Analysis of the Role of Cooperatives in Agricultural Input and Output Marketing in Southern Zone of Tigray, Ethiopia

By

Alema Woldemariam Atsbaha

A thesis Submitted in Partial Fulfillment of the

Requirements for the Master of Science Degree

In Cooperative Marketing

Major Advisor: Dr.G.B.Pillai (Professor)

Co-Advisor: Dr Berhanu G/Medhin

March, 2008

Declaration

This is to certify that this thesis entitled "**Analysis of the Role of Cooperatives in Agricultural Input and Output Marketing in Southern Zone of Tigray, Ethiopia.**" submitted in partial fulfillment of the requirements for the award of the Degree of M.Sc., in Cooperative Marketing to the School of Graduate Studies, Mekelle University, through the Department of Cooperatives done by Mr. Alema Woldemariam Atsbaha, Id.No. FDA/GRS 12/98 is an authentic work carried out by him under my guidance. The matter embodied in this project work has not been submitted earlier for award of any Degree or Diploma to the best of my knowledge and belief.

Name of the student: Alema Woldemariam Atsbaha

Signature _____

Date _____

Dr. G. B. Pillai (Professor) _____ _____

Major advisor Signature Date

Dr. Berhanu G/Medhin _____ _____

Co-advisor Signature Date

TABLE OF CONTENTS

ANALYSIS OF THE ROLE OF COOPERATIVES IN THE AGRICULTURAL INPUT AND OUTPUT MARKETING, IN SOUTHERN ZONE OF TIGRAY, ETHIOPIA.

ABSTRACT

When the issue of economic growth and development of the country is raised, one has to take into account the performance of the growth of smallholder farmers. Reducing the challenges they are facing and utilizing their potentials can help to accelerate the agricultural sector and economic development of the country as a whole. Agricultural cooperatives are ideal means for self-reliance, higher productivity and promotion of agricultural development. Therefore, the major concern of this study is empirically analyzing the role of agricultural multipurpose cooperatives found in the Southern Zone of Tigray Region of Ethiopia. From the five Woredas of the Southern Zone of Tigray Region Alamata and Ofla Woredas were selected at random for the study.

Both primary and secondary data were taken for this study. A three-stage random sampling procedure was adopted to select 10 primary agricultural multipurpose cooperatives and a total of 208 sample respondents at the rate of 56 from Alamata and 152 from Ofla Woreda. Primary data pertaining to the year 2006/7was collected from the selected sample respondents by using a through structured interview schedule. Of the total respondents, about 70.209% and 29.80% were participants and non-participants of the cooperatives agricultural input and output marketing respectively. Secondary data of

cooperatives was also taken in to consideration to examine the performance of the input and output marketing by the cooperatives in the Alamata and Ofla Woreda. Financial ratios were analyzed taking the two audit year's financial data. The liquidity analysis showed that the cooperatives under investigation were below the satisfactory rate (current ratio of less than 2.00). The financial leverage ratio (debt ratio) showed that the cooperatives under investigation used financial leverage (financed more of their total asset with creditors' fund).The profitability ratio of the cooperatives showed that the profitability of most cooperatives improved when we compare from the first audit year to the second audit year, except two cooperatives in Ofla Woreda (Tadesech from 25.9% in 2004 to negative 1.6% in 2007 and Higumberda from 40.8% in 2002 to negative 5.2% in 2003.

.Descriptive statistics were used to compare the explanatory variables of the participant and non-participant sample respondents in the agricultural input and output marketing. Testing differences between two samples were done using T-test and Chi-square test. The comparison revealed that there is a significant difference between the two groups of sample farmers regarding their age, education livestock ownership in TLU, share holding, non-farm income, expenditure on agricultural input, distance of the cooperative office from the farmer member's house, membership of the household head in other cooperatives and price of improved seed. Probit econometric model was employed to identify the factors influencing the participation of cooperative members in the input and output marketing by cooperatives in the two Woreda. Fifteen explanatory variables were included in the model of which ten variables were found to be significant. Of these, six explanatory variables namely own land, shareholding ,distance, output price, membership

in other cooperatives and seed price) were found to be significantly and positively related to the participation of cooperative members in the agricultural input and output marketing by cooperatives. Hence, it is suggested that more attention is to be given to the human resource development of the cooperative auditors through short term and long training programs so that to able to undertake timely audit of the cooperatives both in terms of quality and quantity. This implies, cooperatives can pay the patronage and capital dividend to members and minimize financial embezzlements through strong internal control system. Moreover, professional management is becoming crucial issue for the cooperative societies in order to run viable and profitable business that can meet members benefit. Therefore, due attention is required for the recruitment of professional managers

ACKNOWLEDGMENTS

I am indebted to a large number of individuals for their encouragement and help while conducting this study. First and foremost, I want to thank the valuable suggestions, scientific guidance and encouragingly responsive attitude expressed by my major advisor Dr.G.B.Pillai (Professor) to whom I am duly bound to express my gratitude. My special respect and thanks should also go to my co-advisor Dr. Berhanu G/Medhin for his encouragements, valuable and scientific comments and brotherly advices during my research work.

I am deeply beholden to the IPMS-ILRI Project for its provision of sponsorship to my research work; with out their financial assistance it was unthinkable to make real this study. My special thanks also go to Dr. Gebremedhin W/Wahid IPMS-ILRI Atsbi pilot learning project head for his advice and support to get the sponsorship. Many thanks go to Dr.Gebreyohanes Berhane and his staff of the Alamata IPMSs-ILRI project office for all Administrative and facilitation supports made during my research work.

I have no words to thank for my friend Ato Haftu Tsegay for his moral, financial and material support through out my MSc. study and assignment of his laptop for my research work. In this connection, my thanks are due to my lovely wife w/ro Tibe Abay and my keen children for their commitment and special treatment during my study. My thanks are also due to all my relatives and, brothers (Hiluf W/Mariam, Desta Hailu, Kahase G/michael, Semere abady, Girmay Hailu) for their unreserved support and

encouragements during the entire period of M.Sc. research work. I am also extremely grateful to Ofla and Alamata Woreda Office of Agriculture and Rural Development heads, cooperative experts , cooperative leaders and farmers without their help and co-operation this study would have not been materialized. W/ro Zewdu Gebregiorgs my neighbor also deserve special thanks for the effort she made to assist me in writing and provision of her private computer. I am also indebted for the technical assistance and encouragement received from my colleagues Dr. Zenebe Gebreegziabher, ATo Gebrrehiwot Teklu, Ato Kebede Manjur, Ato Gebrehiwot Hailemariam, and Ato Haileselassie Girmay.

During my stay in Mekelle University, I am indebted to thank the help of all my instructors, the University Community as a whole and specially the Department of Cooperatives and the postgraduate library. Finally, I would like to extend my thank to my friend Jemal Mahmud, Alem Kiros and all my classmates.

HONOR TO ALMIGHTY GOD!

Acronyms and Abbreviations

ACE	Agricultural Cooperatives in Ethiopia
AISE	Agricultural Input Supply Enterprise
AWCPD	Alamata Woreda Cooperative Promotion Desk
CSA	Central Statistics Authority
EAL	Ethiopian Amalgamated Limited
ESE	Ethiopian Seed Enterprise
FAO	Food and Agriculture Organization
FCA	Federal Cooperative Agency
HH	Household Head
ICA	International Cooperative Alliance
ILO	International Labour Organization
ILRI	International Livestock Research Institution
IPMS	Improved Productivity and Market Success
MOARD	Ministry of Agriculture and Rural Development
MOFED	Ministry of Finance and Economic Development
MT	Metric Ton

NFA	National Fertilizer Agency
OLS	Ordinary Least Square
OWCPD	Ofla Woreda Cooperative Promotion Desk
PASDEP	Plan for Accelerated and Sustainable Development to End Poverty
SDPRP	Sustainable Development and Poverty Reduction Program
SNNPR	Southern Nations , Nationalities, Peoples Region
TLU	Tropical Livestock Unit
USAID	United States Aid for International Development
USDA	United States Department of Agriculture
VIF	Variance Inflation Factor
WFP	World Food Programme
WMS	Welfare Monitoring Service

List of Tables

List of Figures

CHAPTER ONE

INTRODUCTION

Agricultural Development is in a crisis in Ethiopia. Agriculture is the major source of employment, revenue and export earning. The challenges facing Ethiopia are daunting: the dynamics of population growth, land degradation, very low productivity, structural bottlenecks, dependence on unreliable rainfall, and being land-locked combine to pose challenges almost unequalled anywhere in the world. Government efforts to accelerate progress as rapidly as possible – including a big push on education, expanding infrastructure, uplifting the economy, building institutions, and devolving (decentralize) administration– are like those of an athlete running uphill: extra-efforts are required just to keep the pace.

There has been encouraging progress in recent years in improving some basic aspects of life in Ethiopia. Since 1996, the literacy rate has increased by 50 percent, the rate of malnutrition has fallen by 20 percent, the share of the population with access to clean water has risen to 38 percent and according to the welfare monitoring survey (WMS) there has been a steady decline in the reported incidence of illness (MoFED, 2006). Nonetheless, human development indicators in Ethiopia still remain at low levels. Most Ethiopians lead lives of unrelenting hardship: the majorities of households live on small plots of relatively unproductive land, and rely almost entirely on hand-cultivation of basic food grains to survive. It has underpinned much of the thrust of the sustainable development and poverty reduction program (SDPRP), and is now the focus is on a massive scaling-up effort to achieve the millennium development goals (MDGs). This

represents the second prong of plan for accelerated and sustainable development to end poverty (PASDEP). (MoFED, 2005)

The concept of human cooperation is not new. It was existing even before the formation of modern cooperative. The Rochdale society of equitable pioneers Ltd 1844 is the first successful consumer cooperative business. A group of 28 traders' in England formed it as consumer (buyers) cooperative. The cooperative was having its own business practices (principles) which made the cooperative successful.

The spirit of self-help and co-operation has long been a part of the farming community in Ethiopia. There have been mutual organizations in urban areas, too. When communities face problems, they devise ways of addressing these problems based on their values, culture and beliefs. In Ethiopia, various self-help co-operatives still exist. They are local level institutions with an organizational base that are indigenous, such as Debo, Mahiber, Iddir, and Iqub. These traditional informal cooperatives would be a base for formal cooperatives.

Ethiopia has introduced modern types of co-operatives in various areas of endeavor after the majority of African countries where their co-operatives were established by the Western powers during their colonization period. In fact, the first consumer co-operative was established in Addis Ababa in 1945 (ILO, 1975: 55). However, it was after decree No. 44 of 1960 that modern or 'imported' co-operatives were officially introduced.

The decree No 44/1960 was replaced by "Co-operative Society Proclamation No. 241 of 1966". The main objective of this proclamation was improving the standard of living of the farmers, better business performance and improving methods of production. In reality, this proclamation benefited the wealthy commercial farmers who resided in the most potential areas. The crisis of

co-operative identity began at the time when the Derge abolished all co-operatives except the Housing and saving co-operatives which were organized under Proclamation 241/ 1966. The Co-operatives during that period were not autonomous organizations, but had purely political character. This was clearly reflected in the proclamation of 138/ 1978 Article 3.5 i.e. "Co-operative shall be organized to conduct political agitation". Besides, Article 3.6 says: "Co-operative is organized to participate in the building of the socialist economy." ILO (1997 as cited by Haileselassie, 2003) clearly states that many co-operatives in Africa are not (were not until recently) "genuine", because they served the state, a political party or individuals instead of their members. When the State 'incorporates' co-operatives, they can become instruments of oppression instead of participation. An example (though now dissolved) is the peasants' associations of Ethiopia, which forced farmers into collective production against their will. Therefore, the proclamation was enacted on the basis of socialist ideology. They were considered as the extension of State institutions, and almost all lost their co-operative identity.

By abolishing the more centralized economic policy and planning and with the new market liberalization policy, which is democratic and decentralized policy, launched the formation of new "Agricultural Co-operative Societies Proclamation No. 85/1994". This proclamation restricts the government from negative interference in the internal affairs of co-operatives and initiates the organization of free, autonomous and independent co- operatives.

For establishment of different types of co-operatives in the country, "Co-operative Societies Proclamation No. 147/1998" replaced the proclamation of 1994. This proclamation in particular includes the following: Agricultural, Consumer, Housing, Industrial and Artisan Producers', saving and Credit, Fishing and Mining Co-operative Societies.

Under this proclamation, co-operatives are organized to solve problems collectively, to achieve a better result by coordinating their knowledge, wealth and labour to promote self-reliance, to improve the living standard of members and so on.

The Ethiopian government is trying to promote co-operatives with the objective of developing them into autonomous self-help institutions. This was the main reason for setting up the Co-operative Promotion Department in Prime Minister's office, Co-operative Promotion Bureaus in regions and in line administrative units (zones and woredas) and later Co-operative Commission at federal level.

The favorable condition created by proclamation No. 147/ 1998 has helped the co-operatives to organize and reorganize themselves voluntarily. In the year 2001, for instance, there were 7,366 different types of co-operatives in the country with 3,684,112 members and with a capital of 515.7 million Birr (FCC Report). Furthermore, the new proclamation has helped the co-operatives to organise themselves into unions by pooling their resources together. As a result, 22 grain marketing unions, and 2 coffee marketing unions have been established in Amhara, Tigrai, Oromiya and Southern Regions.

In Tigrai, modern co-operative societies were introduced after the formation of the first Proclamation No.241/ 1966. It is uninvestigated whether there were cooperatives before the legislation was enacted. However, under the above-mentioned proclamation, there were 7 co-operatives in the then Shire and Raya Azebo Awrajas with 3,297 members and a capital of 176,356 Birr (Haileselassie, 2003). All these co-operatives were located in the most 'potential' areas where their economic return was high.

A report from Tigray cooperative promotion and input marketing division indicates that there are 1309 different types of primary and 21 secondary cooperative societies in the region, of which 582(44.46%) are agricultural multipurpose cooperatives which deal with the input and out put marketing of their members. The remaining 727 (55.54%) cooperatives comprise of saving and credit, construction, irrigation and other type of cooperative societies. The cooperative societies in the region have a total membership of 361,242 which includes 275,696(76.32%) male and 8, 5546 (23.68 %) female members with a total capital of Birr 71,462,246.53.

Table-1 Type of Cooperatives in Tigray

No	Type of Cooperative	Number of Cooperatives	Membership by type			Capital
			Male	Female	Total	
1	Multipurpose Coops.	582	256,844	81,954	338,798	45,602,790.90
2	Irrigation coops.	159	5,759	1,072	6,831	987,853.18
3	Saving& Credit	163	5,466	2,178	7,644	635,5717.00
4	Construction	181	2,254	115	2,369	1,068,064.00
5	Dairy coops.	22	1,036	139	1,175	7,253,368.00
6	Animal & Animal products	26	381	22	403	206,067.00
7	Consumer cooperatives	12	225	28	253	1,162,038.00
8	Metal works	28	418	38	456	602,528.45
9	Other cooperatives	136	3,313	NA	3,313	8,223,821.00
	Total	**1,309**	**275,696**	**85,546**	**361,242**	**71,462,246.53**

Source: Tigray Cooperative Promotion Office report submitted to Federal Cooperative Agency (2006)

1.1. Statement of the problem

The weak performance of the agricultural markets (both input and output markets) in Ethiopia has been portrayed in various studies as a major impediment to growth in the agricultural sector and the overall economy (Dawit, 2005).With an inefficient marketing system, the surplus resulting from increased production benefits neither the farmers nor the country (Eleni *et al*., 2004 as cited by Dawit 2005). This is particularly important as the country is following a policy of agriculture led-industrialization and economic development where the agricultural sector is expected to produce surplus that can move to the other sectors of the economy.

The agricultural markets in Ethiopia are highly influenced by the production system itself. Most of the agricultural production is undertaken by small scale producers scattered all over the country, engaged in different agricultural enterprises without specialization, and with limited marketable surplus. Gebremeskel *et al*. (1998) estimated that only 28 percent of total farm output in 1996 was marketed. Therefore, the scattered produce in small quantity needs to be collected and assembled, graded, and transported from one market level to another. Thus, the marketing system is characterized with a long chain with many intermediaries. An intervention is required to shorten the marketing channel in order to reduce the marketing costs incurred at each level of marketing channel so that the benefits will go to the farmers.

The cause of success and failures of cooperatives corresponds in a building up and breaking down of cooperative identities through the process by which members and employees grow to hold the identity as their own vision.

Although cooperatives are considered as an appropriate tool of rural development they are facing critical problems, which retain them from their positive role. Some of the constraints of cooperatives are: low institutional capacity, inadequate qualified personnel, low entrepreneurship

skill, lack of financial resources, lack of market information, poor members' participation in the different activities such as financing the cooperative, patronizing the business activities of the cooperatives, control and supports it. Moreover, the prices of agricultural inputs are increasing from year to year and farmers are complaining on it. These multifaced problems make very difficult the over all activities of the cooperatives in general and the agricultural input and output marketing in particular. The aforementioned problems place the farmers as usually price takers due to the fact that they have poor marketing skill and limited bargaining power. There have been attempts made by the government to improve the marketing skill and bargaining power of farmers through establishment of cooperatives and promoting other group action approaches. (Dawit, 2005).

The studies reviewed so far have not discussed the role of cooperatives in input and out put marketing in the study area. To the knowledge of the researcher, there is dearth of studies on the role of cooperatives in input/out put marketing in the study area. Hence the present study is unique and it makes an attempt to bring forth the role of cooperatives in input and output marketing in southern zone of Tigray. Therefore, this research will try to address the following issues

1. The roles played by cooperatives in the in put supply and distribution in the southern zone of Tigray.
2. The trend of output marketing made by cooperative societies in the study area
3. The price change of agricultural inputs especially chemical fertilizer.
4. The response of the farmer members in participation in agricultural input and output marketing services provided by primary cooperative societies
5. Constraints affecting input and output marketing activity of primary cooperative societies.

1.2. Purpose of the study

To measure the role of cooperatives in input and output marketing at any level of analysis, information on economic and social contributions of cooperative societies at micro level is virtually needed. The analysis of cooperatives' role at regional and national level critically depends on response parameters from individual farmer's members and cooperative societies. Thus, the purpose of this study is to contribute to the analysis and study of the role of cooperatives at woreda and regional level. Moreover, it will help as an input for researchers for further study, analysis and developing appropriate agricultural input and output marketing system in relation to cooperatives, so that it will address the needs and problems of the cooperative societies and member farmers to benefit from their cooperative organization.

1.3. Objectives of the study

The general objective of the study is to study the role of cooperatives in agricultural input and output marketing in southern zone of Tigray region, Ethiopia.

Specific objectives of the study are:

1. To assess the performance of cooperatives in agricultural input and output marketing in southern zone of Tigray
2. To study the participation of cooperative members in agricultural input and output marketing activities.
3. To identify constraints in the agricultural input and output marketing services delivered by cooperatives in the study area.

4. To develop policy recommendations for improving input and output marketing through cooperatives.

1.4 General Hypothesis

Hypotheses have been framed to indicate the direction in which the researcher study should proceed. In line with objectives, the following hypotheses have been framed.

1. The performance of multipurpose cooperatives in input and output marketing is satisfactory
2. The participation of members of multipurpose cooperatives in the input and output marketing is high
3. The participation of members of multipurpose cooperatives in input and output marketing are influenced by the land ownership of the member household heads
4. Educated members highly participate in the input and output marketing of the cooperatives
5. Fertilizer prices have positive influence in the input and output marketing by cooperatives

1.5. Limitation of the study

The study is restricted both in space and time. Due to the constraints of resource and time as well as purpose of the study, not all the primary cooperatives involved in agricultural input and out put marketing activity found in the study area were covered. A sample of ten (10) multipurpose primary cooperatives was randomly selected from two woredas of the southern zone of Tigray Region. The study is confined to rural agricultural cooperatives which are engaged in agricultural input and out put marketing. The validity of certain data collected from the cooperative societies

and respondents may not be such completely perfect. Even though, the result represents the conditions in southern zone of Tigray Region, the results cannot be generalized to the whole part of Ethiopia.

CHAPTER TWO

LITERATURE REVIEW

The relevant literature pertaining to the concept and definition of cooperatives, input and output marketing and empirical studies are presented in this chapter.

2.1. Concept of Cooperation

Cooperation has been the very basis of human civilization. The inter-dependent and the mutual help among human beings have been the basis of social life. It is the lesson of universal social history that man cannot live by himself and for himself alone. Since the beginning of human society, individuals have found advantage in working together and helping one another in all over the world .In Ethiopia too, it is common for people to be inter-dependent in mutual help and self-help activities in their day-to-day socio-economic conditions. The traditional cooperatives like edir, equb, debo and senbete are traditional form of associations, which should be basis to modern form of cooperatives in Ethiopia.

2.2. Definition of Cooperatives

The cooperative model has been adapted to numerous and varied businesses in 1942.Ivan Emilanoff, (Kimberly A. Zeuli and Robert Cropp, 2004) a cooperative scholar, remarked that" diversity of cooperatives is Kaleidoscopic and their variability is likely infinite. As a consequence

of this diversity, no universally accepted definition of a cooperative exists. Two definitions, however, are commonly used.

1. According to the International Cooperative Alliance (ICA) 1995; "***a cooperative is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise."***

Cooperative leaders around the world recognize the ICA, a non – governmental organization as a leading authority on cooperative definition and values. The ICA definition recognizes the essential elements of cooperatives; membership is voluntarily, coercion (force) is the antithesis (contrast) of co-operation. Persons compelled to act contrary to their wishes are not truly cooperating. True cooperation with others arises from a belief in mutual help; it can't be dictated in authentic cooperatives, persons join voluntarily and have the freedom to quit the cooperative at any time.

2. Another widely accepted cooperative definition is the one adopted by the United Sates Department of Agriculture (USDA) in 1987. "***A cooperative is a user-owned, user-controlled business that distributes benefits on the basis of use."*** This definition captures what are generally considered the three primary cooperative principles such as user ownership, user control and proportional distribution of benefits.

The **"user owner"** principle implies that the people who use the cooperative members help finance the cooperative and therefore, own the cooperative. Members are responsible for providing at least some of the cooperatives capital. The equity capital contribution of each member should be in equal proportion to that member's use (patronage) of the cooperative. This shared financing creates joint ownership, which is part of the ICA cooperative definition.

