was banned, thereby establishing a public monopoly of the financial sector. Credit policy gave absolute priority to the socialized sector public enterprises, state farms and cooperatives. Loans and advances by borrowing institutions over the ten year period between 1981 and 1990 show that on average the government sector took 36.4% of the total, while 50.3% went to public enterprises and the private sector's share was only 8.3% of the total loans and advances made by the banking system during the period.

More than 89 percent of AIDB agricultural loans went to state farms while the rest went to agricultural co-operatives, with the private peasant sector receiving negligible share. Discrimination against the private sector was not limited to credit access. The interest rate schedule explicitly discriminated against the private sector. The NBE set lending rates ranging between 4.5 – 9.5 percent, depending on the type of ownership and sector.

In many instances, banks have been directed by the NBE to lend for nonviable investments in the public sector. As a result, most of the funds disbursed to the public enterprises, particularly state farms, have remained uncollected, leaving the banks with low rate of growth of capital and reserves. Among the financial institutions, the AIDB suffered serious capital depletion, with its net capital becoming negative by the end of the 1990 fiscal year. Repayment problem of the AIDB was so severe (highest 68% in 1988 and lowest of 11% in 1993) that it had to terminate its agricultural inputs loans to rural households (Wolday, 2003) just as its predecessor, the DBE, did in 1961. Therefore, the outcome with regard to reaching small rural borrowers with financial services was disappointing both during the Imperial and Derge regimes. Within the agricultural sector, registered FMSCs and producers' cooperatives were

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eligible for bank credit except for agricultural input loans. Lack of registration of these cooperatives was the main impediment to the expansion of credit. For instance, as of May 1990, the percentage of registered Service Cooperatives was only 48, while that of the producers' cooperatives was only 14. So, the chance of getting credit by small producers was very low. This is evident from the amount of rural credit that went to the peasant sector, out of the overall supply of rural credit through both AIDB and CBE during the period 1982 – 1992 only Birr 792 million (9%) went to the peasant sector. Considering the large number of rural population, the size of land under cultivation and the demand for credit, the volume of loan extended to this sector was insignificant. Credit delivery systems have been insufficient to serve the rural people.

### **2.4.3. Rural credit after the reform period**

Following the fall of Derge regime, Ethiopia has followed free market economy, which advocates financial liberalization. Financial liberalization is important component of a successful development strategy. Both economic theory and practical experience suggest that financial liberalization can stimulate economic development.

Financial liberalization in Ethiopia began at the end of 1992. The financial reforms undertaken in Ethiopia include elimination of priority access to credit, interest rate liberalization, restructuring and introduction of profitability criteria, reduced direct government control on financial intermediaries and limits bank loans to the government, enhancement of the supervisory, regulatory and legal infrastructure of the NBE, allowing private financial intermediaries through new entry of domestic private intermediaries (rather than privatization of the existing ones) and introduction of treasury bills through auction markets. Prior to 1992, the interest rate charged to farmers' cooperatives was 5%, which is below the rate of savings

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deposit (6%). Financial institutions were obliged to pay interest margin on deposits from their own sources. Lending rates that were between 4.5 and 9.5% were raised to 11-15% depending on the sector until September 1994.

- Discrimination of credit access and interest rates by type of ownership (i.e. between state owned enterprises, cooperatives and private firms) was eliminated. Sectoral interest rates discrimination was reduced, and domestic establishment of private financial institutions was allowed and encouraged through proclamation number 29/1992. Since January 1995, the NBE switched to a policy of floors on deposits and ceilings on lending rates, allowing banks to set interest rates. The NBE revised the floor for saving deposits downwards to 3% from 6% in 2001/02 with an intention of encouraging investment and boost economic activity. Lending rates quickly followed suit as the minimum-lending rate changed by commercial banks went down from 10.5% to 7.5% in the same period.

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

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cooperatives or associations sign a loan contract with the bank and channel the borrowed fund to their members or end users.

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

As compared to other economic sectors the share of agricultural sector in the total credit disbursed by the banks has continued to be marginal. For instance, the share of agriculture in the total credit disbursed between 1991/92 and 1997/98 has only been 14.7%, while domestic trade had 32.2% and industry 13.2%. Recently, the share of agricultural credit stagnated at around 16% and never exceeded 19% of the total credit disbursed. In addition, it is believed that almost all of the agricultural credit is of short-term nature, which will have little impact on long-term investment and transformation of agriculture. The financial resource that flows to the sector is in general low when compared to the sector's actual and expected contribution to the economy growth in agricultural versus non-agricultural (Assefa, 2004).

The absence of an effective peasant institution for credit delivery is the other major problem associated with the existing credit system in Ethiopia. A typical service

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cooperative has over 5 to 6 member peasant association or over 1000 member households. It is simply too large to provide effective screening of borrowers, identify genuine defaulters, generate reliable demand information, and/or exert any form of peer pressure on members to make timely repayment of debts. At present, local community participation in screening borrowers and filtering genuine defaulter is minimal. The authorities and the leaders of MPCs have no objective means of assessing the extent of crop loss. Weak cooperatives are also the main reason for the government intervention in the credit market and diversion of valuable extension time to administrative affairs. Hence, the effort to restructure MPCs into smaller groups needs to be stepped up (Mulat *et al.*, 1998).

## **2.5. The Role of Cooperatives in Agricultural Development**

According to US Department of Agriculture (2002), Cooperatives are user-driven businesses that have contributed greatly to the development of one of the worlds most productive and scientific-based agricultural systems. They have played an important role in strengthening market access and competitive returns for independent farm operators during the 20th century. They adapted their operations to agricultural technological innovations, such as the use of fertilizers, plant and livestock breeding, agricultural mechanization, electricity and other new sources of energy, and to new information systems.

A true cooperative is defined as a business voluntarily organized, operating at cost which is owned, capitalized and controlled by a member patrons, sharing risks and benefits proportionally on their participation. Cooperatives may render at least four valuable service at capitalistic system of which they are a part: 1) enhance private property, 2) preserve market competition, 3) retain profit motive and 4) maintain and strengthen the individual consumer and

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entrepreneur. A contractual arrangement between the cooperative and the member patrons requires that all margins above the cost of production be returned to the member patrons in proportion to their business with the cooperatives (Roy, 1964 as cited in Zemen, 2005).

According to Belshaw (1959), the basic principles of cooperative societies as a form of self help and mutual help are the membership shall be open and not determined by religious or political or other considerations irrelevant to objective of the society, that the affairs of the society be controlled in democratic manner on the basis of one man one vote, not in proportion to capital, that interest on capital be fixed, and the members benefit from the activity of the society in proportion to the business they do with it. In essence, membership is voluntary based on mutual interest in removing disadvantage of achieving the desirable objective, and requiring a willingness and ability to conform to the conditions agreed up on.

Among the financial institutions, cooperative societies are more suited particularly to the provision of short-term credit covering not more than one cropping season, usually not longer than a year. Belshaw (1959) has listed the essential aims of cooperative credit as follows: They promote the supply of money. They promote the effective use of loans and to reduce risks in the granting of loans by careful and continuous supervision, through efficient operational records and low costs of management generally to keep the cost of credit as low as possible. They become credit-worthy that they can draw on outside sources of funds in adequate amounts.

Cooperatives are not only performing the above-mentioned duties, but also serve as financial institutions that provide credit to the smallholders. According to Bekele (2001), in his study area, there are different financial institutions that provide credit to the smallholders. They are private or governmental organizations. Financial institutions that receive funds from savers and

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lend to borrowers are called financial intermediaries. In a broad sense, the term financial intermediary is applicable to all financial institutions, including commercial banks, mutual saving banks, saving and loan associations, insurance companies and pension trustees.

Similarly, Samson (2002) stated the role of MPCs, as "service Cooperatives are found mainly engaged with their traditional activities of disbursement of seasonal agricultural input loans. These loans are of short term in nature and are expected to be paid back in the following harvest season. The principal type of loan reported by sample farm households was fertilizer, loan in kind advanced to farmers by their respective service cooperatives. Moreover, among the sample respondents only 32 per cent were found to have access to micro-finance service in the wereda. MPCs were the only institutional loan providers accessible to the remaining 68 per cent of the sample farm households. To him, the credit was fertilizer in kind advanced to farmers through their respective cooperative.

Cooperatives help farmers to increase their net income, through finding good market for their product and by supplying agricultural inputs and services needed in day-to-day operations. Therefore, farmers look their cooperatives to increase their bargaining power in the market place for their product, and to provide a large and growing number of general farm services. Among different services that the cooperatives provide to its members, advancing credit to the members at appropriate amount and time is the major one (Zemen, 2005).

## **2.6 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

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different authors. In what follows, the findings of studies on loan repayment performance will be presented.

### **2.6.1 Empirical studies on other Countries**

Singh et al., (1985) in their study on repayment performance of borrowers in Punjab indicated that the extent of relative loan default was higher in case of large farmers as compared to other categories of borrowers in spite of their better capacity to liquidate their short, medium and long term loans. The study also reported that, on the average, the defaulters in almost all the categories of farmers had taken more loans than non-defaulter from all the financial institutions except commercial banks. The economic and social conditions like households and farm assets, consumption expenditure and repaying capacity, which affect the repayment of loans, were found to be favorable to defaulters.

The analysis of determinants of loan repayment of credit groups carried out by Zeller (1998) indicated that groups with higher levels of social cohesion have a better repayment rate. Moreover, the result led to the conclusion that it is not the level of physical and human assets of the group members but the degree of variance of risky assets among members that contributes to better loan repayment. His results also indicated that heterogeneity in asset holdings among members, and related intra-group diversification in on and off-farm enterprises, enables members to share risks so as to better secure repayment of the loan. Furthermore, gains in the repayment rate due to risk-sharing diminish at the margin, because of increased costs of coordination, monitoring, and moral hazard that come with greater heterogeneity in groups. Zeller (1998) emphasized that policy makers and program managers should be aware that the often-postulated homogeneity among group members has trade-offs by reducing the group's

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ability to repay loans in times of distress and to take advantage of risky, but more profitable, enterprises by spreading risks among members of the same group.

Jama and Kulundu (1992) 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, late loan issuing and 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.

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). Large default rates, despite the subsidies, coupled with the operating losses of many formal rural financial institutions and inadequate agricultural production performance, led many observers, analyst and development agencies to start questioning many of the underlying assumptions upon which rural credit schemes were based, and to focus closely on the functioning of rural credit market (FAO, 1996).

Okorie (1986) reported that four factors had a tremendous effect on the loan repayment performance of Ondo State smallholders in Nigeria. These factors include time of loan disbursement, nature of loan disbursement (in cash or in kind), number of supervisory visits

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made by credit officers after disbursement, and the profitability of enterprises on which loan funds were invested. Likewise, Ike (1986) classified the problems of institutional agricultural loan recovery in Nigeria into three: farmer related problems; structural problems; and bank-related problems. The author indicated that in Nigeria, a good percentage of farmers are illiterate, ignorant and misinterpret the objectives of the government in granting agricultural loans. Hence, loans are diverted to non-agricultural purposes, sometimes they are used for traditional ceremonies. He also indicated that some farmers could not manage their projects due to overexpansion and loan mismanagement. Inherent agricultural problems like natural hazards are also under the group of this problem. Structural problems relate to security, like supply and demand for funds and interest rate structure. Loans are usually made against security for agricultural production. Most of the farmers do not have tangible security. They may have guarantors but the main disadvantage of pledging guarantors as security is that in case of non-repayment, they may disappear, thereby failing to fulfill their loan obligations. The bank related problems include lending policies and procedures as well as personnel capacity of the banks. Some bank managers do not apply the principles of good lending while giving loans to farmers. Related to this is the problem of skilled and adequate number of staff.

Wenner (1995) stated that formal lenders find it difficult and costly to: accurately ascertain the likelihood of defaults and to monitor closely how borrowers use funds and what technologies they choose for project implementation. Thus, borrowers may not take actions that make repayment more likely (moral hazard). Weak legal system, lack of secure collateral and pervasive views that government bank loans are patronage, magnify loan enforcement costs for formal lenders.

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Matin (1997) in his study on the loan repayment performance of borrowers in Bangladesh obtained a significant positive relationship between household's asset/income position/ and its loan default status. In his analysis, he related this situation to a very strong demonstration effect where borrowers having relatively small loan sizes behave in the same way as those who have larger loans. The education status of the household was reported to have strong negative effect on default status irrespective of the household's income position. The total operated land holding of the household was the other variable, which was negatively associated with default after a certain level. It was also indicated that housing loan increases default probability by about 22%.

Khandker et al., (1995) based on their study of Grameen Bank's micro credit operation at branch level reported that loan default is not completely a result of borrower's erratic behavior. Rather, factors like roads, electrification, educational infrastructure, borrower's age, incentives, etc., were reported to have a strong bearing on repayment performance. Kashuliza (1993) reported a positive and significant relationship between borrowers' attitude to repayment and repayment performance based on a case study in Tanzania. He also reported a positive relationship between repayment and farm income and a negative but statistically insignificant relationship between household size and repayment performance.

Kulundu (1990) in his study on Kenyan small holder farmers using cross-sectional data found that loan diversion, use of purchased farm inputs, farm income and attitudes towards repayment had statistically significant impact on loan recovery; whereas crop performance, off-farm income and farmers education proved to have statistically insignificant influence on loan repayment. Regarding loan diversion, his results showed that inadequate supervision and technical support as well as delay in loan delivery had significant influence on loan repayment.

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Empirical study made in Guyana by Hunte (1996) as cited by G/berhiwot using logistic model showed that certain factors such as activities in fishing, male borrowers in food crops and livestock credit experience and sugar cane production resulted in low default risks, minimum or low credit rationing (giving nearly the amount the borrower requested or demanded) and high repayment performance. Alternatively, other factors, such as extended grace period in loan contracts and long processing times led to high default risk and low repayment. Moreover, the result clearly showed that wealthy borrowers exhibited poor repayment performance.

Mwinijilo (1987) studied the causes of medium term loan defaults among smallholder farmers in Salima Agricultural Development Division of Malawi and found that about 50 per cent of the borrowers who had defaulted assigned higher priority to non-farm uses of the income accruing from the use of loan assets. The income generated during the repayment period was used for non-farm purposes such as health problems, domestic needs, payment of school fees and tax, and payment of private loans. These cases took priority over loan repayment. Miller (1977) also reported that the use of farm income for non-farm purposes led to defaults on loans offered to farmers. Too much rainfall, low rainfall and erratic rainfall could adversely affect farm productivity. This, in turn, may affect the repayment process.

The study made by Kuhn and Darroch (1999) in South Africa, using a multinomial logit model associating loan default to various factors, indicated that clients with larger loans were less likely to default for such loans tended to be associated with more (verifiable) collateral, lower administration costs per unit of credit and probably better quality information on potential investment returns.

Mosley (1995, cited in Bekele, 2001) investigated what he called optimal incentives to repay in institutional lending to low income groups in Indonesia. He identified three types of incentives

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and tried to find out the optimum levels of these incentives to optimize the payoffs of lenders and borrowers from the game. These were:

- Incentives to the borrower to pay on time, consisting of a discount on interest payments, which are refunded when all payments due have been made;
- An incentive to the borrower consisting of a credit limit, which is expanded at the rate proportionate to repayment performance of the previous loan; and
- incentives to the staff of lending institution to optimize their efficiency in monitoring and securing repayment by making a portion of income dependent on some indicators of the performance of the institution, usually profit or loan recovery.

### **2.6.2. Empirical Studies Related to Credits in the Ethiopian Context**

For successful utilization of borrowed money and timely repayment of the credit, lenders are also expected to train the borrowers about the proper utilization of agricultural credit. Since the system of agricultural credit is similar throughout the country, many authors have studied the loan repayment performance of smallholders using Multiple Linear Discriminate Analysis or logistic model. Their finding is more or less the same.

According to Anbes (2003) the study revealed that credit users are in a better position as compared to non-users. However, credit was not adequately extended and not given to all activities as a package. It is probably because of inadequate source of credit, untimely supply of credit, lack of extension services, problem of infrastructure, and others. In this study, farm size was found to have a strong negative impact on agricultural credit use of the sample households, implying that farmers who had larger farm size were not agricultural credit users. This may be attributed to the substitutability between land and fertilizer as factors of production.

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According to Zemen (2005) the finding reveals that there are four important factors which affect the borrowers' timely repayment of their debts in the region. Zemen has used Linear Discriminate Analysis to identify these important variables. The variables which differentiate the sample borrowers into non-defaulters and defaulters were size of cultivated land, loan diversion behavior, membership condition and amount of other credit borrowed during the study period. The finding of the study indicated that the larger cultivated land per household, the smaller the occurrence of defaulters, and this result agrees with the assumption that the farmer with larger cultivated land will remain efficient and earn more income compared to farmer with smaller cultivated land size and associated poor earning capacity. So that farmer with large cultivated land size has the productive resources properly and earn more income and settle their debt service on time compared to farmer with smaller cultivated land size.

'Regarding to loan diversion, borrower who allocated his/her input credit for different purposes other than the intended purpose would be forced to use an input below the recommended rate, therefore, he/she cannot attain the expected output level to fulfill his/her obligation. Membership condition has also found to be one of the best discriminating variables in the analysis. The borrower who is a member of the cooperative is most likely not to be a defaulter. The reason being beyond his/her attitude to belongingness to the cooperatives, his/her daily contact and other economical relations abide him/her not to do so' (Zemen, 2005).

Bekele (2001) has summarized his findings using logit model as follows. 'The results showed that individuals who took larger loan had better repayment performance than those who took smaller loans. This directly indicates that individual's loan application were carefully evaluated, sized and approved by the local lenders. Thus, local screening groups should be strengthened and encouraged to set a uniform minimum standard for screening loan

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applications. Group lending is also another way of acquiring information on credit worthiness that is critical in reducing default risks’.

‘Late disbursement of inputs purchased by the loan funds was an important bottleneck facing the sample households and is directly related to two major problems. 1) It is attributable to late repayment of previous loans which emanate from the existing lax loan collection mechanism. 2) The problem of late disbursement of inputs was related to late arrival of the inputs from the sources which could be in turn associated with long-drawn-out procedures of making bids, lengthy decision making process at different administrative levels, poor infrastructure, etc’ (Bekele, 2001).

According to Belay, (1998) on the basis of Linear Discriminant Analysis, three variables were found to be strongly and statistically significant in discriminating between non-defaulters and defaulters of formal fertilizer credit. 1) Those farmers who made frequent contact with development agents were those who paid their loans back to the lenders in time whereas those who had less or no contact were defaulters. 2) Likewise, livestock number in livestock unit was also found to influence strongly and significantly loan repayment performance. Borrowers with more livestock unit settled their debt timely and were non-defaulters whereas those who owned less were found to be defaulters. 3) On the other hand, celebrated social ceremonies affect loan repayment negatively for farmers who celebrated at least one of them in the production year became defaulters of loans.

Tefera (2004) has performed his research using Tobit model and he stated that, repayment rates of non-formal credit were found to be far superior to those of the formal credit. Higher repayment performance in non-formal credit could be associated with the application of social pressure, flexible repayment plan and timely availability of credit in right amount. The

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potential threat of the borrower's reputation with in the village or community in the event of default is by itself an adequate deterrent against default.

G/hiwote (2006) has preformed his research using logit regression model and showed that five variables were significant to affect borrowers' loan repayment performance. These variables include: educational status of the sample household, family size of the household, duration of cooperative membership of the household, total size and use of land holding of the household and amount of money borrowed by the household. Except the size of land holding, all the significant explanatory variables affect the loan repayment performance smallholders positively.

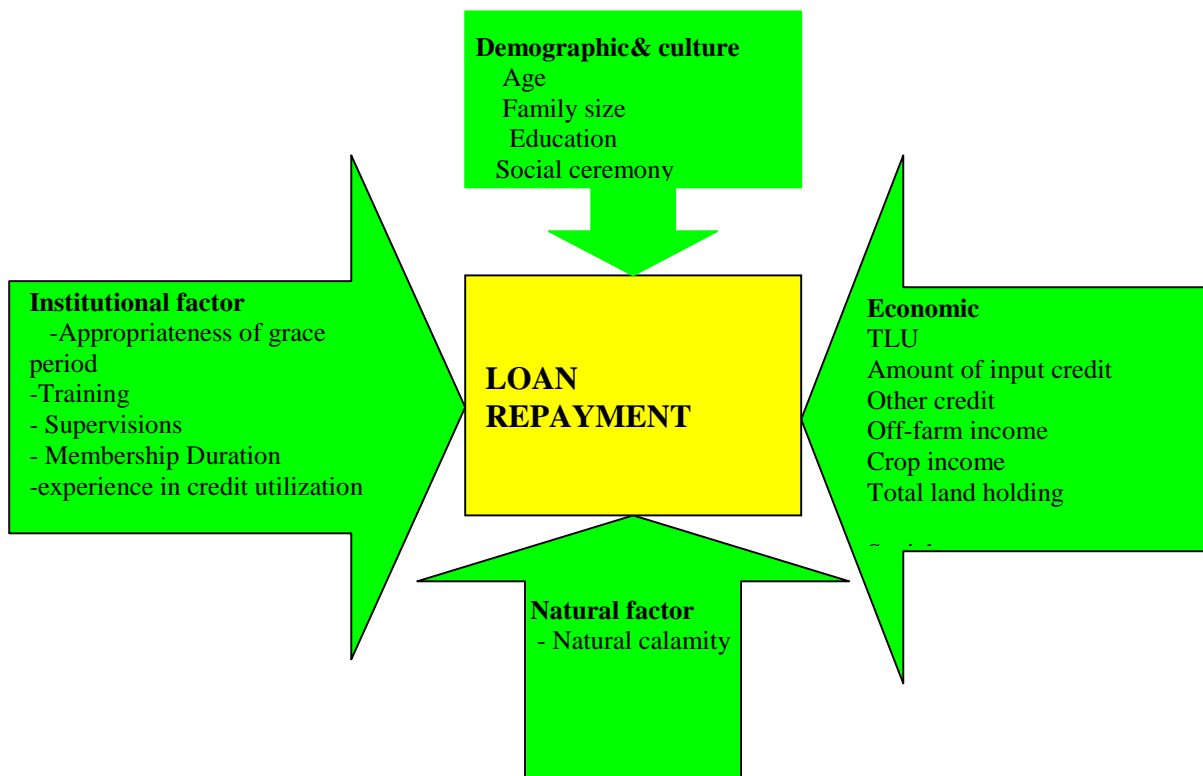


Figure I; Conceptual frame work of Dependent and independent variables for loan repayment

# CHAPTER III: MATERIAL AND METHODES

The methodology used in the study in the study is presented in this chapter

## **3.1. Description of the study area**

### **3.1.1 Description of the Tigray region**

#### **3.1.1.1 Location demographic and natural condition**

Tirgay is the northernmost region of Ethiopia located at latitude of 12° to 15° north and a longitude of 36° 30' to 41° 30' east and covers an area of 53,000 square kilometers (Haile et al. 1999. Solomon.2005). The region is bounded by Eritrea to the north, the Sudan to the west, and the Ethiopian regions of Amhara and Afar to the south and the East respectively. Figure two shows the location of Tigray region.

