# THE ROLE OF DAIRY COOPERATIVES IN STIMULATING INNOVATION AND MARKET ORIENTED SMALLHOLDERS DEVELOPMENT: THE CASE OF ADA'A DAIRY COOPERATIVE, CENTRAL ETHIOPIA

**M. Sc. Thesis**

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**September, 2008**

**Haramaya University**

# THE ROLE OF DAIRY COOPERATIVES IN STIMULATING INNOVATION AND MARKET ORIENTED SMALLHOLDERS DEVELOPMENT: THE CASE OF ADA'A DAIRY COOPERATIVE, CENTRAL ETHIOPIA

**A Thesis Submitted to the Department of Rural Development and Agricultural Extension, School of Graduate Studies**
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**In Partial Fulfillment of the Requirements for the Degree of MASTER OF SCIENCE IN AGRICULTURE (RURAL DEVELOPMENT AND AGRICULTURAL EXTENSION)**

**By**

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**September, 2008**
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***DEDICATION***

***Dedicated to my Mother W/ro Bilew Tefera who sacrificed much to bring me up to this level but not lucky to see the final fruits of my effort.***

# STATEMENT OF AUTHOR

First, I declare that this thesis is the result of my own work and that all sources or materials used for this thesis have been duly acknowledged. This thesis is submitted in partial fulfillment of the requirements for an advanced M.Sc. degree at Haramaya University and to be made available at the University's Library under the rules of the Library. I confidently declare that this thesis has not been submitted to any other institutions anywhere for the award of any academic degree, diploma, or certificate.

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**Date of Submission:** September 1, 2008

# ABBREVIATIONS

| | |
|---|---|
| ACDI/VOCA | Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance |
| ADLI | Agriculture Development Led Industrialization |
| AESE | Agricultural Economics Society of Ethiopia |
| AI | Artificial Insemination |
| AIDS | Acquired Immune Deficiency Syndrome |
| ARD | Agriculture and Rural Development |
| ARDU | Arsi Rural Development Unit |
| ATVET | Agricultural Technical Vocational Educational and Training |
| BSc | Bachelor of Science |
| CADU | Chilalo Agricultural Development Unit |
| CBE | Commercial Bank of Ethiopia |
| CBO | Cooperative Bank of Oromiya |
| CP | Cooperative Promotion |
| CSA | Central Statistical Authority |
| CSO | Civil Society Organization |
| DA | Development Agent |
| DCPO | District Cooperative Promotion Office |
| DDE | Dairy Development Enterprise |
| DZ | Debrezeit |
| DzARC | Debrezeit Agricultural Research Center |
| EEA/EPRI | Ethiopia Economics Association/Ethiopia Policy Research Institute |
| ESAP | Ethiopian Society of Animal Production |
| EVA | Ethiopian Veterinarians Association |
| FCC | Federal Cooperative Commission |
| FDRE | Federal Democratic Republic of Ethiopia |
| HIV | Human Immune Deficiency Virus |

## ABBREVIATIONS (continued)

| | |
|---|---|
| HR | Human Resource |
| ICA | International Cooperative Alliance |
| ILRI | International Livestock Research Institute |
| IPMS | Improving Productivity and Market Success of Ethiopian Farmers' Project |
| MoARD | Ministry of Agriculture and Rural Development |
| MODD | Market Oriented Dairy Development |
| MoFED | Ministry of Finance and Economic Development |
| NGO | Non Governmental Organization |
| OPEDB | Oromiya Planning and Economic Development Bureau |
| PA | Peasant Association |
| PASEDP | Program Accelerated and Sustained Development to End Poverty |
| R & D | Research and Development |
| SDDP | Smallholder Dairy Development Program |
| SWOT | Strength, Weaknesses, Opportunities and Threats |
| WADU | Wolayita Agricultural Development Unit |
| WOARD | Woreda (District) Office of Agriculture and Rural Development |

# BIOGRAPHICAL SKETCH

The author was born in Ginir town, Bale Zone of Oromiya Region, in July 1978. He attended his primary and secondary school at Huruta primary and secondary schools which are found in Arsi Zone. He completed his secondary school education in July 1994.