The **"user- control"** concept means that members of cooperatives govern the business directly by voting on significant and long-term business decisions and indirectly through their representatives on the board of directors. Cooperative statues and bylaws usually dictate that only active cooperative members (those who use the cooperative) can become voting directors, although non-members some times serve on boards in a non voting, advisory capacity. Advisory directors are becoming more common in large agricultural cooperatives in the United States where complex financial and business operations require the expertise of financial and industry experts. Only cooperative members can vote to elect their board of directors and on other cooperative actions. Voting rights are generally tied to membership status-usually one –member, one-vote and not to the level of investment in or patronage of the cooperative. Cooperative law in a number of states in the United States and in other countries, however, also permits proportional voting. Instead of one vote per member, voting rights are based on the volume of business the member transacted the previous year with the cooperative. Generally, how ever, there is also a maximum number of votes any member may cast to prevent control by minority of members. For example, a grain cooperative might permit one vote to be cast for each 1,000 bushels of grain marketed the year before, but any single member would be limited to a maximum of ten votes. Democratic control is maintained by trying voting rights to patronage. Equitable voting rights, or democratic control (as written in the ICA definition), are a hallmark of cooperative.

"**Distribution of benefits on the basis of use,"** under this principle Members should share the benefits, costs, and risks of doing business in equal proportion to their patronage. The proportional basis is fair, easily explained and entirely feasible from an operational standpoint. To do otherwise distorts the individual contributions of members and diminishes their incentives to join and patronize the cooperative.

Cooperative benefits may include better prices for goods and services, improved services, and dependable sources of inputs and markets for outputs. Most cooperatives also realize annual net profits, all or part of which are returned to members in aptly called patronage refunds.

2.3. Cooperative movement in Ethiopia

People form cooperatives to do something better than they could do by themselves or through a non cooperative form of business acting together, members can develop bargaining power or enjoy the benefits of large business like more efficient use of equipment and the ability to spread fixed costs such as management costs over a larger volume of goods and services. These benefits are known as economies of size. To form cooperatives people should have an economic need which can be addressed through the cooperative type of business. Some of the specific needs may include the following

- Expanding in existing markets or developing new markets beyond your own bargaining power or supply potential
- Selling products at higher prices
- Securing lower cost supplies such as feed, seed, petroleum, fertilizer, etc in sufficient quantities and qualities.
- Having better access to services that are of higher quality
- Pooling risks with other produces etc

The concept of human cooperation is not new. It was existed even before the formation or modern cooperative. The Rochdale society of Equitable pioneers ltd in 1844 as the first successful consumer cooperative business. A group of 28 traders' people in England formed it as

consumer (buyers) cooperative. The cooperative was having its own business practices (principles) which made the cooperative to be successful.

2.3.1 Informal cooperatives

Parnel (2001) as cited by Haileselassie, (2003) remarks that traditional (informal) forms of cooperatives have existed for many centuries in many parts of the world and in many cases continue to the present time. These traditional cooperatives practices are often deeply rooted in the local cultures. Typical examples include: systems of work sharing (e.g. at harvest time), irrigation water sharing arrangements, rotating saving and loan clubs, burial societies, construction, agricultural activities.

Norman Uphoff (as cited by the voice of Iddir, 2001) defines indigenous organizations as complex of norms and behaviors that persist over time by serving socially valued purpose, while indigenous organizations are structures of recognized and accepted roles. They are local level institutions with an organizational base that are indigenous.

In Ethiopia, there are indigenous organizations which exist in diverse forms in different cultural, religious and socio-economic contexts. The first organizations in Ethiopia were self-help systems. They existed in the country for centuries before they started to develop some sort of structure. A certain amount of informal co-operation between farms is described mostly involved in lending or borrowing of farm implements, working for a neighbour or lending a hand for special jobs (labour mobilization in agriculture, construction), livestock sharing, saving and credit (in monetary or in material form such as oxen).

The spirit of self-help and co-operation has long been a part of the farming community in Ethiopia. There have been mutual organizations in urban areas, too. When communities face problems, they devise ways of addressing these problems based on their values, culture and beliefs. In Ethiopia, various self-help co-operatives still exist. They are very common across different cultures, but different names are given in different languages. In fact, their objective and functions are almost similar. Among the many others, some of the common ones are mentioned as follows:

a) "Debo". It refers to mutual assistance in farming and house building. This mobilizes community labour in the form of work groups. It is also known in Tigray Region under the name of "Wefera". This happens when one farmer needs his friends, neighbour or relative to help him work in his farm either in ploughing, weeding, threshing, etc. or to construct his house. This informal co-operative does not have permanent members.

b) "Mahber". It is an association for mutual aid based on attachment to religion. It provides members with spiritual satisfaction as they fulfill religious functions, and enables members to get together and develop social interaction among the members. It also supports members in difficulty.

c) "Iddir". It is a society for mutual help and burial. It is established by the mutual agreement of community members to collaborate each other whenever any member or their family members face adverse situations. Unlike others, it has diverse functions and benefits to its members. For instance, it provides financial, material, labour and psychological support at the time of mourning. Furthermore, some of them have been involving in infrastructure development and provision of social services such as schools and health services, and some

are engaged in income generating activities such as consumer goods shop, renting halls and equipment. These diversified functions mainly prevail in urban areas.

d) "Iqub". It is a rotating credit association. It promotes saving habits among members and provides credit to members. It is rare in the rural areas.

Some of the characteristics of self-help organizations (informal co-operatives) include promotion of mutual benefits, more or less democratic and egalitarian structure, voluntary formation, organization leadership, more or less transparent decision making and flexibility of rules and operational modalities (Redie and Hinrichsen, 2002, as cited by Haileselassie, 2003). Furthermore, they show that voluntary associations complement the formal sector by providing spiritual, social and economic services at significantly reduced transaction costs. Above all, informal co-operatives adjust themselves to the changing circumstances. For instance, many iddirs develop 'hybrids' like "iddir_ iqub" to provide saving and credit services in addition to their primary service i.e. consolation and burial service.

2.3.2. Formal Co-operatives

Ethiopia has introduced modern types of co-operatives in various areas of endeavor later than the majority of African countries where their co-operatives were established by the Western powers during their colonization period. In fact, the first consumer co-operative was established in Addis Ababa in 1945 (ILO, 1975). However, it was after decree No. 44 of 1960 that modern or 'imported' co-operatives were officially introduced (Haileselassie, 2003).

It was during the imperial government of Ethiopia that the first decree No. 44/ 1960 was declared in order to form the modern "Farm Workers Co-operatives". This co-operative legislation was

enacted three years later than the creation of the Ministry of National Community Development in January 1957 in order to achieve the objectives of the following Departments: Community Department, Co-operative, Social Welfare and Labour (Alemayehu, cited in Redie and Hinrichsen, 2002).

The decree No 44/1960 was replaced by "Co-operative Society Proclamation No. 241 of 1966". The main objective of this proclamation was improving the standard of living of the farmers, better business performance and improving methods of production. In reality, this proclamation benefited the wealthy commercial farmers who resided in the most potential areas. The co-operatives were not easily accessible to the ordinary and poor peasants. Despite its limitations, Alemayehu (2002) describes that proclamation No. 241/1966 created a favorable situation for the expansion and development of co-operatives in Ethiopia. At the end of the Third Five- Year development Plan, 50 agricultural co-operatives were set up with about 11, 000 members and a capital of 6 million Birr (Haileselassie 2003).

McCarthy (2001) recognizes that the co-operative society proclamation formed the legal corner stone for the promotion of modern agricultural co-operatives; however, he shows the formation of co-operatives in this period was slow and their performance was weak; until the revolution of the 1974, only 165 agricultural co-operatives with a total membership of 33, 400 were established. He asserts that the first Ethiopian co-operatives faced serious obstacles in the land tenure system, banks' collateral requirements, inadequate trained manpower, lack of access to market facilities, absence of membership training programme and inadequate agricultural services.

In 1974, the Ethiopian Revolution erupted and the military regime (known as the Derge) came into power. After a while, the Derge enacted Proclamation No. 71 of 1975 to nationalize all land, which provided for the formation of Peasant Association, Agricultural Producer Co-operatives and Agricultural Service Co-operatives.

In 1978, "Co-operative Societies Proclamation No. 138/1978 replaced the proclamation of 1966. The crisis of co-operative identity began at the time when the Derge abolished all co-operatives except the housing and saving and credit co-operatives which were organized under Proclamation 241/1966. The co-operatives were not autonomous organizations, but had purely political character. This was clearly reflected in the proclamation of 137/1978 Article 3.5 i.e.
"Co-operative shall be organized to conduct political agitation". Besides, Article 3.6 says:
"Co-operative is organized to participate in the building of the socialist economy." ILO (1997 as cited by Haileselassie, 2003) clearly states that many co-operatives in Africa are not (were not until recently) "genuine", because they served the state, a political party or individuals instead of their members. When the state 'incorporates' co-operatives, they can become instruments of oppression instead of participation. An example (though now dissolved) is the peasants' associations of Ethiopia, which forced farmers into collective production against their will. Therefore, the proclamation was enacted on the basis of socialist ideology. They were considered as the extension of state institutions, and almost all lost their co-operative identity.

By 1990, there were 3,723 agricultural producer co-operatives with 302,653 members, and 4,052 agricultural service co-operatives with 4.5 million members and combined assets of more than 422 million Birr. In general, co-operatives in the Derge were characterized by corruption and mismanagement, and served as a vehicle for the government mass collectivization policy as well

as a forced recruiting ground for fighting for Mengistu's escalating internal conflicts (McCarthy, 2001).

Forced by the internal instability and economic crisis along with the world economic situation, the Derge declared the "mixed economy policy" in 1990. This gave an opportunity to the co-operative members to decide on their future. As they were organized without their will and interest, the majority of co-operatives collapsed. Due to unnecessary government interference and compulsion on membership and leadership, people, throughout the country, have developed a negative view about the co-operative movement and reduced their age-old self-help tradition. At this time, the institutional suspicion mentality is widely reflected in the existing co-operative members.

In 1991, the old military regime was defeated in the civil war. The new government embarked on major political and economic reforms. The new constitution provided for decentralization in which substantial political, economic, and social policy power has been devolved to the nine regions and two city council administrations. By abolishing the more centralized economic policy and planning, the new market liberalization policy, which is democratic and decentralized policy, launched the formation of new "Agricultural Co-operative Societies Proclamation No. 85/ 1994".This proclamation restricts the government from negative interference in the internal affairs of co-operatives and initiates the organization of free, autonomous and independent cooperatives.

For establishment of different types of co-operatives in the country, "Co-operative Societies Proclamation No. 147/1998" replaced the proclamation No. 85 / 1994. This proclamation shall in particular include the following: Agricultural, Consumer, Housing, Industrial and Artisan

Producers', saving and Credit, Fishing and Mining Co-operative Societies. Under this proclamation, co-operatives are organized to solve problems collectively, to achieve a better result by coordinating their knowledge, wealth and labour to promote self-reliance, to improve the living standard of members and so on.

The Ethiopian government is trying to promote co-operatives with the objectives of developing them into autonomous self-help institutions. This was the main reason for setting up the Co-operative Promotion Department in Prime Minister's office, Co-operative Promotion Bureaus in regions and in line administrative units (zones and woredas) and later Co-operative Commission at federal level. In the proclamation No. 147 of 1998, the autonomy of co-operatives is clearly stated. The role of the government is limited and only focused on offering guidance and supervision, registration, cancellation and capacity building.

In accordance to the new proclamation, new co-operatives have been established and co-operatives in the past equally get an opportunity to reorganize them. In the Ethiopian co-operative movement, it is observed that co-operatives disappeared with the change of the government. They had exactly the life of the government. They existed as long as the government was in power. However, in the new government, this problem has come into an end. This is demonstrated by the fact that some co-operatives from the Derge era are able to exist at present.

The favorable condition created by proclamation No. 147/ 1998 has helped the co-operatives to organize and reorganize themselves voluntarily. In the year 2001, for instance, there were 7,366 different types of co-operatives in the country with 3,684,112 members and with a capital of 515.7 million Birr (FCC Report, as cited by Haileselassie, 2003). Furthermore, the new proclamation has helped the co-operatives to organise themselves into unions by pooling their

resources together. As a result, 22 grain marketing unions, and 2 coffee marketing unions have been established in Amhara, Tigrai, Oromiya and Southern Regions.

2.4. Cooperative movement in Tigray Region

Like other regions in Ethiopia, Tigray has various age-old traditional self-help organizations, which can provide social and economic benefits to their voluntary members. The commonly practiced self-help institutions in the region are: "wefera, lifinti, blaei, tiwfiriti, mahber, iddir, iqub, etc." These all are self/ mutual-aid groups which still have a contribution in socializing and getting people together, developing self-reliance and the capacity to solve local problems by local people.

In Tigray, modern co-operative societies were introduced after the formation of the first Proclamation No.241/ 1966. It is uninvestigated whether there were cooperatives before the legislation was enacted. However, under the above-mentioned proclamation, there were 7 co-operatives in the then Shire and Raya Azebo Awrajas with 3,297 members and a capital of 176,356 Birr (Haileselassie, 2003). All these co-operatives were located in the most 'potential' areas where their economic return was high, and they primarily served the well-to-do feudal and rich farmers. Although the proclamation had no article which restricts membership i.e. "Member shall mean any physical or juridical person", in actual sense, the ordinary farmers in particular the poor were not eligible for membership because they could not afford the share capital and the membership registration fees. These co-operatives were providing services such as hiring of means of production (tractor), marketing of collective production and flour milling services. At this time, there was no expansion of such experience to other parts of the region. When the

Ethiopian Revolution erupted and the Derge seized power, they were dissolved by Proclamation No. 138/ 1978. Their life cycled was buried with the abolishment of the Imperial regime.

Tigray was fully liberated from the Derge administration in 1989 by the fierce democratic struggle of TPLF. The co-operative movement was paralyzed until the new government's first "Agricultural Co-operative Societies Proclamation No.85/ 1994" was enacted. Under this proclamation, in the years 1994-1996, 76 multi-purpose co-operatives were restructured and 28 new co-operatives were established. Totally, 104 co-operatives with 83,372 members and a capital of 2,373,794 Birr were operational. It was the responsibility of the Bureau of Agriculture for revitalization of co-operatives.

Following the Proclamation of 85/ 1994, for the first time in the region's history, an independent Co-operative Promotion Office was created by the Tigray Regional Council under Proclamation No. 17/ 1996 in order to promote the co-operative way of working together for mutual benefits. Currently, there is a responsible office in the region and at Woreda level for promoting co-operatives in training, supervision, and registration.

In 1997, co-operatives were restructured and began providing the following services for their members:

- Stabilization of markets through supply of consumer goods, marketing of grain and livestock byproducts,
- Utilization of natural resources such as sand, stone, incense, etc. for their capital formation,
- Flour milling facilities,
- Supply of agricultural inputs such as fertilizer, improved seed,
- Access to credit, mainly credit in kind (purchasing fertilizer in credit)

In general, the performance of each co-operative varies from place to place. Even in one Woreda, co-operatives are found at good, medium and weak levels of performance

Agricultural marketing: The marketing of agricultural products begin at the farm when the farmer plans his production to meet specific demands and markets prospects. Marketing enables the agricultural producer to step out of a subsistence straight jacket and grow produce for sale. Correspondingly, it permits a large proportion of a country's population to live in cities and buy their food nearby. Agricultural marketing provides an incentive to farmers to grow produce for export. In this way, it gives farmers more income and earns foreign exchange to pay for imports. Agricultural marketing is complicated by the diverse nature of the products to be handled, and their perish-ability. A further complication is the scattered nature of agricultural production and, in most tropical countries (like Ethiopia), the very large number of separate production units. Fore these reasons, agricultural marketing calls for considerable initiative, decision making and skill.

Cooperative Marketing: is an extension of the principles of cooperatives in the field of marketing. It is a process of marketing through a cooperative association formed voluntarily by its members to perform one or more marketing functions in respect of their produce.

2.5. Empirical studies

A well-functioning agricultural market is an important element of agricultural development program. It could enable farmers' to get a fair proportion of consumers' price, enhance farm income and, consequently, allow the process agricultural intensification to deepen further with a positive impact on poverty reduction (Samuel, 2006).

2.5.1. Marketing of Agricultural Inputs

Julia Caley, (1999). Indicated the responsibility of fertilizer distribution in Tigray was given to one distributor. In addition, the organization of the system of fertilizer distribution in Tigray was more monopolistic than any of the other regions. She added, in 1998, Guna, the regional government affiliated company, did not distribute fertilizer to Tigray as it had in the past. Rather in1998 Tigray Regional Government asked three importers, AISE, EAL, and GUNA, whether they should divide the region amongst themselves or issue tenders as in the Oromiya region. During this period cooperatives role in the input distribution was not as such important.

Haileselassie, (2003). Most of the cooperative members appreciated the involvement of cooperatives in input marketing; as a result members in the Saeisietsaeda Emba Woreda have built a sense of ownership and confidence. He farther indicated that above all members were satisfied for the reason that it removed the need for members moving along distances to collect fertilizer, and reduced time and finance spent on the way.

The current approach of distribution of seed through farmer's cooperative unions and affiliated primary societies has its own limitation, as procurement of inputs is the responsibility of these cooperatives and unions, which usually have shortage of skilled labour and capacity to handle the process. Moreover, the approach does not create any competition, as the suppliers remain the government enterprise, i.e. Ethiopian seed Enterprise (Yonas, 2003).

Agricultural inputs can be categorized into two types, consumable and capital inputs .The former includes manures and fertilizers, seeds, insecticides/ pesticides, diesel oil and electricity, etc, on the other hand, capital inputs include tractors and trailers, harvesters and threshers, pump sets,

and other implements. Most of the agricultural input markets are seen at the level of grain market towns and large villages or cooperative institutions. There are some general aspects of the rural market like underdeveloped markets, illiterate buyers, lack of communication facilities, many languages, and vast spread of the market, storage, transport problems, seasonality and demand which are applicable to agricultural input markets as well (Gopalaswamy, 1997 as cited by Singh, 2004). However, agricultural input markets differ from other product markets in many ways due to the nature of their products, the nature and location of users and the overall environment in which products are being bought and used. (Singh 2004)

Agricultural inputs can be considered to be primarily yield saving or yield enhancing inputs. Their basic usefulness to the farmer and therefore their potential comes fundamentally from the quantity of yield they are able to raise or save. This gives the agronomic potential. They may also help to improve quality. They also help to reduce the uncertainty of obtaining good yields, especially if they are used at the consent or for prevention of disease (Singh 2004).This study mainly focuses on the agricultural inputs in which the cooperative societies deal up on such as fertilizers, seeds, and agro-chemicals, etc.

According to USAID/Ethiopia (2005) Evaluation of Agricultural Cooperatives in Ethiopia (ACE) Program Activities, Cooperative Unions and their affiliated primary cooperative societies supported by the ACE program (in Oromiyia, Amhara and SNNPR) have played significant role in the input marketing. In the same report it has mentioned that Fertilizer sales have increased dramatically, by 141%, from 86,636MT in 2003 to 208,565 in 2004; the value of sales in 2004 exceeded $ 74 million. The report generalized that, this growth is attributable in part to increased membership but more importantly to sales to members who sought more fertilizer to take

advantage of the improved market opportunities made available to them by the more efficient marketing primary cooperative societies. Moreover, part of the growth is also attributed to sales to non members, some of whom may eventually join the movement as a result of their favorable experience. In addition to fertilizer, unions and affiliated primaries sold 5,700 MT of improved seed which valued over $1.5 million; over 125,000 liters of agricultural chemicals with value of over $ 650,000.

In 2004/05, total fertilizer availability amounted to 482,000 metric tones comprising 425,000 metric tones of new imports for a total value of US$ 122 million and 57 000 metric tones of carry-over stocks (NFA, 2001). The state-owned Agricultural Input Supply Enterprise (AISE), and the two private companies Ambassel trading house and Wondo trading company have been dominating the fertilizer sector over the years and are currently holding 80 percent of the market. However, in this cropping year (2004/2005) three new companies (cooperative unions, backed by the regional governments for collaterals, and receiving technical assistance from the MoARD) has emerged operating on a regional basis – Merkeb in Amhara, Yerer and Lume Adama in Oromia Region. (FAO/WFP, 2006). Moreover, the cooperative unions and primary agricultural service cooperatives are distributing significant quantity of fertilizer (exact figures are not available), indicating that the role of cooperatives in fertilizer marketing is picking up. Apart from this, only few private retailers are involved in fertilizer sales and distribution. Retail prices of DAP and Urea registered a significant increase owing to a surge (rush forward) in international prices. (FAO/WFP, 2006).

.The cooperatives were a source of fertilizer for 94.7% of the sample farmers. The average quantity of DAP and Urea taken from the cooperatives were 4.64 and 2.39 bags respectively. The

sample farmers, that used the cooperative as their marketing agent for their teff, took an average quantity of 4.83 bags of DAP, and 2.52 bags of Urea. The corresponding figures for the non-users were 4.36 bags of DAP and 2.20 bags of Urea (Daniel, 2006).

Gebru, 2007). Agricultural cooperatives are legitimate institutions which belong to farmers. Their main activities are to render variety of services and access the market for input supply particularly to the rural community. He noted that "the trend of agricultural inputs supply in the study area highly decreased in quantity of fertilizer, improved seeds and increased unit price almost from year to year.

2.5.2. Marketing of Agricultural Output

Burt, (1997) in his report of Organizing and Operating Agricultural cooperatives indicated that marketing cooperatives can include bargaining and processing organizations. Frequently, they do some of each activity. Their primary role is to move member's products towards the ultimate consumer.

Livestock markets in Ethiopia function at three levels consisting of primary, secondary; and terminal markets. Some also include a nominal forth tier at the farm gate level, which could hardly be considered to function as a market. (Solomon, *et al,* 2000 as cited by yacob 2002) Primary markets have been identified as only village or also Woreda level markets with a supply of less than 500 head of cattle/week where primary producers (farmers and pastoralists) sell small number of animals to small traders, other farmers (replacement animals), farmer or pastoralist traders and in some cases to consumers and local butchers. Such markets are not fenced, have no scales, and no feeds and watering facilities. Purchasing is done through 'eye ball' negotiations.