The Tigray National Regional State (TNRS) is divided into 7 administrative zones, 48 Woredas (Districts), 550 *Tabias* (Fitsum *et al.*, 2002), more than 3500 *Kushets*, and 74 towns. The zones are Eastern, Central, Southern, Western, North Western, south eastern and Mekelle city. *Kushet* is the lowest unit in the administrative hierarchy. TNRS has an estimated total population of 4,448,997 consisting of 2,192,996 men and 2,256,001 women. Out of which 3,519,000 or 81.2 per cent of the population are estimated to be rural inhabitants, while 816,000 or 18.8 per cent of the population are estimated to be urban inhabitants (CSA, 2006).

The climate of the region is highly unpredictable characterized specially by unreliable rainfall. Severe droughts causing famine have affected the region approximately every tenth year through this century. The topography of the region is characterized as mountainous plateau and the climate is categorized as tropical semi-arid.

It is characterized by sparse and highly uneven distribution of seasonal rainfall, and by frequent drought. The amount of rainfall increases with altitude and from east to west, and decreases

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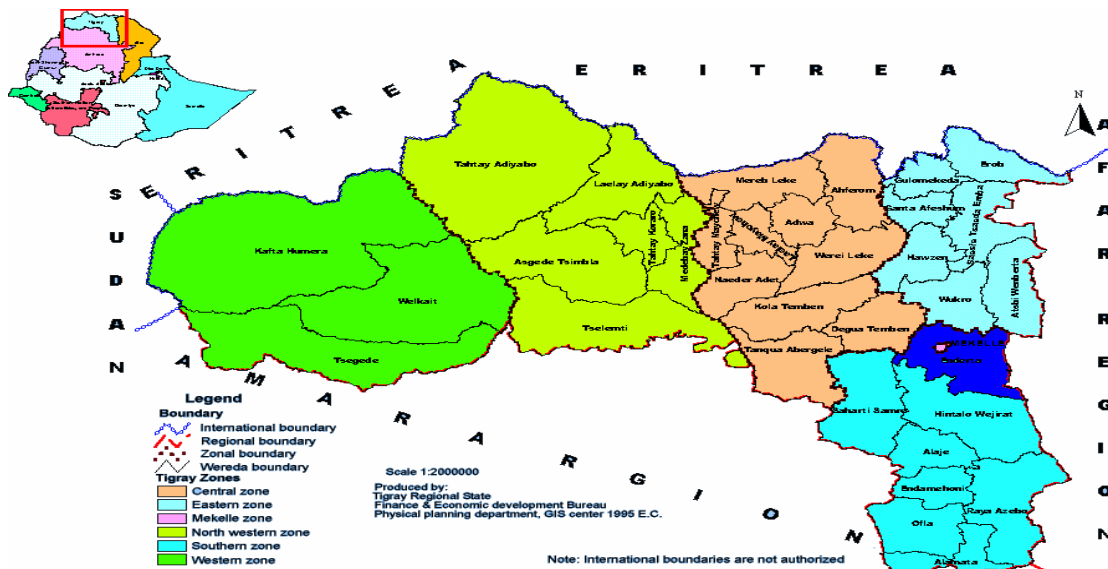


from south to north. Annual rainfall ranges from 450 to 980 ml with significant spatial and temporal variability. Most of the precipitation falls within the three months of June, July and August, and with high intensity (Berhanu *et al.*, 2000). Generally, the rainfall distribution is mono-modal in character, with few exceptions in the Southern and Eastern zones, where it is bimodal.

Average temperature in the region is estimated to be 18 °C, but varies greatly with altitude. In the highlands of the region, during the months of November, December and January, the temperature drops to 5 °C. In the lowlands of Western Tigray, especially in areas around Humera, the average temperature increases from 28 °C to 40 °C during the summer.

Two of the major constraints of agriculture in the region are high level of erosion and poor fertility of the soil. Farmlands in the highland are deficient in critical macronutrients and organic carbon. According to Haile et al (2002), the soil resources are extremely deficient in nitrogen .available phosphorus and organic matter. This has implications for farmers' willingness to adopt new technology. As low soil fertility reduces the benefits from productivity enhancing technology and improved crop management practices.

Figure II; Map of Tigray National Regional State



The region has a diverse topography with peak highlands (8%), midlands 39% and lowlands 53%, which together create diversified agro ecological condition and many niches for biodiversity (hagos et.al. as cited in Girmay)

The distribution land use/ land cover in Tigray is given in Table .1 .The major types of land use are bush and shrub land 36.20%, cultivated land 28.21 %, and grass lands 22.78%.other forms of the land mass. Cultivable land is the dominant land use in the highlands of Tigray, Where there is high population density (Girmay 2006). The natural forest resource of the region overexploited and cover only about 0.2%of the land area. The decline in forest has a long history and is closely linked with human population pressure. Rehabilitation activities are under way through area closures, afforestation, and plantation programmes and community mobilization (Gebremedhine et, al, 2003)

**Table 1; Land use/land cover type of Tigray region**

Land use-land cover type	Area (hectares)	Proportion %
Cultivated land	1,434,792	28.21
Grassland	1,158,681	22.78
Bush and shrub land	1,840,918	36.20
Woodland and plantation	295,082	5.80
Natural forest	9,407	0.18
Afro alpine	670	0.02
Exposed rocks and soil	335569	6.60
Water body and wetlands	8053	0.16
Urban	2,610	0.05

Source: Tigray Bureau of Agriculture and Rural Development (2006)

### 3.1.1.2 The economy of the region

In Tigray agriculture contributes around 57% of the GDP .of the region of which 36% is from crop production and about 17% and 4% is from livestock and forestry respectively (BOPED, 2004) rain fed crop production is the main economic activity for over 85 percent of the population, supplemented by livestock rearing under mixed-farming system. The average landholding in highlands of the region is less than a hectare (pender at.el 2002 as sited in Girmay 2006). Major crops are sorghum, teff, barley, finger millet, wheat, and maize according for 26%,16%,12%,11%,9% and 7% of the total area (RBARD,2004)other crops like pulses and oil seeds accounts the remaining.

Average crop productivity in the region is about 0.8 ton per hectors (BARD 2005).This is low compared to national average of 1.2 tones per hectares in 2003/4 (Bekel 2005). The total land under cultivation in the region is about 10,000 square Km. of which 1,250 square kilometers is cultivated by private investors with the rest being under small farmers. Low productivity in the region is attributable to the low productivity of labor and fertilizer, and low levels of adoption of productivity enhancing inputs (weldehannes, 2000). This is directly related to the drought-prone nature of the area and uncertainty about rainfall, which increases the risk associated with the use of external inputs.

Based on estimate of CSA (2006), Tigray had a total of 2,662,170 cattle, 813,650sheep, 2,399,810 goats 1,890 horses, 7,900 mules, 387,390 asses, 32,780 camels, 3,131,240 poultry of all species and 182,340 beehives. Tigray is one of the regions with the most livestock in Ethiopia; livestock production is mainly a secondary activity. The major economic role of cattle, particularly oxen, in mixed farming is supplying draft-power for crop production. The role of livestock in terms of food supply is limited to milk and related by-products. Equines are

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mainly used for transportation. Sale of small ruminants serves as a source of cash, although in general the livestock sector is less integrated to the market due to structural problems.

In Tigray local markets are poorly developed because of the dominance of subsistence production systems and poorly developed infrastructure. Of course following the reform significant improvement have occurred in terms of competition and efficiency but still remote markets are inefficient,

Non-farm activities in urban areas are increasing as a result of economic reform in the country and are more non-farm employment opportunity for rural households. In Tigray farm households participate to varying extent in labor markets. Although these markets are highly seasonal and involve high traction costs (Weldehanne, 2000)

### **3.1.1.3 Access to social services and infrastructures**

Since 1991, there has been a significant improvement in the provision of social service and access to infrastructure in Tigray although this still fall far below the level needed to bring meaningful rural development (Gebremedhine, 2004 as cited in Girmay). There has been a remarkable improvement in access to education, transport, credit and extension services compared to pre-1991 situation. Local NGOs and communities play a significant role in contributing resource for infrastructure development in the region. However, the current level of literacy in the rural area is very low, with only around 7% with basic literacy skills (Girmay, 2006). There has been some improvement in road density in the region, although this is still below the national average.

Another institutional intervention in the endeavor to foster rural development in Tigray, and other regions of Ethiopia, is the Establishment of rural credit and saving institutions. These aim to facilitate the creation of capital in the rural sector and improve the availability of capital for investment in both rural and non-rural sector. Institutions like cooperatives, Dedbit credit and

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saving and other NGOs had provided credit for households in the region. Credit is mainly provided for purchase of input such as seeds, fertilizer oxen and other productive purpose. The extension service also provides institutional support for agricultural development. About three extension agent with a background with the general agriculture is assigned to each Tabia. However, only about 11% households had a direct contact with extension agents seeking for advice (Gemedhine 2004 as cited in Girmay). This low rate of utilization indicates the need for critical investigation of demand side problem for such service in the region.

## **3.2. Description of Kiltawulalo wereda**

### **3.2.1 Geographical Location and Climate of Kiltawulalo wereda**

Kiltawulalo wereda (district) is geographically located between 39°30'E-39°45'E and 13°45'00"N located in eastern zone of Tigray National Regional State. The wereda is bounded by Astibwenbera to the east, Sasitsadaemba to the North, Hawzen to the West and Enderta to South. Its main town Wokuro town is located about 45 km north of Mekele town. Currently the Wereda encompasses a total of 16 Tabias and 59 kushet.

The total area of the wereda is estimated to be 1010.28 km<sup>2</sup> (101028 hectare) of which 21% is cultivated land, 4.5 % is grazing land, 21% is covered with forest and shrubs, and 53% is not used for production purpose due to different reasons. The total cultivated land under irrigation is 1,227.15 ha. The average land holding of a household is about 0.62 hectare

The Wereda comprises of diversified topographic features with altitudes varying from 1900 m.a.s.l in up to 2400 m.a.s.l. Mean annual rainfall of the Wereda ranges from 350-450ml and the average temperature of the area is also ranges 17-23 °C.

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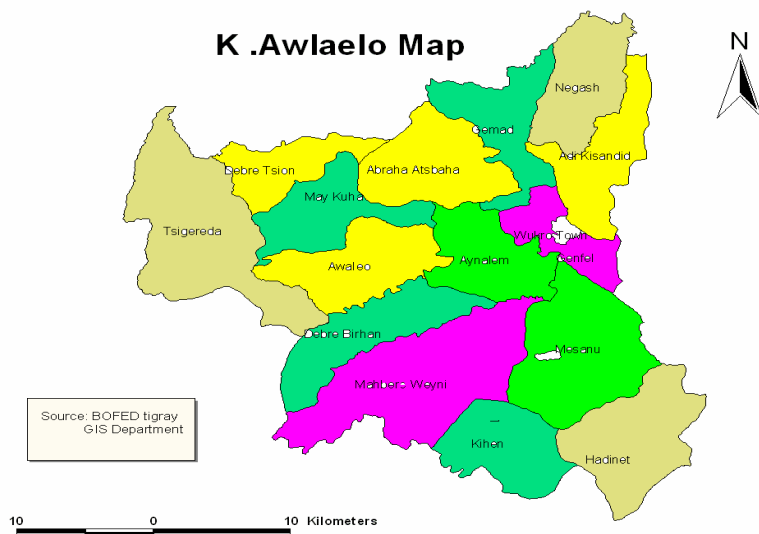
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### 3.2.2 Population Characteristics of Kilt Awlaelo

Based on the bureau of finance and economic development of the wereda (BoFED), total population of the wereda in year 2007 was 119,493 persons. Out of this size, 58,552 are males and 60,941 are females and the number of household was 23,897. The density of the population is 126.3 persons, KM<sup>2</sup>. Regarding the population profile, 46-48 per cent of the total population in the Wereda are youngsters (whose age is below 16 years) while the remaining 52-54 per cent are middle age and old age groups. Life expectancy at birth remains at 47 years and infant and child mortality rates are high at 118 and 173 per 1000 births, respectively (Mehari, 2002).

**Figure III;** Map of Wereda KiltAwlaelo



### 3.2.3 Economic Activities, Social Services and Infrastructure of the Wereda

#### 3.2.3.1. Agriculture

In Kiltewlaelo *wereda*, agriculture contributes much to meet major objectives of farmers such as food supplies and cash needs. The sector is characterized by its small scale and subsistence nature. Mixed farming is the major economic sector in the wereda, where crops are grown for food and cash, and livestock are kept for complementary purpose, as a means of security during

food shortage, and to meet farmers' cash needs. Both crops and livestock productions are equally important.

The dominant crops grown in the *wereda* are Hanfest (mixed crop of wheat and barely) Wheat, teff, barley and finger millet which accounts a total of 25%, 24.6%, 17.6%, 17.3% and 2.7% cultivated land of the wereda. The average yield per hectare is estimated to be 7quintal where as the yield per hectare in minimum and full package is 10 and 14 quintal (WBARD).

According BARD of the wereda the total land covered by different crops from year 2004-20007 was 75,660.5 Hectare. In this consecutive years, crop yield increased was observed from 41,854 quintal in 2004 to 132,709.7quital in2005 and also 191,556.2 quintal in 2006.similary irrigational land was also increase from 329.8ha to 1,227.15ha from 2004-2006.

Even while there was a yield increase in the past few years but still majority of the farmers in the wereda could not meet their subsistence requirements through out a year. The principal reasons for low productivity level and food shortage were rainfall shortage and variability, soil erosion, shortage of draught power, disease and pests, low level use of improved farm inputs, etc.

The livestock sub-sector is one of the components of the integrated farming system in the *wereda*. Animals are kept as source of milk, meat and draught power. Cattle dung is also an important source of manure and fuel. Animals act as an important buffer stock (shock absorber) to purchase grain for compensating the crop failure due to drought and/or prevalence of other sources of risk According WBARD report 2006, in the Woreda there are 59,236 cattle, 26,360 sheep, 20,058 goats, 11,703 donkeys, 966 mules, 232 horse and 42733 chickens. Then accordingly cattle comprise the heights proportion, 36% of the total livestock, followed by

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goats and sheep 28.8%, chickens 26.5% and equines 8%, In addition there are also 9,525 traditional and modern beehives in the wereda.

### **3.2.3.2. Infrastructure and Social Services**

**Roads:** kulteawlalo is relatively accessible in road construction. The wereda town is connected with the regional town Mekelle by 45km paved road and 75km paved road with zonal town Adigrat. Each Kebele association is also connected to main town of the wereda with dry weather roads. .In general total road coverage of the wereda is about 373km of which 60km is main road, 87km dry weather roads and the rest 273 km are sub standard roads constructed by the community.

**Education and Health:** According to the Planning and Economic Development Office (PEDO, 2001), kultawulalo has 3 secondary schools and 37 primary schools. Out of the primary schools, 9 of them are newly constructed ones with in the two years. The Construction of these new primary schools contributes to reduce the average distance schools in the wereda to 4 km.

Concerning the population size of the students, the total number of students engaged in the secondary education was 1422. Of this the number of male and female students was 797 and 675. Similarly, the sum of students attended primary education was 25,403 of this, 12,692 were males and 12,711 were female students

With regarded to health related services in the wereda , there are, 1 health centers, 2 health stations, 16 health posts, Out of these, 1 district hospital health centers is situated in the wukro wereda and this provide service to kultwulalo wereda as well,

**Agricultural facilities:** the agricultural Development office of wereda assigns agricultural extension workers. In each Tabia there are about three extension workers. The extension

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worker on agricultural fields such as crop production, livestock production and home economics all helped the peasant farmers in one way or the other.

### **Market Facility:**

The major market center for the Kultewulalo woreda is the Wukro town; smaller markets are located everywhere in the PA village's specially markets in Agulae, Abra Atsibha, and Tsigerdai are relatively big in size. Both crop and livestock products are the main products supplied by the farmers to the market centers. Table Salt, wood, potato, tomato, live animals, milk, eggs etc are supplied to the market. In return, the farmers take home consumable goods such as food, edible oil, salt, kerosene, soap, etc. Usually the market places are, places where farmers and traders meet in a designated open area with goods displayed on the ground.

### **3.2.4. Cooperatives in the Wereda**

The Wereda consists of 16 rural peasant associations; out of this fifteen of them have MPCs. According to the report of TCPO (2007), 'among other social and economic institutions, 15 primary MPCs and 1 multi-purpose union, 4 saving and credit, 6 irrigation users, 2 dairy, 7 construction and 1 handcraft making a total of 36 cooperatives have been established in the Wereda. Currently, those cooperatives have 8,243 male and 3,512 female members, which make a total number of 11,755 members. These Cooperatives have 379,624.36 Birr current capital and 122,409.41 Birr fixed capital.

#### **3.2.4.1. Multi-Purpose Cooperatives in the Wereda**

MPCs are typical business enterprise in the rural development strategy of the country. Farmers cannot have a strong economic voice without the formation of member-controlled association. Each MPC in the wereda accommodate one Peasants Associations (PAs) as members. All farmers residing in the member PAs are rendered service by cooperatives.

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Currently there are 15 primaries and one union MPCs in Kiltewlaelo woreda and all of them have attained legal entity. Out of fifteen primary cooperative only six of them are members of the union. As it shown in Table 2, the total members of the MPCs in the wereda are 10,994 of which 7,576 (68.9%) are males while 3,418(31.1%) are females. The total family size is 45,957 persons, which is 38.5 per cent of the total population of the Wereda .These cooperatives have 1 hired manager, 8 accountants, and 10 shopkeepers. The total prescribed capital has reached Birr 386,689.69.

These MPCs are actively participating in marketing of agricultural produce, and other industrial products. As the wereda is one of food deficient areas in the region, the multi-purpose cooperative supplying food grain to rural area by purchasing from different parts of the country .more over the cooperatives supply consumer goods, farm implements, fertilizer improved seed etc. Then from 2000-2006, the cooperatives in the wereda purchased and supplied 2792.5 quintal of different types of grain to their members and local community (BARD)In the same years the cooperatives also sold consumer goods which worth Birr 3,260,842.

Above all MPCs are engaged in the distribution of fertilizers, pesticides and improved seeds to the farmers. MPCs started in new mode of fertilizer input credit extension by one cooperative in 1999/0 production year by providing 254 quintal of fertilizer and 139.4 quintal seeds. From then onwards they improve their capacity and all cooperatives participate in input credit disbursement. At present about 9 MPCs are actively engaged in agricultural input credit extension activity. The amount of input distributed by MPCs in 2006/7 production year was 2,374.2 quintals. As it was indicated Appendix VII, totally about 8,118.41 quintal of fertilizers and 2,983.97 quintals of improved seed had distributed from 1999/0-2006/7 by cooperatives to their member farmers.

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In order to accomplish this, cooperatives provide agricultural credit to their members. Commercial bank against regional government collateral is the main sources of fund for the input credit administered by cooperatives. In fact some cooperatives try to cover partial price of input by their own fund. The amount of input credit extended to member farmers from 1999/0-2006/7 was Birr2, 525,220 (Appendix IX).

Outside this short term credit, there are NGOs like Wukro Kidest Mariam and World Vision in the wereda which works jointly with cooperatives. Both of them extend medium term agricultural loan to farmers through cooperatives. Other than these NGOs, different agricultural packages are extended to farmers by food security, bureau of agriculture and rural development and FAO through cooperatives.

In general, MPCs are playing a significant role introducing new production methods, changing the traditional way of life of the peasants and in providing basic social service to their members. All these in turn, are having a positive impact on agricultural development and on the living conditions of the rural population.

Thus, the setting up of sustainable rural development in Ethiopia ultimately hinges on the establishment of community based voluntary organizations that serve both as catalyst and engine of development. Therefore, the vital importance and the positive contribution of private business cooperatives cannot be overlooked. Private business cooperatives are the centerpiece in the rural development strategy of the country. The farmers cannot have a strong economic voice without the formation of member-controlled associations

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**Table 2: Number of Cooperatives in kiltewlalo Woreda with their members and family**

Cooperatives		Number of members			Number of family			Amount of capital in Birr		
Name	Type	M	F	Total	M	F	Total	Fixed	Current	Total
Fire kalsi	MPSC	643	661	1304	4326	1854	6180	7,997.90	118,943.70	126,941.7
Fire weyni	MPSC	528	418	939	2634	3101	5735	2,071.00	26,688.49	28,779.49
Limate	MPSC	797	200	997	2287	2176	4463	5,635.82	32,593.49	33,324.53
Genfel	MPSC	695	339	944	2011	2118	4191	453.81	29,438.84	29,892.65
Aynalem	MPSC	741	225	943	1833	1900	3733	2,860.16	32,593.49	35,453.65
Abrehatsibaha	MPSC	326	160	486	1417	1238	2655	1,955.89	12,891.77	14,847.66
Awet	MPSC	370	192	562	430	198	628	2,305.52	15,095.81	17,401.33
Simret	MPSC	293	150	443	504	188	693	884.47	9142.70	10,027.17
Debretsiyon	MPSC	680	103	783	1689	1481	3170	785.44	9368.26	10,153.7
Selam	MPSC	321	91	412	1366	586	1952	258.40	6440.66	6,699.06
Mahberewyni	MPSC	519	161	680	1590	1490	3080	1,002.55	8493.84	9,496.39
Shewit	MPSC	384	134	518	303	93	396	4,982.65	32724.08	37,706.73
Qihean	MPSC	370	105	475	1176	1186	2362	1,597.20	6516.19	8,113.39
Hadnet	MPSC	345	360	905	3220	1380	4600	72.00	5103.30	5,175.3
Debebrhan	MPSC	564	119	564	1140	1042	2182	1,955.90	10714.04	12,669.94
Sub Total		7576	3418	10955	25926	20031	46020	34,818.71	356,748.66	386,689.69
Other cooperatives	Number Of Coops.									
Saving& credit	4	172	20	192	597	463	1061	0.00	4273.00	4273.00
Irrigation	6	370	72	442	438	735	1173	79590.70	5219.70	84810.40
Construction	7	85	0	85	127	100	227	-	1740.00	1740.00
Hand craft	1	12	0		24	30	54	8000.00	650.00	8650.00
Dairy	2	28	2	30	72	64	136	-	10990.00	10990.00
Sub total		667	94	749	1258	1392	2651	87590.70	22875.7	110462.4

Source; Annual report of WBoARD (2006)

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### 3.2.5. Agricultural Credit Provision in the wereda

One of the potential constraints to farmers adopting modern technologies and inputs is the shortage of capital. It is difficult to increase productivity of the agricultural sector in the absence of an efficient credit facility, given the fact that the majority of farmers are resource-poor.