He joined the then Alemaya University of Agriculture in September 1994 and completed his Bachelor of Science Degree studies in Agricultural Extension in July 1998. Immediately after graduation, the author was employed in Oromia Cooperative Promotion Bureau, Arsi Zonal Department and served as cooperative promoter and credit and marketing expert until July 2002. Following that, the author has worked in non governmental organizations and Asella ATVET College as program officer and instructor respectively.

In July 2006, he pursued his graduate studies in the Department of Rural Development and Agricultural Extension at Haramaya University.

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# ABSTRACT

*For an agriculturally dependent country like Ethiopia, dairy development has enormous scope for rural development and national prosperity. Dairy cooperatives are needed to consolidate the efforts of small producers to provide processing and transport facilities on a large scale. Organizing farmers through dairy co-operatives can have many advantages over individual farming. First, co-operatives can improve or facilitate access to market information, reduce costs of marketing and can increase producers' access to technology, extension and related services, and thereby enhance efficiency in the process of production and marketing of dairy products. Second, dairy marketing co-operatives can help to decrease transaction costs and price risks, and enhance bargaining power of dairy producers. These lead to increased return from commercial dairying which in turn stimulates innovation in the sector. This study was undertaken to explore the role of dairy cooperatives in stimulating innovation and market oriented smallholders' development by taking Ada'a dairy cooperative as a case study. It entails the specific objectives of investigating the role of the cooperative in promoting innovations, linkages for access to services and marketing and enhancing knowledge and information sharing. Primary data were collected from 150 smallholder dairy producer members of the cooperative. This was supplemented by information from focused group discussion with dairy producers, board members of the cooperative and key informants. The study result showed that the cooperative has started to enhance innovations in the dairy sector which include technological, institutional and organizational innovations, promoting linkages for access to marketing and services and in sharing knowledge and information. With regards to technological innovation the cooperative introduced milk processing using its own processing machine and started to produce quality products as pasteurized milk, butter and cheese. The cooperative had many activities with regards to institutional innovation, which include: provision of dairy inputs, marketing, creating employment opportunities, having well designed organizational and financial systems and addressing development issues. Organizationally there was weak interaction among members and board members of the cooperative. The cooperative is performing good in promoting market oriented dairy development through creating market link to the urban and peri-urban subsystems, collaborating with other dairy associations, public organizations, NGOs, projects and donors affiliated on MODD. The cooperative has been sharing dairy related knowledge and information by providing training and advisory services; based on that 55% of the sample respondents have got training on dairy production and marketing through the cooperative during the last three years; and all sample members of the cooperative have got advisory services using innovative members and staff members of the cooperative ( 85.33%), staff of the district agricultural office (8%), NGOs (4.67%) and DzARC (2%).*

# 1. INTRODUCTION

## 1.1 Background of the study

Agriculture is the basis of Ethiopia's economy and is the most important economic sector in terms of generation of foreign currency. The sector is the primary sources of livelihood for more than 85 % of Ethiopian rural households who practice subsistence crop and livestock production. The current Ethiopian agricultural policy, which advocates ADLI, has led the Ministry of Agriculture to spearhead the intensification of activities in support of agricultural development. One concern is the overall improvement and development of the livestock sector (MoARD, 2007).

Livestock is the source of income, which can be used by rural population to meet basic needs and purchase agricultural inputs. Livestock comes second to coffee in foreign exchange earnings in Ethiopia. Its contribution can equally well be expressed at household level by its role in enhancing income, food security and social status. Ethiopia holds large potential for dairy development, the country currently manages the largest livestock population, estimated at 29 million cattle, 24 million sheep and goats, 18 million camels, 1 million equines and 53 million poultry (Ahmed *et al*., 2004).

The dairy sector in Ethiopia holds large potential to contribute to the commercialization of the agriculture sector due to its large livestock population, the favorable climate for improved, high-yielding animal breeds, and the relatively disease-free environment with potential for animal feeding. Like other sectors of the economy, the dairy sector in the country has passed through three phases, following the economic and political policy changes in the country. In the most recent phase, characterized by the transition towards market-oriented economy, the dairy sector appears to be moving towards a takeoff stage. Liberalized markets and private sector investment and promotion of smallholder dairy are the main features of this phase leading to the commercialization of the sector (Ahmed *et al*., 2004).