The Government of Ethiopia is strongly supporting the restructuring and expansion of the cooperative movement including its involvement in grain marketing. The experience in the past in many countries is that grain marketing cooperatives have to be very efficient to compete with private sector traders when both are on a level playing field. This is mainly because private traders have often been better informed than cooperatives, have been able to respond more rapidly to changing market conditions, make assessments of the risks involved and take rapid decisions based on those assessments (Oxford Policy Management, 2003**).**

Frank, et al, (2003), Cooperative marketing societies in India constitutes one of the important segments of the agricultural cooperative societies. Cooperative marketing societies render marketing services to the poor and exploited farmers at reasonable cost, assembling, grading, storing, financing, sale and transportation are undertaken by these cooperative marketing societies at a lower cost by eliminating the middlemen. They added that cooperative society is to operate at two levels, viz, input marketing and output marketing .Input marketing includes the purchase and sale of agricultural inputs like seeds, fertilizers and pesticides. Output marketing denotes the purchase and sale of the produce of the member farmers. According to these scholars, a cooperative marketing society, to be successful, must engage in output marketing to the maximum level than the marketing of inputs. C.M. Muniramappa (as cited by Franck, et al 2003), is one of the pioneers to throw light on this subject. He says, "If a society fails to market the produce of its members or for that matter the produce of any others, it ceases to be of any use to its members for marketing. Many are there just for the name-sake and exist as agents of government for distribution of controlled commodities like wheat, sugar, rice, pulses and

production requisites like seeds, fertilizers and pesticides. For all purposes they are either dormant or defunct and can be removed form out of the list of the societies."

Kimberly A. Zeuli and Robert Cropp (2004) Stated that the primary function of marketing cooperatives is to market the products of their members .Beyond that , there is a great range of additional functions the cooperatives in this group perform, bargaining cooperatives(or associations) are at one end of the spectrum. Moreover, they added, in 2002, cooperatives marketed 27% of all farm products in the United States and had a combined net business volume of 569.6 billion US dollar.

A good majority of the livestock markets in Ethiopia belong to this group. Secondary markets are trader and to some extent butcher, breeding and draught stocks and located mainly in regional capitals. Secondary markets serve the local consumers to some extent but mainly feed the terminal markets. These markets also supply live animal exporters and meat processors.

Under the current institutional arrangement the Ministry of Agriculture and Rural Development (MoARD) is responsible to design, implement and monitor agricultural marketing policies through the different divisions organized under the department of agricultural marketing and inputs of the Ministry. Other organizations like cooperatives, unions**,** traders associations, exporters' associations etc also play important role in improving the marketing skill, bargaining power and also in the process of policy formulation. However, under the current situation, they are not strong enough to play the expected role. Thus, it is important that these institutions are strengthened. (Dawit, 2005).

Cooperatives have also found it difficult to retain the 'loyalty' of their members if they can obtain better prices for their grain from alternative outlets. Because of these inherent problems, governments are frequently tempted to tilt the playing field in favour of cooperatives by giving them preferential access to credit facilities and investment grants and/or loans. It is to be hoped that the Government of Ethiopia will not follow this path but rather encourage healthy competition between all participants in the grain marketing system, leading to lower marketing costs that will benefit all of the rural poor, both consumers and producers. There is already considerable support being given to the cooperative movement through the USAID-funded ACE programme. It would be desirable to undertake a study to assess the need for additional donor funding and technical assistance, bearing in mind the desirability to foster a competitive environment in the grain marketing system on a level playing field.

USAID, (2005), indicated that the amount of out put marketed by the cooperative societies supported by Agricultural Cooperatives in Ethiopia (ACE) in 2004 was, 7487 MT with the value of 133,569,214 birr from Oromiya and SNNPR, 17,598 MT or birr 33,598,263.00 , Sugarcane 118,156 MT or birr 10, 273, 588.00 (from Oromiya), 1,560,410 liters whole milk,1831 k.g of butter 3,419 k.g of cheese and 368 liter of skim milk with a total value of birr 3,002,727 .00 was sold by cooperative unions and their affiliated societies.

Cooperatives primarily purchase teff as it is primarily produced and sold by most of the farmers in the study area for their cash requirement. The cooperatives pay cash for the farmers on delivery. The duration of their purchasing ranges from December to May. In 2003/4, 53% of the sample farmers marketed teff through the cooperatives. This figure increased to 58.3% in 2004/5. Out of the sample farmers, 58.3% marketed teff through the cooperatives. These farmers were

asked for the important attributes of cooperative purchasing of teff in the area. And 29.9% of the farmers pointed out that selling to the cooperative have an advantage of genuine measurement (no cheating in the weight) and 37.7% of the farmers pointed out both genuine measurement and patronage refund3 as important attributes. Genuine measurement and introduction of desirable competition were pointed out by 14.3% of the farmers. The corresponding figures for patronage refund and introduction of desirable competition were, 2.6% and 6.5% respectively (Daniel, 2006).

Crop sales can be considered as the major source of income for farmers to finance input purchase. The survey result has shown that, on the average sample households earned about birr 426 per annum. Adopters obtained large revenue from crop sales (Birr 650.60) compared to non-adopters (Birr 89.95), with mean difference significant at 1% (Techane, 2006).

Misra et al. (1993) used the ordered probit model to analyze the factors influencing farmers' degree of satisfaction with the overall performance of milk marketing cooperatives. As satisfaction level of dairy farmers is a discrete qualitative variable, they used this model instead of the OLS as the latter would result in biased and inefficient estimate. Their result showed that dairy farmers perceive cooperatives' ability to hold down operating and marketing costs, to provide higher prices and competent field services and the assurance of a market for their milk as important attributes of dairy marketing cooperatives.

Hind (1994) studied the Performance of 31 agricultural cooperatives and 82 non-cooperatives in agribusinesses in United Kingdom. He determined first, the mean, standard deviations and t-test of differences in means for the two businesses of the selected performance indicators such as sales turnover, return on asset, sales/working capital, debt ratio, etc. Then, he used the linear

multiple regression analysis to determine if there were significant relationships between the performance indicators and business form using dummy variables for the business form. The findings of his research revealed that cooperatives do not perform differently to non-cooperatives, despite being required to balance members' needs with the attainment of their goals.

Mauget and Decklerck (1996) examined a sample of European community agricultural cooperatives annual reports including financial results such as value-added/turnover, operating activities/turnover, (net income plus depreciation) /turnover, labor cost/turnover etc. in order to find key factors of success. Their data years were 1990 and 1991. The result showed that in general specialized cooperatives didn't perform better than multi-purpose cooperatives. Specialized cooperatives were most successful in Denmark while multipurpose cooperatives did better in Ireland.

A logit regression analysis was used by Tretcher (1996) to analyze the factors associated with diversification on agricultural cooperatives in Wisconsin. He found that the impact of diversification upon measures of cooperative performance (profitability, patronage refund and equity redemption) was relatively minor i.e. diversification on agricultural cooperatives was not statistically associated with profitability, increases in patronage dividends or increases in equity devolvement. The result also showed that diversification on agricultural cooperatives was an important factor in determining membership size i.e. diversified cooperatives enjoyed larger membership.

The technical efficiency and scale economies of the dairy marketing cooperatives were estimated by Ellene and Schreiner (1996) in Kenya. They used the maximum likelihood technique to estimate a stochastic cost frontier function and determined technical efficiency and scale

economies. The estimated long–run average cost curve indicated that scale economies, but most of the scale economies are exhausted for the average size of cooperatives in the sample. In general, the result indicated that the dairy marketing cooperatives were technical efficient for the observed technology. They also suggested that cooperatives can reduce unit costs by expanding volume of milk handled, either through existing members or new member, including merging with other cooperatives.

Kebede (2006) used the logit model to analyze the farmers' perception and determinants of land management practices in Ofla Woreda, southern Tigray, Ethiopia. His findings showed that Age, Sex, Distance to *Woreda* market, , perceived water logging problem, perceived gully and degradation status, Investment in soil and water conservation practices, slope category were found to determine the farmers perception of land management practice.

Daniel (2006) used the Tobit model to assess the performance of primary agricultural cooperatives and determinants of members' decision to use as marketing agent in Adaa Liben and Lume districts. His finding showed that among these significant variables district, Cooperative price for teff, position in the cooperative, farm size, yield of teff, patronage refund and distance of the district market from the farmer's house were found to be significantly and positively related to the farmers' marketing of teff through the cooperatives.

Gizachew (2007) used ratio analysis and found that the *liquidity ratios* of the cooperatives under his study are fluctuating during the consecutive three years of his study period. This is because of the difference in the amount of the loan from year to year which results for fluctuating in interest payable. Here, the impact of borrowing has shown in decreasing the liquidity ratio. Therefore, cooperatives should increase their capital to minimize a loan.

2.5.3 Constraints in agricultural input and output marketing

Although cooperatives are considered as an appropriate tool of rural development, they are facing critical problems, which retain them from their positive role. Some of the constraints of cooperatives are: low institutional capacity, inadequate qualified personnel, low entrepreneurship skill, lack of financial resources, lack of market information, poor members' participation in the different activities such as financing the cooperative, patronizing the business activities of the cooperatives, and control and supports it (Dawit, 2005). Moreover, the prices of agricultural inputs are increasing from year to year and farmers are complaining on it. These multifaced problems make very difficult the over all activities of the cooperatives in general and the input and output marketing in particular. The aforementioned problems place the farmers as usually price takers due to the fact that they have poor marketing skill and limited bargaining power. There have been attempts made by the government to improve the marketing skill and bargaining power of farmers through establishment of cooperatives and promoting other group action approaches.

Haileselassie (2003). Found that, the management committee members and focus groups participants were suggested the barriers which prevent the co-operatives from fully achieving their objectives. Their replies were: inadequate capital, unskilled management committee, illiterate membership, unwillingness to serve as committee member, low commitment and disloyalty of members, low level of infrastructure development (transport, storage), and the unhappiness of members with the co-operative services.

CHAPTER THREE

MATERIALS AND METHODS

The methodology developed and followed in the study is presented in this chapter.

3.1 Conceptual Framework

3.1.1 Performance of cooperatives in the input and output marketing

The volume of business performed by cooperatives with their member patrons and other community members can be considered as the performance indicator of the cooperative societies. As the business volume and value of the cooperative institution is expected to grow from year to year so that it will benefit its members as owners, users and controllers of the cooperative business, it might indicate weather the cooperative is performing negatively or positively towards the members' betterment. In this study, ratio analysis, input and output marketed by cooperatives are considered to contribute for the performance of cooperatives in the input and output marketing.

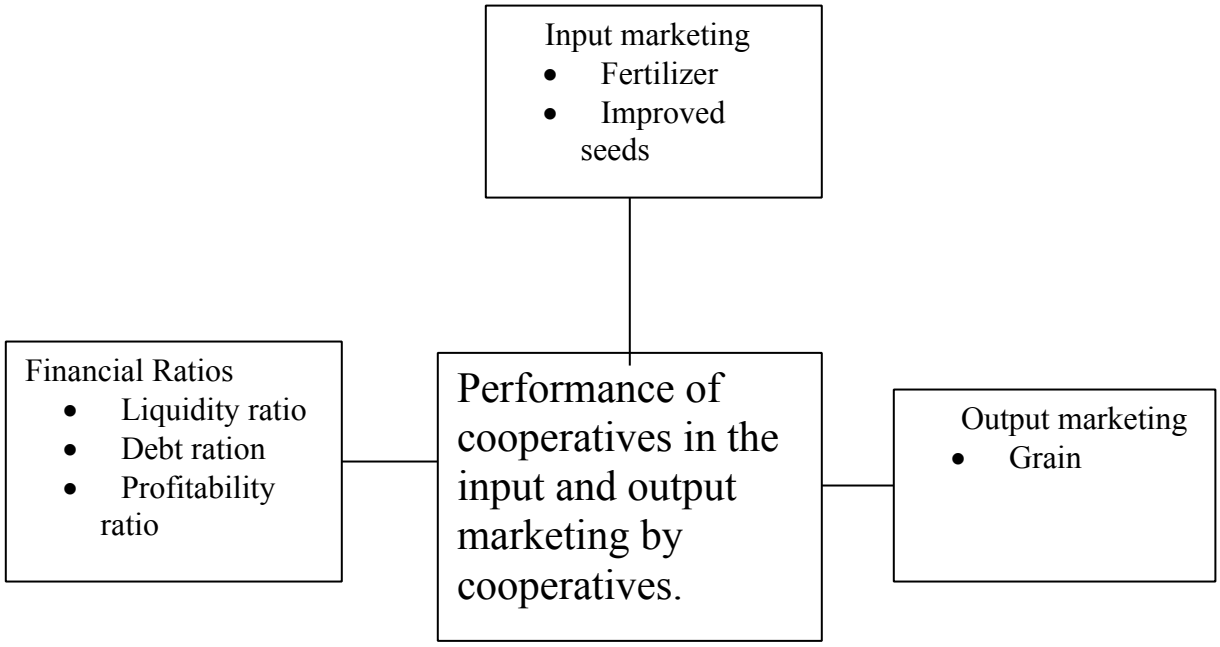

Figure1: conceptual frame work of performance

3.1.2 Participation of members in the agricultural input and output marketing by cooperatives

For the effective functioning of the cooperative movement, members' participation is the pole of the cooperative. These are members who are aware of the importance of the cooperative societies socially and economically. These members will make themselves aware of the problems and have the willingness to contribute to the progress of the cooperatives. Such membership ensures member participation in the business and managerial affairs of the cooperatives. Vigilant members prevent financial irregularities and the emergence of vested interest in cooperatives. Thus the health of cooperatives improves. As against the participant members, ignorant, sleepy,

inactive, non-participative and indifferent members become a problem in themselves. They are prone to exploitation by the convert (change) elements in the society. So the .members in the society must be highly participative in all aspects of the cooperative affairs.

Democracy is the basic value of cooperatives. In a democratic organization like cooperatives, the general body is supreme organ of the organization and the management committee is elected by them to look after the day to day affairs. In this study, the concept of participation lays the involvement of member patrons in patronizing the agricultural input and output marketing made by cooperatives. Therefore, factors that contribute to the participation of members in the input and output marketing by cooperatives are presented in the figure.

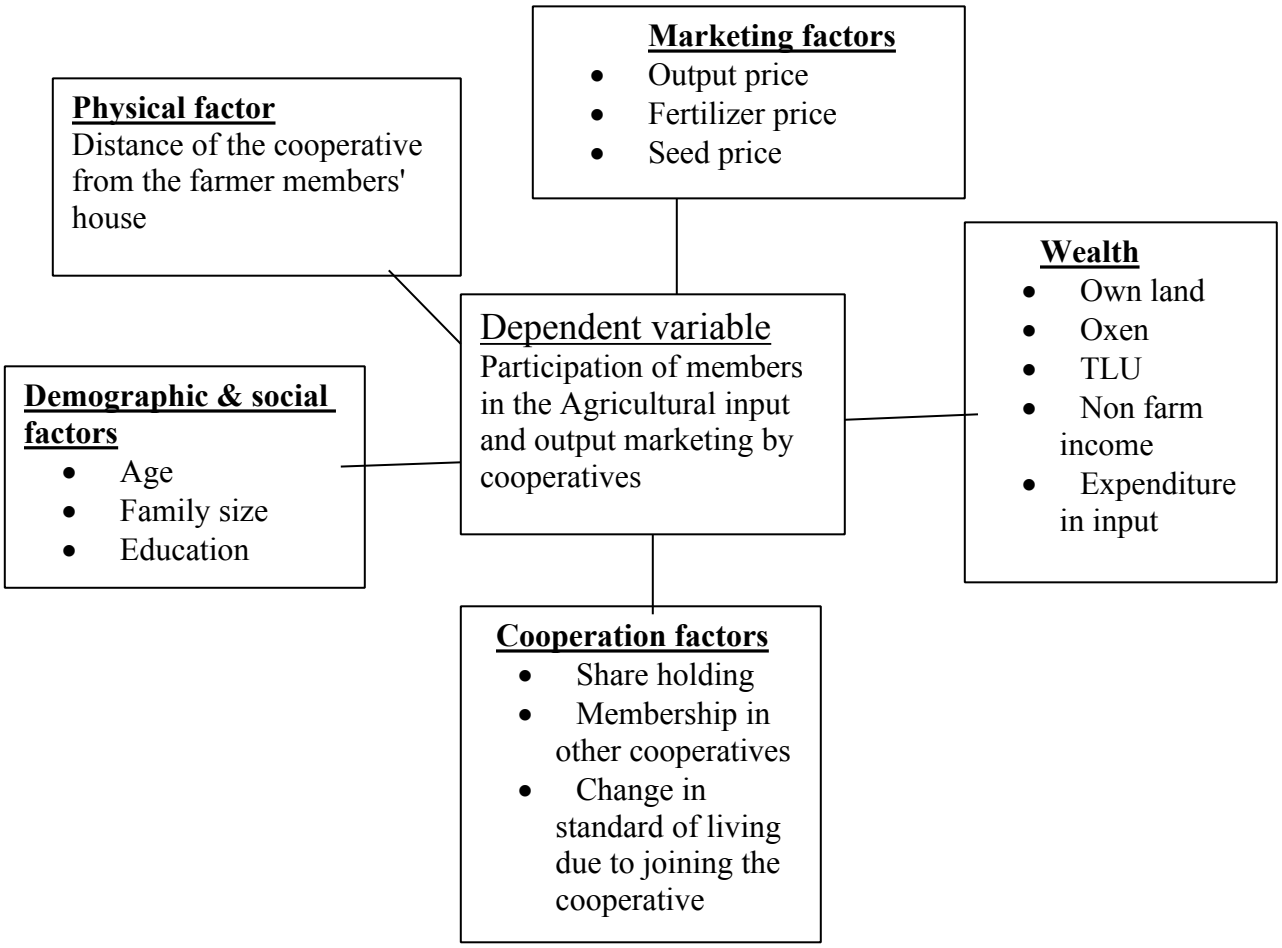

Figure-2 Conceptual frame work of participation of farmer members in the agricultural input and output marketing by cooperatives

3.2. Site selection and description

3.2.1 Description of Southern zone of Tigray

The study was conducted in the southern zone of Tigray region of Ethiopia. Southern zone of Tigray is one of the seven administrative zones in the Tigray National Regional State. Southern zone is located in the southern most boundary of Tigray Region. Southern zone is bounded by Afar region in the east, Eastern zone of Tigray in the North, Amhara Region in the South and South West and Central zone of Tigray in the North West. The southern zone has a total population of 1,070,781 of which 51 percent are female. The zone covers about 9286.52 $k.m^2$ with a population density of 115.3 people per $k.m^2$ (CSA, 2006).There are five woredas in the zone. The zone has bimodal with erratic rainfall pattern of rain fall. “Belg” rain is the small rain occurring usually from February to April. The second rainy season “keremt” is from June to early September. Despite the shortage and variability in its occurrence, the bimodal pattern of rainfall has allowed the production of two cropping seasons in some woredas in the southern zone of Tigray. Southern zone of Tigray is purposively selected for its market oriented commodities' potential and being a project area of an international organization. It is a project area of the IPMS-ILRI (Improved Productivity and Marketing Success- International Livestock Research Institution)-project. This project is the potential sponsor of the study. There are five woredas in southern Tigray zone; from which two woredas are randomly selected for the study. All these two woredas are agriculturally dominated. Of the five Woredas in Southern zone of Tigray, two a woredas Alamata (lowland) and Ofla (highland) were randomly selected for the study.

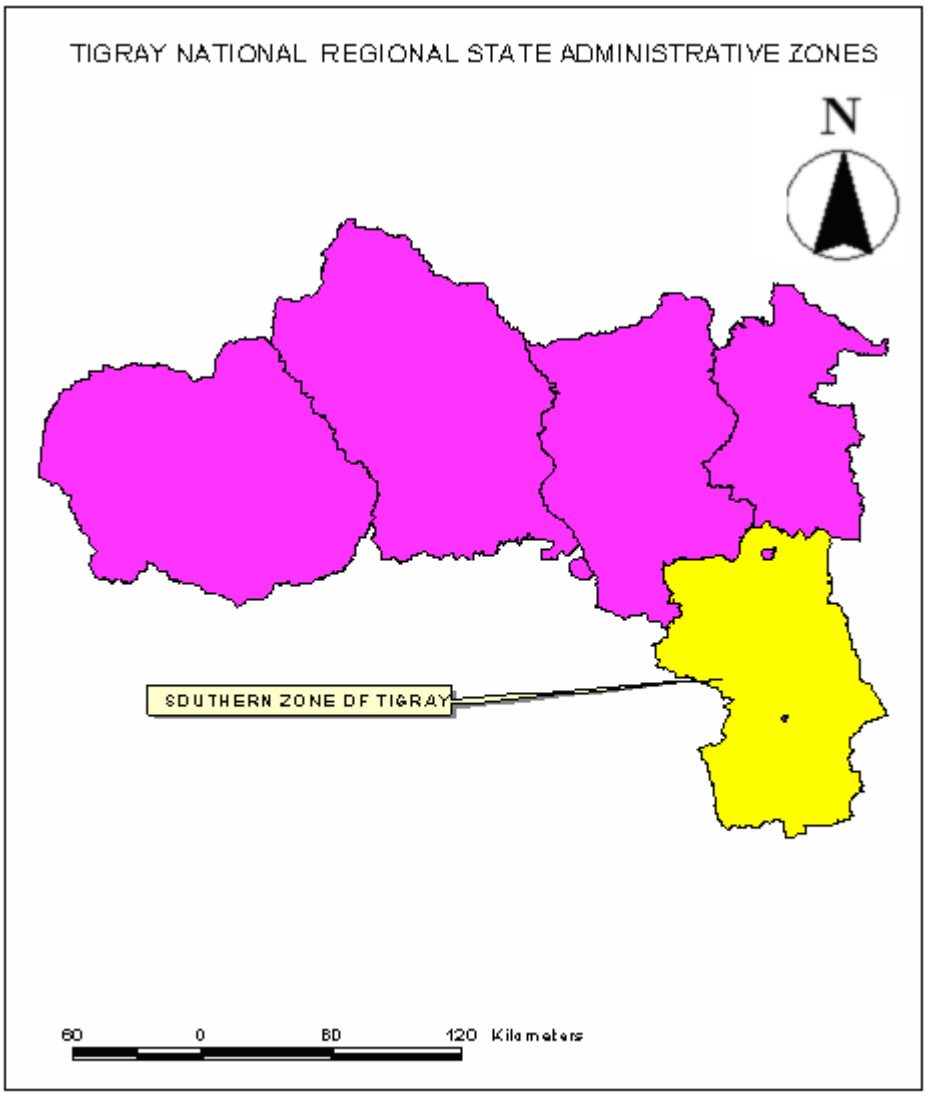
TIGRAY NATIONAL REGIONAL STATE ADMINISTRATIVE ZONES
N
SOUTHERN ZONE OF TIGRAY
60
0
60
120 Kilometers