The availability of credit for resource poor farmers is quite important to finance the agricultural activities. The major sources of credit in the study area have been government and local MFI called DECSI, and cooperatives. Furthermore, farmers obtain credit from informal sources, mainly from relatives, friends and local moneylenders.

Agricultural lenders must simultaneously evaluate new loan application and judge the performance of loans already made. Following the first loan, continual analysis is necessary as a basis for extending additional loan funds and for determining the amount and kind of loan supervision needed.

Regarding the agricultural input credit through MPCs, every year request of credit starts from March and extends to April. Farmers are always advised to apply for credit from March to April, would be distributed from June up to August. Moreover, the credit expert in the wereda and development agents (DAs) in each kebele administration should estimate and compile the kebele credit demand for inputs. Each MPCs would have a compiled input credit based on the information obtained from the cooperative members. After receiving farmer's application, the cooperative's Input Credit Coordinating Committee thoroughly investigate the applicants' credit repayment history and their demand. If the applicant didn't repay his/her debt during the past production years, the committee automatically erases him/her from the applicants list. The MPCs send the total demand of members to Kiltewlalo bureau of agriculture and rural

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development (KBARD) particularly to cooperative and input desk. The KBARD compiles the application of various cooperatives and submit it to the regional bureau of Agriculture and Rural Development (RBARD) for approval of the amount of input credit which would be taken from CBE.

After collecting input demand of all Weredas the regional bureau of agriculture and rural development (particular cooperative and input desk) prepares bid to importers especially for fertilizers, and then the bid winner based on the agreed upon transport fare would transport the agreed amount to the wereda's store. Moreover, the TNRS is responsible to secure the loan in case of default and also empowered the WBARD to approve the input credit and to determine the maximum amount of money for each kebele and individual by negotiating with Commercial Bank of Ethiopia as per the agreements reached.

Regarding the final input credit distribution member of MPCs directly apply for their requirements to the MPCs and MPCs also apply to WBARD. After all these processes, the demand of the true borrowers will be compiled and submitted to WBARD, the WBARD will sign an agreement with management committee of the MPCs. Following these steps, letter of order for credit sale will be written to the supplier organization which is in this case to AISCO/Agricultural Cooperative Union, signed by the WBARD head and sealed. The AISCO/Multi-Purpose Cooperatives' Union then allows the MPCs to distribute the stated amount from their store after signing on the AISCO/Union acquisition receipt.

The AISCO/Union after compiling the WBARD distribution orders and receipts, apply for repayment to the cooperative and input promotion desk. The WBARD through proper investigation will order the Commercial Bank of Ethiopia to transfer the stated amount of money to the account of the supplier by the authorized person's signature and seal.

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In the study wereda, fortunately there are input suppliers like AISCO, Endera union, Wukro Union primary Cooperatives. There is also CBE, Wukro branch, to facilitate the wereda' credit process. Therefore, these four vital organizations facilitate and serve the demand of farmers in this respect.

### **3.2.6 Loan Repayment Mechanism in the wereda**

The majority of rural population, which constitutes the target group of rural development program, is too poor to offer collateral. On the other hand, credit institutions tend to depend heavily on observable and tangible wealth such as land, livestock, buildings etc as security against default. Such collateral requirements have many credit programs by effectively excluding the intended beneficiaries namely the poor from credit services. In this respect as well, informal credit markets are more popular among the poor because they depend less on collateral and more on personal relationship and hence accessible.

Agricultural input credit disbursed through the region is non-amortized loan and effected in the following harvest, immediately during or after the peak period. Input Credit Coordinating Committee also monitors the agricultural input credit repayment from Kebele Administration to region level. Farmers are informed by management of MPCs as well as DAs to settle their debt at the beginning of December up to end of February. Where as collection will continued by suing and penalizing the defaulters.

The Input Credit Coordinating Committees represent different public offices in the wereda (it includes Agriculture and Rural Development Office, Food Security Desk, Office of Agriculture, Cooperative Promotion Office and Wereda Finance and Economic Development Office). This committee has a direct contact with loan committee of cooperatives and administrative bodies of the Kebele(Tabia). Then though this bodies efforts were made to

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persuade farmers to repay on time through meetings and under taking thorough discussions. Repayment is made to the assigned MPCs loan committee and for this purpose they give a receipt to those who settle their loan. Interest rate is based on the months up to the repayment date. When farmers settle their debt in accordance to the agreement made, they could be registered for the next input credit. Individuals who fail to fulfill their commitment would be denied future access to agricultural input credit.

The agreement between MPCs and RBARD specifies that the interest rate that the Commercial Bank of Ethiopia shall receive at a rate of 7.5 per cent per annum out of the interest to be charged by borrower farmers and MPCs charge the farmer 12.5 per cent interest rate per annum. Moreover, according to the agreement between CBE and TNRS, the difference between interest on saving deposits by the CBE and the interest rate that CBE collects from its borrowers (cooperative society) is equally divided for the regional government and CBE.

Regarding to the repayment, the loan committee of cooperatives in collaboration with local administrative bodies reminds the farmers immediately after harvest to repay their credit within the specified days. Moreover, the extension agents, cooperative staffs and other civil servants agitate the farmers to repay their loans on due date. Credit allocation and collection procedures are based on ad-hoc and bureaucratic arrangements. It has been alleged by fertilizer dealers that this situation has allowed some local government authorities to direct input credit sales in favor of companies with affiliation to regional governments (Wolday, 2003).

According to the agreement of CBE and the Regional Government, the scheduled date for full repayment of credit given for purpose of fertilizer or seed is before the end of Ethiopian budget year or June. It is scheduled that farmers have to repay their debts fully on time before month of February 30. In time gap between end February and June the cooperative uses its maximum

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capacity to collect the rest of the money from defaulters by penalizing and suing them to the social courts

The principal bottleneck, which inhibits farmers to repay their loan on time, is presumably the volatility of agricultural product price in good harvest year and crop failure to cover working capital costs, during bad production year. All expenses such as: credit repayment (formal and informal), land use and income taxes, social contributions, etc are made immediately after peak harvesting time. All these factors contribute to a sharp rise in the supply of agricultural products with no or very low increase in demand for the produces. This causes a sale of large quantities of products at low prices. The consequence of this situation may make farmers reluctant to settle their loan on time so as to secure food sufficiency of the household through out the year.

### **3.2.7 Status of demand and supply of credit in Kildeawulalo Wereda**

#### **Demand of credit:-**

The demand for credit indicates that number of households who are willing and ready to borrow money at a given term and condition. It is assumed that the household could rationally reach a decision by considering the cost of credit and the benefits that they derive from receiving it. In the study area, smallholders have demand for many types of credit, i.e., for production purpose, consumption purpose etc.

As agriculture is the engine of growth, government provides more attention for the sector. The government encouraging for establish different types of rural banks i.e. Microfinance Institutions and saving and Credit cooperatives and made a support for agricultural input credit promotion activities in rural areas.

The secondary data of the wereda and the regional office (Appendix Table 2-3) shows that all the regular members (non-defaulter members) of MPCs in the wereda were given the required

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loan assistance for meeting their production credit need only. However, other types of credit demands such as for consumption, business and other non-farm activities were not given attention by the credit suppliers as well as by the government in the wereda.

supply of credit:, In the wereda, there are only few opportunities for farm households to borrow money for farm and non-farm activities. The main suppliers of credit in the wereda are Dedebit Credit and Saving Microfinance, Cooperatives, local and international NGOs and Bureau of Agricultural.

Most of the agricultural credits were given for purchase of farm inputs, but Dedebit and Food Security Program provide credit in some cases for petty trade. Institutional supply of consumption credit is almost absent. Mostly the suppliers of credit for consumption purposes are individual money lenders and relatives. The main suppliers of input credit (for fertilizer, seed and different chemicals) were cooperatives whereas, food security, world vision (WV), Wukro Kidist Mariam (WKM), and Wereda Bureau of Agriculture and Rural Development (WBoARD) supply medium term loans for different Agricultural packages

Based on the data in Appendix 3, the demand of input credit of the MPCs from 2002/3 to 2006/7 production year was Birr 2,546,916. Similarly the supply of agricultural input credit by CBE and BoARD for these MPCs in the same production years was Birr 2,535,188. Here the difference between the demand and supplied amount was very small and insignificant. The reason for this is that the regional government has given emphasis for agricultural development and submitted its budget as collateral for the bank on behalf of smallholders.

Moreover, National Regional State of Tigray arranged credit services for purchase of improved agricultural packages like modern beehives, poultry, dairy cows, small irrigational implements and etc. The fund has been allocated from the regular annual budget of the region. This fund

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has been disbursed through MPCs and Dedebit Credit and Saving Institution. Mostly the loan amount depended on demand of the smallholders linked with the price of agricultural packages. The total amount of money guaranteed by the regional state and distributed to farmers in the region was 874,428,646 and 661,825,321 birr respectively. Out of the total distributed credit to farmers 24.8% was distributed through cooperatives and the rest 75.2% distributed through DESI (Appendix table 6). The amount of credit guaranteed by TRNS and distributed to farmers through cooperatives in the wereda was Birr 1082617.73 and Birr 582617.37 respectively (CBE Mekele district 2007).

### **3.3 Sampling Technique and sample size**

#### **3.3.1. Sampling technique**

Kilteawlalo Woreda was selected purposively as it had an advantage for the study. The justification for this is that, first the wereda is one of the areas in the region which have long experience in cooperative credit provision. According to the information obtained from BARD, after the downfall of Derg regime input loan provision by cooperatives had started in Tigray in 1998, by four weredas namely Adwa, M/zana, S/T/Emba and Ahferom and in 1999 including Kilteawlalo other 13 Weredas were also involved in the activity. This long time experience of cooperative in the Wereda is useful to have general knowledge about loan repayment of member farmers in the region. Moreover in the Wereda there are also cooperatives which newly engaged in input loan provision and this might be a good opportunity to compare and contrast the nature of loan repayment. Secondly based on past years reports TCPO & personal experience, loan repayment performance of the cooperatives in the wereda was not in a good position. Even in the wereda there is one cooperative which is totally withdrawn from credit provision to its members because of high loan default. In addition with this, the wereda is also

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one of the drought prone areas in the region this makes the Wereda more representative and advantages for the study.

### 4.3.2. Sampling frame

Rosters that consist of list of MPCs and their members were obtained from BARD and MPCs respectively. There is a separate list of borrowers who pay their debt on time and those who do not fulfill their obligation on time

### 4.3.3. Sample size

In the wereda there are fifteen MPCs of which only 10 of them provide input loan to their members. Then out of the ten MPCs which disbursed input loan six MPCs were selected randomly.

. To obtain the required information from the borrower’s equal number of defaulters and non-defaulters were selected from separate lists of each sample MPCs randomly.

In order to select representative sample for the study, a proportional number of respondents to the number of borrowers had taken from each MPCs. Then accordingly a total 130 respondents i.e. 65 non-defaulters and 65 defaulters were selected from the sample MPCs.

Table 3: Sample cooperatives and their sample respondents

Sample cooperatives	Number of borrowers			Sample respondents		
	DF	NDF	Total	DF	NDF	Total
Aynalem	43	99	142	4	5	9
Limate	48	266	314	10	10	20
Mahberweyni	26	199	225	7	7	14
Awet	37	230	267	9	8	17
FireQalsi	35	550	585	18	18	36
Firewyni	77	476	553	17	18	34
Total	266	1820	2086	65	65	130

Source; MPCs loan profile sheet as of December 2006

### 3.4 Data Source and Methods of data Collection

This study was designed to study the nature of loan repayment and to identify socio economic factors influencing input loan repayment performance members of MPCs and to determine their relative importance of the factors,

#### 3.4.1 Secondary Data

In order to answer the first objective and also supplement the primary data with an additional information, secondary data gathered from publications, quarterly, semi-annual and annual reports of MPCs, Wereda Cooperative desk ,regional cooperative promotion office, CBE and other relevant organizations. The secondary data provided a background to understand the general feature and nature of loan repayment members of MPCs in the study area. . The data that had been collected from the above mentioned organizations included the number of users in each year, the amount of credit taken by the MPCs; such as the amount of input credit supplied and the amount of credit distributed by MPCs and used by their members.

#### 3.4.2. Discussion

In order to supplement the primary and secondary data, discussion was made with board of directors, loan committee and hired staffs of the MPCs, Wereda and regional experts of the BARD, and local administrative bodies of the area.

#### 3.4.3 Primary Data

The main data used for this study were collected from a sample of formal credit borrowers' by interviewing, using structured interview schedule, which was prepared for the study. Information pertaining to respondents, socio-economic characteristics

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and institutional situations etc. were obtained directly through the interview, which was conducted at household level.

Appropriate training, including field practice, was given to the enumerators to develop their understanding regarding the objectives of the study, the content of the interview schedule, how to approach the respondents and conduct the interview. Pre-testing of the interview schedule was carried out for twenty respondents. Moreover, personal observations and informal discussions with borrowers were used to generate primary information.

### **3.5. Methods of data Analysis**

To analyze the collected data and information, both descriptive and non-linear statistical/econometric models were used.

#### **3.5.1 Descriptive Statistics**

In order to have clear understanding about the result of the study, it is important to be familiar with demographic and socio-economic characteristics of the sample households. To assess the nature of repayment of members of MPCs and repayment status of smallholders, descriptive statistics such as; percentages, mean and standard deviation were applied to primary data obtained from sample farmers and secondary data obtained from various organizations. Moreover, differences between defaulters and non-defaulters with respect to selected variables were tested using t-student statistic and  $\chi^2$  test.

#### **3.5.2. Non-linear models (logit model)**

The objective of the study is to analyze which, how, and how much the hypothesized regresses will affect the loan repayment performance of farmers in MPCs. The dependent variable in this case is a dummy variable or qualitative dichotomous variable which takes the value of 2 if the

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borrower repays the loan before due date (March 9, 2007) and 1, otherwise. The explanatory variables to be included in the study are of both types i.e. binary and continuous depending on the nature of the explanatory variables to be considered.

When one or more of the explanatory variables in a regression model are binary, we can represent them as dummy variables and proceed to analysis. However, the application of the linear regression model is more complex and/ or even not efficient when the dependent variable is binary. Binary choice models assume that individuals are faced with a choice between two alternatives and their choice depends on their behavior. Thus, one purpose of a qualitative choice model is to determine the probability that an individual with a given set of attributes will make one choice (Belay, 2002).

Regarding the dummy dependent variables, there are three different models that one can use: the linear probability model, the logit model and the probit model. The linear discriminate function is closely related to the linear probability model. The coefficients of the discriminate function are just proportional to those of the linear probability model. Thus, there is nothing new in linear discriminate analysis. The linear probability model has the drawback that the predicted values can be outside the permissible interval (0, 1) (Maddala, 2001).

In linear probability model, the dichotomous dependent variable is expressed as a linear function of the explanatory variables. According to Pindyck and Rubinfeld (1981) as cited by Tefera (2004), LPM has frequently been used in econometrics application, especially in the early years, because of its computational simplicity. Nevertheless, since the dependent variable is dummy variable, proceeding with the OLS estimation procedure will result in biased and inconsistent estimates and it has a serious defect in that the estimated probability values can lie outside the normal 0-1 interval.

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In multiple regressions, for example, we try to predict the average value of dependent variable for given values of the independent variables with the use of a regression line. In logit regression, however, our interest is to predict the probability that a particular characteristic is present. Hence, we do not predict whether the dependent variable equals 1 or 0: what we predict is the probability that  $y=1$  given the value of the independent variables (Mukherjee and et al., 1998).

Hence, we will confine our attention to logit and probit models because of the problems with the LPM. The LPM is plagued by several problems, such as non-normality of the error term, heteroscedasticity of error term, possibility of the estimated probability value lying outside the 0-1 range and the generally lower  $R^2$  values. Between logit and probit, which model is preferable? In most applications the models are quite similar, the main difference being that the logistic distribution has slightly fatter tails. That is to say, the conditional probability  $P_i$  approaches zero or one at a slower rate in logit than in probit (Gujarati, 2003). In the analysis of models with dummy variables, we assume the existence of a latent (unobserved) continuous variable, which is specified as the usual regression model. However, the latent variable can be observed only as a dichotomous variable (Maddala, 2001).

Due to the inadequacy of the linear probability model, non-linear specification may be more appropriate and the candidate for this will be an S-shaped curve bound in interval 0, 1 (Gujarati, 1999). The author suggested that, the S-shaped curves satisfying probability model as those represented by the cumulative logistic function (logit model) and cumulative normal distribution (probit model).

In principle, one should use logit if one assumes the categorical dependent variable reflects an underlying qualitative variables (hence logit uses the binomial distribution), and use probit if

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one assumes the dependent variable reflects an underlying quantitative variable (hence probit uses the cumulative normal distribution). In practice, these alternative assumptions rarely make a difference in the conclusions, which will be the same for both logit and probit under most circumstances. Prime among these circumstances is the fact that logit regression is better if there is a heavy concentration of cases in the tails of the distributions (Borooah et al, 2002).

Belay (2002) also pointed out that a logistic distribution (logit) has got advantages over others in the analysis of dichotomous outcome variable in that it is extremely flexible and used from mathematical point of view and results in a meaningful interpretation. The justification for using logit is its simplicity of calculation and its probability lies between 0 and 1. Moreover, its probability approaches zero at a slower rate as the value of explanatory variable gets smaller and smaller, and the probability approaches 1 at a slower and slower rate as the value of the explanatory variable gets larger and larger (Gujarati, 1999).

According to Maddala (2001), the usual logit model can be used with out any change even with unequal sampling rates. Logit is the natural logarithm of the odds ratio. The logit model is specified as follows:

$$P_i = E(Y = 1 / X_i) = \frac{1}{1 + e^{-z_i}}$$

Where:  $Z_i = B_0 + B_1X_1 + B_2X_2 + \dots + B_kX_k + u_i$

$X_i$  =  $i$ th explanatory variable

$B_i$  = Coefficient of explanatory variables to be estimated

$K$  = represents number of explanatory variables included in the model

If  $P_i$  is probability in favor of non-loan defaulter /loan repaid/ by the household, then  $(1-P_i)$  is the probability of loan defaulter / non-loan repaid by the household/.

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Therefore,  $\left(\frac{P_i}{1-P_i}\right) = \frac{1+e^{z_i}}{1+e^{-z_i}} = e^{z_i} = e^{(B_0+B_1X_1+\dots+B_kX_k)}$

$\left(\frac{P_i}{1-P_i}\right)$  is the odds-ratio that implies the ratio of the probability that an individual would choose an alternative  $P_i$  to the probability of the borrower would not choose it  $(1-P_i)$ .

Taking natural logarithms of...  $\left(\frac{P_i}{1-P_i}\right) = e^{z_i}$ . We have

$$\ln\left(\frac{P_i}{1-P_i}\right) = Z_i = B_0 + B_1X_1 + \dots + B_kX_k + u_i$$

This log-odds ratio is a linear function of the explanatory variables and we call it logit model. In this case our data is based on individual observations; we used the method of maximum likelihood function to estimate the model. To Gujarati (2003), in ML estimation procedure, our objective is to maximize the log linear function (LLF) that is to obtain the values of the unknown parameters.

### 3.5.3. Sensitivity analysis

In reality, not all the explanatory variables have the same level of impact on the loan repayment performance of the households. The relative importance of each significant quantitative explanatory variable in loan repayment decision can be measured by examining variable elasticity, defined as the percentage change in probability as percentage change in value of the variables. To compute the elasticity, one need to select a variable of interest, compute the associated  $P_i$ , and vary the  $X_i$  of interest by some amount and re-compute the  $P_i$  and then measure the rate of change as  $dP_i/dX_i$ , where  $dP_i$  - percentage change of  $P_i$  and  $dX_i$  - percentage change of  $X_i$ . The impact each explanatory variable on the probability of loan repayment is

calculated by keeping the continuous variables at their mean value and the dummy variables at their most frequent value (0 or 1).

### 3.5.4. Test for multi-collinearity

As stated above, the model adapted to this study is the logit model. In the course of application of the model, before fitting the selected important variables into the model, it is desirable to sort out problem of multi-collinearity among continuous variables and check the associations among discrete variables. The reason for this is that the existence of multi-collinearity will affect seriously the parameter estimation.

VIF was employed to test the existence of multi-collinearity problem among explanatory variables. VIF shows how the variance of an estimator is inflated by the presence of Multi-Collinearity (Gujarati, 1995). Each selected continuous explanatory variable ( $X_i$ ) is regressed on all the other continuous explanatory variables, the coefficients of determination ( $R^2$ ) being constructed in each case.  $R^2$  is the adjusted square of the multiple correlation coefficients that result when the explanatory variable is regressed against all other. As a rule of Thumb, value of VIF greater than 10 is assumed often as a signal for the existence of multi-collinearity problem in the model (Gujarati, 1995). VIF is computed as follow:

$$VIF = \frac{1}{1 - R^2}$$

Where VIF = Variance Inflation Factor and  $R^2$  = the adjusted R square

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:

Where, C= coefficient of contingency,  $\chi^2$  = Chi-square random variable and N=total sample size.

### 3.6 Definition of Variables

. Based on the literature, considering personal character of borrower and socio-economic factors that are expected to influence loan repayment of agricultural credit borrowers from MPCs, selected and pertinent points will be included in the interview schedule.

**Dependent variable:** The dependent variable for the logit analysis has a dichotomous nature representing the loan repayment of the household. The households who pays their loan before last date of repayment schedule (March 9 2007) are non-defaulters whereas these who didn't pay until March 9, 2007(February 30,1999EC) are categorized under defaulters. It is represented in the model by 2 for non-defaulters and 1 for defaulters.

**The major independent variables included in the analysis are: -**

**Age of household head (agehh):** - this variable was measured in years and it is a continuous variable represented by positive integer values. The households' age is hypothesized to have positive association with farmers' loan repayment. This is because as the age progress; farmers' acquire experience in the farming business and knowledge in credit use which in turn might help them to accumulate wealth over time which would enable borrowers to repay their debt in time than young borrowers.