Even though the livestock sector in general and the dairy sector in particular have a huge potential, it is constrained by shortage and fluctuation in quality and quantity of feed, poor and eroding genetic resource base, poor management practices, diseases, poor market infrastructure, poor service delivery and policy and institutional arrangements. To ameliorate the development constraints and realize the benefits from the huge but untapped livestock resource, efforts have been made in various aspects to develop the livestock sector. These efforts include the provision of input and services such as animal health, breed improvement, feed resources development, research, extension services and development, finance and marketing (Azage *et al*., 2006).

Ethiopia adopted an Agricultural Development-led Industrialization (ADLI) strategy, which initially focused on food crops and Natural Resources Management. More recently, the country has added market orientation to this strategy (FDRE, 2006). Increased availability and utilization of appropriate technologies, an effective and efficient service delivery system and sustained demand for the agricultural outputs are critical in such market oriented agricultural development efforts. Moreover, strengthened technology development and extension, markets and the demand side development, institutional competence and performance and integrated and co-ordinated service delivery systems are needed to transform the country's subsistence oriented agriculture to market orientation (Puskur and Hagmann, 2006).

Collective action is commonly supposed to assist smallholders' engagement in markets, contributing to improvements in rural economies. Like in many other developing countries, this perception is largely shared also amongst policy- makers in Ethiopia, who do not hesitate to express their overwhelming confidence in cooperative organizations as a driving force for rural development. The perception that collective action may contribute to boost the Ethiopian rural economy also holds true for the dairy sector.

Organizing farmers through dairy co-operatives can have many advantages over individual farming. First, co-operatives can improve or facilitate access to market information, reduce costs of marketing and can increase producers' access to technology,

extension and related services, and thereby enhance efficiency in the process of production and marketing of dairy. Second, dairy marketing co-operatives can help to decrease transaction costs and price risks, and enhance bargaining power of dairy producers. These lead to increased return from commercial dairying which, in turn, stimulates innovation in the sector (Beekman, 2007). Hence, the focus of this study is to investigate the role of dairy cooperatives in stimulating innovation and market oriented smallholders' development by giving special emphasis to Ada'a dairy marketing cooperative.

## 1.2 Statement of the Problem

Ethiopia has set forth a comprehensive set of development objectives that target economic growth and reduction of poverty through strategies designed to promote a market-led transformation of the rural economy. PASDEP places a great emphasis on commercialization of agriculture, diversification of production and exports, and private sector investment in order to move farmers beyond subsistence farming to small-scale market-oriented agriculture (MOFED, 2006). In the process of commercialization of the country's subsistence-oriented production systems to more productive and market-oriented production systems, the agricultural support service has to transform towards being responsive and innovative (Tesfaye, 2007).

In Ethiopia, dairy production system is not market oriented and milk produced by smallholders is primarily used for household consumption purpose. The surplus is processed in to butter, ghee, cheese and sour milk and sold through informal market (Redda, 2001). The primary reason among others seems to be the inefficient dairy and dairy products marketing characterized by high margins and poor marketing facilities and services.

Regardless of the challenges outlined above, market-oriented dairy production is still one of the promising avenues to improve food security and livelihood of rural households in Ethiopia. The opportunity for increasing income, employment, and improving food and nutritional security of rural households through smallholder commercial dairy development arises from many factors: 1) the expected increase in demand for milk and milk products in the country with increasing population, increasing urbanization, and expected increase in consumers income, 2) it is estimated that 50% of households in the highlands own cattle of which 56% are dairy cattle ( Ahmed *et al*., 2004), 3) the availability of technological and institutional options to deal with production and market related challenges, 4) the opportunities provided by the policy and institutional reforms being implemented, including liberalization and market orientation of development policy, decentralization, and pluralism in service delivery. The policy change has encouraged increased involvement of the private sector in dairy production, processing, marketing and in service delivery such as animal health and artificial insemination services.

Market oriented smallholder dairy development in Ethiopia offers a great opportunity to improve food security and livelihood for the rural majority, including for the poorest of the poor and women. However, the sought transformation of the subsistence oriented dairy production systems to that of productive, market oriented and dynamic systems calls for technological and institutional innovations. Resource endowment is not sufficient to get the Ethiopian dairy sector moving, necessary though it is crucial. Agricultural knowledge and information are key components in commercial smallholder dairy development. Knowledge and information play a significant role in improving productivity, linking producers to remunerative markets, improving competitiveness in markets, and thus leading to improved livelihood, food security and national economies (Tesfaye *et al*., 2008).