Figure- 3 Map showing Tigray Region by Administrative Zones

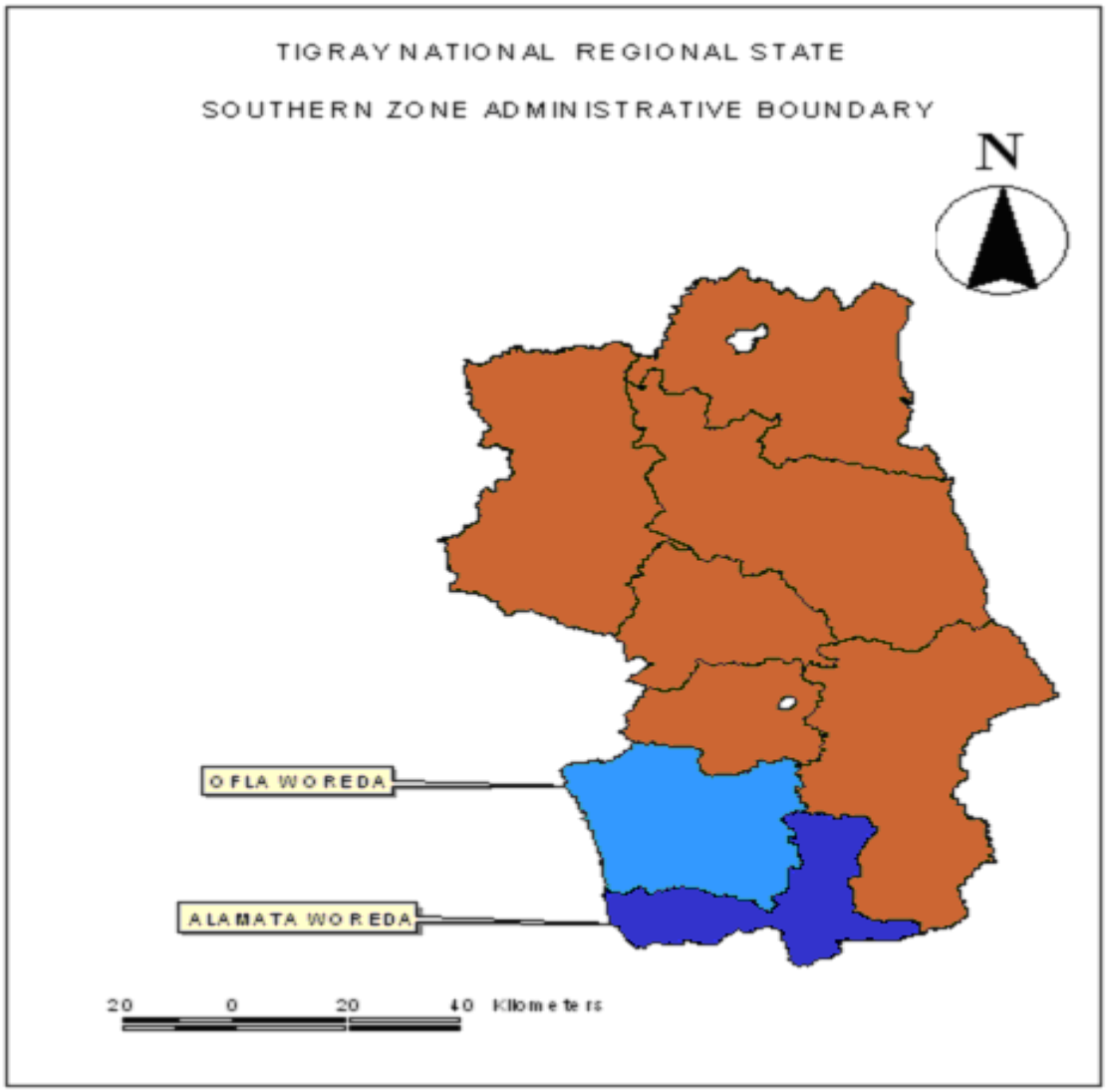

Figure-4 Map of selected woredas in the southern zone of Tigray

3.2.2 Description of Alamata Woreda

Alamata woreda is one of the five woredas in southern zone of Tigray located 600 km north of Addis Ababa and about 180 km south of the Tigray Regional capital Mekelle. Alamata is the south most woreda of the Tigray Region and borders with Amhara region from the south and west and Afar region from the east. There are 10 peasant associations and two town dwellers associations in the woreda. The number of agricultural households of the woreda is 17,597.The total population of the woreda was 128,872 in 2003/04 (IPMS-ILRI, 2005). Altitude in the area ranges from 1178m to 3148 m and 75% of the woreda is lowland (<1500 masl) and only 25% is found in intermediate highlands (between 1500 and 3148 masl). The Alamata valley is one of the most agriculturally potential areas in the Tigray Region. Farmers in the Woreda extensively cultivate cereals and vegetable; and raise mainly sheep and cattle in the valley. The total area of the Woreda is estimated about 550km^2. (IPMS-ILRI, 2005).

The surrounding mountains in the woreda are a potential source of runoff on to the Alamata valley substantially important for crop growth using irrigation. The major crops grown in the Alamata woreda are sorghum, teff, maize in the lowland area and wheat, barely, pulses in the highland part of the woreda .Shortage of rainfall (moisture stress) is a major constraint of agricultural production in the Woreda. Rainfall is usually short duration.

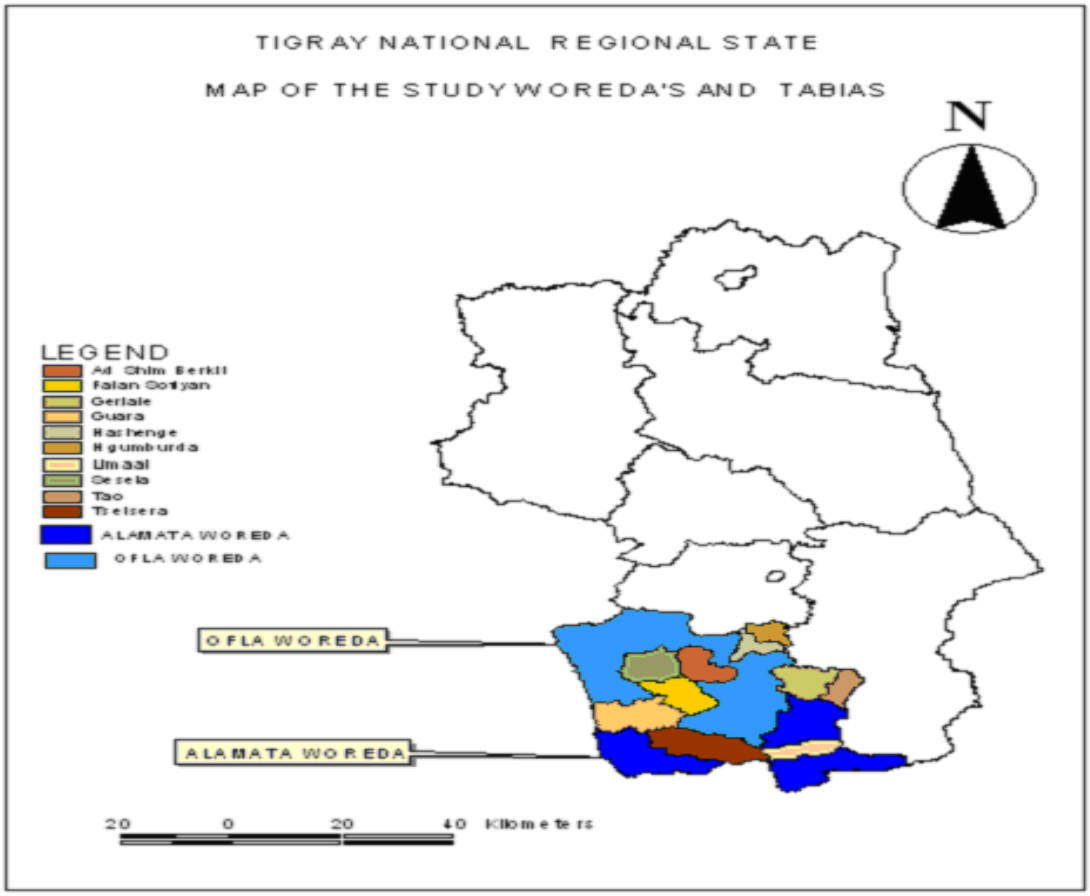

Figure-5 Map of the sample Tabias selected in the study woredas.

3.3.3 Description of Ofla Woreda

Ofla Woreda is one among the five Woredas of southern Tigray zone. Ofla is located about 620 kms away from Addis Ababa and about 160 kms from Mekelle. The Wored*a* is located on the geographic coordinates of 12^{0}31'North Latitude and 39^{0}33' East Longitude. The altitude varies between 1700-2800 m.a.s.l and the slope ranges to more than 15 percent. The total area of the woreda is about 133,300 ha, of which 42% of the area is Woina Dega (55,986 ha) and the rest are Dega and Kolla which accounts for 29% each and 77,314 ha in total (Kebede, 2005, Ofla Woreda BoARD, 2006).

Ofla has two (Bimodal) rainy seasons namely; Keremt where the main wet season is from June to September and Belg; the small wet season extends from February to March. The rainfall distribution of the study area is characterized by heavy and erratic in nature, like most highlands of the country. The annual rainfall varies from 450mm to 800mm during keremt and 18mm to 250mm during Belg season (Ofla Woreda BoARD, 2006). The mean annual temperature of the study area is 22^{o}c with minimum and maximum temperature of 6^{o}c and 30^{o}c respectively (Kebede, 2005, Ofla woreda BoARD, 2006).

Ofla Woreda has about 133, 300 ha of landmass, which has 25,275 arable, 24,149 ha grazing, 44,635 ha forest, 36,515 useless and 2,726 currently not under cultivation, but suitable for cultivation (Ofla Woreda BoARD, 2006). The average land holding in the Woreda is about 0.5 ha per household. Ofla Woreda has an estimated total population of 132,491 of which 51.83% are female. From the total 33,944 rural household heads, male headed households account for about 67.93 percent while female-headed households account for about 36.07 percent. The population density of the study area is about 104 people per km^2 (Ofla Woreda BoARD, 2006).

Agriculture is the mainstay of the community. Similar as in the other parts of the country, the farming techniques used by the rural communities are traditional. Ofla Woreda is characterized by a mixed farming system where the livelihood of the rural community depends both on livestock and crop farming. Crop production is mostly rainfall dependent. Wheat, barley, field pea, faba bean, lentil, sorghum and maize are the dominant crops grown in Ofla Woreda. Wheat and barley are the major sources of daily foodstuffs.

3.3. Data Collection and Procedures

3.3.1. Sampling Techniques

A three-stage random sampling procedure was adopted for the selection of the sample farmers from the cooperatives in the two Woredas (figure 6). In the first stage, two woredas (Alamata and Ofla) were randomly selected out of the 5 woredas found in southern zone of Tigray.

In the second stage, considering the total number of 27 multipurpose primary cooperatives (11 in Alamata Woreda and 16 in Ofla Woreda) as well as financial and time limitations, ten primary multipurpose cooperatives were randomly selected from the two study woredas(four from Alamata Woreda and six from Ofla Woreda) (Table 2).

In the third stage, given the available resource and time at the disposal of the researcher, a total of 208 farmer members (56 farmers from Alamata Woreda and 152 farmers from Ofla Woreda) were selected randomly using probability proportional to sample size (PPS).

Southern Zone of Tigray

(5 woredas)

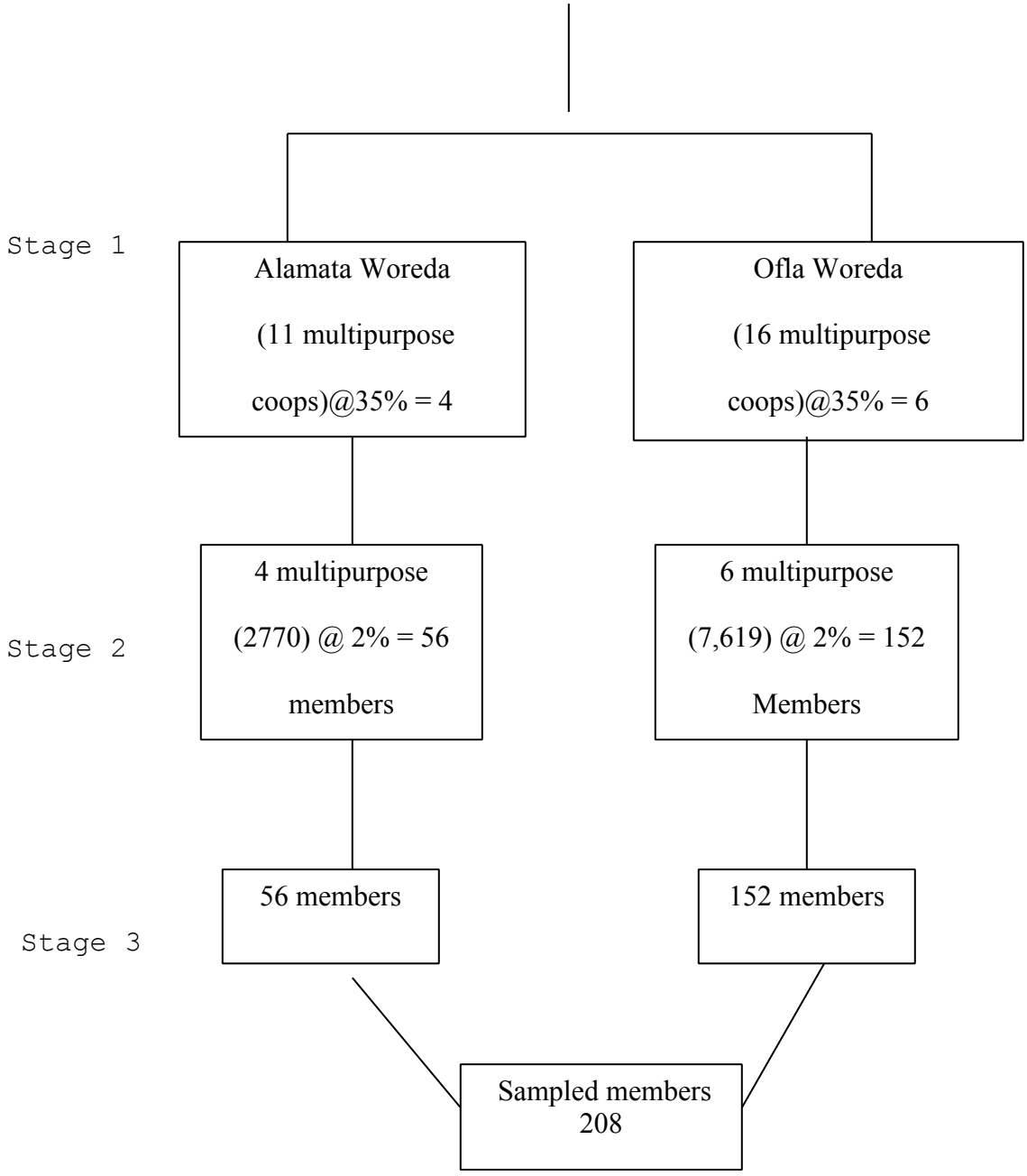

Figure 6: sample procedure flow

Table-2 Sample size of the study cooperative societies and number of respondents in Alamata and Ofla woredas, 2008

Name of Woreda	Name of sampled cooperative	Total members/coop.	No. of members sampled/coop.
Alamata	Tsetsera	362	8
	Lemeat	1,053	21
	Garjele	569	11
	Tao	792	16
	Sub-total	**2776**	**56**
Ofla	Tadesech	1,871	37
	Redatafere	950	19
	Adishumbereket	915	18
	Fallansofian	1,297	26
	Hadushberhan	1,299	26
	Higumberda	1,287	26
	Sub-total	**7,619**	**152**
Grand Total		**10,395**	**208**

3.3. 2. Data Collection

Both primary and secondary data were utilized for this study.

3.3.2.1 Primary data

Primary data was collected on age of respondents, martial status, sex of the household head, educational level, family size, family income, size of land holding, livestock ownership, duration of membership, awareness about cooperatives, contact with the cooperative leaders , participation in cooperative management, dividend payment, availability of credit, exposure to mass media, price of agricultural inputs, opinion on price of agricultural outputs, timely delivery of inputs, regular marketing service of cooperatives, distance of the house of the household head from multipurpose primary cooperative , expenditure and other relevant variables from the sample respondents who are members of the primary multipurpose cooperatives selected for the study. The data collection was made during the period of October and November 2007. Six enumerators were appointed for the purpose of data collection.

3.3.2.2 Method of data collection

A structured interview schedule was developed to collect the needed primary data. The interview schedule was first prepared in English and translated into Tigrigna for practical field work. The interview schedule was pre-tested before actual administration with 10 cooperative members.

The researcher fully participated in the interview and closely supervised and guided the six enumerators during the entire period of data collection.

3.3.2.3 Secondary data

The researcher collected the required secondary data regarding:

- The number of cooperatives by type;
- Membership by sex and age;
- Volume and value of input and output marketed by the sample cooperatives;
- Volume and value of input and output marketed by cooperatives in the two sample woredas
- Input suppliers in the study area;
- Credit disbursed and collected by the cooperatives in relation to input and output marketing;
- Dividend paid to members
- The number of employees of the cooperatives, storage and other marketing infrastructures,
- Input price such as fertilizer (DAP and Urea) and Seed marketed by cooperatives.
- Other relevant information related with the research objectives.

3.4 Method of Data Analysis

3.4.1 Descriptive Statistics

Descriptive statistics are important to have clear picture of the characteristics of sample units. By applying descriptive statistics one can compare and contrast different categories of sample units

(farm households) with respect to the desired characteristics. In this study, descriptive statistics such as mean, standard deviation, percentages and frequency of occurrence were used along the econometric model, to analyze the collected secondary and primary data. Moreover, volume and value of input and output marketed, price of agricultural inputs (inorganic fertilizer and improved seeds), and ratio analysis were worked out using tables, graphs, charts and percentages

3.4.2 Ratio analysis

Ratio analysis was done using the audited financial data of each primary multipurpose cooperative society and their financial performance was evaluated. The commonly used ratios such as liquidity ratio, debt ratio, and profitability ratio were calculated and analyzed for sample multipurpose cooperatives for the study period.

To assess the performance of the cooperative, different financial ratios were used. Financial ratios can be designed to manage cooperative's performance. Ratios can be used as one tool in identifying areas of strengths or weakness in cooperatives. Financial ratios enable to make comparison of cooperative's financial conditions over time or in relation to other cooperatives.

3.4.2.1. Liquidity ratio

A cooperative intends to remain viable in business entity must have enough cash on hand to pay its debts as they come due. In other words, the cooperatives must remain liquid. One way to determine whether this is the case is to examine the relationship between a cooperative's current assets and current liabilities. Liquidity ratios are quick measure of cooperative's ability to provide sufficient cash to conduct business over the next few months. According to Neveu (1985);

Bringham and Houston (1998) and William et al.(2003) one of the most commonly used liquidity ratio is the current ratio that is computed by dividing current asset by current liabilities.

Current ratio = Current asset / Current Liability **Eq (1)**

3.4.2.2. Financial leverage management ratio

Whenever a cooperative finances a portion of its asset with any type of financing, such as debts, the cooperative is said to be using financial leverage. According Bringham and Houston (1998) and William et al. (2003) financial leverage management ratio measures the degree to which a firm is employing financial leverage. According to these authors, of the several types of financial leverage ratios, debt ratio is commonly used. It measures the portion of a firm's total asset that is financed with creditors' fund. It is computed by dividing total debt by total asset.

Debt ratio = Total debt / Total asset **Eq (2)**

3.4.2.3. Profitability ratio

Profitability is the net effect of a number of policies and decisions by the management of the firm (cooperative). Profitability ratios measure how effectively a firm's management was generating profits on sales, total assets, most importantly stockholders' investment (Neveu, 1985; Bringham and Houston, 1998; William et al., 2003). One of the most commonly used profitability ratio is return on total asset among others, which is computed by dividing net income by total assets.

Return on total asset = Net income / Total asset **Eq (3)**

3.4.3 Model specification for members' Participation in the input and output marketing by cooperatives

Models, which include a "yes" or "no" type dependent variable, are called dichotomous (binary). Such models approximate the mathematical relationships between explanatory variables and the dependent variable that is always assigned qualitative response. The four most commonly used approaches to estimate dummy dependent variable regression models are (1) the linear probability model (LPM), (2) the logit, (3) the probit and (4) the Tobit model. They are applicable in a wide variety of fields (Gujarati, 2004).

The linear probability model, which expresses the dichotomous dependent variable *(Yi)* as a linear function of the explanatory variables *(Xi),* is called linear probability model (LPM). LPM has some econometric problems like non-normality of the disturbances *(Ui)*, heteroscedastic variances of the disturbances, non-fulfillment of $0 \leq E(Yi/Xi) \leq 1$ and lower value of R^2, as a measure of goodness of fit. Therefore, linear probability model is not appropriate to test the statistical significance of estimated coefficients (Liao, 1994; Gujarati, 2004).

The logit and probit models will guarantee that the estimated probabilities will lie between logical limit 0 and 1 (Pindyck and Runbinfeld, 1981). Because of this and other facilities, the logit and the probit models are the most frequently used models when the dependent variable happens to be dichotomous (Liao, 1994; Maddala, 1989; Gujarati, 2004).

Ignoring the minor differences between logit and probit models, Liao (1994), Gujarati (2004), Pindyck and Runbinfeld (1981) pointed-out that the probit and logit models are quite similar, so they usually generate predicted probabilities that are almost identical. Aldrich and Nelson (1984) indicated that in practice these models yield estimated choice probabilities that differ by less than 0.02. Besides its difficulty in calculation, the probit model enables to calculate the marginal effect of the explanatory variables on the dependent variable.

Therefore, this study has applied binary probit model to identify the determinant variables and their marginal effect on the participation in agricultural input and output marketing by cooperatives.

The Dependent Variable of the Model: The dependent variable for probit analysis has a dichotomous nature measuring the participation of the member farmer in the agricultural input and output marketing business by purchasing and selling from and to the cooperative. It is represented in the model by 1 for a participated member and 0 for a non-participated member.