**Family size of household (famlshh):** Refers to the number of people living in the same residence. The large the family members, the more the labor force available for production purpose, the less the probability to default. On the contrary, to this fact large family size may imply self-insufficiency because large households consume more than do the small households.

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Therefore, the coefficient of this variable may appear negative or positive sign in loan repayment of farmers (Zemen, 2005). But in this study the variable hypothesized to have positive influence on loan repayment members of MPCs..

**Level of education of the household head (educhh):** - This represents the level of formal schooling completed by the household head. Level of education is a continuous variable represented by positive integer values/number of years. Education is a social capital, which could impact positively on household ability to take good and well-informed production and nutritional decisions. Some scholars argued that education could be more important in loan repayment and the expected effect on loan repayment is positive (Babatunde *et al.*, 2007).

Education increases farmer's ability to get information, processed and use. For example, farmers with formal education exposure may seek information on prices more than the illiterate ones and consequently sell their produce at reasonable price (Bekele, *et al.*, 2005). Educated farmers are expected also to have more exposure to the external environment and accumulated knowledge through formal learning. Moreover, education may enable farmers to be aware of importance of input loan and hence may reduce willful default. Therefore, under *ceteris paribus* assumption, education is hypothesized to reduce the rate of default.

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

**Expenditures on celebration of social ceremonies by the household (Expcerm):** - This is a continuous variable, which accounts for the amount of money spent by the household to

finance various social ceremonies. A farm household is expected to spend more if he/she celebrated social ceremonies. These ceremonies have their own negative impacts on the repayment performance of borrowers and force the household to use the borrowed money Belay (2002),

**Experience of the household head in credit use (expcred):** - It is a continuous variable. It is the total number of years of experience that the household head has got with regard to borrowing and use of credits obtained from formal sources. Farmers who have experience in use of credits and who lived to the best expectations of the lenders would develop reputation, and they might have demonstrated their credit worthiness and become trustworthy. According to Belay (1998), more experienced farmers in credit use have developed confidence and reputation in loan acquisition and repayment. Therefore, it is hypothesized in the present study that experienced farmers may settle their debt in time or before due date as compared to the inexperienced farmers.

**Duration of cooperative membership of the household head (coopmsp):** - This represents the total number of years since the household head has become a member of that cooperative. It is a continuous variable. Since member's active participation is an important cooperative principle, member who have joined the cooperative earlier may have strong attachment to the institution and may contribute to and democratically control the capital of the cooperative society. They receive limited compensation if any, on capital contributed as a condition of membership. So it is fair to hypothesize that senior members have better sense of belongingness and show loyalty to their cooperative than the fresh ones.

Moreover, membership of cooperatives is a vehicle for development in the rural areas. Access to cooperative loans depends on membership of the society and it is expected that access to

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credit should increase household's income generation. Hence, the expected effect of senior membership of a society on agricultural loan repayment is positive (Sholotan, *et al.*, 2007 as cited in G/hiwot). Therefore, it is expected in this study that senior members of the cooperatives may pay back their debt on time as compared to their fresh fellow members.

### **Supervision of credit beneficiaries by loan committee of MPCS (loancsp)**

It is not enough to advance agricultural credit to farmers, but the lending institution (cooperatives) should ensure its efficient utilization through effective supervision. Such supervision prevents the misuse of credit for non productive purposes and hence facilitates regular loan repayment. Utilization of credit for the intended purpose in turn ensures increase in production and income and ultimately the agricultural development.

This variable is a dummy variable in the study which will take a value 2 if the household head was supervised by loan committee of MPCs and 1 otherwise. Households who supervised by the loan committee are expected to repay their loan in time than the household heads not supervised.

**Crop income of the household in Birr (cropinco):-** It is a continuous variable. Crop income is defined as the total income generated from crop production activities measured in birr during a particular year. The income generated from these activities may help farmers to adopt new technologies. This is because; relatively the better-off farmers tend to take risks than the poor ones. Moreover, this income is the immediate source of working capital for smallholder farmers to finance their day-to-day activities. Hence, higher revenue may result in the better repayment capacity of the borrower. Therefore, this variable is expected to have positive contribution to loan repayment members of MPCs..

**Total livestock ownership (numlivst).** This variable represents the number of livestock owned by smallholders in the study area. Livestock are the farmers' important source of income, means of transportation, food and draught power for crop cultivation in the study area. Wolday (2003) stated that livestock production is extremely important as a source of draught power, food and investment to highland farmers. Moreover, livestock in the rural area constitutes accumulation of wealth, security against emergencies, dowry and used as cultural privilege. They can also be easily transferred in to cash when demand arises. This variable was found to influence significantly and positively the amount and the timely repayment of loans (Belay, 1998). Hinging on the multi functionality of livestock sub-system, it is logical to expect that large number of livestock unit increases the probability that one does not default. Therefore, ownership of more livestock by the smallholders is expected to be associated with the capacity to repay his debt in time than ownership of less livestock unit.

**Amount input credit borrowed by the household (credamo):-** This refers to the amount of agricultural input credit (for fertilizer seed & chemicals) that the household received in the 2006/7 production year. When the supply of agricultural input credit is enough to fulfill its demand, then farmers may be able to use the recommended rate of farm input. Therefore, farmers who acquire the amount demanded can able to produce enough products, and then they can easily repay their debt on time compared to those who do not get the required amount of input. According to Bekele (2005), the model output revealed that increased input loan amount enables the borrowers to generate more income and this leads them to repay their debt in time. Therefore, this variable is expected to have a positive relation with the dependent variable, (Zemen 2005).

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**Amount of credit borrowed by the household from other sources in Birr (othecred):** - The agricultural input credit borrower may borrow additional credit from different sources. The sources may be formal or informal lenders. According to Zeller (1998) most of the formal loans are used for production purpose, informal loans are frequently used for stabilization of consumption purpose. If farmers get these additional credits, they may agree to repay after harvest. So due to several reason like social pressure, amount of interest rate and other reason the borrower may be forced to repay first such credits. On the contrary, the availability of other source of loans may reduce role of loan diversion and may built production capacity of the farmer (Zemen, 2005). However the hypothesis of this study agreed with the second Idea, therefore the coefficient of this variable has a positive impact on loan repayment of borrowers. It is also continuous variable.

**Off-farm and non-farm income (offnfin):** Was defined as the amount of income (in Birr) generated by the household from activities out side his crop and livestock production. These include petty trading, charcoal selling, firewood selling, farming activities out side his farm and others. These additional sources of income would encourage the borrowers to settle their debt even during hard times.. Therefore, off-farm income, as a variable is hypothesized to have positive impact on the loan repayment.

**Natural calamities (natucalam):** natural calamities such as drought, pest and disease infestation of crop and animal. It is dummy variable taking a value of 2 if the natural calamities are occurs and 1 otherwise. It is hypothesized natural calamities will be negative related to loan repayment .This is because natural calamities reduce farm income of farmers by affecting the productivity of agricultural production.

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**Access to training (actrain):** It is a discrete variable, which takes a value of “2” if yes and “1”, otherwise. Training would increase the awareness level of farmers and exposure to new ideas, information, activities, opportunities, working environment etc. Usually training programs which focus on credit may help borrowers to use the credit fund efficiently and to identify different source of income. Moreover the training may also helps borrowers to understand their rights and obligation to use credit and to repay in time. Therefore, access to training would have positive impact on the decision of farmers to repay their loan..

**Appropriateness of the repayment period (apptime))**

This variable refers whether the existing time schedule for loan repayment of MPCs (March 9) is appropriate time for farmers to repay their loan or not. It is a dummy variable taking a value 2, if it is appropriate and 1 otherwise. The coefficient of the variable may appear with positive or negative sign in loan repayment. . In one hand as the due date (March 9) for loan repayment is more approaches to time of harvesting, it may help farmers to repay their loan on time before they used their product for consumption or other purpose. On the other hand the variable may also increase default; this is because during harvesting time market price for farm product special for grain is relatively low then farmers may need extra time to repay their loan until market price start to rise. However the hypothesis of this study agreed with the second idea.

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# CHAPTER IV: RESULTS AND DISCUSSION

## **4.1 Loan repayment nature of members MCPs in the study area**

This section presents results of loan repayment nature of members of the multi-purpose cooperatives in the study area. The results are based on secondary data obtained from publication, documents and annual reports of MPCs, WBOARD, regional bureau of agriculture and rural development, commercial bank Ethiopia and other institutions in the wereda. Descriptive statistics like percentage and also graphic representation are used to describe the result.

### **4.1.1. Type of credit and nature of repayment**

As it is known the source of fund for input credit for cooperatives are WBARD (for improved seeds) and commercial bank (for fertilizer and chemicals) though the guaranty of regional government. This loan is short term in nature (its repayment period less than 1 Year). Where as the credit funds obtained from Wukro Kidist Mariam, World Vision Ethiopia ,FSP and WBARD was medium term in nature(from 1 up to 5 years) and given to farmers for different agricultural packages.

As Appendix 9 and Appendix 2 depicts that, there is a difference in loan repayment percentage between input credit and other medium term loan disbursed by cooperatives for different package. From the total amount of input credit (Birr 412,560) disbursed in 2006/7, 97.8 % ( Birr 403,585.6) were repaid in the year whereas from the total birr 474136.3 which out performing medium term loan in 2006/7 production year only 46.6 percent ( Birr 220,963.78) was collected from farmers in the year. In order to verify the reason for better repayment rate input credit than medium term credit discussion where made with board directors, loan committee of MPCs,

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hired staffs and wereda experts. Then most of them pointed out that, the main reasons for low repayment of these medium term loans in comparative with input loan are

1. Low attention was given by loan committee and management bodies of MPCs to repay the loan as the loan was free of interest to cooperatives.
2. Low attention of farmers to repay the loan as the loan was free of penalty unlike the input loan
3. Farmers also give priority to repay input loan first than the medium term loan. This is because if farmers did not settle their input loan timely they will not get input credit for next year.

#### **4.1.2 Repayment pattern borrowers in the study area**

In order to identify the time repayment of borrowers, a five year data were collected from cooperative files and documents. Then accordingly the number of borrowers in each year and their repayment pattern were illustrated in Table 4,.Accordingly majority of the members had repaid their loan from December up to February month. Even while there was a variation from year to year

As it is indicated in Table 1, out of 13086 borrowers 13033 were repaid their loan as follows, 17.16% borrowers repay their loan up to end of November, 62.24% from December up to end of February and the rest 20.6% were defaulters who pay their debt after end of February. Moreover out of 10,558 non-defaulters 78.6 % of them repaid their loan from December up to end of February and February is the pick period for repayment (Figure IV). So from this it is possible to understand the loan repayment nature of the borrowers was more related with harvesting time and end of the repayment period. According the information obtained though discussion, more borrowers explained as they are not happy with the time schedule MPCs for

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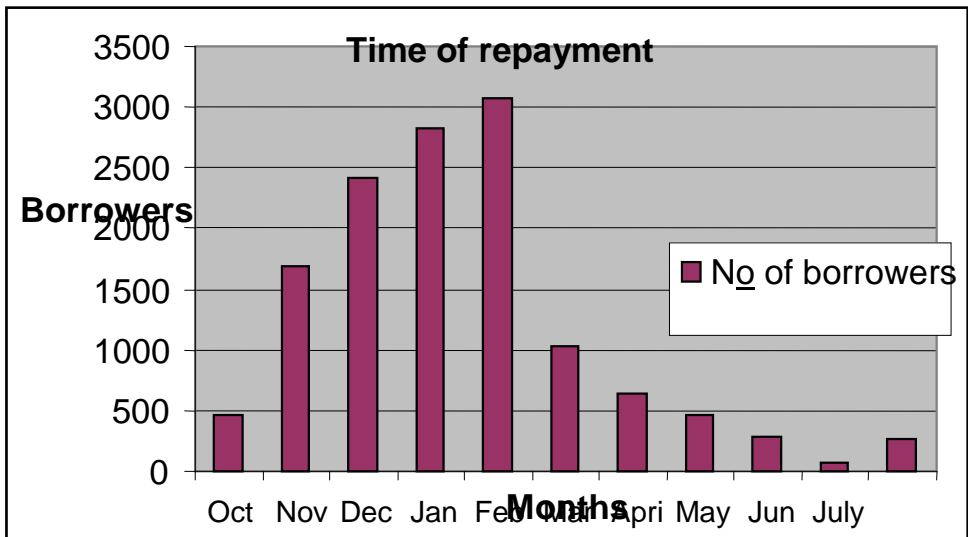
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loan repayment. They explained also that, the earliness of this repayment period was a bottleneck to them to sale their crop immediately after peak harvesting time with lower price.

**Table4 ; time of loan repayment of borrowers**

Production year	August & Sept	October	November	December	January	February	March	April	May	June	July	August and after
2002	14	35	133	476	657	716	303	243	215	132	48	33
2003	34	119	394	735	794	918	258	182	126	74	14	89
2004	2	38	319	310	271	262	119	90	32	28	0	23
2005	22	136	472	419	496	477	98	47	51	34	2	81
2006	35	134	370	473	602	695	256	73	39	16	7	32
Total	107	462	1688	2413	2820	3068	1034	635	463	284	71	258

Source; from MPCs documents



**Figure IV; Time of repayment of borrowers**

**4.1.3. Borrowers perception on interest rate of MPCS**

The amount of interest rate is one factor that determines ability of farmers to repay the loan. The rate of interest charged by MPCs to farmers varies according the type of loan. The rate of interest for input loan is 12.5%. Where as rate of interest for medium term loans obtained from

Wukro Kidist Mariam, World Vision Ethiopia, FSP and WBARD was 9% annually. This is because the medium term loan obtained from NGOS and WBARD is free of interest for cooperatives but cooperatives pay 7.5% interest rate to CBE for short tem input loan.

Even while the interest rate of input credit is higher than the medium term loan which extend for agricultural package, cooperatives repayment performance is higher in input credit than the medium term loan as the percentage difference shown in Table 5. This indicates the interest rate is not more determinant factor for loan repayment in the study area. Based on suggestion of management bodies of cooperative and wereda experts, the reason is, farmers didn't perceive the difference as more economical sound to them this is because

1. The amount of loan for input loan is too small compare to the amount of loan for the medium term loan
2. As the loan was short term loan farmers pay an interest for months less than one year then the amount interest paid for the input loan is too small compared with medium term loans.
3. As farm inputs are critically important for farm production, farmers' priory demeaned input loan compare to the medium term loan, and then the attention given by farmers to interest rate difference between these two loans is low. Similar result was obtained from the survey result as it is indicate in Table 24 page No 95 Table 5 interest rate and rate of repayment

description	Interest rate	Total Loan borrowed	Amount to repay in 2006/7	Amount repaid in 2006/7	% repaid
Input loan	12.5%	-	412560	403585.6	98
Credit for Agricultural package	9%	1,258,894	474136.3	220963.8	46.6

Source; from documents of MPCs

#### 4.1.4 Progress in amount of loan borrowed and repaid by members of MPCs

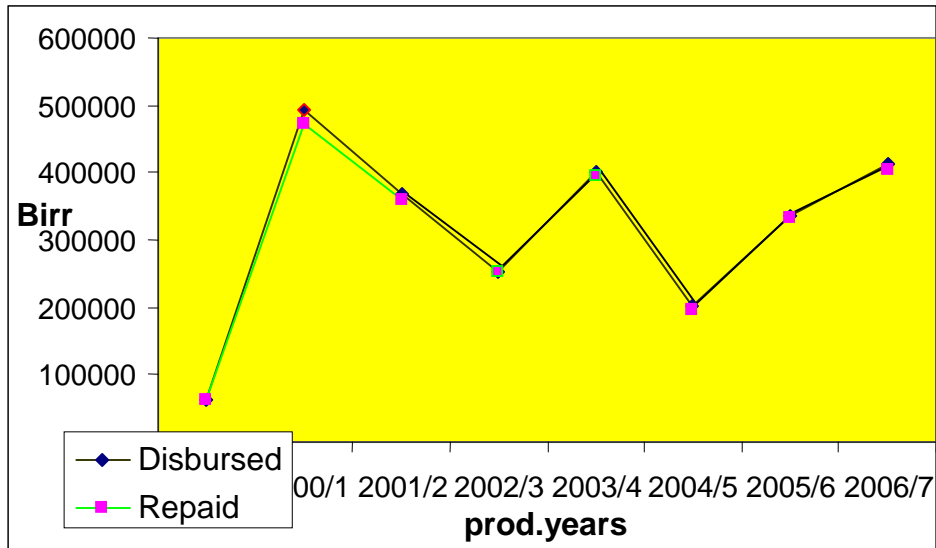
After the reform input loan distribution to members of MPCs in the wereda was first started in 1999/0 production year by one cooperative. In year 2006 the number of participant MPCs had reach ten as it was indicated in Table 6,.Similarly the amount of loan borrowed by members of MPCs had grown from Birr 6158.7 to Birr 412560 in the same production year. But as it was indicated on the Figure V, the trend in increase was fluctuates from year to year. As per the information obtained though discussion from different bodies, the main reason for the variation was inconsistence input utilization by borrowers due to rain fall problem in the area.

Concerning repayment, out of the total borrowed loan from 1999/0-2006/7 production year 97.9% was repaid by borrowers up to end 2006/7 production year. This is smaller compare to the percentage of input loan collected from borrowers by MPCs in the region which is 99 %( Birr 178,245,416.7 out of Birr 180,115,972.7)

**Table 6; Amount birr borrowed and repaid by members from 1999/0-2006/7**

description	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	Total
No MPCs	1	9	9	8	7	6	8	10	
Borrowed Loan	61587.67	492299.4	368447.1	253776.7	400755.4	201224.	334569	412560	2525220
Repaid	61587.67	472184.4	360826.1	251477.2	395293.9	196303	.331379	403585.	2472634
%repaid	100	95.9	97.9	99.1	98.6	97.6	99	97.8	97.9

Source; from documents of MPCs



Figure; Growth trend in the amount of borrowed and repaid loan

## **4.2 Factors affecting loan repayment performance of farmers**

This section presents the results from the descriptive and econometric analyses. The descriptive analysis made use of tools such as mean, percentage, standard deviation and frequency distribution. In addition, the t- and Chi-square statistics were employed to compare defaulters and non-defaulters group with respect to some explanatory variables. Econometric analysis was carried out to identify the most important factors that affect the loan repayment performance and to measure the relative importance of significant explanatory variables on loan repayment.

### **4.2.1 Descriptive Statistics Results**

The descriptive statistics was run to observe the socio-economic and institutional characteristics of the respondents such as: age, family size, level of education, on-farm and non-farm income, livestock ownership, oxen ownership, land holding and other related variables.

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## Demographic and socio-economic characteristic of the household

### 4.2.1.1 Age of the sample household head

Age of the household is one of the factors which affect family labor of household in farming community. The average age of the household heads is found to be 42.7 years (44.08 years for non-defaulter and 41.66 years for defaulters) with a standard deviation of 11.08. The minimum and maximum age of the sample household heads were 21 years and 72 years, respectively.

As Table 7 depicts that there is positive significant difference between the non-defaulters and defaulter groups at less than 5 percent significant level in various age groups. The possible expiation might be elderly heads of household may accumulate larger wealth in their life time than younger ones

**Table 7: Age distribution of sample household heads**

Age (in years)	Non-defaulter		Defaulter		$\chi^2$ -value	Total	
	No	%	No	%		No	%
Age group 19-34	13	20	25	39	6.123**	38	29
Age group 35-50	36	55	31	48		67	52
Age group 51-76	16	25	9	13		25	19
Overall mean	44.08		41.66			42.7	
Standard deviation	11.20		10.90			11.08	
Maximum	72		70			72	
Minimum	23		21			21	

Source: Computed from survey data

\*\*Significant at 5 per cent significance level

### 4.2.1.2. Educational status of the sample households

Education is a social capital which has a positive impact on household ability to understand and utilize new technological information and also to know their rights and obligation.

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It can help them to understand their rights to borrow agricultural input credit and also their obligation to repay their debt on time. But lack of education and poor awareness level thereof may be a bottleneck to manage the input credit and repay on the stated repayment date.

The survey result indicated that out of the 130 sample borrowers' 51 respondents are illiterate, 4 can read and write, .40 respondents from grade 1 up to 4, 29 from grade 4 up to 8 and the rest 6 are at high school level. This result reveals that the majority of respondents are in illiterate group and this calls for the necessity of basic education for rural people in the area.

Of the total sample respondents, 29.2 per cent of non-defaulters and 49.2 per cent of defaulters illiterate, and 70.8 per cent of non-defaulters and 50.8 per cent of defaulters have basic education knowledge and can read write. The  $\chi^2$ -values indicate that there are statistically significant differences between the non-defaulter and defaulter groups at 5 % significant level.

**Table 8: Educational level of sample farmers**

Description	Non-defaulter		Defaulter		Total	
	No	%	No	%	No	%
Illiterate	19	29.2	32	49.2	51	39.2
Can read and write	2	3.1	2	3.1	4	3.1
Grade 1- grade 4	19	29.2	21	32.3	40	30.8
Grade 5-grade 8	20	30.8	9	13.8	29	22.3
Grade 9-grade 12	5	7.7	1	1.6	6	4.6
Overall mean	3.39		2.200		2.840	
$\chi^2$ -value	9.25**					

Source: Computed from survey data

- \*\*, significant at 5 per cent significance level, respectively

#### 4.2.1.3. Family size of the sample households

According Table 9, total family size of the respondents is 743 with average family size of 5.71(5.53 persons for defaulter and 5.89 persons non- defaulter) persons,. This was higher the national average 5 persons (CSA, 2006). The largest family size was 13 and the smallest was 1. Out of 130 borrowers, 108 were married (104 men borrowers 4 Female borrower), 20 widowed (7 men and 13 women) and the rest 2 were single men.

Table 9 shows that 21 (32.3 per cent) of the non-defaulter respondents and 30 (46.1 per cent) of the defaulter respondents have the family size that ranges from 1-4 persons. Moreover, 38 (58.5 per cent) of non-defaulter respondents and 23 (35.4 per cent) of the defaulter respondents have a family size of 5-8 persons. Whereas, the remaining 6 (9.2 per cent) of the non-defaulter respondents and 12 (18.51 per cent) of the defaulter respondents have a family size of 9-13 persons. Therefore, computed  $\chi^2$ -value reveals that there is a statistically significant difference between the non-defaulter and defaulter groups 5 per cent level of significance.