A number of key ingredients are necessary for achieving market orientation and also making this process inclusive. Innovation which emphasizes on putting available knowledge from multiple sources to economic use is critical for this to happen. Innovations such as the cultivation of high-yielding crop varieties, adoption of sustainable

natural resource management techniques, sharing of indigenous knowledge and practices, using communication technologies to access market information, the development and use of new products, the involvement of new entities to support collaborative pursuit of specified goals, or changes in rules of the game, all have far-reaching impacts throughout the agricultural sector. Although these improvements operate through indirect, often complex, pathways, they can ultimately translate in higher incomes, greater food consumption, better nutrition and more sustainable resource use (World Bank, 2006).

Ada'a dairy marketing cooperative is found in Ada'a woreda, 45 km South-East of Addis Ababa. This cooperative is the biggest dairy cooperative in Ethiopia both in terms of number of members (about 850) and volume of production (almost 8000 liters of milk per day). The cooperative has been providing different services to its members including AI, concentrate feed, animal health care and marketing related activities. However, information is lacking on the role played by this cooperative in enhancing innovation and market orientation with related to introducing new or existing technologies, change in the habit or norms of the dairy producers, creating marketing and service provision linkages with multiple actors and in sharing knowledge and information; among policy makers, development practitioners and the community at large.

Therefore, the focus of this study is to generate information on the role of dairy cooperatives in enhancing innovation and market orientation smallholder producers with special emphasis on the performance and contributions of Ada'a dairy cooperative towards stimulating innovation, enhancing linkages and knowledge and information sharing.

## 1.3 Research Questions

The study addresses the following research questions:

1. What is the role of Ada'a dairy cooperative in promoting innovation?
2. What is the performance of Ada'a dairy cooperative in promoting linkages for access to market and services?
3. What is the role of Ada'a dairy cooperative in enhancing knowledge and information sharing?

## 1.4 Objective of the Study

The main objective of the research is to investigate the role of Ada'a dairy cooperative towards stimulating innovation and market oriented smallholders' development.

The specific objectives of the study are:

1. to assess the role of Ada'a dairy cooperative in promoting innovation,
2. to examine the performance of Ada'a dairy cooperative in promoting linkages for access to services and marketing, and
3. to assess the role of Ada'a dairy cooperative in enhancing knowledge and information sharing.

## 1.5 Scope and Limitation of the Study

The study is limited in terms of coverage and depth owing to time and financial resource availability. Hence, it is limited to address the objectives mentioned in this proposal which is to investigate the role of dairy cooperatives in stimulating innovation and market oriented smallholders' development. The study is limited to one dairy cooperative located in Ada'a district of Oromia Region, central Ethiopia. In this study, the role of Ada'a dairy cooperative in stimulating innovation is viewed in terms of technological, institutional, and organizational aspects.

## 1.6 Significance of the Study

One aim of establishing dairy cooperatives in the rural area is to increase efficiency of the dairy marketing system. Moreover dairy cooperatives can play a significant role to enhance new and/or innovative approaches to production, technology transfer, input supply, credit and output marketing and in knowledge generation, transfer and utilization continuum.

Hence, investigating the role of dairy cooperatives in stimulating innovation and market oriented smallholders development by taking sample cooperative would provide beneficial information to government bodies, policy makers and donor organizations. In addition, findings of this research work give insight for researchers and students interested in similar research theme for further investigation in other areas.

## 1.7 Organization of the Thesis

This thesis consists of five chapters. Chapter one deals with the background, problem statement, objectives, scope and significance of the study. Chapter two reviews literature related to the research topic. Methodological issues including the study area description are presented in chapter three. The fourth chapter presents the results of the study and their interpretation. The final chapter summarizes the thesis, concludes and presents policy implication and recommendations.

# 2. LITERATURE REVIEW

## 2.1 General Concept and Definition

### 2.1.1 Cooperatives

According to ICA (1995), a cooperative can be defined as '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.'

Center for Cooperatives (2004) defined cooperative as a private business organization that is owned and controlled by the people who use its products, supplies or services. Although cooperatives vary in type and membership size, all were formed to meet the specific objectives of members, and are structured to adapt to members changing needs.