3.4.4 Linear Probability Model (LPM)

In LPM, the dichotomous dependent variable is expressed as a linear function of the explanatory variables. Although one can estimate Linear Probability Models (LPM) by the standard ordinary

list square (OLS) method as a mechanical routine, the results will be beset with the following problems. The LPM may generate predicted values outside the 0-1 intervals, which violate the basic tenets of probability. The other problem with LPM is that the variance of the disturbance term is Heteroscedasticity since it depends on the conditional expectation of the dependent variable, which of course depends on the value taken by the regressor. Because of this OLS estimators, although unbiased, are not efficient; they do not have minimum variance. The third problem with such models is that the conventionally computed coefficient of determination (R^2) is likely to be much lower than one. For this reason, the use of R^2 as a summary statistic should be avoided. The fourth problem with LPM is that the assumption of normality in the disturbance term is no longer tenable (acceptable); because like the dependent variable, the disturbance term takes only two values (Gujarati, 2004). To alleviate these problems and produce relevant empirical outcomes, the most widely used qualitative response models are the Non-Linear Probability Models (logit and probit) (Amemiya, 1981). These two models, in addition to the advantage that the probabilities are bound between 0 and 1, they fit well to the non-linear relationship between the probabilities and the explanatory variables. The probability approaches zero at slower and slower rate as an explanatory variable (X_i) gets smaller and smaller and approaches one at slower and slower rate as an explanatory variable (X_i) gets larger.

3.4.5 The Logit and Probit Models

The inadequacy of the LPM suggests that a non-linear specification may be more appropriate. The researcher in this case had chosen an S-shaped curve bound in an interval 0-1 (Pindyck and Rubinfeld, 1981; Gujarati, 2004). The authors suggest that the S-shaped curves satisfying the probability model are those represented by the cumulative logistic function and the cumulative

normal distribution. The logit model assumes cumulative logistic probability function, whereas the probit probability model is associated with the cumulative normal distribution function.

In this respect, a choice has to be made between logit and probit models. However, the statistical similarities between the two models make such a choice difficult. The choice of any model is therefore, not dominant and may be evaluated a posteriori on statistical grounds, although in practice there is no strong reason for choosing one model over the other. Gujarati (2004), and Pindyck and Rubinfeld (1981) illustrated that the logistic and probit formulations are quite comparable, the main difference being the former has slightly fatter tails; that is the normal curve approaches the axes more quickly than the logistic curve.

Chabers and Cox (1967) devised a test to distinguish the two models, which can be used only when there is a single independent variable, which takes on three values, with many observations on the dependent variable for each value of the independent variable. Even for a specialized case, it required an exceedingly large number of observations for a test to distinguish the two models effectively.

3.4.6 .Specification of the probit model

To identify the factors influencing the participation of cooperative members in the agricultural input and output marketing business, binary probit model was employed for this study. Therefore, the determinants of participation in the agricultural input and output marketing activity were estimated using binary probit regression model.

According to Maddala (1983, 2001) probit model is specified as:

$$I_i^* = \square + \square X_i + \square_{1i}$$

Where

$I = 1$ if $I_i^* > 1$, the members participates in the agricultural input and output Marketing by cooperatives.

$I = 0$ if $I^*_i \leq 0$, otherwise.

X_i are exogenous variables where i=1, 2…, 15.

X_1 = Age of household

X_2 = Educational level of the household head

X_3 = Family size of the household head

X_4 = Land owned by the household head

X_5 = Number of oxen owned by the household head

X_6 = Livestock holding of the household head

X_7 = Share holding of the household head

X_8 = Non farm income of the household head

X_9 = Expenditure in agricultural inputs by the household head

X_{10} = Distance to the cooperative office from the home of the household

X_{11} = Perception of household head on price of agricultural output

X_{12} = Perception of the household head on change of standard of living due to joining to cooperatives

X_{13} = Membership of the household head in other cooperatives

X_{14} = Perception of the household head on Fertilizer price

X_{15} = Perception of the household head on improved seed price

$\square$ is vector of parameters to be estimated;

$\square$ is the intercept term;

ε_{1i} are the disturbance term

The probit model was estimated to identify determinants of participation in agricultural input and output marketing by cooperatives in the two study woredas (Alamata and Ofla). The dependent variable of this model was participation of members in agricultural input and output marketing by cooperatives.

The Variance Inflation Factor (VIF) was used to test for the existence of multi-collinearity between continuous explanatory variables. VIF shows how the variance of an estimator" R" is inflated by the presence of multi-collinearity (Gujarati, 2004). If R^2 is the adjusted square of the multiple correlation coefficients that results when the explanatory variable (X_i) is regressed against all the other explanatory variables, VIF is computed as

$$VIF\ (X_i) = (1-R^2_i)^{-1}$$

As the adjusted R_i^2 approaches 1, the VIF approaches infinity. That is as the extent of collinearity increases, the variance of the estimator increases, and in the limit it can become infinity. If there is no collinearity between independent variables, the values of VIF will approach 1. As a Rule of Thumb, values of VIF greater than 10 are often taken as a signal for the existence of multi-collinearity problem in the model (Gujarati, 2004).

Contingency coefficients were also calculated to see the degree of association between the dummy variables. They were calculated for each pair of dummy variables using contingency coefficient procedure available in SPSS. Contingency coefficient is a chi-square based measure of association. A value of 0.75 or more indicates a stronger relationship (Healy, 1984). The contingency coefficients will be computed as follows.

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

Where C= coefficient of contingency, χ^2= Chi-square test and N= total sample size

3.4.7. Operationalisation of variables

After having appropriate analytical tools it is plausible to identify, define and describe the dependent and independent variables with their appropriate symbols and measurements in a workable way. In the discussion that follows this issue will be addressed.

3.4.7.1 The dependent variables of the model: The dependent variable in this study is participation of cooperative members in the agricultural input and output marketing by cooperatives. The concept of participation is explained and studied by various writers. According to Davis (1969) as cited by G.Surendran, 2000) participation is a mental and economic involvement of a person in a group situation which encourages him to contribute to goals and shares responsibilities in them. For the effective functioning of a cooperative society, membership participation is the pole of the cooperative movement because members are the owners, the controllers and the users of the cooperative business. The participating members are those who have an interest to involve in various cooperative affairs (such as in patronizing the agricultural input and output marketing of the cooperatives, election of board members, financing of the cooperatives by investing in the form of share capital, and other decision making process). These members might make themselves aware of the problems and have the willingness to contribute to the progress of the cooperatives and ensures member participation in the business

and management affairs of the cooperatives. Based on this concept of participation, the dependent variable participation can be operationally defined as follows:

The dependent variable for this study has binary (dichotomous) nature, that is, the dependent variable can take the value 1 with a probability of success when the member respondents participate in the agricultural input and output marketing activity of a given cooperative in 2006/07 production season independently, or the value 0 when a given farmer did not participate in the agricultural input and output marketing activity of the cooperative to be analyzed using the binary probit model independently.

Participation is operationalized as the involvement of a member in a group situation and his contribution to goals of the agricultural input and output marketing and sharing responsibility in them.

More Explicitly:

$Y_p = 1$ if a given farmer participated in the input and out put marketing of a given cooperative,

0 otherwise

3.4.7.2 The independent variables of the study: The independent variables that were expected to influence farmers' participation decision can be of many types. Those independent variables are explained below:

Age of the household head (AGEHH): Age is a continuous independent variable indicating the age of the household head in years. The households' previous experiences may have either positive or negative, and this may likely influence his or her attitude on participation in the input and output marketing. Besides, his or her capacity to earn additional cash income may increase or decrease with age. Age may have a bearing on investment (Fitsum, 2003). Thus the expected sign is ambiguous.

Education level of household head (EDUCTN): It is a continuous variable and refers to the number of years of formal schooling the farmer attended. The higher the education level, the better would be the awareness of the farmer towards the cooperative and acquire information and education about the benefits of the cooperative easily (Kraenzle, 1989; Klien et al., 1997, Daniel, 2006). Hence, those farmers with higher formal education may be in a better position to know the benefits of cooperative and more likely to participate in the input and output marketing activities of the cooperative societies. So this variable is expected to influence the input and output marketing role of the cooperatives positively.

Family size (FAMSIZE): This variable is a continuous explanatory variable and refers to the total members in the family the household has in number. It is assumed that household with larger family size consume more of what is produced in the house and little will remain to be marketed. Therefore, family size is expected to have negative influence in marketing of the household through the cooperative.

Land holding (LANDHOLD): This variable is a continuous variable and it refers to the total area of farmland that a farmer owns in hectare. The usage of the cooperative as marketing agent requires substantial economic resources of which land is the principal one (Wadsworth, 1991;

Klein et al., 1997). It is assumed that the larger the total area of the farmland the farmer owns, the higher would be the input usage and output produced. This implies farmers who have larger land holding may patronize the cooperative's input and output marketing in a better way. Therefore, it is expected that this variable might have positive influence on the input and output marketing participation of members in the cooperative.

Number of oxen (OXEN): This is the number of draft oxen possessed by the household during 2006/2007 production year. Oxen are the prominent source of traction power in the study area. Farmers with large farm size would have more number of oxen for cultivation. This may result in more use of agricultural inputs and production of more outputs. Therefore, having more number of oxen means able to cultivate larger farm which in turn leads to more agricultural input purchase from the cooperative and selling more agricultural produce to the cooperative. Therefore, number of oxen, as a variable is hypothesized to have direct relation ship with the cooperative's input and output marketing business.

Total livestock holding (TLSH): This variable is a continuous variable and refers to the total number of livestock the household owns in terms of TLU. It is assumed that households with larger TLU have better economic strength and financial position to purchase sufficient amount of agricultural inputs (Techane, 2002; Teferi, 2003, Daniel, 2006) that boost his production and produce more amount of output to sell to their cooperative. Therefore, this variable has assumed to have positive association with the input and output marketing by cooperatives.

Share holding (SHAREHOLD): Share holding is operationally defined as the number of share holdings by the cooperative member based on the by-law of the cooperative. Farmers with more awareness about cooperative may purchases number of shares to capitalize their cooperative

society. This implies that farmers with more share holding may participate more in the cooperative affairs. Therefore, share holding may have positive relationship with participation of members in the input and output marketing business of the cooperatives.

Non farm income (NONFARMI): It is a continuous variable which refers to part of the total amount of income measured in birr that is earned from non farm activities which are not related to agriculture. Therefore, in this study it is hypothesized that non-farm income affects the members' participation in input and output marketing through cooperatives positively.

Expenditure in agricultural input (EXPINPUT): This is a continuous variable measured in birr. As the expenditure of the household head in agricultural inputs increase due to high price of agricultural inputs, farmers expenditure input use will be increased. Therefore, in this study it is assumed the expenditure in agricultural inputs may influence the participation of members in the input and output marketing negatively.

Distance of the cooperative office from the farmer's house (DISTANCE): It is a continuous variable measured in k.ms. It refers to the distance of the cooperative from the farmer's house. The proximity of the cooperative from the farmer's house reduces the cost of time and labor that the farmers spent in searching for a supply of agricultural inputs and sale of farm outputs. The other advantage is that as the farmer is close (near) to the cooperative, he will have more knowledge about the cooperative and its benefits (Bishop and McConnen, 1999, Daniel, 2006). Therefore, in this study the distance of the cooperative from the farmer house is expected to influence the role of cooperatives in the input and output marketing negatively

Perception on the price offered by cooperative for agri-output (OUTPUTP): This is a variable taking value 1 if the cooperative price offered for farmers output is higher or better than the market price in the area and, 0 otherwise. The price effect is one that the cooperative passes on the farmer's economy (Chukwu, 1990). Therefore, if the cooperative charges competitive price for agricultural outputs in the area, the farmers sell through the cooperative (Wilkins and Stafford, 1982; Fulton and Adamowicz, 1993; Misra et al., 1993; Klein et al., 1997, Daniel, 2006). Therefore, cooperative price may influence the marketing of output marketing by cooperatives positively.

Change on standard of living due to joining to cooperative (CHSTDUCO):

This is a dummy variable measured as 1 if the household head has improved his standard of living due to joining the multipurpose cooperative, other wise 0. Therefore, it is assumed that members with improvement in their standard of living due to joining to cooperative may participate in a better way. Therefore, this variable can have positive contribution to the participation of members in the agricultural input and output marketing by cooperatives.

Membership in other cooperatives (MOTHRCOOP): This is a dummy variable measured as 1 if the household head has a membership of another cooperative society, otherwise 0. Therefore, this may be a sign of awareness of the importance of participation in the cooperative business by the household and it may have positive influence in the participation of member patrons in the agricultural input and output marketing by cooperatives.

Price of inorganic fertilizer (FERPRICE): This is the monetary value of inorganic fertilizer (DAP and UREA) which is supplied by the cooperative to its farmer members. It can be measured as high or Low by assigning the value of 0 and 1 respectively. Low price of inorganic

fertilizer might be perceived to have positive influence in the participation of members in agricultural input and output marketing by cooperatives and vice versa.

Price of improved seed (SEEDPRICE): is the monetary value of improved seeds which may be supplied by the cooperatives or other suppliers to its farmer members. Price of improved seeds can be measured as high or low by assigning the value of 0 and 1 respectively. Low price of improved seeds might be perceived to have positive influence in the participation of cooperative members in agricultural input and output marketing by cooperatives and vice versa.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

This chapter presents the findings of the study. Tables, percentages, graphs and charts were used to present the volume and value of agricultural inputs and outputs marketed by cooperatives in Southern Tigray region and in the study woredas. The ratio analysis made use of three ratios i.e. liquidity ratio (current ratio), leverage ratio (debt ratio) and profitability ratio (return on total asset) to examine the performance of the cooperatives found in Alamata and Ofla woredas. The descriptive analysis made use of tools such as mean, standard deviation and percentage. T-test and χ^2- test were also employed. Moreover, to test the multicollinarity and degree of association between the continuous and discrete variables, variance inflation factor and contingency coefficient was also calculated. Econometric analysis was employed to identify the most important factors that influence the participation of member patrons in the agricultural input and output marketing activity made by the primary cooperative societies.

4.1 Performance of cooperatives in the input and output marketing

4. 1.1. Input marketing in Tigray Region

4.1.1.1 Improved seed marketing in Tigray Region

Seed marketing in the Tigray Region is mainly undertaken by Tigray Region BoARD. The Ethiopian Seed Enterprise (ESE) is the major seed supplier to the region through its branch office in Mekelle both from the central warehouse and seed produced by farmers in the region. The seed produced by the farmers in the region is on contract basis with a premium price of 15 percent from the prevailing market price of the respective crop. The seed market is subsidized by the regional government mainly in the form of transportation from different parts of the country and with in the region too. As a result, the price of seed is some what stable and the seed consumption in the region shows continuous increment (Table-3)

Table 3.Yearly Improved seed distribution of Tigray region in quintals

Year	Total	% change
2002	1892.25	100.00
2003	5190.32	274.29

2004	**11485.70**	**606.98**
2005	**16418.634**	**867.67**

Source: Tigray BoARD 2006

Figure- 7 improved seed distribution in Tigray region

4.1.1.2 Improved seed marketing by cooperatives in Tigray region

Table 4 showed that the seed marketed by cooperatives in the region was in a steady growth from 2002 to 2004 because cooperatives were getting the seed supply from the Bureau of Agriculture input and credit department on discount basis and declined from 2004 to 2005 due to the reason that in the year 2005, cooperatives couldn't get discount and farmer members could get the seed at the area with same price. Therefore, involvement of cooperatives was not worth while in the seed distribution activity and a number of cooperatives withdrew from seed distribution business transaction. As a result, the volume of seed marketed by cooperatives increased up to year 2004 and declined there after (Table 4).

Table: - 4. Yearly seed distribution by cooperatives in Tigray Region

year	Units	Seed marketed by coops.	%change
2002	**Quintals**	**960**	**100.00**
2003	**Quintals**	**1117**	**116.35**

2004	**Quintals**	**3920**	**408.33**
2005	**Quintals**	**2442**	**254.37**

Source: TCPO marketing department 2006

Figure -8 improved seed marketing by cooperatives in Tigray region

4.1.1.3 Fertilizer marketing in Tigray Region

In the region there are various types of inputs distributed to the farming community , such as fertilizers, seeds, agro-chemicals, beehives, local and exotic cows, motor pumps, treadle pump, etc. The inputs are distributed through cooperatives; input and credit experts of Board. The cooperative societies mainly deal with fertilizer and seed distribution to members. As we can observe from the Table-5, the fertilizer consumption in the region is declining from year to year. This is mainly due to drought, high fertilizer price, minimized influence by the extension workers and local administrators.

Table -5.Yearly Fertilizer distribution in Tigray Region

Year	DAP (qt)	UREA(qt)	Total in quintal	% change
1998	76886	60214	137100	100.00
1999	71441	52821	124262	90.63
2000	63444	51924	115368	84.14
2001	60635	52544	113179	82.55
2002	54996	45912	100908	73.60
2003	55649	46080	101729	74.20

2004	55879	33093	88972	64.89
2005	49006	32691	81697	59.60

Source: BoARD of Tigray Region 2006

Figure-9 Fertilizer distribution in Tigray Region

4.1.1.4 Fertilizer marketing by cooperatives in Tigray region

Even though both the private and public sector made the importation of fertilizer, the distribution was shifted to farmers' cooperatives and Unions, which had to undertake the purchase and distribution to members, by themselves during the 2004 cropping season. The cooperative unions in Oromia, Amhara, SNNP and Tigray have started fertilizer importation (24 percent of the total Import). According to the Federal cooperative agency and regional cooperative bodies report, the fertilizer import and distribution coverage of Cooperative societies are increasing in the last two years (for example in 2005 cropping season, 68 percent of the import by eight cooperative unions and 70 percent of the distribution was made by cooperatives (FCA, 2005). This is due to two reasons:

1) The support of the government in the allocation of fund in the form of loan through the regional government budgets guarantee for import and distribution is increased.

2) The establishment of the cooperative unions in the different regional states of the country. As Table 5 depicts that cooperative societies in the Tigray Region started fertilizer distribution since 1998. The volume of fertilizer distributed by cooperative societies was increased for the first four years (1998-2001), and then declined in the year 2002 due to drought problem, and rose up in the year 2003 production year. Moreover, quantity distributed dropped down in 2004 by 47 percent

due to the fact that the cooperatives which did not repay their loan on time have withdrawn from the fertilizer business. In 2006 production year, Enderta cooperative union imported 25,000 metric ton of DAP and purchased from Lume Adama cooperative union 6,000 metric ton of UREA and took the upper hand in fertilizer distribution in the region. The volume of fertilizer distributed by cooperatives rose to 89,494 quintals in the year 2006 cropping season. Enderta cooperative Union not only distributed all the fertilizers needed in the Tigray region but also sold to Oromia region (Lume Adama Cooperative Union) and Amhara Region in order to avoid maximum carryover stock.

Table -6 Yearly Fertilizer distributions by cooperatives in Tigray in quintals

Type of fertilizer	1998	1999	2000	2001	2002	2003	2004	2005	2006
DAP	1054	12546	34472	43771	34551	62438	25485	33195	50860
UREA	1171	9432	28132	37793	30180	26572	21764	25438	38634
Total	2225	21978	62604	81564	64731	89010	47249	58633	89494[1]
%change to 1998	100.00	988.00	2814.00	3666.00	2909.00	4000.00	2124.00	2635.00	4022.00

Source: Tigray Cooperative Promotion Office and Enderta Cooperative Union 2006

[1] *All the fertilizer supply and distribution to the retailers (primary cooperatives) is made by Enderta cooperative union in 2006.*

Figure- 10 Fertilizer distribution by cooperatives in Tigray region (1998-2006)

4.1.1.5 Fertilizer price

Retail prices of DAP and urea in 2004 registered a significant increase owing to a surge (rush forward) in international prices. Field interviews have shown a hike in the retail prices of fertilizer of up to 22 percent for DAP in Amhara region and 43 percent for urea in Oromia region. However, despite this increase in retail prices, the national level fertilizer demand in 2004 amounted to 323 000 tons, accounting for a 19 percent increase compared to the previous year's demand. (FAO/WFP, 2006).

Table-7 Average fertilizer price per quintal comparison by product and year (2002-2006) in Tigray region

Type of product	2002	2003	2004	2005	2006
DAP	272.75	265.75	312.00	388.75	379.25
UREA	221.00	212.25	280.00	341.00	334.85

Source: 6 Tigray Region BoARD and Enderta cooperative union 2006

Figure -11 Average price trend of fertilizer per quintal in Tigray Region (2002-2006)

Table- 8 Average input price trend in Ofla Woreda per quintal

Year	DAP	UREA	Improved Seeds[2]
2003	246.50	191.90	240.00
2004	292.90	260.00	245.00
2005	**370.30**	**360.15**	**386.10**
2006	355.20	304.85	270.00
2007	365.70	345.40	270.00
Average	326.12	292.46	282.22

Source: Ofla Woreda cooperative promotion, input and output marketing desk

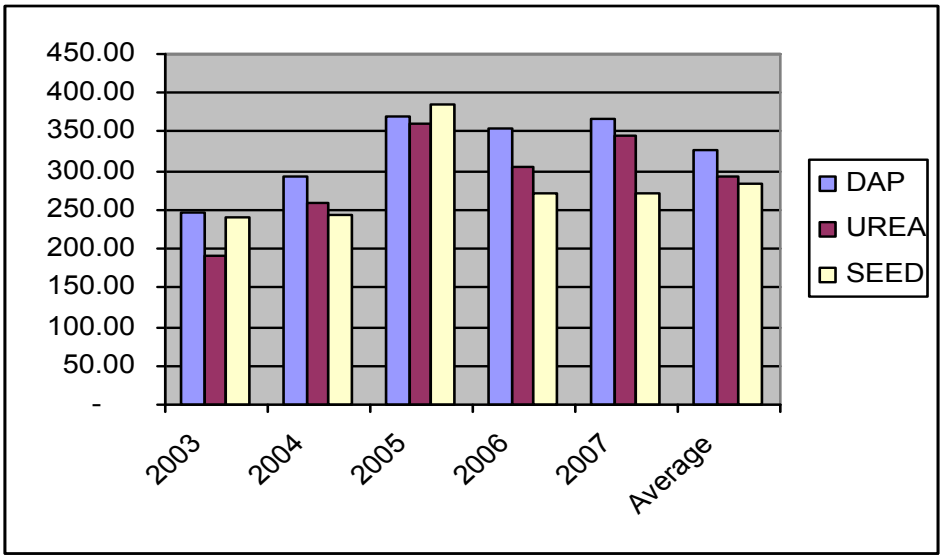

Figure- 12 Trend of average input price per quintal in Ofla Woreda

[2] *improved seeds in this regard mainly are teff and wheat*

In the past five years the average price trend of fertilizer (DAP and UREA) shows an increasing trend (Table-8). The high price of fertilizer was recorded in 2005 which is 370.30 for DAP fertilizer, 360.15 for urea and 386.10 for improved seeds. This was emanated from the low competition of the suppliers, poor infrastructure which leads to high inland transportation cost, fuel price increment, and the continuous increment of the international fertilizer price. The

percentage change in price taking 2002 as a base year in comparison with 2006 is that 39.04% for DAP and 51.51% for UREA. This is a burden for the poor farmers. However, there is slight reduction in price in 2006 as compared to 2005 (**2.44** percent for DAP and **1.8** percent for UREA) due to the thin gross profit margins of Enderta Cooperative Union (three birr per quintal only), government support in transportation, relatively less transportation cost from Djibouti to Mekelle (nine birr less as compared to Lume-Adama Cooperative Union in Oromiya).