Table 9: Family size of sample households

Description	Non-defaulter		Defaulter		Total	
	No	%	No	%	No	%
1-4 persons	21	32.3	30	46.1	51	39.2
5-8 persons	38	58.5	23	35.4	61	46.9
9-13 persons	6	9.2	12	18.5	18	13.9
$\chi^2$ -value			7.277**			
Overall mean	5.89		5.53		5.71	
Maximum	11		13		13	
Minimum	2		1		1	
Total family size	383		360		743	

Source: Computed from survey data

\*\*, significant at 5 per cent level of significance,

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#### **4.2.1.4. On-farm and non-farm income of sample households**

Farm (crop and livestock) and non-farm activities were important income sources for the sampled borrowers. As shown in Table 10, all the sample households earn their annual income from sales of crop and livestock. Sales of crops, live animals and animal products are the major sources of income of the sample households and plays substantial role in generating income of the smallholders in the study area. The average revenue earned by a borrower from all crops (barley, teff, wheat, sorghum and vegetables) and livestock in 2006/7 was 2,284.3 and 6,018.64 Birr per annum respectively. On an average, non-defaulters reaped 2,418.6 Birr whereas defaulters reaped Birr 2,150.05 from sale of crops.

Concerning livestock income Table10 indicates also as there is a statistically significant difference between the non-defaulter and defaulter groups in the amount of livestock income (i.e., income from live animals and animal products) earned at less 1 per cent significance level. Moreover, the statistical result shows that there is also significant difference at less than 1 percent between the two groups with regard to total farm income of the sample smallholders.

The other sources of income for the borrowers of the study area were income from off-farm and non-farm activities. The major non-farm income generating activities practiced in the area were selling labor (daily laborers), petty trading (selling salt, firewood, local drink and other activities) and different farming activities outside his farm. The income generated from these off-farm and non-farm activities varied from one borrower to another with a minimum value of non-farm income generating activity being 0 to a maximum value of Birr 14,400 per annum. Non-defaulters earned on the average higher amount of cash from non-farm activities (Birr 2512.94) as compared to the defaulters who earned on the average 1,476.31 Birr. Therefore, the

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mean difference of the two groups in earning non-farm income is found to be statistically significant at 10 per cent level of significance.

**Table 10: Varying income sources of the sample farmers**

Descriptions	Non-defaulter		Defaulter		t-value	Total	
	Mean	SD	Mean	SD		Mean	SD
From sale of crop	2418.60	2332.10	2150.05	2271.59	-0.665*	2284.3	2297.06
From sale of livestock	7230.78	4824.95	4806.49	3480.75	3.285***	6018.64	4363.64
Total farm income	9649.39	6231.87	6707.33	4212.18	3.153***	8178.37	5500.066
From non-farm activity	2512.94	2937.27	1849.68	1476.31	-1.769*	2181.3	2154.71
Total farm & non-farm	12162.23	7665.24	8806.22	4327.77	7.939***	10484.27	6307.05

Source: Computed from survey data

\* And \*\*\*, significant at 1 and 10 per cent level of significance

#### **4.2.1.5 Land holding size**

Table 11 show that the average total land size by a household was 1.034, with 0.06 ha being the minimum and 3 ha the maximum land holding. This includes land owned by the household, land shared and rented from other farmers. Out of the total 130 respondents 106 (56 non defaulters and 50 defaulters) have their own land and 24 of them are land less (9 non defaulters and 15 defaulters). The average land holding size was 0.639 ha, that is with in rang of average land holding size of the region (0.1 ha. to 1 ha, CACC, 2003).

It can be observed from the table that, the total land size by non-defaulters was larger than defaulters'. This is 1.159 hectares for non-defaulters and 0.909 hectare for defaulters. Where as a typical defaulter farmer cultivated more rented-in and shared-in crop land (0.518ha) than non-defaulter (0.352ha). The land shared -out to other farmers by defaulters and non defaulters was 0.039 and 0.025 hectares respectively .Differences in rented, shared-in and shared-out land between non-defaulters and defaulters groups statically were tested and found insignificant.

Whereas difference in total land size and owned land found to be significant at 5 and 1 percent level of significant. This implies cultivating and securing more land contribute to increase credit repayment of the house hold.

Table 11: Land holdings of the households (ha)

Descriptions	Non-defaulter		Defaulter		t-value	Total	
	Mean	SD	Mean	SD		Mean	SD
Total land size	1.159	0.613	0.909	0.477	-2.595**	1.0337	0.561
Owned land	0.757	0.569	0.522	0.427	-2.661***	0.639	0.514
Rented-in land	0.008	0.062	0.0154	0.087	-1.000	0.012	0.075
Share cropped land from others	0.344	0.434	0.327	0.431	-0.228	0.336	0.431
Share cropped land to others	0.025	0.102	0.039	0.218	0.452	0.032	0.169
Maximum (total land size)	3		2			.3	
Minimum (total land size)	0.38		0.06			0.06	

Source: Computed from survey data

\*\* And \*\*\* significant at 5 and 1 per cent level of significance, respectively.

#### 4.2.1.6. Expenditures on social ceremonies

Social ceremonies such as different holidays, wedding, ‘Religion day’ and funeral of family members were celebrated in the study area. According the survey result, 77 respondents (59.2 percent) have reported that they had celebrated one or more of these occasional ceremonies and 53 respondents (40.8 per cent) stated that they had not celebrated any ceremonies.

The average amount of money spent by non-defaulter group was Birr 425.72 with standard deviation of 604.85. The minimum and maximum expenditure for the group was Birr 0 and 4000 respectively. On the other hand the average amount of money spent by defaulter group was Birr 930.27 with standard deviation of 1536.56. While it’s maximum and minimum expenditure for the group was Birr 0 and 8691 Birr respectively.

These social ceremonies have their own negative impact on the loan repayment performance of borrowers and force the household to use the borrowed money for consumption. However, as indicated in Table 12, there is no statistically significant difference between non-defaulter and defaulter groups regarding the number of members celebrate social ceremony.

**Table 12: Amount of money spent to celebrate holidays and social occasions**

Description	Non-defaulter		Defaulter		$\chi^2$ -value	Total	
	No	%	No	%		No	%
Not celebrated	24	18.5	29	22.3	0.796	53	40.8
Yes celebrated	41	31.5	36	27.7		77	59.2
Mean of Expenditure	425.75		930.27			481.03	
Maximum	4000		8691			8691	
Minimum	0		0			0	
Standard deviation	604.85		1536.56			1190.38	

Source: Computed from survey data

#### 4.2.1.7. Livestock ownership of sample households

Next to land, livestock is the most important asset for rural households in Ethiopia. It is used as a source of food, draft power, income and energy. Moreover, livestock is an indicator of wealth and prestige in rural community. The types of livestock reared by the households are cattle (excluded oxen), sheep and goats (small ruminants), pack animals (equines), poultry and some of the respondents also have honeybee. From the non-defaulter side, a typical household maintains 1.688 (TLU) cattle (excluded oxen), 0.608 (TLU) small ruminant and 0.592 (TLU) pack animal and about 0.063 (TLU) chickens and 0.43 honeybee whereas the defaulter group possesses relatively less Tropical Livestock Unit than non-defaulter group such as 1.263 cattle (TLU), 0.3 (TLU) small ruminant and 0.45 (TLU) pack animal and about 0.064 (TLU)

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chickens and 0.138 honeybee on average (Table 13). The minimum and maximum number of livestock in Tropical Livestock Unit was 0 and 16 from all types respectively.

Interestingly, statistically significant differences are found between groups in the number of donkeys, small ruminants, honey bees, poultry and total livestock size expressed in Tropical Livestock Unit, at 1 per cent, and 10 per cent significance levels, respectively. So these variables are believed to differentiate the two groups as this difference might help the non-defaulters to repay their debt on due date. However, there were no significant differences between the two groups in their holding of other livestock classes.

**Table 13 :** Livestock ownership of the sample households

Description	Non-defaulter		Defaulter		t-value	Total	
	Mean	SD	Mean	SD		Mean	SD
Cattle in TLU	1.688	1.475	1.263	1.206	4.043*	1.475	1.359
Donkeys(TLU)	0.592	0.498	0.450	0.483	1.486*	0.519	0.494
Goat and sheep(TLU)	0.608	1.180	0.300	0.570	3.165*	0.454	0.938
Poultry(TLU)	0.063	0.059	0.064	0.081	0.997	0.064	0.071
Honey bee (number)	0.430	1.103	0.138	0.583	12.11*	0.285.	0.891
Livestock (TLU) (including oxen)	4.330	2.687	2.980	2.065	1.587***	3.650	2.482
Maximum	16		9			16	
Minimum	0		0			0	

Source: Computed from survey data

\* and \*\*\* are significant at 10, and 1 per cent significance level, respectively.



#### 4.2.1.8 Oxen ownership of sample households

Oxen are the main means of draught power in the study area. As oxen are important input in crop production, owning oxen facilitates the timely cultivation of farmland and encourages timely repayment of credit loan. In addition number of oxen shows the status of wealth in the farming community. Out of the total 130 respondents, 24 farmers (18.5% ) did not own any ox, 68 farmers (52.30%) own single ox, 30 farmers (23.1%) own pair oxen and remaining 8 farmers (6.2%) of the respondents own more than a pair of oxen. On average the number of oxen for non-defaulters is 1.41, which is more than defaulters 0.97(Table 12). Moreover, the two groups have shown significant difference at less than one percent level of significant. Therefore, the result showed that oxen ownership is crucial for the farming operation and it is one of the variables that differentiate the two groups.

#### 14: Oxen ownership of the sample households

Number of oxen	Non-defaulter		Defaulter		t-value	Total	
	No	%	No	%		No	%
0	6	9.2	18	27.7	1.693***	24	18.5
1	32	49.2	36	55.4		68	52.3
2	22	33.9	8	12.3		30	23.1
3	4	6.2	2	3.1		6	4.6
4	1	1.5	0	0		1	0.8
5	0	0	1	1.5		1	0.8
Overall mean	1.41		0.97				1.19

Source: Computed from survey data

\*\*\*, significant at 1 per cent level of significance

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#### 4.2.1.9. Sources of credit of sample households

Cooperatives, Dede-bit Credit and saving, Food security Program, Bureau of Agriculture are the main source of Credit in the area. There are also other non governmental organizations like Wukro Kidist Mariam and World Vision Ethiopia which provide agricultural loan to farmers through cooperatives. However, to finance/purchase/ agricultural inputs, member farmers often obtain loans from MPC.

According to the survey result beside MPC, credit from other sources such as Dede-bit, Food Security Programme and from money lenders was used for petty trading, purchase of oxen, consumption needs etc. Of the total 130 sample farmers, 90 (69.2 per cent) have reported that they had borrowed additional loan from Dede-bit Credit and Saving Microfinance Institution, Food Security Programme ,and Bureau of Agriculture.

The descriptive statistics result, indicates that, the non-defaulter and defaulter groups have no more difference in opportunities to borrow from the sources of credit accessible in the study area. Therefore, as Table 15 depicts that there is no significant difference between the two groups.

Regarding priority in loan repayment, 48.8 percent of respondents (31 persons from non-defaulters and 35 persons from defaulters) respond that, they provide priority to repay loan of DECSI. Out of these respondents 39 of them specify that the main reason for their priority is due to group pressure and 26 respond the main reason for their priority was because of high interest rate and penalty fee levied on the loan to enforce early repayment. Where as 40.5 %(52 persons) of the respondent respond that as they provide priority to cooperative loan .similarly out of them 28 persons (21.5%) reported that the main reason for their priority was to get credit input next year from cooperative, 14 persons (10.8%) due to high interest rate and penalty fee

and 10 persons (8%) because of the customary relation ship and owner ship responsibility to their cooperatives.

The rest 10.7% of the respondents also respond as they give priority to repay loan for FSP, BOA and loan of other people.

**Table 15 Sources of credit in the study area**

Sources of credit	Non-defaulter		Defaulter		$\chi^2$ -value	Total	
	No	%	No	%		No	%
Cooperative	20	15.4	20	15.4	1.736	40	30.8
Cooperative and DECS	5	3.8	8	6.2		13	10
Cooperative and FSP	20	15.4	18	13.8		38	29.4
Coop, BOA and FSP	2	1.5	4	3.1		6	4.6
Cooperative, DECS, FSP& other people	18	13.8	15	11.5		33	25.4
Total	65		65				130

Source: Computed from survey date

**Table 16: Reason for priority to repay loan**

Source of credit	Reason for priority	Non – defaulters		Defaulter		Total	
		N <sub>0</sub>	%	N <sub>0</sub>	%	N <sub>0</sub>	%
DESI	Group pressure	19	29.2	20	31	39	29
	High interest and penalty	11	16.9	15	23.1	26	19
	Customary relation ship & ownership responsibility	1	1.5	0	0	1	0.8
	To get input loan next year	-	-	-	-	-	-
Cooperative	Group pressure	-	-	-	-	-	-
	High interest and penalty	7	10.8	7	10.8	14	10.8
	Customary relation ship & ownership responsibility	4	6.2	6	9.2	10	8
	To get input loan next year	19	29.2	9	13.9	28	21.5
FSP %BOA	Group pressure	-	-	-	-	-	-
	High interest	2	3.1	3	3.1	5	3.9
	To get input loan next year	-	-	-	-	-	-
Other people	High interest	2	3.1	5	7.7	7	5.4

**4.2.1.10 Amount of inputs used by the sample households**

Farmers in the study area used inputs such as chemical fertilizers, improved seeds herbicides and pesticides for production but the amount of inputs and the rate of application were not uniform for all farmers. According the survey result most farmers respond that as they do not share part of their input (recommended rate) to their relatives and other people. But most farmers did not follow the recommended rate of application as they try to distribute (apply) part of the input to other additional farm land outside the recommended one.

The type of input supplied by cooperatives to farmers in the study area are fertilizers namely DAP and UREA and improved seeds. These inputs accessed to farmers either on cash or credit terms. The loans for such inputs are short term in nature and are expected to be paid back in the follow crop season.

The amount of input used by non-defaulter and defaulter groups is summarized in Table 17. As can be observed from this Table, on an average, the sample households used 0.55 quintal of fertilizer and 0.34 quintal of seed. When we see the average of total input usage of the non-defaulter is 1.00 quintal with 0.32 standard deviation, whereas the average of total input usage of the defaulter is 0.76 quintal with 0.30 standard deviation which is less than the amount of non-defaulters' total input usage. This indicates that, the defaulter group used less input than non-defaulter group. This could be one reason for their defaulting as it has an impact on their production.

Table 17 depicts that there are statistically significant differences between non-defaulter and defaulter groups with regard fertilizer and the overall input usage of members at less than 1 per cent probability level. However, there are no statistically significant mean differences between the two groups with regard to improved seeds usage at any level of significance.

**Table 17: Proportion of the Sample Households Using Commercial Inputs**

Descriptions	Non-defaulter		Defaulter		t-value	Total	
	Mean	SD	Mean	SD		Mean	SD
Seed (in quintal)	0.38	0.36	0.29	0.33	1.021	0.34	0.34
Fertilizer (in quintal)	0.62	0.33	0.47	0.34	0.631***	0.55	0.34
Total	1	0.32	0.76	0.30	0.033***	0.88	0.33

Source: Computed from survey data

\*\*\* Significant at 1 per cent level of significance

#### **5.1.1.11. Duration of cooperative membership of the household**

For the cooperative to be successful, its members, as user-owners of the cooperative must be active through their patronage, capital investment and participation in decision making. Cooperatives should also efficient to provide services to their members and their families. Moreover they have also social responsibility to improve the quality of life in its community. Unlike a private enterprise, whose basis is its capital investment, the cooperative is based on its membership. The fully paid-up member is the one who has paid the value of only one share of the equity capital of the cooperative. Moreover, members leaving the cooperative have the right to be reimbursed by the cooperative to the real value of one share.

Loans and borrowings from any source, whether government or private, including those from the members themselves, in the form of savings deposits, can be provided based on the member's application and financial capability of the cooperative to cover the demand of their members. Moreover, cooperatives provide education and training for their members, elected representatives, managers, and employees so they can contribute effectively to the development of their cooperatives. They inform the general public, particularly young people and opinion leaders, about the nature and benefits of cooperation.

Unlike other businesses, any savings generated by the cooperative are returned to member-owners, proportionate to the amount of service purchased from the co-operative during the year. Due to these and other benefits, length of membership of a cooperative has direct impact on the loan repayment performance. As we can see from Table 18, almost 81.6 per cent of the sample households became member of their cooperatives between 1997 and 2006.

In the study area, cooperative movement started in 1979 and since they served their members by giving agricultural credit and other services. The minimum and maximum membership of

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the respondents varied from 1 year to 27 years. Moreover, the maximum membership of the non-defaulter and defaulter groups is 21 and 27 years, respectively. However, the Average number of years of cooperative membership is 7.81 years with standard deviation of 4.31.

As tables 18 shown, that, the average years of duration as membership of MPCs for non-defaulters was 8.66 years with standard deviation of 4.31 and the maximum and minimum years of membership duration were also 1 and 21 years. Where as the average years of duration as membership for defaulters was 6.97 years with the standard deviation of 3.32. The maximum and minimum years of experience where also 1 and 27 years. Statically there was a significant difference between the two groups in average year's duration as membership of MPCs at less than 5% significance level.

Table 18: Years of experience of sample households as members of cooperatives

Years of membership	Non-defaulter		Defaulter		Total	
	No	%	No	%	No	%
1979-1986	5	7.7	7	10.8	12	9.2
1987-1996	6	9.2	6	9.2	12	9.2
1997-2001	23	35.4	38	58.5	71	54.7
2002-2006	21	32.3	14	21.5	35	26.9
Overall mean	8.66		6.97		7.81	
Standard deviation	4.31		4.32		4.37	
t-value	-2.237**					
Maximum	21		27		27	
Minimum	1		1		1	

Source: Computed from survey data

\*\*, significant at less than 5 per cent level of significance

#### 5.1.1.12. Experience of credit usage of sample households in year

Farmers may develop good experience in efficient utilization and keeping their promise to pay on time when they use credit for long period of time. The average length of credit experience

from formal credit sources of the household was 4.33 years with standard deviation of 3.22. The maximum and minimum experience of the household were also 0 and 16 years.

As Table 19 show that, the average years of experience credit from formal sources of non-defaulters was 4.91 years with standard deviation of 3.431 and the maximum and minimum years of experience were also 0 and 16 years. Where as the average years of experience in credit utilization of defaulters was 3.74 years with the standard deviation of 2.895. The maximum and minimum years of experience where also 0 and 14 years. Statically there was a significant difference between the two groups in average length of years in credit utilization at less than 5% significance level.

**Table 19: The experience of sample households using credit**

Experience in credit use	Non-defaulter		Defaulter		t-value	Total	
	Mean	SD	Mean	SD		Mean	SD
Years	4.91	3.431	3.74	2.895	-2.100**	4.33	3.217
Maximum	16		14			16	
Minimum	0		0			0	

Source: Computed from survey data

\*\* Significant at less than 5% significant level

#### **4.2.1.13. Amount of credit forwarded to the sample households**

. Credit is needed by the farmers for both production and consumption purposes. For the production loan, households first try to gain access from formal financial institutions since the interest rates are relatively low. Usually consumption credit is not allowed by the formal financial institutions, with an exception to some schemes of the Government and Non-governmental Organizations. The main sources of finance for input loan in the study area are cooperatives.



The average amount of agricultural input credit obtained by the borrowers was Birr 201.47 with standard deviation of 111.17 during the study year. The average amount of agricultural input credit taken by non-defaulters is Birr 237.33 and it is relatively higher than the amount of credit channeled to defaulters which is Birr 165.62. as it was indicated in Table 20, the average amount of credit for chemical fertilizer for non-defaulters is Birr 134.71 whereas Birr 93.39 for defaulters and it indicates that there exists a clear difference on the use credit for chemical fertilizer credit used among non-defaulter and defaulter sample households.

As expected, it is found that there is a statistically significant difference in the amount of credit for chemical fertilizer and total amount of input credit between non-defaulter and defaulter groups at less than 1 per cent probability level. This means, non-defaulters have borrowed large amount of money than defaulters. However, it is found that there is no statistically significant difference in the amount of credit for the purpose of purchasing improved seed between the non-defaulter and defaulter groups at any level of significance.

**Table 20: Amount of credit taken by non-defaulter and defaulter sample households**

Purpose of input credit	Non-defaulter		Defaulter		t-value	Total	
	Mean	SD	Mean	SD		Mean	SD
For improved seed	101.24	97.32	76.46	89.93	0.925	88.84	94.11
For chemical fertilizer	134.71	101.05	93.39	89.92	1.684***	114.21	97.54
For total input credit	237.33	114.94	165.62	95.33	4.506***	201.47	111.17
Maximum credit	571		546			571	
Minimum credit	80.4		81			80.4	

Source: Computed from survey data

\*\*\* Significant at less than 1 per cent level of significance

#### 4.2.1.14. Amount of other credit

According to the survey result beside the short term input credit of cooperative sample farmers borrowed short and middle term loans from DESI, FSP, bureau of agriculture, and from their

relatives and money lenders. Majority of this credit was extended in kind for different agricultural packages where as the DESI and FSP provide credit for non-farm activity also. According to the information of respondents, most of the time the credit obtained from money lenders and their relatives have used for consumption purpose

The average amount of credit borrowed by total sample respondents from other sources was Birr 1866.34 with standard deviation of 1555.05. The average amount of credit borrowed by non-defaulter was Birr 2017.75 with standard deviation of 1618.47 which is greater than the average credit borrowed by defaulters Birr 1714.93.

Based on the Table 21, there was a significant difference between the two at less than 10% level of significant.

However, the average credit was increased to Birr 2732.37, 2533.43, and 2637.22 to non– defaulters, defaulters and for the total respectively when the mean was calculated only to 90 respondents’ who took loan from other sources (Table 21)

**Table 21: Amount of other credit taken by sample households**

Description	Non-defaulter		defaulter		t- value	Mix	Man	Total	
	Mean	SD	Mean	SD				Mean	SD
For total respondents (130)	2017.7	1618.4	1714.9	1485.9	0.133*	0	6300	1866.3	1555.0
Borrowers only(90)	2732.3	1254.0	2533.4	1079.2	-.812	500	6300	2637.2	1171

Source: Computed from survey data

\* Significant at less than 10 per cent level of significance

### 2.2.1.15 Diversion of input credit for other purpose

Due to social, personal and cultural problems farmers divert their Agricultural input credit to other unintended purpose. Borrowers may sale part of their input for cash in order to solve personal problems or may share to their relative, and other people who can’t get input credit.

According to the survey out of the total 130 respondents 91.5% of the respondents (92.3% non-defaulter and 90.8% defaulters) respond that as they did not divert (selling or share their input to others) their loan whereas only 8.5 % (7.7% non-defaulter and 9.2% defaulter ) reported as they divert their loan .