4. 1. 2. Output marketing by cooperatives in Tigray region

Table 9 reveals that, the grain marketing performance of cooperatives in the Tigray region had increased from year 1997 to 1998 dramatically. This is due to the fact that during this fiscal year most of the primary multipurpose agricultural cooperatives involved in grain marketing business even though the availability of disaggregated data is one of the limitation to present the major crops. In the years 2002 and 2003 the grain marketing of cooperatives got down to the lowest level as a result of price failure in 2000 and 2001 at national and regional level.

Table- 9 Grain Marketing activity by cooperatives in Tigray Region

Year	Purchased Qt	% change to 1997	Purchased value in birr	Sold value in birr
1997/98	4,917.00	100.00	783,662.00	827,990.00

1998/99	108,964.00	2216.00	1,166,348.00	12,349,560.00
1999/00	69,100.00	1405.00	9,696,182.00	10,180,991.00
2000/01	83,934.00	1707.00	13,615,966.00	16,396,764.00
2001/02	53,563.00	1089.00	6,854,630.00	7,197,361.00
2002/03	8,000.00	163.00	1,108,332.00	1,163,958.00
2003/04	4,917.00	100.00	7,046,639.00	1,293,961.00
2004/05	46,382.00	943.00	18,967,692.00	20,003,892.00
2005/06	134,201	2729.00	73,434,684.00	77,106,420.00

Source: Tigray Cooperative Promotion Office Annual Reports 2006.

Table 10 shows that the grain marketing performance of the agricultural multipurpose cooperatives in Alamata Woreda was fluctuating during the period under study. It was about 6,363 quintals in 2003 and declined to 860 quintals in 2004.

Table-10 Volume and value of grain[b] purchased and sold by cooperatives in Alamata Woreda

Year	Purchased			Sold		
	Volume in qt	**unit price/qt**	**Value in birr**	**Volume in qt**	**unit price/qt**	**Value in birr**
2003	6,363.79	163.55	1,040,845.7	6,031.61	144.70	872,889.74
2004	859.80	96.66	83,113.15	1,192	150.00	178,800.10
2005	2,255.76	174.39	393,377.7	2,256.16	199.13	499,269.39
2006	58.08	157.20	9,130.00	58.08	189.74	11,020.00
2007	2,412.26	352.81	851,073.26	2,412	376.11	907,175.00
Total	**11,949.7**		**2,377,539.8**	**11,949.85**		**2,469,154.**

Source: Alamata Woreda cooperative promotion desk

[b] Grain in Alamata includes Teff, sorghum, maize

Table 11 reveals that the data for grain marketed by cooperatives in Ofla Woreda was not available for the year 2003 and 2007. However, for the year 2004 to 2005 and 2005 to 2006 the volume of grain marketed by cooperative societies in the Woreda has increased by 140 % and decreased by 7.78 percent respectively. This implies there was lack of consistent marketing regarding the grain marketing activity of the cooperatives in the woreda.

Table-11 Grain marketing performance by cooperatives in Ofla Woreda

Year	Volume in qt.	Purchasing price/qt in birr	Purchasing Value in birr	Selling price/qt in birr	Selling value in birr
2003	NA	NA	NA	NA	NA
2004	723	170.41	123,209.00	172.99	125071
2005	1735	141.23	245,032.00	145.19	251905
2006	1600	141.27	226,031.00	144.70	231513
2007	NA	NA	NA	NA	NA
Total	**4,058**		**594,272.00**		**608,489.00**

NA- Not available

Source: Ofla Woreda cooperation promotion desk

4.1.3 Ratio analysis

To asses the performance of the sample cooperatives, financial ratio analysis was calculated from the audited financial reports (balance sheet and income statement of each cooperative society).

4.1.3.1 Liquidity ratio

The satisfactory rate of current ratio that is accepted by most lenders as condition for granting or continuing commercial loan is 2.00. With this yardstick when we look to the reference years (2004 and 2007) depending on the financial audit report of Tsetsera, Lemeat primary

cooperatives of Alamata Woreda, and Tadesech, Redatafere, Adishumbereket and Hadushberha of Ofla Woreda are observed, all performed below the desirable standard (which is 2.00 ratio) but they remain liquid to cover their financial obligations due to the fact that their current ratio is above 1.00. Moreover, in 2005 and 2007 for Gerjele, 2003 and 2004 for Tao also shows below the commercially accepted ratio. The current ratio for Fallansofian and Higumberda primary multipurpose cooperatives in Ofla Woreda ranges the minimum in Higumberda during 2003 is 0.80 and maximum value for 2002 of Fallansofian primary multipurpose cooperative society 1.77. The highest ratio was 3.12 which were scored by Tadesech primary multipurpose cooperative from Ofla Woreda and the lowest was 0.56, which was scored by Tao primary multipurpose cooperative from Alamata Woreda in 2002. In this study it was Tao primary multipurpose cooperative from Alamata Woreda that has serious liquidity problem followed by lemeat multipurpose cooperative from the same Woreda. Those cooperatives couldn't pay their financial obligations in both audit periods i.e. 0.56 and 0.69 in 2002 and 2003 respectively because their ratios were below 1.00. When we see the performance of the sample multipurpose primary cooperatives, the liquidity ratio of five cooperatives had increased when we compared between the two consecutive auditing periods (i.e. one from Ofla and four from Alamata) and for the remaining five cooperatives it decreased from the first audit period to the second audit period. This implies that their current liabilities are rising faster in the later case than their current assets and vise versa in the former cooperatives. The input credit for the cooperatives was from Commercial Bank of Ethiopia through the government collateral system. The ability to get cash (credit) by their own to meet their short-term demand for money (to supply farmers' with agricultural inputs and purchase their members farm produce) is not possible because lenders were not willing to extend short-term loan to these cooperatives due to the banks collateral

policy, cooperatives low financial and managerial capability i.e. lenders require current ratio to remain at or above 2.00 as a condition for granting loan and also the collateral from the lending institution.

Table-12 Liquidity ratio of sample primary multipurpose cooperatives in Southern Zone of Tigray (Alamata and Ofla Woredas)

Name of Cooperative	**Current ratio(current asset/current liability)**				
	2002	**2003**	**2004**	**2005**	**2007**
Tsetsera			1.05		1.12
Lemeat			0.98		1.02
Gerjele				1.13	1.21
Tao		0.56	0.69		
Tadesech			3.12		1.22
Redatafere			1.69		1.13
Adishumbereket			2.29		1.12
Fallansofian	1.88	1.33			
Hadushberhan			1.40	2.09	
Higumberda	1.57	1.02			

Source: Computed from audited financial statements of each primary cooperative

The cooperative societies in the two woredas are not getting regular auditing service as per the proclamation 147/1998 that is at least once a year due to low number of auditors both in quantity and quality (the ability to audit cooperatives independently is very low). Therefore, the researcher

was forced to take two consecutive audit years in order to assess the performance of the sample primary cooperative societies using financial ratios.

4.1.3.2 Financial leverage ratio (debt/capita) analysis

All of the cooperatives in the two study woredas (Alamata and Ofla) used financial leverage (finances a portion of assets with debts). Majority of the cooperatives under investigation in the two sample study woredas financed more of their total asset with creditors' fund. The lowest debt ratio in this study was 0.24 which is scored by Adishumbereket primary multipurpose cooperative of Ofla Woreda, which implies 24% of its assets in the year 2004, was financed from creditor's fund, whereas 76% of its asset was financed from its own fund. On the other hand, the highest debt ratio scored by Lemeat multipurpose primary cooperative from Alamata was 0.95 in the year 2007. This indicates that only 5 percent of the cooperatives business was run by its own financial sources. Therefore, the major source of finance for the cooperative to serve its patron members in supply of agricultural inputs and purchase of their farm outputs was from borrowed capital. (Table-13).

Table-13 financial leverage ratio (total debt/capital) of sample multipurpose cooperatives in Ofla Woreda

Name of Cooperative	Debt ratio				
	2002	**2003**	**2004**	**2005**	**2007**
Tsetsera	-	-	0.42	-	0.86
Lemeat	-		0.93		0.95
Gerjele	-			0.85	0.89
Tao	-	0.88	0.90	-	-
Tadesech	-		0.26		0.78
Redatafere	-		0.44		0.80
Adishumbereket	-		0.24		0.81
Fallansofian	0.46	0.66			
Hadushberhan	-		0.56		0.31
Higumberda	0.63	0.91			

Source: Computed from audited financial statements of each primary cooperative

From the above table-13 we can conclude that except one cooperative (Hadushberhan multipurpose primary cooperative), all cooperative societies borrowed capital had increased in the later audit years as compared to the former audit years. This implies, 90% of the cooperatives

business runs at risk. The smaller the proportion (<50%) of the total assets financed by the creditors fund, the smaller will be the risk that the firm/cooperative unable to pay its debt (William et al, 2003 as cited in Daniel, 2006).

Having higher proportion of asset financed by the creditors fund may lead the cooperatives to the risk of bankruptcy unless the management seek a solution to increase the cooperatives own fund through sales of share capital to its members and running profitable business that can award both to the member patrons in the form of patronage refund and the cooperative society through allocation of reserve fund out of the net profit earned.

4.1.3.3 Profitability ratio analysis

The profitability ratios demonstrate how well the firm is making investment and financing decisions, fetching profit from the sales made by the business by the cooperative. According to William et al. (2003), as cited in Daniel, 2006, firms need to earn return on their asset that enables them to pay the interest of the money they borrowed i.e. they need to return on their asset which is equal or better than the interest rate of the money they borrowed. One can observe from Table-14 that the profitability ratios of the cooperatives under investigation were improving from the first audit year to the second audit year under consideration. When we look at the earning of the cooperatives under investigation in audit year wise, the highest and the lowest profitability ratio was 40.8% and negative 5.2 percent which was scored by Hugumberda multipurpose cooperative in Ofla Woreda in 2002 and 2003 audit year respectively. In this study 80% of the cooperative societies under investigation improved their profitability as compared from the first audit year to the second audit year, except two cooperatives in Ofla Woreda (Tadesech from

25.9% in 2004 to negative 1.6 percent in 2007 and Higumberda from 40.8% in 2002 to negative 5.2 percent in 2003.

The plausible reasons for the difference in profitability among the cooperative lies on how effectively the cooperative management is generating profit on sales, total assets, money they borrowed and most importantly members' investment (share capital).

Table- 14 Profitability Ratios (net profit/total asset) of sample multipurpose cooperatives in Alamata Woreda

Name of the cooperative	**Profitability ratio analysis (RONA)**				
	2002	**2003**	**2004**	**2005**	**2007**
Tsetsera			0.034		0.179
Lemeat			0.101		0.359
Gerjele				0.239	0.379
Tao		0.158	0.242		
Tadesech			0.259		0.016
Redatafere			0.025		0.029
Adishumbereket			-0.016		0.035
Fallansofian	-0.014	0.092			
Hadushberhan			0.051		0.054
Higumberda	0.408	-0.052			

Source: Computed from audited financial statements of each cooperatives

4.2. Participation in the agricultural input and output marketing by cooperatives

4.2.1 Descriptive Analysis

In order to understand the socioeconomic conditions of the participant and non-participant sample respondents, descriptive analysis is summarized and discussed as follows

4.2.1.2 Socioeconomic Characteristics of the Sampled Households

The average age of the sample farmers was about 43.23 years. The corresponding figure for the participant and non-participant farmers was about 42.47 and 45.02 years respectively. An independent sample t-test was conducted to compare the difference in mean age between participant and non participant sample respondents are statistically significant at 10% probability level of significance (t =1.84) table 15. This indicates that more aged members do not participate in the input and output marketing activities of the cooperatives as compared with the less aged farmer members.

The average educational level of the sample households was 3.29 years of schooling. While the respective participant and non participant sample farmers average schooling is 3.53 and 2.73 years. According to the independent sample t-test, the difference mean t-test was compared

between the participant and non-participant cooperative members with respect to educational level of the household head is found to be statistically significant at 10% probability level (t=-1.87) This implies relatively educated member farmer members participate in the input and output marketing activities of the cooperatives. This can be due to the fact that educated farmer members have more exposure to timely information and understand about the cooperative marketing activities as compared to less educated members.

The mean family size of the sample household in the study was found to be 6.03. The respective average family size for participant and non participant household is 6.02 and 5.987 respectively However, the analysis shows that, the mean difference between participants and non-participants of the agricultural input and output marketing by cooperatives with respect to family size is found to be statistically non significant (t = -0.834).

The average land ownership of the sample respondents were 0.67 hectare. Moreover, the corresponding figures for the participant and non-participant sample respondents' amounts 0.72 and 0.57 hectare respectively. According to the independent sample t- test conducted in this study, the difference in mean land ownership between the participant and non participant household heads is found to be significant at 5 percent probability level (t= -2.48). Therefore, from this we can conclude that the majority of the sample farmers own more than half a hectare of land which is above the Woreda average (i.e. 0.5 hectare).

.

The average livestock holding for the sample households as a whole is 5.62 TLU (Table 15). The average livestock holding of participants is relatively higher (6.06) than that of non-participants (4.59). An independent sample t- test was conducted to compare the mean difference in TLU owned between participants and non-participants of the agricultural input and output marketing

by cooperatives. The result shows that there is statistical significant difference between the participant and non-participant households at 5 percent probability level (t=-2.38).

More importantly the average shareholding of the whole sample farmers, participant and non-participant farmer members amounts 2.22, 2.36 and 1.89 respectively. An independent sample t-test was analyzed to compare the mean difference between the participant and non-participant households in the agricultural input and output marketing by cooperatives and the result shows statistically significance at 1% probability level(t = -2.99). This indicates, majority of the sample respondents 146 (70.19%) were participating in financing their cooperative societies through investing in the form of additional share capital.

Table -15 Mean, STD, T-values Continues variables for Non-Participated and Participated Groups, Southern zone of Tigray, Alamata and Ofla Woreda 2008 (N = 208)

Explanatory Variables	Non-Participant (N=62)		Participant (N= 146)		Total (N= 208)		Sig.	t-values
	Mean	STD	Mean	STD	Mean	STD		
Age of HH	45.02	9.00	42.47	9.13	43.23	9.15	0.066*	1.84
Level of Education of the HH	2.73	2.79	3.53	2.85	3.29	2.85	0.063*	-1.87
Family size of HH	5.987	1.987	6.02	1.931	6.003	1.959	0.405	-0.834
Land owned by the HH	0.57	0.37	0.72	0.44	0.67	0.43	0.014**	-2.48
Number of oxen owned by the HH	1.23	1.047	1.72	1.34	1.57	1.27	0.010**	-2.58
TLU	4.59	3.47	6.06	4.31	5.622	4.12	0.018**	-2.38
Non farm income of the HH	3147	4776	2087	2106	2403.3	3172.7	0.098*	1.68
Expenditure on input	247	229	323	284	300.45	270.6	0.066*	-1.85
Number of share holding by the HH	1.89	0.93	2.36	1.1	2.22	1.07	0.003***	-2.99
Distance from the coop, office to the HH house	3.52	3.10	4.43	3.71	4.16	3.56	0.090*	0.06

* Significant at 10% level of significance
** Significant at 5% level of significance
*** Significant at 1% level of significance

The average non-farm income of the sample farmers is about birr 2,403.32 with a standard deviation of 3,172.72 that shows high non-farm income variation among the sample households Moreover, non-participant farmers got higher average non-farm income which is birr 3,147.00 as compared with the participant sample farmers who have birr 2,087.00 average non-farm income.. Results of the independent sample t-test difference in mean non-farm income between the

participant and non-participant households was found to be statistically significant at 10 percent probability level (t=1.68). It was confirmed during the interview with the farmers that most of the non-participant farmers involve in safety-net, petty trade and in daily labour to acquire their financial income.

Table-16 Group scores, chi-square value, and significance of discrete variables for non-participate and participate sample respondents in southern zone of Tigray, Alamata and Ofla Woreda 2008, (N = 208)

Explanatory Variables	**Non-Participant (N=62)**		**Participant (N=146)**		**Sig.**	**□2**
	0	**1**	**0**	**1**		
Perception on the price of output	45 (72.58)	17 (27.42)	76 (52.05)	70 (47.95)	0.006***	7.535
Perception on the change of standard of living due to joining coop	27 (43.55)	35 (56.45)	103 (70.55)	43 (29.45)	0.000***	13.536
Membership with other coop.	42 (67.74)	20 (32.26)	62 (42.47)	84 (57.53)	0.001***	11.122
Perception on fertilizer price	23 (37.10)	39 (62.90)	47 (32.2)	99 (67.8)	0.493	0.469
Perception on improved seed price	30 (48.39)	32 (51.61)	64 (43.8)	82 (56.2)	0.546	0.364

* Significant at less than 10% level of significance
** Significant at less than 5% level of significant
*** Significant at less than 1% level of significant

- Figures in parentheses are percentages

Perception on the price of output was one of the economic variables hypothesized to influence participation of agricultural input and output marketing by cooperatives. When we see to the total respondents about 70.19% of the sample respondents are participants. The chi-square analysis shows the existence of statistical significant differences between the two groups at 1 percent probability level (χ^2= 7.535). This implies farmers who perceived the price offered by the cooperative society to their agricultural produce are more likely to participate in selling their output to the cooperatives. On the other hand perception of the household head on the fertilizer and improved seed price have statistically non-significant with the participation of members in the agricultural input and output marketing by cooperatives.

4. 2.2 Factors influencing the participation of members in the agricultural input and output marketing by cooperatives

The estimates of parameters of the variables expected to influence the participation of farmer members in the agricultural input and output marketing by cooperatives are displayed on Table 18. Fifteen explanatory variables of which five are dummy variables and the remaining 10 are continuous explanatory variables were taken for the analysis. The result of the probit model analysis showed that 10 variables were found significant. The impact of these explanatory variables on the dependent variable is discussed below.

Before running the model, it is useful to look into the problem of multicollinarity among the continuous variables and verify the degree of association among the hypothesized qualitative explanatory variables. To this effect, the 10 continuous explanatory variables were checked for multicollinarity using Variance Inflation Factors (VIF) while Contingency Coefficients were used

to detect the degree of association among five qualitative (discrete) explanatory variables (see Appendices 2 and 3 respectively). According to the results, no significant problems of multicollinarity and very high degree of association were observed. Therefore, all the 15 hypothesized continuous and discrete explanatory variables were included in the model. Table 17 presents the variables with the expected sign.

To start with, endogeneity was suspected in the case of perception of output price, perception of change in standard of living due to joining to the cooperatives, perception of fertilizer price and perception of improved seed price with the dependent variable participation of the household head in the agricultural input and output marketing by cooperatives as there is an increase in participation due to those explanatory variables with participation. On the other hand, households' decision of participation depends on the price of output, price of fertilizer, improved seeds and change on the standard of living of the household head due to the participation in the input and output marketing by cooperatives. In this case, the researcher runs the probit regression model with and with out the four perception variables and no serious endogeneity problem was seen (Table 19).

Table 17 Explanatory variables with their expected sign in relation to the participation on agricultural input and output marketing by cooperatives

Explanatory variable	Expected sign per probit regression in input and output marketing by cooperatives	Variable description
Age of HH	?	Age in years
Educational level of the HH	+	Number of schooling years
Family size of the HH	-	Measured in number of family members
Land owned by the HH	+	Measured in hectares.
Number of oxen owned by HH	+	Number of oxen owned
Livestock holding of the HH	+	In Tropical Livestock Unit
Share holding of the HH	+	Measured in number of shares
Non farm income of the HH	-	Measure as continuous in birr
Expenditure in agricultural inputs by the HH	-	Measured in birr
Distance to the cooperative office from the home of the HH	-	Measured in kilometers
Perception of the HH on price of agricultural output	+	Dummy, favorable response = 1
Perception of the HH on change of standard of living due to joining to cooperatives	+	Dummy, favorable response = 1
Membership of the HH in other cooperatives	+	Dummy, favorable response = 1
Perception of HH on fertilizer price	-	Dummy, favorable response = 1
Perception of HH on improved seed price	-	Dummy, favorable response = 1

Age of household head (AGEHH): Analysis of binary probit model as given in Table 18 reveals that the demographic explanatory variable namely age, has negative and significance effect at 10% probability level on the participation of members in the agricultural input and output marketing by cooperatives in the two study woredas between all categories of members (participant and non-participant). This result is in contrary to the finding of Subbaura.j and Karunakara on the peoples' perception on the social benefits of cooperation (Frank, 2003). This is an important finding that young cooperative members are more active participants in the agricultural input and output marketing by cooperatives. The probable reason for this could be young members might have more awareness about the benefit of cooperatives as compared to aged members.

Land owned by the HH (LANDOWN): As it was expected, landholding has influenced positively the agricultural input and output marketing activity of cooperatives significant at five percent probability level. Each additional hectare of land increases the probability of purchasing agricultural input from the cooperative and selling of its agricultural outputs to their cooperative. Therefore, land ownership is an important variable in the input and output marketing participation of the household head. The result of this study was similar with to the findings of Daniel, 2006, as the farm size increases, the cooperative members patronize their cooperative society by purchasing and selling agricultural input and output respectively.

Share holding of HH (SHARHOL): The variable share holding had influenced the participation of farmer members in the agricultural input and output marketing by cooperatives positively and significant at five percent probability level as it was expected. This implies that as the number of share holding of farmer members increases the level of participation in the cooperative affairs

such as input and output marketing increases. The larger the share holding the greater will be the sense of ownership by the cooperative members which leads for more participation.