The chi-square value reveals, there was no any difference between the two groups or it is non significant at any level.

**Table 22 : Borrowers' responses on loan diversion by group**

Description	Non-defaulters		Defaulters		$\chi^2$ -value	Total	
	No	%	No	%		No	%
Divert	5	7.7	6	9.2	0.99	11	8.5
Not-divert	60	92.3	59	90.8		119	91.5
Total	65	100	65	100		130	100

Source: Survey results

## **Institutional factors of sample households**

### **4.2.1.16 Distance from service institutions**

The location of borrowers from different service institutions are believed to have their own impact on loan repayment. For instance Borrowers nearby the lending institution have a location advantage and can contact the lender easily and frequently than those who live in more distant locations. Similarly borrowers who located nearer to extension agent office have also a better opportunity to get timely extension advice which may help them to use the loan efficiently and to repay on time.

Therefore the distance in hours that the beneficiaries traveled on foot to get different services was assessed. In line with this, the average distances traveled by the respondents to reach cooperative office and extension agent's office was 0.66 and 0.76 hours, respectively. The mean

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difference between the distances covered by non-defaulters and defaulters was statistically insignificant at any level of probability.

**Table 23; Summary statistics of defaulters and non-defaulters**

Description	Non-defaulters		Defaulters		t-value	Total	
	Mean	SD	Mean	SD		Mean	SD
Distance from MPC in minutes	0.71	0.543	0.61	0.575	-1.032	0.66	0.559
Distance from DA in minutes	0.72	0.539	0.84	1.870	0.391	0.76	1.372

Source: Survey results

#### 4.2.1.17 Perception of borrowers on Interest rate of cooperatives

Perception of borrowers on the interest rate of input loan was collected during the survey. As Table 24 indicates that, out of the total borrowers, 10.8 % borrowers reported that the interest rate for input loan was low, 68.5 % reported as it is fair, and 18.4% as high and the rest (2.3%) reported as it is too high. The chi-square result reveals the difference between the non-defaulters and defaulters was insignificant at any level.

**Table 24: perception of borrowers on interest rate of input loan**

perception	Non-defaulter		Defaulter		$\chi^2$ -value	Total	
	No	%	No	%		No	%
Low	7	10.8	7	10.8	1.101	14	10.8
Fair	46	70.8	43	66.2		89	68.5
High	10	15.4	14	21.5		24	18.4
Too high	2	3.0	1	1.5		3	2.3
Total	65	100	65	100		130	100

Source: Computed from survey date

#### 4.2.1.18. Supervision of credit beneficiaries by loan committee of MPCs

In order to ensure efficient utilization of credit timely supervision of lending institution is very important. Such supervision prevent the misuse of credit for non productive and hence facilitate regular loan repayment. Utilization of credit for the intended purpose in turn ensures increase in production and income and ultimately for the agricultural development.

Commonly loan collection of multi-purpose cooperatives in the study area is preformed by loan committee of the cooperatives. Moreover the committee has a responsibility to made timely supervision and to follow up the credit utilization of borrowers at their locality. According to the survey result, supervision of borrowers by the committee members before the due date of loan repayment was found to be important.

Hence as we can see from Table 25, about 66.2 % of the sample households responded that as they are supervised by loan committee before the due date of loan repayment whereas 33.8% of the respondents reported that as they did not supervised by any committee member. The statically result show that there is a significant difference between the two groups at less than 10% level of signficance.

**Table 25. supervision Credit beneficiaries by loan committee of MPC**

Type	Non-defaulter		Defaulter		$\chi^2$ -value	Total	
	No	%	No	%		No	%
Yes visited	48	73.8	38	58.5	13.436*	86	66.2
No visited	17	26.2	27	41.5		44	33.8

Source: Computed from survey data

\* Significant at less than 10 per cent level of significance

**4.2.1.19. Appropriate ness of the repayment period**

As common practice cooperatives in the region as well as in the study area, used March 9 (February 30 in Ethiopia calendar) as last date for collection of input credit from member borrowers. This was in order to repay their loan to commercial bank of Ethiopia early and to assess input demand of members for next year by screening defaulters and non-defaulters. Whereas from the point view of borrowers it may have its own advantage and disadvantage.

In one hand, during this period farmers may have a possibility to get money and repay their loan immediately after harvest before they used their product for other purpose whereas in

other hand during this time, market price for farm products especially for grain is relatively low. This is because most farmers sale their product during January and February to celebrate different social ceremonies and also to repay different loans. Then farmers may need extra time to store their product until market price rises.

As Table 26, revealed that 56.2 % of the respondents (43.1 % non-defaulters and 69.2% from defaulters) have not agreed with the existing repayment period for loan repayment .the rest (43.8%) (56.9% non-defaulters and 30.8% defaulters) of the respondents reported that as they agree with the existing repayment period. In addition, the chi-square value reveals that as there was difference between the two groups at 1% significant level.

**Table 26: Appropriateness of the grace period of MPC**

Appropriate ness of the grace period	Non-defaulter		Defaulter		$\chi^2$ -value	Total	
	N <sub>0</sub>	%	N <sub>0</sub>	%		N <sub>0</sub>	%
Yes Appropriate	37	56.9	20	30.8	9.029***	57	43.8
No Appropriate	28	43.1	45	69.2		73	56.2
Suggestion to extend the grace period							
Up to end of March	13	20	22	33.8	8.198**	35	26.9
Up to end of April	12	18.4	19	29.2		31	23.9
Up to end of May	3	4.7	4	6.2		7	5.4
To continue as it is	37	56.9	20	30.8		57	43.8

Source: survey result

\*\* and \*\*\* Significant at less than 1and 5 per cent level of significance

Concerning the suggestion of respondents an appropriate time for loan repayment the survey result reveals that about 26.9% borrowers asked to extend the repayment period up to end of March, 23.9% borrowers up to end of April, 5.4% borrowers end of May where as the rest 43.8

%e suggest that the existing repayment period (up to march 9) is an appropriate time for repayment and to continue as it is.

Hence, as Table 26 depicts that there is a statistically significant differences at 5% significant level between the two groups with regard to suggestion an appropriate time for their loan repayment.

**4.2.1.20 Health care expenditure**

The average medical expense of the borrowers was about 74.83 Birr per annum with the minimum and maximum of 0 and 700 Birr, respectively. Non-defaulters and defaulters spent an average of about 95 and 54.27 Birr on health care, respectively. However, the mean difference between the two groups was not statistically significant (Table 27).

**Table 27: Health care expenditure by group of borrowers (Birr)**

Description	Non-defaulters		Defaulters		t-value	Total	
	Mean	SD	Mean	SD		Mean	SD
Expense	95	189.81	54.27	133.55	8.404	74.83	164

Source: Survey results

**4.2.1.21 Occurrence of natural calamities and income loss**

Natural calamities such as drought, pest and diseases infestation of crops and animals reduce farm income of the household by affecting the productivity crops as well as animals. Hence natural calamities have a negative impact on loan repayment of farmers.

According the survey result out of the total 130 respondents only 25.4% reported as they had faced with different natural calamity especially with flood problem and loss of animals due to disease infestation .but 74.6%respondats reported as they didn't face any natural calamity. GroupWise, 18.5% of the non-defaulters and 32.3% of the defaulters reported as they had faced with natural calamity. Whereas 81.5% non-defaulters and 67.7% defaulters reported as they

didn't face with any natural calamity. The Chi-square value, revealing differences between the two groups, was significant at 10% significant level (Table 28).

**Table 28: Borrowers' responses on of natural calamity problems**

Problem of natural calamity	Non-defaulters		Defaulters		$\chi^2$ -value	Total	
	Number	Percent	Number	Percent		Number	Percent
Yes I had faced	12	18.5	21	32.3	3.29*	33	25.4
No	53	81.5	44	67.7		97	74.6
Total	65	100	65	100		130	100

Source: Survey results

\* Significant at less than 10 per cent level of significance

As table 29 reveal that, the average income loss of a house due to natural calamities was Birr 314.62 with Birr 5000 being the maximum and Birr 0 the minimum .group wise the average income loss for non-defaulters was Birr 210.77 whereas the average income loss due to natural calamity of defaulters were Birr 418.46. Differences in income loss between non-defaulters and defaulters groups were tested and found to be non significant

However, the average loss for the borrowers which affected by natural calamity (33 respondents') was increased to Birr 913.33, 1511, and 1363 to non-defaulters, defaulters and for the total respectively when it was analyzed separately (Table 29)

**Table 29: Income loss due to natural calamities**

Description	Non-defaulter		Defaulter		t-value	Max	Man	Total	
	Mean	SD	Mean	SD				Mean	SD
For total respondents (130)	210.77	528.00	418.46	1151.21	1.322	5000	0	314.62	898.15
affected borrowers only (33)	913.33	766.12	1511	1800.25	1.361	5000	100	1363	1438.74

Source: survey result



#### 4.2.1.22 Training

Training will enable the farmers to increase their knowledge and improve their skills. A typical training course is likely included demonstrations and visits to the farmers' fields. In collaboration with Wukro Kidist Mariam and World Vision Ethiopia, cooperative in study area provided training on utilization and repayment of loan to members on different time. The survey results show that 59 percent of the respondents stated that they were trained on the proper use of credit they have availed whereas the other 41 percent of the respondents stated that they were not trained.

Moreover, about 69 per cent of the non-defaulters and 49 defaulters respond that they were trained. Whereas 31 per cent of the non-defaulters and 51 percent of defaulters responded that they were not trained. Therefore, the value of  $\chi^2$  also indicated that the mean difference between the non-defaulter and defaulter groups was statistically significant at less than 5 per cent level of significance with regard to training on credit use (Table30). The possible explanation for this is that in the study area the trained farmer might have used the borrowed fund properly and helped them in repaying their debt in time.

**Table 30: Borrowers' responses on availability training on credit**

Descriptions	Non-defaulter		Defaulter		$\chi^2$ -value	Total	
	No	%	No	%		No	%
Trained (Yes)	45	69	32	49	5.383**	77	59
Not trained (No)	20	31	33	51		53	41
Total	65	100	65	100		130	100

Source: Computed from survey data

\*\*, significant at 5 per cent level of significance

#### 4.2.1.23 Adequacy and timeliness of credit

The survey results reveal that 95.4% of the borrowers stated that the disbursed loan was adequate while only 4.6% borrowers reported that the opposite. More specifically, 96.8% of the non-defaulters and 93.8% of the defaulters reported that the loan they received was adequate. The two groups of borrowers were not statistically different with respect to their view on the adequacy of credit at any conventional level of probability (Table 31).

With regard to timeliness of credit, 98.5 percent of the non-defaulters and 94 percent defaulters reported that these input credit services were delivered on time and 1.5 percent non-defaulters and 6 percent defaulters reported that they were not given on time. As it is indicated in table 30 there is no statistical difference between the two groups

**Table31: Borrowers' responses on adequacy of credit by borrower group**

description	Non-defaulters		Defaulters		$\chi^2$ -value	Total	
	Number	Percent	Number	Percent		Number	Percent
Adequacy of credit					0.699		
Adequate	63	96.9	61	93.8		124	95.4
Inadequate	2	3.1	4	6.2		6	4.6
Total	65	100	65	100		130	100
Timeliness of credit							
Yes	64	98.5	61	94	1.872	125	96
No	1	1.5	4	6		5	4
Total	65	100	65	100		130	100

Source: Survey results

## 4.2.2 Results of Econometric Analysis

### 4.2.1 Factors Influencing input Loan Repayment of members of MPCs :

As discussed earlier the logit economic model was selected for analyzing the factor influencing the loan repayment of input credit of the sample household's. The statistical software package used for analyzing the data was SPSS 15.0 for windows. Prior to running the logistic regression analysis both the continuous and discrete explanatory variables were checked for the existence of multicollinearity and high degree of association using variance inflation factor (VIF) and contingency coefficients, respectively The VIF values for continuous variables were found to be very small (much less than 10) indicating that absence of multicollinearity between them (Table 32). Likewise, the results of the computation of contingency coefficients reveal that there was no serious problem of association among discrete variables (Table 33). For this reason, twelve continuous and four discrete explanatory variables were hypothesized to estimate the logit model. Out of these, 6 variables were found to be significant, while the remaining 10 were non-significant in explaining the variations in the dependent variable

Table 32: VIF of the continuous explanatory variables ( $X_j$ )

Variable	Adjusted-R <sup>2</sup>	VIF
Agehh	0.431	1.758
Educhh	0.174	1.211
Familshh	0.320	1.470
Coopmsh	0.340	1.517
Cropinc	0.251	1.336
Nolive	0.337	1.508
Offnfinc	0.108	1.121
Expcerm	0.078	1.085
Totfrsiz	0.346	1.529
Expcrehh	0.241	1.318
Amoucred	0.180	1.220
Othcred	0.203	1.255

Source: Own computation

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**Table 33 : Contingency coefficient for discrete variables**

Variable	Natcal	loacm	Trainmm	Apptim
natcal	1	0.006	0.130	0.008
loacm		1	0.078	0.161
trainmm			1	0.176
Apptim				1

Note: The coefficients were tested using Chi-square test

Source: Own computation

**Table34: Summary statistics of variables used in the logistic regression**

Variable	% with a value 1			Mean			SD		
	ND	D	Total	ND	D	Total	ND	D	Total
agehh				44.2	41.66	42.7	11.12	10.50	10.87
Educhh				3.39	2.20	2.89	3.10	2.55	2.89
familshh				5.89	5.53	5.71	2.09	2.85	2.49
coopmsh				8.66	6.97	7.81	4.31	4.32	4.37
cropinco				2418.6	2150.05	2284.32	2332.10	2271.59	2297.06
nolive				4.33	2.98	3.65	2.69	2.07	2.48
offnfin				2512.94	1849.68	2181.30	2637.27	1476.31	2154.71
totfrsiz				1.159	0.91	1.03	0.61	0.48	0.56
expcerm				425.75	930.27	481.0.	604.85	1536.56	1190.38
expcrehh				4.91	3.74	4.33	3.43	2.89	3.22
amoucred				237.33	165.62	204.47	114.94	95.33	111.17
othecred				2017.75	1714.93	1866.34	1618.47	1485.98	1555.05
Natucalam	18.5	32.3	25.4						
Loacm	73.8	58.5	66.0						
trainmm	69	49	59.0						
Apptime	56.9	30.8	43.8						

Note: Sample size, N=130 ND= Non-defaulter D= Defaulter SD= Slander devotion

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#### 4.2.2.1 Discussion on the Significant Explanatory Variables

Out of the sixteen variables hypothesized to influence the loan repayment performance of borrowers, six were found to be statistically significant. The maximum likelihood estimates of the logistic regression model shows that education (EDUHH), number of livestock (nolive), amount of input credit borrowed by the household (amoucred), experience of the household in credit use (expcrehh), income of the household from off-farm and non farm activity (offnfin) and Appropriateness of the repayment period (apptime), were important factors influencing the loan repayment performance of member borrowers in the study area. More specifically, the coefficients amount of input credit borrowed by the household was statistically significant at less than 1 percent probability level. The variables, experience of the household in credit use, education level of the household, off farm and non form income of household and Appropriateness of the repayment period were statistically significant at less 5% and number of livestock was also significant at less 10% level of significance. On the other hand, the coefficients of 10 explanatory variables, namely age of the household (agehh), family size of the household (famlisiz), total farm size of the household (totfsiz),Expense of the household for social ceremony (expcerm), other credit borrowed by the household (othcred), income of the household from crop (cropinc), cooperative membership of the household (coopmsh), training access of the household (trainhh), supervision of borrower by loan committee of MPC (loancs) and effect of natural calamity (natucalam) on loan repayment were less powerful in explaining loan repayment performance of the sample borrowers. Regarding the signs of the coefficients of variables three variables namely family size, appropriateness of the time for repayment and effect of natural calamity have negative sign whereas the rest variables have positive sign. The results of the logit regression analysis are shown in Table 35.

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**Table 35: Logistic regression estimates of loan repayment performance in kilteawulalo Woreda**

Explanatory variables	Coefficient	Wald test	Sig.	Exp(B)
agehh	.034	1.465	.226	1.035
Educhh	.185	4.140	.042**	1.203
Familshh	-.133	1.339	.247	.875
Coopmsh	.006	.009	.926	1.006
Cropinco	.000	1.793	.181	1.000
nolivst	.207	2.717	.098*	1.230
Offnfinc	.000	4.598	.032**	1.000
Totfrsiz	.300	.318	.573	1.350
Expcerm	.000	1.495	.221	1.000
Expcrehh	.179	4.275	.039**	1.196
Amoucred	.008	9.086	.003***	1.008
Othecred	.000	.745	.388	1.000
trainhh(1)	.567	1.340	.247	1.763
natucalam(1)	-.633	1.047	.306	.531
loancsp(1)	.154	.083	.773	1.167
apptime(1)	-1.230	5.571	.018**	.292
Constant	-3.221	5.943	.015	.040
Chi-square value	54.6***			
-2 Log Likelihood	125.397			
Over all sum	76.2			
Sample size	130			

Source: Model out put

\*, \*\* and \*\*\*, significant at 10, 5 and 1 per cent probability level, respectively

The interpretations of significant variables were present as follow.

**Level of education of the household head (educathh):-**

The result of logit model shows that this variable affects loan repayment of the household positively. This is consistent with prior expectation. It had a strong relation ship with the

dependent variable showing that educated household heads were more able to recognize the advantage of loan repayment in time and willing to take credit. A possible explanation for a positive relationship is that education reflects acquired knowledge of socio-economic amenities.

All other things held constant, the odds ratio suggests that farmers who have attended formal education are more likely to repay their debts in time than farmers who have not attended formal education and showing interest to be non-defaulter by a factor of 1.203 for literate household heads. Similarly Gebrehiwot (2006) reported a positive relation between loan repayment and educational level of the households.

**Amount of input credit borrowed by the household (amoucre):-** The result of logit model showed that this variable has higher positive significant influence on loan repayment performance in the study area. This is consistent with prior expectation. The model output revealed that increase in loan amount enables the borrower to generate more farm income as it creates access for the household to use the required amount of farm input. Input credit is one of the financial services being rendered by cooperatives in the wereda. In the process of credit provision for those who are the poorest of the poor, loan size is the main concern of the lenders and the borrowers. The cooperative societies had been trying to fulfill their members' credit demand with that of limited capital resource, and borrowers are interested to get increased loan amount.

Result reported by Kebede (2003) and Gebrehiwot(2006) corroborates the results obtained in the present study regarding the significance of an amount of credit supplied to the rural household. Moreover, according to Babatunde *et al.* (2007), this is the ability of the household to obtain large amount of credit for household's production purpose. Production credit could

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increase household's income and could allow him/her to repay their debt on due date. Assuming ceteris paribus, the odds ratio suggests that farmers who have got large amount of credit are expected to repay their debt in time than borrowers who have got small amount.

#### **Experience of the household in formal credit utilization (expcrc):-**

The results of the logit model show that this variable affects loan repayment positively. This is consistent with a prior expectation. This variable is significant at less than 5 per cent level of significance. This might be because of the fact that borrower with long experience have better and efficient utilization of loan. This ultimately improves the loan repayment performance of the farmers. In addition those farmers with long experience have a better knowledge in the rules and regulation of financial institutions and more aware of the consequence of loan default on the availability of credit for the next year.

The odds ratio result reveals that farmers with better years of experience in credit utilization from formal institutions are more likely to repay their debts in time than farmers who have lower experience and showing interest to be non-defaulter by a factor of 1.196 for experienced household heads. Similarly Amare (2005) reported a positive relation between loan repayment and experience of households in credit utilization.

#### **Total livestock unit of the household.**

Total livestock ownership (LIVSTKNO) is, as expected, positively related to the dependent variable (significant at less 10% level). The implication is that, Livestock are sources of cash in rural Ethiopia and serve as security against crop failure. Farmers who owned more livestock are able to repay their loans even when their crops fail due to natural disaster. In addition, as a proxy to oxen ownership the result suggests that farmers who have larger number of livestock

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have sufficient number of oxen to plough their field timely and as a result obtain high yield and income to repay loans.

The odds ratio result reveals that farmers with more number of livestock are more likely to repay their debts in time than farmers who have small number of livestock and showing interest to be non-defaulter by a factor of 1.23 for experienced household heads. Similar result was also reported by Amare (2006).

### **Appropriateness of repayment period**

The results of the logit model show that this variable relates negatively with loan repayment at less than 5% level of significant. This is consistent with the prior expectation. The negative relation of the variable with loan repayment shows inappropriateness of the existing repayment period for borrowers to repay their loan. The possible explanation here is that as the time length between harvesting and due date of loan repayment was too short farmers may not have a chance to choose best time for marketing of their product. This is because during January and February market price for farm product special for grain is relatively low as most farmers sell their product to celebrate social ceremony and also to repay different loans. Then farmers may need extra time to procure the farm product until market price start to rise,

Moreover odds ratio in favor of non-defaulter was decreasing by a factor 0.292 for borrowers, if the period of repayment existing as it is (unchanged). But the result is contrary to Hunte (1996), findings that, extended repayment period in loan contract led to high default risk and low repayment.

### **Off farm and non farm activities of the house hold (offnfinc)**

Getting income from off-farm and non-farm activities are another economic factor that were positively and significantly affected loan repayment performance of smallholder farmers. This

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might be due to the fact that; off-farm and non-farm activities were additional sources of income for smallholders and the cash generated from these activities could back up the farmers' income to settle their debt even during bad harvesting seasons and when repayment period coincides with low agricultural prices.

The odds ratio in favor of non-defaulting was increasing by a factor of 1.00 as the borrower's participated in off-farm and non-farm activities. However, this result is contrary to Bekele's (2001), findings that, off-farm income was negatively related with loan repayment performance of farmers. But Amare (2005) reported that off-farm and non-farm activities were positively related with loan repayment,

#### **4.2.2.2 Sensitivity Analysis**

All significant qualitative and quantitative explanatory variables do not have the same level of impact on the loan repayment performance of borrowers. The relative importance of the qualitative explanatory variables can be seen by examining the changes in probabilities that would result from changes in values of these variables. ). Similarly, the relative importance of continuous explanatory variables on access to credit use can be seen by examining variable elasticity, defined as the percentage change in the value of these variables .To rank these factors, a 'typical borrower' is defined by the most frequent values of the qualitative variables included in the model. Thus, a typical borrower is male (out of the 113 males of respondents) out of the non-defaulter group and who have positive attitude on his livelihood thereby on loan repayment performance. The probability that this typical borrower will have a good loan repayment performance (will be a non-defaulter) is estimated to be 0.97668 and the log odds ratio or the stimulus index in favor of non-defaulting for a typical borrower is 42.52 Table 36, shows the effect of changing the values of statistically significant qualitative and quantitative

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explanatory variables, specified in the model, on the probability of non-defaulting. The predicted probabilities reveal how the likelihood of non-defaulting is influenced by the changes in the significant qualitative values and elasticity of quantitative values. Regarding with qualitative variable, the probability of non-defaulting of a typical borrower, who is typical in all respects except who agrees with the appropriateness of existing time schedule for loan repayment, had a value of 0.95567 or a decrease of the probability value by 2.1%.

Concerning the quantitative (continuous) variables, the probability that this typical borrower will have a good loan repayment performance (will be a non-defaulter) is estimated to be 0.97807. If the year of schooling of the farmer increased by 10 per cent (from illiterate to grade 1), the probability of the typical borrower being non-defaulter will increase by 0.14 per cent (i.e., if the average grade of the farmer increased from 3.39 to 3.729).

Similarly, if the average number of livestock is increased by 10 per cent (i. e., from 4.33 to 4.763), the probability of being non-defaulter for a typical borrower increased by 0.196 per cent, this may be due to the fact that, livestock are one of the basic income sources of the household in rural areas. Moreover, if the average years of experience in credit utilization of the typical borrower increase by 10 per cent (i. e., from 4.91 to 5.4 years), the probability of being non-defaulter will increase by about 0.20 per cent.

In addition, if the average amount of input credit increases by 10 per cent (i. e., from Birr 237.33 to Birr 261.06, the probability of being non-defaulter for the typical borrower will increase by 0.40 percent. Whereas an increase by 10 percent in the average off-farm and non-farm income of a typical borrower the probability will remain constant (at 0.97668 probability) being non-defaulter.

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**Table 36 The effect of Significant Explanatory Variables on probability of Loan Repayment**

Description	Probability	$\Delta$ probability	% $\Delta$ in probability
Typical borrower	0.97668		
Appropriate ness of the time schedule for repayment	0.95567	-0.02101	2.1
Typical borrower but 10 % increase in schooling year	0.97807	0.0014	0.14
Typical borrower but 10% increase in duration of credit utilization	0.97866	0.002	0.20
Typical borrower but 10% increase in credit amount	0.98064	0.004	0.40
Typical borrower but 10% increase in off-farm and non-farm activity	0.97668	0	0
Typical borrower but 10% increase in livestock number	0.97864	0.00264	0.196

Source: Own computation

$\Delta$  =change and % $\Delta$  =percentage change

### **4.3. Farmers' suggestion to improve loan repayment**

In order to get initial information and insight in to farmers' idea looking their suggestion and recommendation is quite important. Hence farmers are the main focus of the study .This section aimed at examining farmers' suggestion and idea to recommend appropriate strategy to improve loan repayment performance member farmers. For this purpose ten important ideas were identified by the researcher and addition ideas were incorporate from respondents by open interview schedule. As it is indicated Appendix 11 a positive statement was prepared on each idea and a data was collected from respondants..

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In order to know the weight given by respondents for each suggestion, it is necessary to prioritize them according their result obtained in Table 27, Then to calculate the average score each suggestion respondents level of agreement are graded as follows, 1 for strongly agreed ,.0.5 for agree, and 0 for disagree ones. Based on this the suggestions are ranked from 1 up to eleven. Then the first six most important suggestions given by the respondents are as follow.

1. The price input was increasing from time to time so cooperatives, government and other concerned body should take measures to alleviate the problem.
2. Off-farm and non-farm activities as means of additional income should be diversified in rural areas to improve loan repayment performance of farmers.
3. As most farmers did not use recommended rate of fertilizer and seed given by bureau of agriculture extension efforts have to be made to change this situation.
4. Orientation (training) should be given before loan provision about the interest, time of repayment and utilization.
5. Before approval of loan agreement the cooperative should evaluate the former performance of each borrower.
6. There should be close supervision by loan committee of MPC and loan expert of wereda .

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# CHAPTERV: CONCLUSION AND RECOMMENDETION

## Introduction

This chapter presents the funding of the study and conclusion drawn from the finding. It also presents the recommendation for policy changes to improve the loan repayment performance of farmers. The recommendation is based on the result obtained from analysis of econometrics model and suggestion of respondents to improve the loan repayment of borrowers in the study area.

## 6.1 Conclusion

Ethiopia is an agricultural country employing more than 85 percent of the total population in that sector. Small farmers are numerically dominant, contributing over 91 percent of the production. Yet, this output cannot meet the food requirements of the country's population, even for the farmer himself. There exist a variety of reasons for this problem, but low productivity, which results from lack of capital, is the main one.

Small farmers in Ethiopia, as in many developing countries, lack finance to purchase productive agricultural inputs. With the exception of family labor and local seeds, almost all inputs required in agricultural production are to be purchased. However, the majority of Ethiopian population comprises small farmers, who cannot implement a technology without external funding.

As a result, efforts are being made by the federal and regional governments to solve the smallholders' problem such as lack of factors of production (i.e., improved seeds, fertilizer, farm tools and other necessities) by purchasing through the agricultural credit borrowed from the respective cooperatives. The assumption here is that smallholders should utilize the borrowed money for the intended purpose and repay their debt in time.

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Therefore, the objective of this study was to investigate the nature of loan repayment of MPCs, to identify socio-economic factors affecting loan repayment performance of borrowers and to give suggestion and recommendation to improve loan repayment performance of farmers in the study area. To address the objectives of the study, relevant and related studies were reviewed. The primary data, on which the study mainly depends, was collected from a sample of 130 household heads drawn from 6 MPCs. A structured survey questionnaire was employed to interview the selected sample households. Whereas the secondary data was gathered from various sources such as-publications, semi-annual and annual reports of MPCs, wereda and regional cooperative promotion offices and CBE reports

In the study the binary logit model was used to identify the factors that affect loan repayment performance of smallholders. In addition to the econometric model, descriptive statistics were also used. The descriptive analysis showed that the non-defaulter group is economically better off than the defaulter group. The income generated from farm and non-farm activities of the non-defaulters is higher than the income generated by the defaulters from these activities. Similarly, the number of livestock owned by the non-defaulters is greater than the number of livestock owned by the defaulters. Regarding the total input usage, the defaulter group used less input than non-defaulter group and this shows there is statistically significant difference between non-defaulter and defaulter groups with regard the overall input usage.

Based on the suggestion and ideas collected from respondents more than 70% respondents suggest that close supervision, training, diversification off-farm and non-farm activities in rural area, and the need of extension work to solve the problem in input application are very important to improve the loan performance of the farmers. More over they suggest that

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cooperatives should take action in extending grace period of loan repayment and also to supply inputs with reasonable price by reducing overhead costs of the cooperatives.

Concerning nature of loan repayment of the study area, based on the data collected from different sources and discussions held with different bodies it is possible to understand that member borrowers provide more priority to repay input loan than other loans and their repayment pattern was more related with harvesting time and end of the grace period for repayment.. Moreover it is possible to understand that borrowers' didn't provide more attention for interest rate difference between in input loan and package loan extended by the MPCs.

The econometrics model also show that, 12 explanatory and 4 discreet variables had hypothesized to explain the factors that affect loan repayment performance of smallholders in the MPCs. Some of these variables are of demographic type while the others are socio-economic in nature. The logit regression model showed that six variables were significant to affect borrowers' loan repayment performance. These variables include: educational status of the sample household, credit experience of the household head, appropriateness of the repayment period, livestock income of the household, off-farm and non-farm income of the household and amount of input credit borrowed by the household. Except the suggestion of respondents for the appropriateness of repayment period, all the significant explanatory variables affect the loan repayment performance smallholders positively.

Education found to have positive and strong impact on the loan repayment performance of sample households. The educated farmers might facilitate through the application of new agricultural technologies and in turn, this helps them to improve their livelihood and repay their debt in time.

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The other significant variable was suggestion of respondents on the appropriateness repayment period. The result of the logit model shows this variable has a negative significant influence on loan repayment of borrowers in the study area. The possible explanation here is that, as the time gap between harvesting and end of the repayment period (due date of the loan) was too short, farmers may not get good market price for their product. This is because during January and February market price for farm product special for grain is relatively low as most farmers sell their product to celebrate social ceremony and also to repay different loans. Then farmers may need extra time to procure their product until market price start to rise,

Credit experience of the household has also found to be significant variable in the logit regression.. The possible explanation is that households the one who had long experience in credit utilization from formal institutions may develop a better and efficient utilization of loan. In addition those farmers with long experience have a better knowledge in the rules and regulation of financial institutions and more aware of the consequence of loan default on the availability of credit for the next year. Hence they are prior in settling their debt in time.

The other significant explanatory variable was number of livestock of the household. This variable also positively related with loan repayment of the household. As it was known, livestock are one of the major sources of cash in rural areas and serve as a security against crop failure. Especially farmers who earn more income from livestock are able to repay their loan even when their crops fail due to natural disasters

Similarly off-farm and non-farm income of the household was also found positively significant. This might be due to the fact that; off-farm and non-farm activities were additional sources of income for smallholders and the cash generated from these activities could back up the farmers'

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income to settle their debt even during bad harvesting seasons and when repayment period coincides with low agricultural prices.

Lastly, the amount of input loan borrowed by the household is found to have a strong impact on the loan repayment performance of the smallholders who took large amount of loan had better loan repayment performance. This could be because the borrowers used more inputs to increase his/her farm production and lead him/her to become non-defaulter.

## **6.2. Recommendation**

Rural development means nothing but transformation of subsistence agricultural production to the market oriented agricultural economy. Availability and access to financial resources is one of the key elements to this transformation and is an important factor in economic development. To achieve higher growth in agricultural sector and its being an engine of growth, credit should be made available and easily accessible to the smallholder farmers taking as a challenge.

The result of the study has very important points which need to implement by the farmer, cooperatives and NGOS moreover as the rural credit programs are an integral component of government policy in Ethiopia. This work suggests also government policies should target community oriented institutions such as cooperatives and informal and semi-formal credit institutions, since the specialized banks were unable to meet the demand of smallholders. There for the following recommendations are given based on the findings of the study.

- ❖ The level of education was found to be positively and significantly related to the loan repayment performance. Therefore, level of education of the farmers should be enhanced through literacy campaign for adults and formal education for youngsters. Then government, NGOs and the community should contribute their best effort to support the programmer also. .

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- ❖ The finding of this study also revealed that, livestock are important farm assets that improve the farmers' repayment performance. As livestock are sources of income and serve as security against crop failure. It is, therefore, important that more attention be given to the livestock sector at least in the following areas: feed resource improvement and management; genetic resource improvement; control and/or prevention of animal diseases and parasites; and development of marketing facilities for animal and animal products. But this demands concerted efforts and integrated task of the government, cooperatives, NGOs and the farmer him self.
- ❖ Number of years of experience in utilization of credit from formal institution is a factor, which was positively related to the loan repayment . This might be because of the fact that those farmers that have utilized loan for longer period of time developed skills and experience how to use the loan wisely for productive purpose and income generating activities .This ultimately improves the loan repayment performance of farmers. In addition, those farmers that are regular customers of formal credit institution have a better knowledge in the rules and regulation of financial credit institutions and more aware of the consequence of loan default on the availability of credit for the next year and are likely to make conscious decision to repay loan timely. This may indicate that the need to mobilize more poor farmers to become customers of formal financial institutions. This is possible by strengthen the financial and managerial capacity of these institutions in order to provide service as it required. Moreover it is also necessary to encourage farmers to participate in

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diversified economic activities and to use different agricultural technologies in order to increase their income.

- ❖ Based on the model's result, income of the household from off-farm and non-farm activities had significant impact on loan repayment of the household and positively related. Since this result enables us to recommend that as land is getting smaller and smaller with higher population increase, then diversification of non-farm and off-farm activities for additional income of the family in rural areas was the best and most chooses in now days. The Micro and Small Enterprise Agency should give attention to the landless young farmers in collaboration with Agricultural and Rural Development Bureau to generate more job opportunities to absorb unemployed labour and enables the farmer to generate additional income. This may mitigate two basic rural problems such as rural unemployment and shortage of cultivable land.
- ❖ The other important point is that, concerning length of repayment period for input loan. Members and management bodies of cooperatives have loin share to revise and to take corrective action in their credit policy and distribution mechanism. Then cooperatives should revise and replace the existing time schedule for repayment with time schedule that can meet the right time for marketing and also suitable for them to collect and repay their loan to CBE. However it was true that, there were technical and managerial problems in cooperatives. Therefore Positive government intervention and support is important especially for the newly established cooperatives. Government should work to built technical and managerial skill of the cooperatives. More is also expected from regional and wereda experts of BoARD to provide technical advice for cooperatives in order to revise time schedule for their loan repayment and related problems with this.

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- ❖ Multi-purpose cooperatives should also provide enough amount of credit with appropriate terms should be given for smallholder farmers. The result of the study showed that, individuals who took large amount of credit had better repayment performance than those who took smaller ones. Therefore, government should create conducive environment to provide timely and adequate agricultural input credit to farming households through cooperatives at a competitive price to enhance agricultural product.

To solve problems related with the amount of credit of individual borrowers such as inappropriate demand and screening problems extension agents should provide technical support to the farmer in screening the demand of credit. Cooperatives should also set uniform minimum standard to size and measure loan demand of the farmer.

- ❖ The other important factor raised and suggested by member respondent is increase of fertilizer price from time to time. Based on their suggestion cooperative should play a crucial role in minimizing the price increase in fertilizer by reducing the over head costs of fertilizer and improving marketing efficiency through reducing long marketing channel's.. As policy implication emphasize should be give for long term strategic solution such as production of chemical fertilizer with in the country, ensuring competitive market system, developing appropriate government policies, subsisting chemical fertilizers with alternative sources and etc.

### **Implication for future research**

Only Kiltawulalo Wereda has been taken into consideration for the study. Loan repayment behavior of members of cooperatives societies in other weredas of the region may be studied,

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# APPENDICES

## Appendix I

### Conversion factors used to estimate the households' livestock Ownership in Tropical Livestock Unit

Animals	TLU-equivalent
Calf	0.25
Heifer & Bull	0.75
Cows & Oxen	1.00
Horse	1.10
Donkey	0.70
Sheep& Goat	0.13
Chicken/poultry	0.013

Source: Strock *et al.* (1991)

## Appendix II

### Loan disbursed for agricultural packages by NGOs and BoARD though cooperatives

Name organization	Number of cooperative	Total loan disbursed (for 5 years)	Loan repayment performance of cooperatives in 2006/7		
			Amount to repay	Repaid	Rate%
Word vision	5	446281	96455.30	68775.18	0.71
Kidist Mariam	2	82120	23202	12840.7	55.4
Food security	4	500836	124822	53374	42.8
BoARD	10	229657	229657	85973.9	0.37
Total	21	1,258,894	474136.3	220963.78	46.6

Source; From documents of Multi-purpose cooperatives

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**Appendix III:**

Total amount of money borrowed by each MPCs from CBE and BoARD for input, disbursed to farmers and repaid (from 2000/1-2006/7)

S/N	Coops Name	Requested Amount	Approved Amount	Disburse Amount	Repaid Amount	Amount Overdue
1	Fireweyni	415000	415000	401106.2	399574.9	1531.3
2	Firekalsi	453000	453000	452124.9	437889.00	14235.93
3	Awet	231584	231584	231584.1	230988.9	2272.8
4	D/tsiyone	279780	279780	279751.4	275747.4	4044.00
5	Aynalem	225000	225000	215194.1	209578.3	4955.8
6	Qihean	11880	11880	11880	11880	0
7	Limate	255650	255650	248268.80	244914.40	3354.45
8	D/berhan	6100	6100	6075	6075	0
9	Mesanue	13500	13500	13500	13500	0
10	M/weyni	65000	65000	65000	60227.15	4772.9
11	Hednet	15500	13770	13770	13770	0
12	A/Atsibha	188000	188000	177171.4	174715	2456.4
13	Simret	210000	200000	184795.7	180884.8	3909.5
14	Genfel	176920	176920	176910.5	151505.2	25405.4
	Total	2546914	2535184	2477132	2411049	66080.77

Source; From documents of Multi-purpose cooperatives

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**Appendix IV:**

**Volume of business activities preformed by MPCs in the Wereda**

Production year	Amount of consumer goods in Birr	Farm tools Birr	Natural resource sold in Birr
1998	69947.74	-	12767.00
1999	81795.02	3929.00	36636.00
2000	141819.73	720.00	7252.00
2001	252437.14	750.00	24849.00
2002	181276.98	110.00	58776.30
2003	178885.2	81.00	23009.50
2004	375697.87	3733.00	52576.25
2005	346656.33	2460.00	62176.00
2006	1179355.97	1440.00	18369.00
<b>Total</b>	<b>2807872.00</b>	<b>13223.00</b>	<b>296411.10</b>

Source; Kiltewulao Wereda Bureau of Agriculture and Rural Development

**Appendix V:**

Total amount of money borrowed by MPCs from CBE for by the guaranty of regional government and disbursed to their members (1999/0-2005/6) in Tigray

Budget Year	No of Coops	Purpose of credit	Guaranteed By TNRS	Amount of credit	Repaid On time	Amount of overdue
1999	14	For agricultural input	500,000	424,566.73	424,566.73	-
2000	81	For agricultural input	10000000	5423000	5423000	-
2001	242	For agricultural input	22000000	16217555	16181616	35939
2002	302	For agricultural input	26891000	17303663	16801159	502504
2003	294	For agricultural input	24001916	13156900	12637413	519487
2004	252	For agricultural input	28602100	11595530	11433056	162475
		For agricultural output	33169070	11107087	11107087	-
		Sub-total	61771170	22702617	22540143	162475
2005	316	For agricultural input	30666774	11139661	10805471	334190
		For agricultural output	66062500	70200840	6432790	897350
		Sub-total	96729274	81340501	17237961	1231840
2006	318	For agricultural input	111250500	104855097	104539135	315962
<b>Total</b>			<b>353,143,860</b>	<b>261423899</b>	<b>195,785,294</b>	<b>2,767,907</b>

Source: Tigray Cooperative Promotion Office

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**Appendix VI:**

Total amount of money borrowed by MPCs from CBE and DESI for agricultural packages by the guaranty of regional government and disbursed to their members (1999/0-2005/6) in Tigray

Name of institution	Budget Year	Guaranteed By TNRS	Amount of credit	Amount repaid	Amount of overdue (with interest)
MPCs	2000	120,000,000	80,459,750	56,782,773	23676977
	2002	42,210,000	31,117,461	13,870,527	17246934
	2003	143,750,000	51,735,000	25,195,069	2659931
	2004	27,973.000	723,110	0	748,518
	Sub total	333,933,000	164,035,321	95,848,369	80,371,650
DESI	2002	307,790,000	307,790,000	94,940,761	269,049,895
	2004	232705646	190,000,000	0	194860547.86
	Sub total	540,495,646	497,790,000	94,940,761	463,910,443
	Total	874,428,646	661,825,321	191789130	544,282,093

Source Commercial bank of Ethiopia Mekelle district

**Appendix VII: Total amount input loan disbursed and collected from farmers by DECSI in Kiltawlalo wereda (From 1996-2002)**

Production Year	Number of users	Disburse Amount	Amount repaid	Amount Overdue
1996	1782	203771.48	173935.44	29836.04
1997	4548	519975.6	413736.38	106239.22
1998	6888	759985.39	679116	80869.39
1999	6409	765112.2	721911.58	43200.64
2000	2657	221145.17	213757.33	7387.84
2001	661	96695.25	96085.53	609.72
2002	542	51593.86	48418.86	3175
Total	23487	2566685.09	2546961.12	271317.85

Source; Dedebit Credit and Saving Institution Wukro & Kiltawulalo branch

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**Appendix VIII; Amount fertilizer, improved seed and chemicals distributed to farmers in the wereda from (1991/92-1998/99)**

Production year	Fertilizer distributed by MPCs (on credit )		Fertilizer distributed by WBoRD (on cash)		
	Fertilizer in quintal	Seed in quintals	Fertilizer in quintals	Seed in quintals	Herbicide & pesticide in litters
1999/0	247.0	130.4	2,375.93		147.00
2000/1	1,927.77	81.00	1,786.13	1454.92	195.00
2001/2	1,591.38	24.65	1,239.13	258.18	130.42
2002/3	1,030.25	116.43	1,241.25	280.70	922.00
2003/4	918.51	938.00	3,774.67	2,752	581.00
2004/6	643	122.63	1734.00	904.75	347.40
2005/6	835.5	738.86	Nd	Nd	Nd
2006/7	925	832.00	Nd	Nd	Nd
<b>Total</b>	<b>8118.41</b>	<b>2983.97</b>	-	-	-

Source; Bureau of Agriculture and rural development  
 ND: No Data



Appendix IX: Population estimate of the wereda in 2006/2007

N <sup>o</sup>	Tabia	Number of Population		Number of household
	Male	Female	Total	
1	2443	2543	4986	997
2	4700	4894	9594	1919
3	3367	3504	6871	1374
4	2273	2367	4640	928
5	3698	3849	7547	1509
6	4057	4224	8281	1656
7	5992	6237	12229	2446
8	3987	4150	8137	1627
9	4233	4407	8640	1728
10	4462	4644	9106	1821
11	2932	3050	5982	1196
12	3348	3483	6831	1366
13	2688	2797	5485	1097
14	3175	3303	6478	1296
15	3421	3560	6981	1396
16	3776	3929	7705	1541
Total	58552	60941	119493	23897

Source: Kiltewulalo wereda Planning and Economic Development Office

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**Appendix X: Total Amount of input credit disbursed and repaid from 1999/0- 2006/7 by cooperatives in the wereda**

Production years	Number of cooperatives	Amount disbursed	Amount repaid	Amount of overdue
1999/0	1	61587.67	61587.67	0
2000/1	9	492299.4	472184.4	20115.01
2001/2	9	368447.1	360826.1	7621.06
2002/3	8	253776.7	251477.2	2299.2
2003/4	7	400755.4	395293.9	5461.15
2004/5	6	201224.3	196303.4	4920.95
2005/6	8	334569	331379	3189
2006/7	10	412560	403585.6	8974.4
<b>Total</b>	<b>59</b>	<b>2,525,220</b>	<b>2,472,637</b>	<b>52,580.77</b>