Non-farm in come of the HH (NONFARNI): As expected the economic variable non-farm income has influenced the participation of agricultural input and output marketing by cooperatives negatively and significant at one percent probability level. Field survey result shows that, farmers earning high non-farm income are non participants in the agricultural input and output marketing by cooperatives because they don't involve in the farming activity since they don't have the land.

Distance of the cooperative office from the HH house (DCOFFH): influenced the participation in the agricultural input and output marketing by cooperatives positively and significant at one percent probability level. It was expected that farmers, who are relatively nearer to the cooperative office, have the chance to participate more in the marketing activities of the cooperative. However, the model result shows that farmers who live far-away from the cooperative office were increase their probability to participate in the agricultural input and output marketing cooperatives. This implies farmer members at relatively distant location have less alternative marketing agents as compared to those who live near the cooperative which are influenced by other private marketing agents. This result is in contrary with finding of Daniel (2006).

Perception of the HH on the price agricultural output (OUTPP): This variable had influenced the agricultural input and output marketing of the cooperatives positively and significant at one percent probability level. These shows as the cooperative offers better price to its members

agricultural produce the participation of members in selling their farm output to the cooperative increase. The result was in conformity with the Daniel (2006).

Perception of the HH on the change in standard of living due to joining a cooperative (CHSTDUCO): The variable change in standard of living due to joining a cooperative (becomes a cooperative membership) has negative and significant at five percent probability level. Therefore, the variable change in standard of living has negative contribution to the input and output marketing by cooperatives.

Membership in other cooperatives (MOTHCOOP): Membership in other cooperatives i.e. other than the multipurpose cooperatives has positive and significance influence at 10 percent probability level in the agricultural input and output marketing by cooperatives. This implies that cooperative members who have a membership in other cooperatives have better understanding in participating in the cooperative affairs including in patronizing the cooperative business (such as input and output marketing business).

Perception of the HH on fertilizer price (FERPRICE): The variable fertilizer price influenced the participation of cooperative members in the agricultural input and output marketing by cooperatives negatively and significant at 10 percent probability level. This implies as the price of fertilizer increases the participation of the household head in purchasing fertilizer from the cooperative decreases.

Perception of the HH on improved seeds price (SEEDPRIC): The price of improved seed has influenced the dependent variable participation of cooperative members in the input and output marketing by cooperatives positively and significantly at 10 percent probability level which is

contrary with what was expected. This implies farmer members in the two woredas participate more actively in the purchase of improved seeds as compared to other types of inputs regardless the price.

In general, the participation of farmer members in the agricultural input and output marketing by cooperatives was significantly influenced by age, own land, shareholding, non-farm income, distance of the cooperative office from the household house, output price, change in standard of living due to joining cooperative, membership in other cooperatives, price of inorganic fertilizer and price of improved seed. However, out of the 10 significant explanatory variables six of them (own land, shareholding, distance, output price, membership in other cooperatives and seed price) were influenced the participation of cooperative members in the agricultural input and output marketing by cooperatives positively and significantly at 10% probability level.

Table 18 Probit regression estimates of determinants of participation[a] in agricultural input and output marketing by cooperatives in Alamata and Ofla Woreda, 2008 (N=208)

Variables	Coefficient	Marginal effect
Age of HH in years	-0.0403* (0.0150)	-0.0121* (0.0045)
Educational level of the HH in years of schooling	0.0398 (0.0437)	0.0120 (0.0131)
Family size of the HH in number	-0.0369 (0.685)	-0.0111 (0.0206)

Land owned by the HH in hectares	0.8618** (0.3385)	0.2603** (0.1013)
Number of oxen owned by HH in number	0.0401 (0.1558)	-0.0121 (0.0471)
Livestock holding of the HH in tropical livestock unit	0.0349 (0.0496)	0.0105 (0.0149)
Share holding of the HH in number of shares	0.3052** (0.1235)	0.0922** (0.0367)
Non farm income of the HH in birr	-0.0001*** (0.0000)	-0.00003*** (0.0000)
Expenditure in agricultural inputs by the HH in birr	-0.0005 (0.0004)	-0.0002 (0.00013)
Distance to the cooperative office from the home of the HH kms	0.0632** (0.0323)	0.0191** (0.0098)
Perception of the HH on price of agricultural output dummy	0.6539*** (0.2454)	0.1883*** (0.0660)
Perception of the HH on change of standard of living due to joining to cooperatives dummy	-0.5405** (0.2349)	-0.1702** (0.0758)
Membership of the HH in other cooperatives dummy	0.4155* (0.2211)	0.1251* (0.0660)
Perception of HH on fertilizer price dummy	-0.5658* (0.2912)	-0.1809* (0.0962)
Perception of HH on improved seed price dummy	0.6310** (0.2759)	0.1906** (0.0813)
Constant	0.9031 (0.6451)	
Pseudo-R^2	0.2524	
LRX^2(15)	63.98	
Prob>X^2	0.000	

- ***, **, and * indicates statistically significant at 1percent, 5 percent and 10% probability level respectively.
- Figures in parentheses are standard errors

Table 19 Probit regression estimates of determinants of participation[a] in agricultural input and output marketing by cooperatives in Alamata and Ofla Woreda, 2008 (N=208) with 10 explanatory variables

Variables	Coefficient	Marginal effect
Age of HH in years	-0.0315* (0.0135)	-0.0103* (0.0040)
Educational level of the HH in years of schooling	0.0296 (0.0400)	0.0097 (0.0130)
Family size of the HH in number	-0.0328 (0.0640)	-0.0107 (0.0209)

Land owned by the HH in hectares	0.7833** (0.3113)	0.2560** (0.1008)
Number of oxen owned by HH in number	0.0122 (0.1400)	-0.0716 (0.0457)
Livestock holding of the HH in tropical livestock unit	0.0131 (0.4484)	0.0042 (0.0146)
Share holding of the HH in number of shares	0.2466** (0.1122)	0.0806** (0.0365)
Non farm income of the HH in birr	-0.0001*** (0.0001)	-0.0000*** (0.00003)
Expenditure in agricultural inputs by the HH in birr	-0.0017 (0.0004)	-0.0001 (0.0001)
Distance to the cooperative office from the home of the HH kms	0.0536** (0.0303)	0.0175** (0.0099)
Membership of the HH in other cooperatives dummy	0.4645* (0.2109)	0.1510* (0.0676)
Constant	0.7188 (0.5802)	
Pseudo-R^2	0.1596	
LRX^2(15)	40.44	
Prob>X^2	0.0000	
Pred. P	0.7361	

- ***, **, and * indicates statistically significant at 1 percent, 5 percent and 10% probability level respectively.
- Figures in parentheses are standard errors

In table 18, marginal effects of the explanatory variables on the probability of member's participation in the agricultural input and output marketing by cooperatives are also presented in the last column. As we can see from the table, a unit change in the variables household age, non-farm income, change in standard of living and price of inorganic fertilizer decreased the probability of participation of farmer members in the agricultural input and output marketing by cooperatives by 0.0121, 0.000035, 0.1702 and 0.1809 respectively. More importantly, one hectare of extra land owned by the household head increased the probability of participation of the household head in the agricultural input output marketing by cooperatives by 0.2603 units. Similarly, a unit change in the share holding of the household head increased the probability of

participation in the agricultural input and output marketing by cooperatives by 0.0922. As clearly shown in Table 18, a one km change in the distance of the cooperative office from the house of the household head also shows an increased probability of participation in the input and output marketing by the cooperatives, which is in contrary with the findings of Daniel (2006).The plausible reasons for this is no matter with the distance farmer members prefer to do business with their cooperative society. One birr change in the price of agricultural produces marketed to the cooperative society by its members results an increase of the probability of participation in the agricultural input and output marketing by cooperatives by 0.1883 units. Similarly one birr change (lower) in the improved seed price increased the probability of participation of the cooperative members in the agricultural input and output marketing by cooperatives by 0.1906 unit and a unit change in the membership in other cooperatives increased the probability of the household head in the participation of in the input and output marketing by cooperatives by 0.1251 units.

As it has clearly shown in table 18, the over all fit of the model has also quite well with LR chi^2 value of 63.98 and Prob > chi^2= 0.00. The model explains 25.24% of the variations in the participation of agricultural input and output marketing by cooperatives.

4.2.3 Satisfaction of farmer members by the Agricultural input and output marketing by cooperatives

As cooperatives are member owned, member control and member benefited, their main target is to satisfy members' needs in all aspects of their business operations. Moreover, members participate in the agricultural input and output marketing by cooperatives mainly to satisfy their

economic needs. Therefore, to look the level of satisfaction of member patrons in the agricultural input and output marketing by cooperatives, probit model analysis was done using the 15 explanatory variables (Table 20). The result of the probit regression model shows that, out of the 15 explanatory variables, only three of them are statistically significant at 10 percent probability level with respect to the satisfaction of members by the agricultural input and output marketing through cooperatives.

The explanatory variable number of oxen owned by the household head has a positive and significant influence to the probability of satisfaction of members by the agricultural input and output marketing through cooperatives and a unit change in oxen ownership of the household head was increased the probability of satisfaction of the household head by the agricultural input and output marketing made through cooperatives by 0.0942 units. Moreover, Expenditure in agricultural inputs and price of fertilizer are influenced negatively and significantly the level of satisfaction of the household head by the agricultural input and output marketing through cooperatives at 10 percent probability level. One birr change in the expenditure of agricultural inputs and price of fertilizer decreased the probability of satisfaction of the household head's the agricultural input and output marketing through cooperatives by 0.0003 and 0.1637 units respectively. This implies, low fertilizer price has important contribution to the level of satisfaction of the household head.

Table 20 Probit regression estimates of determinants of satisfaction [a] in agricultural input and output marketing by cooperatives in Alamata and Ofla Woreda, 2008 (N=208)

Variables	Coefficient	Marginal effect
Age of HH in years	-0.0070 (0.0126)	-0.0274 (0.0045)
Educational level of the HH in years of schooling	0.0287 (0.0369)	0.0112 (0.0144)
Family size of the HH in number	0.0129 (0.0591)	0.0050 (0.0231)

Land owned by the HH in hectares	-0.0513 (0.2683)	-0.0200 (0.1049)
Number of oxen owned by HH in number	0.2409* (0.1296)	0.0941* (0.0505)
Livestock holding of the HH in tropical livestock unit	-0.0379 (0.0379)	-0.0148 (0.0148)
Share holding of the HH in number of shares	-0.0366 (0.0962)	-0.0143 (0.0376)
Non farm income of the HH in birr	-0.0003 (0.0000)	-0.0000 (0.0000)
Expenditure in agricultural inputs by the HH in birr	-0.0008* (0.0004)	-0.0003* (0.0001)
Distance to the cooperative office from the home of the HH kms	0.0116 (0.0270)	0.0045 (0.0098)
Perception of the HH on price of agricultural output dummy	0.2027 (0.2033)	0.0788 (0.0785)
Perception of the HH on change of standard of living due to joining to cooperatives dummy	-0.2950 (0.2063)	-0.1156 (0.0807)
Membership of the HH in other cooperatives dummy	-0.0284 (0.1959)	-0.0111 (0.0765)
Perception of HH on fertilizer price dummy	-0.4170* (0.2322)	-0.1637* (0.0905)
Perception of HH on improved seed price dummy	0.1622 (0.2006)	0.0634 (0.0783)
Constant	0.6622 (0.5716)	
Pseudo-R^2	0.0625	
LRX^2(15)	17.76	
Prob>X^2	0.2756	

- *Indicates statistically significant at 10% probability level.
- Figures in parentheses are standard errors

4.3. Constraints of agricultural Input and Output marketing by cooperatives

Cooperative members were asked to give their view on the major constraints of agricultural input and output marketing activities of the multipurpose cooperatives. The members identified 22 major constraints that affect the agricultural input and output marketing activity of the cooperative societies. More importantly, the sample respondent's opinion on the constraints of

agricultural input and output marketing was categorized as less important, important and very important with a value of 0, 1, and 2 respectively (Table 21). The categories have received an average frequency score of 56.68 (27.25%) for less important constraints, 122.73 (59.0%) for important constraints and 28.59(13.75%) for very important constraints. Moreover, cumulative index has been calculated by giving the value of 20 for less important, 30 for important and 50 for very important constraints. Table 21 reveals that the major constraints of agricultural input and output marketing by cooperatives in their order of importance are:

- Timely audit problem (80.90%**)**
- Lack of training to members and board of directors (68.20%)
- Lack of professional manager (66.40%)
- Shortage of capital (66.30%)
- Unable to pay dividend to members (66, 10%)
- Financial embezzlement in cooperatives (65.40%)
- Low commitment and disloyalty of members (63.00%)
- Lack of timely market information (62.60%)
- Recurrent draught (62.40%)
- Low input use of farmer members (62.40%)
- Low participation of members on the coop affairs (61.80%)
- Unskilled management committee (61.70%)
- High price of agricultural inputs (61.10%)

Table- 21. Constraints in the agricultural input and output marketing of cooperatives

Constraints	**Less important (20 points)**		**Important (30 points)**		**Very important (50 points)**		**Weighted index 100%**
	Frequency	%	Frequency	%	Frequency	%	
Shortage of capital.	27	13.0	148	71.2	33	15.9	**66.30**
Unskilled management committee	45	21.6	144	69.2	19	9.1	61.70
Illiterate membership	20	9.6	158	76.0	30	14.4	**66.00**
Low commitment and disloyalty of	42	20.2	142	68.3	24	11.5	

members							63.00
Low participation of members on the coop affairs	40	19.2	151	72.8	17	8.2	61.80
Strong competition in the grain marketing	109	52.4	84	40.4	15	7.2	54.50
High price of agricultural inputs	63	30.3	125	60.1	20	9.6	60.10
Low input use of farmer members	54	26.0	127	61.1	27	13.0	62.40
Recurrent drought	86	41.3	79	38.0	43	20.7	62.40
Poor marketing system	63	30.3	128	61.5	17	8.2	59.5
Inadequate market infrastructure	59	28.4	131	63.0	18	8.7	60.10
Lack of professional manager	30	14.4	143	68.8	35	16.8	**66.40**
Lack of timely market information	46	22.1	138	66.3	24	11.5	62.60
Poor technical support by cooperative promoters	64	30.8	127	61.1	17	8.2	59.40
Lack of Members confidence on their cooperative	60	28.8	126	60.6	22	10.6	60.80
Unable to pay dividend to members	63	30.3	95	45.7	50	24.0	**66,10**
Lack of Loyalty of management committee	81	38.9	108	51.9	19	9.1	58.10
Financial embezzlement in the cooperative	74	35.6	82	39.4	52	25.0	65.40
Storage problem	91	43.8	113	54.3	4	1.9	54.10
Transportation problem	104	50	97	46.6	7	3.4	53.40
Timely audit problem	7	3.4	105	50.5	96	46.2	**80.90**
Training of members and board of directors	19	9.1	149	71.6	40	19.2	**68.20**
Average	56.68	27.25	122.73	59.0	28.59	13.75	

Source: Computed from field survey data

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Multi-purpose agricultural cooperatives operate in the agricultural sector of the national economy and they are supposed to play their role in the marketing system and promote agricultural development in the rural area. They are also organized to render economic benefits such as economies of scale, market power, risk pooling, coordination of demand and supply and guaranteed access to input and output markets to the member patrons.

The objectives of the study were:

- To assess the performance of cooperatives in agricultural input and output marketing,
- To study the participation of farmer members in the agricultural input and output marketing
- To identify constraints in the agricultural input and output marketing services delivered by cooperatives in the study area, and
- To develop policy recommendations for the input and output marketing through cooperatives

The study was based on primary data from the farmers and secondary data obtained from the primary cooperatives, the Woreda cooperative desk and the regional BoARD. Volume and value of agricultural inputs and outputs marketed by cooperatives were analyzed using tables, percentage, graphs and charts. The financial performance of the cooperatives was examined using the financial ratios. Current ratio, debt ratio and net profit margin ratio indicators were used to examine the financial performance of the cooperatives. Statistical software called "SPSS 15 version" and "STATA" was employed to analyze the descriptive statistics of the sample farmers and the probit regression results respectively. The model was selected or chosen since it has advantage in revealing the objective of the study cited above. Ratios were analyzed taking the two audit year's financial data (2004 and 2007) for seven cooperatives, 2002 and 2003 for two

cooperative societies and 2005 and 2007 for one cooperative due to the limitation of timely audit of the cooperatives in the study area. The reason why the researcher took different audit years is that, due to lack of uniformity in the auditing of the cooperative societies. The liquidity analysis showed that the cooperatives under investigation were below the satisfactory rate (a current ratio of less than 2.00) for the two years. All of the cooperatives under investigation in the two woredas used financial leverage (financed more of their total asset with creditors fund i.e. on average 90% of the assets of the cooperatives was financed with creditors fund in the audit years under analysis). The profitability ratio of the cooperatives under investigation showed that the profitability of the cooperatives was weak. The descriptive statistics and econometric model were also used for analyzing the data in addition to the ratio analysis. T-test was used to compare the mean values of the 10 continuous explanatory variables and examine the existence of statistically significant differences between the participants and non-participants in the agricultural input and out put marketing by cooperatives in the two study woredas. The T-test showed significant difference in the age, land, TLU, Shareholding, non-farm income, expenditure in agricultural input, distance of the cooperative office from the household house, membership in other cooperatives, and price of improved seed between the two groups (participant and non participant) at less or equal to 10% probability level. Discrete variables were also compared using chi-square test to see if there is statistically significant difference between the participant and non participant group of respondents. The chi-square test also revealed that the discrete variables (perception on price offered by the coop to members produce, perception on the change of standard of living due to joining to coop, fertilizer price and seed price, showed significant differences between the two groups at less than or equal to 10% probability level. To identify the

factors influencing the participation of member farmers in the agricultural input and output marketing by cooperatives in Alamata and Ofla Woredas, probit regression model was used.

The model results revealed that among 15 explanatory variables included in probit model, six continuous and four discrete explanatory variables were found to be significant at less than or equal to 10% probability level. More specifically, these variables include age, own land, shareholding, non-farm income, distance of the cooperative office from the household house, perception of the household head on output price, perception of the household head on change in standard of living due to joining cooperative, membership in other cooperatives, perception of the household head on price of inorganic fertilizer and price of improved seed were found to be significantly related to the participation of farmer members in the agricultural input and output marketing by cooperatives. And among these significant variables own land, shareholding, distance, output price, membership in other cooperatives and seed price) were found to be significantly and positively related to the participation of cooperative members in the agricultural input and output marketing by cooperatives**.** In this study the major constraints in the agricultural input and output marketing services delivered by the cooperatives identified were:

Timely audit problem (80.90%**)**, lack of training to members and board of directors (68.20%), lack of professional manager (66.40%), shortage of capital (66.30%), unable to pay dividend to members (66, 10%), financial embezzlement in cooperatives (65.40%), low commitment and disloyalty of members (63.00%), lack of timely market information (62.60%), recurrent draught (62.40%), low input use of farmer members (62.40%), low participation of members on the coop affairs (61.80%), unskilled management committee (61.70%), high price of agricultural inputs (61.10%) are the very important constraints among others.

5.2 Recommendations

Based on the study results, the following recommendations are arrived at for improving the agricultural input and output marketing through cooperatives. The recommendations are categorized in to three main areas.

A. For cooperative development workers (decision makers)

1) The number and type of cooperative societies in the two study woredas (Alamata and Ofla) are growing from time to time. This demands more technical support by increasing the quantity and quality of the cooperative promoters and auditors at Woreda as well as at regional level. The growing number of cooperatives in the study area is not getting timely audit service by the cooperative auditors assigned for this job in each Woreda under the Office of Agriculture and Rural Development, Cooperative Promotion and Input and Output Marketing Division. Therefore, it is highly important to raise the number and the technical capacity of the Woreda and regional level auditors through short term and long term training programs and retaining the trained manpower in the cooperative sub-sector.
2) Having higher proportion of asset financed by the creditors fund may lead the cooperatives to the risk of bankruptcy. Therefore, the board of directors and cooperative staff should strive to seek a solution to increase the cooperatives' own fund through sales of share capital to its members and running profitable business that can award both to the member patrons in the form of patronage refund and the cooperative society through allocation of reserve fund out of the net profit earned from the business operation of the cooperative societies based on the by-law and proclamation no.147/1998.
3) The problem of financial embezzlement in cooperatives is mainly due to weak internal control and unskilled management in the cooperative society's day to day business

operation. The cooperative unions organized in the respective woredas should be able to assist in periodic technical support and financial control to the member primary cooperatives through mentoring (coaching) on reasonable payment basis. Moreover, transparency is to be promoted in the cooperatives and the continuous training and education is required in the cooperatives.

4) Out of the very important constraints identified by the respondents are "unable to pay patronage dividend to members" by the cooperative society. This highly affects the business growth and sense of ownership of the cooperative members. Therefore, cooperatives should be able to pay patronage dividend to their member patrons when they have got profit after auditing their business operations.

5) Among the internationally accepted cooperative principles by the Ethiopian Government are continuous education and training to the cooperative members, the community and youth. However, survey result shows that, lack of training and education to members and board of directors is one of the very important problems identified by the sample house hold members. Therefore, as members are the poles of the cooperative, due attention should be given by the governmental and non governmental organizations for members' education and awareness creation through the allocation of the required budget

6) One of the very important constraint of the agricultural input and output marketing activity of the cooperatives is lack of professional management. This shows that cooperative members are aware of the importance of the professional management. Therefore, the cooperative management committee and the cooperative promoters should take appropriate action in hiring professional staffs depending on the financial capacity of

the cooperatives in order to enable the respective cooperative society solve its management problem.

7) The cooperative societies in the two study woredas are dealing with the distribution of agricultural inputs (fertilizer, improved seeds and agro-chemicals), grain marketing and consumer goods. However, farmers in Alamata Woreda are producing high value crops such as fruits and vegetables, sesame, groundnuts through the support of IPMS-ILRI and BoARD of the Tigray region, Therefore, cooperatives should involve in the fruits and vegetables marketing of the farmers' produce especially in Alamata Woreda taking in to consideration the feasibility and profitability.

B. Policy recommendations for cooperative development

8) The source of finance for agricultural input and output marketing business of cooperatives is the Commercial Bank of Ethiopia through the collateral of the regional government. This can be good as short tem solution to alleviate the financial problem of the cooperatives. However, vertical and horizontal integrations should be taken in to consideration among the various cooperative societies to solve their financial problem through the formation of saving and cooperative unions at Woreda level and cooperative bank at regional as medium and long term solutions.

5.3 Implication for future research

1) The role of cooperatives in the agricultural input and output marketing was studied in the southern zone of Tigray only. So it is suggested that similar studies may be conducted in the other parts of the Tigray region.

2) It is also suggested to conduct a study on the factors influencing the efficiency of agricultural input and output marketing through cooperatives.

Reference

Alemayehu, Z. (2002) "Co-operatives in Ethiopia: Past Experiences and Future Trends" in *Self-help* Initiatives in Ethiopia*:* Prospects and Challenges, Redie, A. and Hinrichsen, I. 2002**.**

Befekadu Degefe and Berhanu Nega, eds.(1999/2000). Annual report on the Ethiopian

Economy, vol.1, Addis Ababa: United Printers for the Ethiopian Economic Association.

Bishop, D. and R. McConnen, (1999). Purpose of Cooperative. VOCA/ Ethiopia, Addis Ababa, Ethiopia.

Bringham, E.F. and J.F. Houston, (1998). Ratio Analysis. In: Dryden Press (ed.), Fundamentals of Financial Management. The Dryden press, Orlando, Florida, U.S.A., pp. 70-93.

CSA. (2006). Population estimation, Addis Ababa, Ethiopia

Daniel Belay, (2006). Performance of primary agricultural cooperatives and determinants of members' decision to use as marketing agent in Adaa Lliben and Lume districts MSc. thesis in agricultural Economics, Alemaya University, Ethiopia.

Dawit Alemu, (2005**).** The status and challenges of agricultural marketing in Ethiopia, Melkassa Agricultural Research Center, EARO Paper presented at a panel discussion organized by the Ethiopian Association of Agricultural Professionals (EAAP), Addis Ababa, Ethiopia

Demeke, M., Kelly, V., Jayne, T.S., Said, A., LeValle´e, J.C., Chen, H., (1998). Agricultural Market performance and determinants of fertilizer use in Ethiopia. Working Paper 10. Grain Market Research Project, Ministry of Economic Development and Cooperation, Addis Ababa.

EFDR, (2005). Agricultural input and product marketing strategy and Implementation mechanisms, Addis Ababa, Ethiopia.

Ellene Kebede and F.Schreiner, (1996). Economics of scale in dairy marketing cooperatives in Kenya. Agribusiness. 12(4): 395-402.

Eli.P.Cox III, (1979). Marketing Research information for Decision Making. R.R. Donnelly & Sons Company, New York

ESE, (2005). Annual performance evaluation report, Addis Ababa, Ethiopia's.

FAO/WFP, (2006**).** Special report crop and food supply assessment mission to Ethiopia. Addis Ababa, Ethiopia.

FCC (Federal Cooperative Commission), 2005. Annual report for the year 2004/2005. Unpublished document, Addis Ababa, Ethiopia.

Federal Negarit Gazeta, 1998. A proclamation to provide for the establishment of agricultural cooperative society: proclamation No.85/1986. Addis Ababa, Ethiopia.

Federal Negarit Gazeta, (1998). A proclamation to provide for the establishment of cooperative society: proclamation No.147/1998. Addis Ababa, Ethiopia.

Frank Ratna Kumar, A. Savarimuthu and K.Ravichandran,(2003). A new World through Cooperatives, Rainbow publications, India

Gebremeskel Dessalegn, T.S. Jayne, and J.D. Shaffer (1998). Market structure, conduct and performance: constraints on performance of Ethiopian grain markets, working paper 8 grain market research project ministry of economic development and cooperation, Addis Ababa, Ethiopia.

Gebru Desta (2007). 'Competitive advantage of Agricultural Cooperatives' Services in Rural Areas of Tigray, Ethiopia. MSc.Thesis, submitted to Department of Food Business and Development, National University of Ireland, Cork

Gizachew Yertaw (2007). Should Government Undertake Collateral for Cooperative Debt Financing, MSc. Thesis in Accounting and Finance, Addis Ababa University, Ethiopia.

Gujarati, (2004). Basic Econometrics, fourth edition, TATA Mcgraw –Hill, Companies Inc., New york.

Haileselaqssie Girmay, (2003). The Benefits of Cooperative Membership: A cooperative study in Saesie Tsaeda Emba District, Tigray Region, Ethiopia. MSc.Thesis, submitted to Department of Food Business and Development, National University of Ireland, Cork

Hind, A.M., 1994. Cooperatives-under performers by nature. Explanatory analysis of cooperatives and non-cooperative companies in the agribusiness sector. Journal of Agricultural Economics. 45(2): 213-219.

IPMS-ILRI,(2005). Alamata pilot learning site diagnosis and program design, Tigray, Ethiopia

Julia Caley Stepanek, (1999). Lessons from Ethiopia's High-input Technology Promotion Programme: how the organization of the fertilizer sub sector affects maize productivity, dissertation, in partial fulfillment of the requirements. For the degree of doctor of philosophy, Michigan State University, USA

Kebede Manjur, (2006). Farmers' perception and determinants of land management practices in ofla woreda, southern tigray, Ethiopia, MSc. Thesis in Agricultural Extension, Alemaya University, Ethiopia.

Kimberly A.Zeuli and Robert Cropp, (2004). Cooperatives: Principles and Practices in the 21st Century. Cooperative Extension Publishing, University of Wisconsin, Medison, USA.

Klein, K.K., T.J. Richards and A.Walburg, (1997). Determinants of Cooperative Patronage in Alberta. Canadian Journal of Agricultural Economics 45:93-110.

Kraenzle, C. A., (1989). Farmer Cooperative: Members and Use. Agricultural Cooperative Society Research Report 77. USDA, Washington, D.C., U.S.A.

Maddala, (2002). Introduction to Econometrics**,** Third edition, J. Wiley and Sons. LTD. England

Mauget, R and F. Declerck, 1996. Structure, strategies and performance of European community agricultural cooperatives. Agribusiness. 12(3): 265-275.

McCarthy (2001) "The History of Agricultural Co-operatives" in *Co-operative Business Today*. First Quarter Vol.1 Issue 1, VOCA- Ethiopia, Addis Ababa.

Melinda Smale and Thom Jayne, (2003). Maize in Eastern and Southern Africa: seeds of success in retrospect Environment and Production Technology Division, International Food Policy Research Institute, Washington, U.S.A.

Ministry of Finance and Economic Development (MoFED), (2005). Sustainable Development and Poverty Reduction Program, Addis Ababa, Ethiopia

Misra, S.K, D.H. Carley and S.M. Fletcher, (1993). Dairy farmers evaluation of dairy cooperatives. Agribusiness. 9(4): 351-361.

Negarit Gazeta, (1966). The Imperial Government of Ethiopia Ministry of Pen. *Co-operative Societies Proclamation No. 241,* 3rd September. 1966, Addis Ababa.

Negarit Gazeta (1978). The Provisional Military Administration Council. Co-operative Societies Proclamation No. 138, 3rd March, 1978, Addis Ababa.

Negarit Gazeta, (1998). The Federal Democratic Republic of Ethiopia. Co-operative Societies Proclamation No.147, 29th December, 1998, Addis Ababa.

Neveu, R.P., 1985. Financial statement analysis. In: South Western (ed.), Financial Management Analysis. South Western Publishing Co., Cincinnati, Ohio, U.S.A., pp 44 -76.

NFIA, (2001). Fertilizer marketing Activities in Ethiopia (1997-2001), Addis Ababa, Ethiopia.

Oxford Policy Management (2003). Towards a Strategy for Support to Make Agricultural Markets Work Better for the Poor: The Grain Marketing System in Ethiopia, UK.

Parnell .E. (2001). The role of cooperatives and other self-help organizations in crisis resolution and socio economic recovery; ILO cooperative branch and IFP/crisis, Geneva.

Paul E. Green, et al, (2001). Research for Marketing Decisions, Fifth edition, Prentice-Hall France.

Robbins et al (2004). Collective Marketing for Smallholder Farmers, Manual 4: The Territorial Approach to Rural Agro-enterprise Development, Uganda.

Samuel Gebreselassie, (2006). Intensification of Smallholder Agriculture in Ethiopia: Options and Scenarios, Paper prepared for the Future Agricultures Consortium Meeting at the Institute of Development Studies, Addis Ababa, Ethiopia.

Singh, (2004). Rural Marketing, with special focus to input marketing, India

Soundararaja, (2004). Role of urban cooperative housing Societies in Promoting Housing in Tirunelveli Region, A study, India.

Storck, H., Bezabih Emana, Birhanu Adnew, Borowiecki, A. and Shimelis W/Hawariate,

1991. Farming systems and farm management practices of smallhoders in the Hararghe Highlands. Farming Systems and Resource Economics in the Tropics, Vol. 11, Wissenschaftsverlag, Vauk, Kiel, F.R. Germany.

Techane Adugna, (2002). Determinants of Fertilizer Adoption in Ethiopia: the case of major cereal producing areas, M.Sc. Thesis, Agricultural Economics, Alemaya University, Ethiopia.

Teferi Wondale, (2003). Trends in and Determinants of Fertilizer Use in Gozamin woreda, Amhara Region, M.Sc. Thesis, Agricultural Economics, Alemaya University, Ethiopia.

Tretcher, D.D., (1999). Impact of diversification on agricultural cooperative in Wisconsin. Agribusiness. USA.

USAID /Ethiopia, (2005). Evaluation of Agricultural Cooperatives in Ethiopia (ACE) Programme Activities. Prepared by and submitted by Mitchell Group.INC. 191611th St.NW.Washington, D.C.USA.

Voice of Iddirs ,(2001). 3rd year issue No.3 special issue, Addis Ababa, Ethiopia.

Wadsworth, J.J., (1991). An analysis of major farm characteristics and farmers' use of Cooperatives. Journal of Agricultural Cooperation 6.

William, J.R, S.F. Haka, M.S. Bettner and R.F. Meigs, (2003). Financial Statement Analysis. In: McGraw-Hill (ed.), Financial Accounting. McGraw-Hill Companies, Inc, New York, U.S.A., pp 602-645.

Wilkins, P.C. and T.H. Stafford, 1982, Dairy farmer evaluation of northeastern dairy cooperative. Agricultural Cooperative Society Research Report 19. USDA, Washington, D.C.,U.S.A.

Yacob Aklilu ,(2002) An Audit of the Livestock Marketing Status in Kenya, Ethiopia and Sudan, (Volume I) In collaboration With Patrick Irungu (in Kenya) and Alemayehu Reda (in Ethiopia), Nairobi, Kenya.

Yonas Sahlu, (2003). The Ethiopian Seed Enterprise and its Contribution to the National Seed Industry**,** Addis Ababa, Ethiopia.

Zenebe Gebreegziabher, (2007). Household Fuel Consumption and Resource Use in Rural Urban Ethiopia, PHD.Thesis, Wageninen University, The Netherlands.

APPENDICES

Appendix-I

Interview schedule

Interview schedule developed for the study of "Analysis of the Role of Cooperatives in Agricultural input and output marketing in Southern Zone, Tigray (Alamata and Ofla Woredas)."

General Instructions to Enumerators

a) Make brief introduction to the respondent before starting the interview, get introduced to the farmers (greet them in the local way) get her/his name , tell your name, the institution you are working for, and make clear the purpose and objective of the study that you are undertaking.
b) Please ask the question clearly and patiently until the farmer understands (gets your point)
c) Please fill up the interview schedule according to the farmers reply(do not put your own opinion)
d) Please do not try to use technical terms while discussing with farmer and do not forget to record the local unit
e) During the process put the answers of each respondent both on the space provided and encircle the choice or tick mark as required

Date of interview _____ Identification number (Code) _____

Name of enumerator _____

Zone _____ Woreda _____ P.A_____ Coop._____

Part I. House holds characteristics

1. Please list the members of your family including you

No.	Family member including household head	Age	Sex	Marital status		Educational Level [a]	Main Occupation (Rank) [b]	Relation ship[c]
				Single	Married			
1								
2								
3								

2. Do you own land? **No/Yes**

3. If yes, size of land holding cultivated in 2006/7 cropping year.
a. Owned by the household_____ in tsimdi(ha)

b. Rented _____ in tsimd i(ha)
c. Shared _____ in tsimdi(ha)
d. Shared out _____ in tsimdi(ha)
4. Farming experience in full years (head of household's) _____years

5. What are the major crops grown in your farm in 2006/7 crop year?

No	Types of crop	Amount of land allocated in tsimdi(ha)

6 Land allotted for livestock grazing in ha/tsimdi_____ Fallow in ha/tsimdi_____
7. Fertility status of the plots as perceived by the respondent
a) Poor b) Good
8 Do you feel that your holding is sufficient to satisfy for home consumption and for other goods you need? **No/ Yes**

9. If No, which of the following activities did you perform to raise your income?
(a) Selling labor (b) weaving (c) Sales of local drink (d) Trading (e) Safety net (f)livestock sales (g) Remittance
10. Do you own livestock? **No/Yes**
11. If yes, please fill in the following table

No	**Types of livestock**	**Number**	**Value in birr**	**Total Livestock owned in TLU**

12. What is the purpose of keeping the livestock?
(a) Draft power (b) Manure (c) Threshing (d) for sale (e) dairy (f) others (specify)
.

Part II. Performance of the cooperative in input and output marketing

- **Input marketing /supply**

13. What are the agricultural inputs you get from your cooperative society?

a) DAP fertilizer c) Seed

b) UREA fertilizer d) Agro-chemicals

e) Others (specify) _____

14. Are you able to get all the agricultural inputs from your cooperative society on correct time and quantity? **No /Yes**

15. If yes, complete the table below

No.	types of nputs	On time (2)	Some times later (1)

16. Are the agricultural inputs available incorrect quantities from the cooperative?

No.	Inputs	Always in required quantity (2)	Some times in required quantity(1)

17. If the answer for Q 9 is No, where did you get your agricultural input?

No	**Type of input**	**From Market**	**Own**	**From Relatives**	**No supply**	**Others (specify)**

Price of agricultural inputs

18. How do you perceived the price of the agricultural inputs set by the cooperative?

No.	Types of agricultural input	High (1)	Low(2)
1	Fertilizer		
2	Improved seed		

19. How do you rate the level of satisfaction with the input marketing service of the cooperatives? a) Satisfied (2) b) Dissatisfied (1)

Output marketing

20. Do you sale your agricultural product to the cooperative? **No /Yes**

21. What percentage of your marketable products do you sale through your cooperative society? Use the following local measurement of percentage 0, ¼, 1/3, ½, ¾; please list the products in the table below.

No	Type of product	0	1/4	1/3	1/2	3/4	1

22. What is your opinion (perception) on the price offered by cooperative to your agricultural produce as compared to other private traders?

No.	Type of product	Low (1)	high (2)

23. What is your perception on the change in your standard of living after joining to cooperative?
a) Improved (1) b) No change at all (0)

24. If there is a change, what do you think the cause of improvement in your life?

No	Cause of improvement	Highly improved(3)	Improved(2)	No change at all(1)	Decreased(0)
1	Input price				
2	Better output price				
3	Availability of credit				
4	Market stabilization				
5	Dividend payment				
6	Others (specify)				

Regularity of marketing service

25. Does the cooperative serve regularly the marketing service? **No/ Yes**
26. If NO, why? _____

Dividend payments

27. Did the cooperative pay you dividend in the last years? **No/ Yes**
28. If No why?

_____

Credit provision to members

29. Do you have the experience of using credit? No /Yes

30. If yes, for how long did you use credit?_____in years.

31. 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) Purchase of grain for consumption g)For family consumption h) Social obligation i) Others (specify)_____

32. What is your source of credit? (1) Relative (2) money lender (3) BOARD (4) Coop. (5) Others (specify) _____

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

a) Less security required b) Easier to get loan

C) Seemed more friendly d) Knew persons before hand

e) Other reasons (specify) _____

34. Did you get training? No /Yes

35. If yes, who supported the training a) Coop. b) NGO c) GOV d) Others (specify)_____

36. Who have more responsibility to make decision on the credit taken?

a) Wife b) Husband c) Both

37. How did you perceive the interest rate of the loan from the credit sources?

a) Very high (0) b) High (1) c) Fair/reasonable (2) d) Low (3)

38. What is your opinion on the timing of the credit? Just on time / Late

39. Is the amount of credit enough to do your business**?** No/Yes

40. Did the credit bring significant change in your living standard? No /Yes

41. If NO, why? _____

42. Do you support the continuity of the cooperative's credit? No /Yes

43. Did you meet credit committee of the cooperative for technical assistance? No/Yes

45. If yes, why do you communicate with the credit committee of cooperative?_____

Part II. Member's participation in the input and output marketing service of Cooperatives

Membership

46. Year of joining the cooperative _____

47. Number of shares held _____

48. How do you become a member of the cooperative?

a) On own accord c) Board of directors

b) Neighbors d) Friends influence

49. What was the purpose of joining the cooperative?

a) to get training from my cooperative b) to get credit service

c) to get agricultural inputs supply d) to get agricultural output marketing service

e) to get dividend payment f) to get market stabilization

g) Others (specify) _____

50. What is the distance from the multipurpose cooperative office in kms? _____

51. Are you a member of any other cooperative society? No /Yes

52. If, yes specify _____

53. How do you compare the performance of the two cooperative societies in bringing change to your standard of living? _____

54. Do have contact with the cooperative management committee members of your cooperative society? No /Yes

55. If yes, your frequency of contact a) Once a month b) Once every three months

c) Once every six months d) Once a year

56. Do you have any contact with the cooperative promoters in your woreda? No/Yes

57. If yes, frequency of contact a) Once a month (3) b) Once every three months (2)
c) Once every six months (1) d) Once a year (0)

58. If no, why? specify_____

59. What is the purpose of contact?

a) Market information b) Credit information c) Input price information d) Output price information

e) Training f) others (specify) _____

Participation in cooperative management

60. Do you participate in cooperative management/ decision making process? No/Yes

61. What is your position in the cooperative? _____

62. In which area did you exercise your management power?

No	Description	Not at all (0)	Rarely (1)	Often (2)	Many Often (3)
1	Attending meeting				
2	approving the by-law				
3	Electing board of directors				
4	Approving annual plan and budget				
5	Approving audit report				
6	Financing the cooperatives				
7	Evaluating the management				
8	Sharing responsibilities				

63. If your answer to Q 3 is No, what would be the possible reason?

Description	SDA (0)	Disagree(1)	Agree(2)	SA (3
Lack of awareness about duties and responsibilities				
Limitation of the BoDs to notify the annual meeting				
Lack of willingness to involve in exercising my right				
Lack of equal opportunity in passing decision				
Busy with own tasks				
Interference of other stakeholders				

Awareness about cooperatives

64. Are you aware of the following about your cooperative?

No	Description	Nothing(1)	Well (2)
1	Objective of the coop.		
2	Duties and responsibilities of members		
3	Management committee of the cooperative		
4	Types of Services provided by the cooperatives		
	No. of members of the coop.		
	Capital of the coop.		
5	Others (specify)		

Family income

65. What are your main sources of income in order of importance?

a) Sale of crops b) Sale of livestock c) Off-farm income d) others (specify)_____

66. Can you tell me the amount of money you earned in 2006/ crop year? _____

67. What is the main source of livelihood?_____

Expenditure

68. Would you tell me the amount of money you have spent in buying different agricultural inputs in 2006/7 cropping year (in birr)? Please fill in following table.

Types of purchased input	Quintal	Unit price	Total Value in birr
Fertilizer			
Improved seeds			
Farm tools and implements			
Agro. chemicals			
Oxen			
Others specify			

63. Indicate the type and amount of money spent by your family for the year 2006/7.

S/N	Type of Expenditure	Amount (Birr)
1	Purchased food items	
1.1	Crop products	
1.2	Animal and animal products	
1.3	Industrial products	
	Sub total	
2	Own produce consumed by the family	
2.1	Crop products	
2.2	Animal and animal products	
2.3	Fruits and vegetable products	
	Sub total	
3	Other Expenses	
3.1	Industrial goods consumed by household	
3.2	Medical and Education Expenses	
3.3	Farm inputs	
3.4	Others (specify)	

Exposure to mass media

69. Do you have any accessibility to Mass media? Yes = 1 No = 0
70. If yes, what type of mass media do you attend?

No.	Type of mass media	Regularly (2)	Occasional (1)	Rarely (0)
1	Radio			
2	Television			
3	News paper			
4	Others(specify)			

71. What type of program do you listen mostly?

Type of program	Rank
Agriculture	
Drama	
Price	
News	
Others(specify)	

Part V. Constraints in the input and output marketing by cooperatives

72. Rate the constraints in the input and out marketing of cooperatives in their order of importance

No.	List of constraints	least important (0)	important (1)	very important(2)

Part VI Specific Suggestions

73. Please indicate your specific suggestions to improve the level of satisfaction of the cooperative members in the agricultural input and output marketing of the cooperative

No.	Suggestion	less important (0)	important (1)	very important (2)
1				
2				
3				

Appendix II

VIF of continuous explanatory variables (Xi)

Hypothesized for the study

Variables	**Ri^2**	**Variance Inflation Factor (VIF)**
Age of HH	0.380	1.615
Educational Level of HH	0.2325	1.303
Family Size of HH	0.3898	1.639
Own Land of the HH	0.3399	1.515
Number of Oxen owned by HH	0.6319	2.717
Livestock Ownership of the HH in TLU	0.5638	2.926
Shareholding of the HH	0.1896	1.234
Distance of the coop office from the house of the HH	0.1119	1.126
Non farm income of the HH	0.1197	1.136
Expenditure in agricultural inputs of the HH	0.2144	1.273

Source: Computed from the field survey

Appendix III

Contingency Coefficient for Discrete (Dummy Variables)

Variables	A	B	C	D	E
A	1	0.282	0.126	0.128	0.186
B		1	0.138	0.026	0.025
C			1	0.00	0.025
D				1	0.492
E					1

Source: Computed from the field survey

A. Perception on price of output marketing, B. Perception on the change of standard of living due to joining to cooperatives, C. Membership in other type of cooperatives, D. Perception on the price of fertilizer and E. perception on the price of improved seeds.

Appendix IV

Conversion factor used to estimate tropical Livestock unit (TLU)

Livestock type	Tropical Livestock Unit(TLU)
Oxen/Cow	1.00
Bull	0.80
Heifer	0.75
Calf	0.20
Donkey	0.70
Donkey(young)	0.35
Horse/ Mule	1.10
Camel	1.25
Sheep/Goat	0.13
Sheep/ Goat(young)	0.06
Chicken	0.013

Source: Storck et al., (1991)