Source; from documents of Multi-purpose cooperatives

**Appendix 11 Farmers' suggestions to improve loan repayment performance**

Suggestion	Description	Non-defaulter		defaulters		total		Result 0-1	Rank
		No	%	No	%	No	result		
There should be close supervision by loan committee of MPC and loan expert of wereda RDBA (Sup1)	Agree	43	66.2	40	61.5	83	63.8	0.57	5
	Strongly agree	14	21.5	19	29.3	33	25.4		
	Disagree	8	12.3	6	9.2	14	10.8		
Orientation (training) should be given before loan provision about the interest, time of repayment and	Agree	33	50.8	30	46.2	63	48.5	0.64	3
	Strongly agree	27	41.5	28	43.1	55	42.5		
	Disagree	5	7.7	7	10.7	12	9.2		

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utilization (Trian2)									
As the loan provision and repayment services of cooperatives are too low efforts should be made to improve this services by member committee and other responsible bodies (Serv3)	Agree	19	29.2	22	33.8	41	31.5	0.37	8
	Strongly agree	14	21.5	14	21.5	28	21.5		
	Disagree	32	49.2	29	44.6	61	47		
As social ceremonies need great deal of money they have negative effect on loan repayment so integrated efforts are needed to minimize traditional ceremony (Cerem4)	Agree	24	36.9	18	27.7	42	32.3	0.35	9
	Strongly agree	11	16.9	14	21.5	25	19.2		
	Disagree	30	46.2	33	50.8	63	48.5		
Before approval of loan agreement the cooperative should evaluate the former performance of each borrower (AGRE5)	Agree	35	53.9	36	55.4	71	54.6	0.58	4
	Strongly agree	19	29.2	21	32.3	40	30.8		
	Disagree	11	16.9	8	12.3	19	14.6		
Husband and wife should have equal decision right to take and administrate the loan (Huw6)	Agree	41	63.1	37	56.9	72	55	0.56	6
	Strongly agree	21	32.3	25	38.5	42	32		
	Disagree	3	4.6	3	4.6	16	13		
As the time schedule for loan repayment of cooperatives is too early to meat the right time of marketing so measures	Agree	38	58.5	39	60	77	59.2	0.54	7
	Strongly agree	15	23.1	17	26.2	32	24.6		
	Disagree	12	18.5	9	13.8	21	16.2		

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should be taken to extend the time (SCHed 7)									
Off-farm and non-farm activities as means of additional income should be diversified in rural areas to improve loan repayment performance of farmers (off-f8)	Agree	40	61.5	46	70.8	86	66.2	0.65	2
	Strongly agree	24	36.9	17	26.2	41	31.5		
	Disagree	1	1.5	2	3	3	2.3		
As the interest rate in input credit is too high cooperative & government should take measures to reduce the rate of interest.(Inte-9)	Agree	12	18.5	16	47.1	28	21.5	0.27	10
	Strongly agree	12	18.5	7	10.8	19	14.6		
	Disagree	41	63	42	64.6	83	63.8		
The price input was increasing from time to time so cooperatives. Government & other concerned bodies should take measures to alleviate the problem (PRICE 10)	Agree	47	72.3	37	57	84	64.6	0.66	1
	Strongly agree	18	27.7	25	38.5	43	33		
	Disagree	0	0	3	4.6	3	2.3		
As most farmers did not use recommended rate of fertilizer and seed given by bureau of agriculture extension efforts have to be made to change this situation (FERT11)	Agree	41	63.1	46	70.8	87	66.9	0.64	3
	Strongly agree	23	35.4	18	27.7	41	31.5		
	Disagree	1	1.5	1	1.5	2	1.5		

Source: Computed from survey data

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# Interview schedule

Date \_\_\_\_\_

Code No. \_\_\_\_\_

## I. Identification

Name of Respondent (optional) \_\_\_\_\_

Peasant Association \_\_\_\_\_ Village \_\_\_\_\_

Name of multi-purpose coop. \_\_\_\_\_

Age of household head \_\_\_\_\_

Type of the household 1) Female headed 2) Male headed

Marital status: 1) Single 2) Married 3) Divorced 4) Widowed

Educational status

Illiterate \_\_\_\_\_

Can read and write \_\_\_\_\_

Primary school \_\_\_\_\_ Grade \_\_\_\_\_

High school \_\_\_\_\_ Grade \_\_\_\_\_

College \_\_\_\_\_

Interviewer \_\_\_\_\_

Supervised by Name \_\_\_\_\_ Date \_\_\_\_\_ Signature \_\_\_\_\_

Approved by (Researcher) \_\_\_\_\_ Date \_\_\_\_\_ Signature \_\_\_\_\_

Comment (if any) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## I. Social characteristics of the household

2.1. Your family size \_\_\_\_\_ (in number of persons)

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2.2. Please provide information on all members of your family

No	Name	Sex	Age	Relation Ship	Marital Status	Educational level	Main occupation (Rank)	Income contribute to family	Status in the	
									Family	PA

2.3 What is your status in PAs and/or MPC, in which organization did you participate?

- a) Cooperative committee
- b) Local administration leader
- c) Youth association
- d) Women association
- e) Farmer association
- f) others (specify) \_\_\_\_\_

2.4 What is your position? a) Chair person b) Vice person c) Committee member

2.5 When did you become the member of multi -cooperative? \_\_\_\_\_

2.6. Did it help you in getting loan? \_\_\_\_\_

2.7. If yes, How? \_\_\_\_\_

2.8 Did you celebrate social ceremonies in this year? a) No b) Yes

2.9. If yes to question, please provide information on your social and religious ceremonial expense

Type ceremonies	Frequency	Estimated total expense
Wedding		
Funeral ceremony		
Birth day(kiristina		
holidays		
mahiber		
Engagement		
Other(specify)		
Total		



Other source of income; specify \_\_\_\_\_ amount in birr \_\_\_\_\_

### 3.2. Expenditure of the Household

3.2.1 Indicate the amount of money you have spent in buying different agricultural inputs during the last cropping year (in birr)?

- a) For fertilizer \_\_\_\_\_ b) For improved seed \_\_\_\_\_  
 c) For farm tools and implements \_\_\_\_\_ d) for chemicals \_\_\_\_\_  
 e) For oxen \_\_\_\_\_ f) For others \_\_\_\_\_

3.2.2 Indicate the type and amount of money your family has spent during the year 2006.

S/N	Type of Expenditure	Amount (Birr)
3.2.2.1	Purchased food items	
1.1	Crop products	
1.2	Animal and animal products	
1.3	Industrial products	
	Sub total	
3.2.2.2	Own produce consumed by the family	
2.1	Crop products	
2.2	Animal and animal products	
2.3	Fruits and vegetable products	
	Sub total	
3.2.2.3	Other Expenses	
3.1	Industrial goods consumed by household/out of food	
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	

### 3.3 Farm Resource Characteristics of the Household

3.3.1. Total farm size \_\_\_\_\_ in local units.



3.3.2. Do you own land? a) No b) Yes

3.3.3 If your answer is yes, size and use of land holding in 2006/7 crop year is:

1) Total cultivated land in 2006/7 crop year \_\_\_\_\_ *Thimdi* ( \_\_\_\_\_ ha)

2) Owned by the household \_\_\_\_\_ *Thimdi* ( \_\_\_\_\_ ha)

3) Rented in \_\_\_\_\_ *Thimdi* ( \_\_\_\_\_ ha)

4) Shared cropped in \_\_\_\_\_ *Thimdi* ( \_\_\_\_\_ ha)

3.3.4. Owned land operated by others \_\_\_\_\_ *Thimdi* ( \_\_\_\_\_ ha)

1 Rented out \_\_\_\_\_ *Tsmidi* \_\_\_\_\_ (hectare)

2 Sharecropped out \_\_\_\_\_ *Tsmidi* \_\_\_\_\_ (hectare)

3.3.5 How many of your family members do permanently work on farm? .....

3.3.6 Have you used hired labour on farm? \_\_\_\_\_

3.3.7 If yes, how often? \_\_\_\_\_

3.3.8. At what rate? \_\_\_\_\_

3.3.9. For how long? \_\_\_\_\_

3.3.10. For what farm activity did you hire labour?

1. Plough

2. Weeding

3. Harvesting

4. Threshing

5. Others (specify \_\_\_\_\_)

3.3.11. Was there shortage of labour during the peak period? Yes/ no \_\_\_\_\_.

3.3.12. If yes, how did you overcome it?

a) Through mutual aid team (Debo) \_\_\_\_\_

b) Hiring daily labourer \_\_\_\_\_

c) By using the female children labour of the family \_\_\_\_\_

d) Others (specify) \_\_\_\_\_

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3.3.13. Allocation pattern of land to different crops during 2006/7-crop season

S/N	Types of crop	Amount Allotted in <i>Timad</i>
1	Teff	
2	Wheat	
3	Millet	
5	Barely	
6	Maize	
7	Sorghum	
8	Lentil	
9	Peas	
10	Beans	
11	oil seeds	
12	Vegetables	
13	Others(specify)	

3.3.14. Land allotted for Livestock grazing \_\_\_\_\_ Fallow \_\_\_\_\_ others (specify) \_\_\_\_\_

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

a) Good      b) Medium      c) Poor

3.3.16. 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)	labour in M.D	
1. Teff							
2. Wheat							
3. Millet							
4. Barley							
5. Maize							
6.Sorghum							
7.Vegetable							
8. Beans							
9.oil seeds							
10. Lentil							
11. Others							

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3.3.17. Do you feel that your holding is sufficient to produce the amount required to satisfy your home consumption and for generating funds for purchase of other goods you need? a) No b) Yes

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

- a) Selling labor                      b) Weaving                      c) Local drink sale  
 d) Trading   e) Nothing        f) Or combination of these    g) others (specify)\_\_\_\_\_

3.3.19. Can you get more land if you want? a) No b) Yes

If yes where? \_\_\_\_\_ Distance from your home \_\_\_\_\_

How much is the payment for one *timad* \_\_\_\_\_ Birr.

4.3.20. How many livestock do you own? Please fill in the following table

S/N	Types of Livestock	Number	Purpose of use	Value of LS in Birr
1	Oxen			
2	Bulls			
3	Cows			
4	Heifers			
5	Calves			
6	Mules			
7	Horse			
8	Donkey			
9	Sheep			
10	Goats			
11	Poultry			
12	Others			

3.3.21. Number of oxen owned for draught purpose

1. None 2.One 3.Two 4.Three 5.Four 6. Five and more than five

## Production and Consumption

### 3.3.22. Crops

Major crops produced	Total production In (Qts)	Price/Qts (Birr)	Amount		
			Consumed	Sold	Stored
Teff					
Wheat					
Chickpea					
Guayyo (Vetch)					
Lentil					
Nugi					
Barely					
Sorghum					
Maize					
Peas					
Beans					
Vegetables					
Others (specify)					

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3.3.23. Livestock Products

Type of Production	Total owned	Price per unit	A m o u n t (No.) in 2001		
			Consumed	Sold	Saved
Oxen					
Cows					
Heifers					
Calves					
Bulls					
Donkey					
Horses					
Mules					
Goats					
Sheep					
Poultry					
Milk					
Butter					
Dung					
Eggs					
Others(specify)					

3.3.24. Do you face a problem in selling your farm produce? a) No b) Yes

3.3.25. If yes, did it affect you to repay your loan on time a) yes b) no

3.3.26. If your answer is yes, what is the major marketing problem do you face ? a) low price b) lack of transport c) low demand for the produce  
 d) Long distance e) Competition from other producers  
 f) Lack of storage facilities g= others (specify).....

**3.4 Loan Repayment performance of the Household**

3.4.1. Did you pay your debt? a) No b) Yes

3.4.2. If your answer is yes, at what time did you pay back your debt? \_\_\_\_\_

- 1) Before time of commitment
- 2) On time
- 3) After time of commitment

3.4.3. If not repaid, how could you get input loans for the next production season?

- a) Not to use improved inputs
- b) Share improved inputs from relatives who get through credit
- c) I explained the reasons for non-repayment and convince to get fresh loan
- d) Others (specify) \_\_\_\_\_

3.4.4. If your answer is no, why you become late?

- a) I did not get/receive money on time
- b) I forgot the time of repayment
- c) The management did not ask me
- d) I did not need to repay
- e) Specify other if any \_\_\_\_\_

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

- a) Cooperative's loan
- b) Bank's loan
- c) From relative and money Lender's loan
- d) Food security's loan
- e) World Bank and FAO's loan
- e) Other specify \_\_\_\_\_

3.4.6. Why? State your reason

- a) Due to high penalty
- b) Due to high interest
- c) I do not need to repay other's loan
- d) Due to the existence of collateral
- e) Other specify \_\_\_\_\_

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

\_\_\_\_\_

3.4.8. Did you know the end of grace period of the credit that you took last year?

- a) No
- b) Yes

3.4.9. If totally not repaid, what were the major reasons/factors, which force you not to repay your agricultural input loan/debt? (Rank in order of importance)

- 1) Clothing \_\_\_\_\_
- 2) Housing \_\_\_\_\_
- 3) School fee \_\_\_\_\_
- 4) Land use tax \_\_\_\_\_
- 5) Recreation \_\_\_\_\_
- 6) Food consumption

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7) My negligence                      8) others (specify) \_\_\_\_\_

3.4.10 Do any natural calamity affect your crop and livestock production in the production year    a) No  
b) Yes

3.4.11 If yes, which natural calamity had occur in your production

1. Crop loss due to pest and disease
2. crop loss due to drought
3. crop loss due to water logging
4. loss of livestock due to drought or disease
5. if others specify \_\_\_\_\_

3.4.12, How much income you had loss due to natural calamity? In birr \_\_\_\_\_

3.4.13. Have you faced series health problem? a) No    b) Yes

If your answer is yes, do you have any farm activity you didn't perform on time because of health problem? Specify if any \_\_\_\_\_

3.4.14. How much was the loss of production \_\_\_\_\_

3.4.15. Have you gone to any health center? a) No    b) Yes

3.4.16. If yes, how much money you pay for treatment \_\_\_\_\_

3.4. 17.The source of the money you paid is:    a) my resource        b) credit        c) grant

#### **IV. Institutional factors**

##### **4.1. Institutional service**

4.1.1 Distance of your home from extension agent (hrs) \_\_\_\_\_ km \_\_\_\_\_

4.1.2 Distance from MPC (hrs) \_\_\_\_\_ km \_\_\_\_\_

4.1.3. How many times MPC' loan committee has visited you in the year? \_\_\_\_\_

4.1.4. Was the service provided by cooperative in credit provision and repayment is satisfactory a) yes  
b) no

4.1.5. If your answer is no, what are the major credit service problems of cooperative that you believe them affect your loan repayment performance.

- a) Credit supply does not keep the right time
- b) Loan repayment does not keep the right time of marketing
- c) Committee members are not found in their office during time of loan repayment
- d.) specify other problems if any.\_\_\_\_\_.

4.1.6. Do you think committee members are working according the bylaw and regulation of cooperative? a) No b) Yes

4.1.7. Do you thing the time schedule for loan repayment is appropriate to meet the right time for marketing a) No b) Yes

4.1.8. Do you think in general the repayment period is appropriate for input loan repayment? a) No b) yes

4.1.9. If your answer is no, would do suggest the appropriate time\_\_\_\_\_

4.1.10. What institutional problems did you face in your kebele administration?

- a) Land tenure
- b) Health service
- c) Credit institution
- d) Veterinary service
- e) Extension service
- f) Educational service
- g) Transportation problem
- h) other (specify) \_\_\_\_\_

4.1.11. How could you get credit from multi-purpose cooperative?

- a) On my need
- b) Local administration enforced me to take credit
- c) In order to get other services I take credit

4.1.12. Did you practice saving? a) No b) Yes

4.1.13. If your answer is yes, in what form?

- a) In kind
- b) In cash at home
- c) In cash at bank
- d) In cash at saving and credit cooperative
- e) other (specify)\_\_\_\_\_

4.1.14. If your answer is no, why?

- a) Saving and credit cooperative is not available



b) I do not see the benefit of saving

c) My income is not enough to save

4.1.15 Do you think that the committee members help you to repay loan on time? a) No b) Yes

4.1.16. If no, state the problems\_\_\_\_\_

#### **4.2. Input and Credit Availability of the Household**

4.2.1 Did you get input (improved seed and fertilizer) during the last production season? a) No b) Yes

4.2.2 If your answer is yes, how many quintals used? \_\_\_\_\_ a) seed \_\_\_\_\_ b) fertilizer

4.2.3 How do you perceive about the price of the inputs? a) Cheap b) Fair c) Expensive

4.2.4 If your answer is no, why?

a) I did not need input

b) I have not get input

c) Because the input was very expensive

d) I did not hear about it

4.2.5 Is there adequate number of input supplier? a) No b) Yes

4.2.6 If your answer is yes, how many were there?\_\_\_\_\_

4.2.7 If your answer is no, from where did you get the input?\_\_\_\_\_

4.2.8 Did you use improved seed on your farm? a) No b) Yes

4.2.9. If your answer is no, state your reason.

1 I do not know its use

2) Not available (No supply)

3) Too expensive

4) others (specify)\_\_\_\_\_

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

a) No b) Yes

4.2.11. If your answer is yes how much?\_\_\_\_\_

4.2.12. For what purpose did you use the money?\_\_\_\_\_

4.2.13 Do you have the experience of using credit? a) No b) Yes

4.2.15. If your answer is yes, for how long did you use credit?\_\_\_\_\_ Years.

4.2.16. If your answer is no, why?

a) Interest is high

b) I do not need credit

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- c) Credit delivery is not convenient                      d) others

4.2.17. Did you face shortage of money to finance your production and consumption purpose and took credit to alleviate the shortage of money during the year? a) No    b) Yes

4.2.18. If your answer is yes, for what purpose?

- a) Purchase of seeds      b) Purchase of fertilizer              c) Purchase of chemicals  
 d) Purchase of oxen    e) Purchase of farm implements    f) For family consumption  
 g) Social obligation      h) others (specify) \_\_\_\_\_

4.2.19. From whom and how much money did you borrow to alleviate the shortage of money?

List in the following table.

S/N	Source of credit	Amount	Interest	Repaid	Arrear
1	From CBE				
2	From cooperative				
3	From BOA				
4	From World Bank				
5	From relative and money lenders				
6	From food security				
7	From FAO				
	Total				

4.2.20. Why did you borrow from the above mentioned sources?

- a) Less collateral required                      b) Easier to get loan  
 c) Seemed more friendly                      d) Knew persons before hand  
 e) Get terms to suit situation                      f) previous business dealings  
 g) Cheapest source of credit that could be found  
 h) Other reasons (specify) \_\_\_\_\_

4.2.21. What are the main sources of credit accessible in your locality in order of importance?                      i)

\_\_\_\_\_ ii) \_\_\_\_\_ iii) \_\_\_\_\_ iv) \_\_\_\_\_

4.2.22. Did you get the amount of credit you requested for agricultural input credit purpose? a) No  
b) Yes

4.2.23. If your answer is yes, how much? \_\_\_\_\_ If not, why? \_\_\_\_\_

4.2.24. Did you get credit service in time? a) No b) Yes

4.2.25. What types of credit did you receive in 2006/7? Fill the following table correctly.

S/ n	Source of credit	Duration of credit			Types of credit		Amount of credit in birr
		Short term	Medium term	Long term	In cash	In kind	
1	From CBE						
2	Cooperative						
3	From BOA						
4	From World Bank						
5	Food security						
6	From FAO						
7	Other people						

4.2.26. Who take more responsibility to make decision on the credit taken?

a) Husband                      b) Wife                      c) Both

4.2.27. What did you suggest on the interest rate of the loan you took from cooperative?

a) Low    b) Fair/reasonable    c) High    d) Very high

4.2.28. If your answer is high/very high; did it makes you not to repay loan? a) No    b) Yes

4.2.29. Did the use of credit bring significant change in your living standard?

a) No    b) Yes

4.2.30. If your answer is yes, in what aspect?

a) I owned assets    b) I educated my children  
c) I build a house    d) my production has increased

4.2.31. Do you support the continuity of the agricultural input credit? a) No    b) Yes

### 4.3. Communication

4.3.1. Did you have a radio? a) No    b) Yes

4.3.2. If yes, did you follow agricultural programs on the Radio? a) No b) Yes

4.3.3. If literate, have you access to written agricultural materials? a) No b) Yes

4.3.4. If yes, how often? \_\_\_\_\_

4.3.5. If no, Why? \_\_\_\_\_

4.3.6 Did you get credit expert or DA for technical assistance on utilization of credit? a) No b) Yes

4.3.7 If yes what were the major factors that made you to communicate with the credit expert or development agency/DA?

a) To get technical assistance

b) To approve the loan

c) Nothing except to fulfill their criteria

d) others \_\_\_\_\_

4.3.8. How frequent do you meet a DA or credit expert?

1. Once in a week

2. Once in a month

3. Specify if any other \_\_\_\_\_

4.3.9. Have you been trained/took orientation before loan disbursement about credit, interest rate, and commitments that you had to fulfill? a) No b) Yes

#### V. opinion of management bodies of cooperatives, local administrative and experts

5.1 How did you see the general procedure of loan acquisition and nature and repayment conditions of your area? \_\_\_\_\_

(To be answered by cooperative's experts and local administrative bodies)

5.2 What is your opinion on your Cooperative member's credit use, loan disbursement, and interest rate and repayment conditions? \_\_\_\_\_

(To be answered by cooperative's management committees)

5.3 please discuss the most important constraints in loan repayment nature of MPCs and suggest solutions \_\_\_\_\_

(To be answered by cooperative's management committees, hired staffs of MPCs & experts)

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**VI. Suggestion of respondent to improve input loan repayment of MPCs.**

R.No	Suggestion to improve loan repayment of members of MPCs			
		Agree	Strongly agree	Disagree
1.	There should be close supervision by management committee and loan expert to improve loan repayment performance of members.			
2.	Training(orientation) should be given before loan provision about the interest, time of repayment, utilization etc.			
3	As the Loan provision and repayment Services of the cooperatives was too weak efforts should be made to improve this service by member, committees and other responsible bodies.			
4	As social ceremonies need great deal of money they have negative effect on loan repayment so integrated efforts are needed to minimize traditional ceremony.			
5	Before approval of loan agreement evolution of former loan performance each member is necessary			
6	Husband and wife should have equal decision power to take and to administrate loan			
7	The time schedule for loan repayment of cooperative is too short to meat the right time for marketing so this should be extended.			
8	As most farmers did not use the recommended rate of fertilizer and seed given by bureau of agriculture Extension efforts have to be made to change this situation			
9	The creation of non-farm and off-farm activity as a means of additional income to the house hold should be diversified in rural areas in order to improve loan repayment performance of member farmers.			
`10	As the interest rate for input credit is too high, most farmers didn't repay debt in time; cooperatives should take a measure to reduce the rate of interest.			
11	Specify other recommendation if any			