Koopmans (2006) also defined a cooperative as a member-controlled association for producing goods and services in which the participating members, individual farmers or households, share the risks and profits of a jointly established and owned economic enterprise. According to this definition a cooperative is established by farmers in response to unfavorable market conditions, which is a shared problem. This could be a problem related to the marketing of produce resulting in low farm-gate prices, to the supply of good-quality and reasonably priced farm inputs, such as seed and fertilizer, or to the supply of sufficient and cheap credit.

### 2.1.2 Marketing Cooperatives

A marketing cooperative is an organization owned and operated by a group of farmers who produce similar products. Farmers join a marketing cooperative to gain more control in marketing their products so they can: increase the price they receive for their products, reduce the costs of marketing for their produce and for obtaining agricultural inputs such as seed and fertilizer; and make the market for their goods more secure (Tsehay, 1998). The marketing cooperative accomplishes these objectives by: performing certain functions such as

processing, packing, storing, cooling, shipping, promoting, and selling; negotiating for better market terms because of volume and variety offered by their members; and buying production supplies (seeds, fertilizer, feed, containers, etc.) in large volumes at lower prices.

### 2.1.3 Actors

The term actor refers to an individual or to a group, organization or network. All interact, taking and implementing decisions on the basis of their own perceptions, interests, agendas, understandings and the opportunities that they are able to see (Solomon and Engel, 1997). Actors are all those people who have a stake or share in a particular issue or system. Actors can be at any level or position in a society, from the international to the national, regional, household or intra-household level. Actors include all those who affect and are affected by policies, decisions or actions within a particular system.

### 2.1.4 Knowledge and Information

According to Solomon and Engel (1997), knowledge can be defined as the set of concepts, meanings, skills, and routines developed over time by individuals or groups as they process information. Knowledge is in people, 'between the ears'. It is intrinsically related to social practice. Actors generate, transform, integrate, exchange, disseminate and utilize knowledge while going about their daily business. On the other hand information refers to the explicit part of the knowledge, which can be exchanged among people. It is a pattern imposed on a carrier such as sound, radio waves, paper, diskettes, electronic cables and so forth – any sort of written or spoken message. The production of knowledge is achieved by exposing what we know to what we do not know. Increased mobility of knowledge has made re-cycling of knowledge easier.

According to De Silva *et al* (2005), knowledge consists of facts, concepts, theories, heuristic methods, procedures and relationships. It is information organized and analyzed for understanding and for application in problem solving or decision making. Knowledge is basically what we know, but is most often associated with what can be tangibly found in books, other forms of print media, on the internet, and in other formats in which it has been codified. This type of knowledge is known as 'explicit knowledge'. However, there is also a

large body of knowledge that has not been codified, that exists within the minds, experiences and histories of people around the world. This 'tacit knowledge' includes non-documented indigenous knowledge as well as valuable insights, understanding, experiences, practices, ideas and concepts of people. There has been a greater focus on explicit knowledge both in terms of generating it as well as sharing it; however tacit knowledge has been left undiscovered and unlocked.

### 2.1.5 Innovation

The term 'innovation' has its roots from the Latin word 'novus', which means 'new' and is derived into the verb in plus 'novare' that covers the meaning 'to make new'. Therefore, in the broadest context, 'to innovate' is 'to begin or introduce (something new) for the first time', and 'innovation' has the meaning of 'the act of introducing something new' (The American Heritage Dictionary, 2000).

Leonard and Swap (1999) study innovation in connection with creativity. Innovation is the end result of a creative activity. Within this framework, they define creativity as "…a process of developing and expressing novel ideas that are likely to be useful." Such a definition emphasizes not only the new, novel and unusual, but also useful characteristics of the creative activity, which leads to the potential for utility. From this perspective, as the end result of the creative process, "innovation is the embodiment, combination, and/or synthesis of knowledge in novel, relevant, valued new product, processes or services."

According to FARA (2007), the concept of innovation refers to the search for, development, adaptation, imitation and use of technologies, approaches and methodologies that are new to a specific context. Innovation is a combined social and technical process involving multiple sources of ideas and technologies. For the innovation process to be successful, many players need to pull in the same direction. Stakeholders, including inter-alia politicians, market agents, farmers, NGOs, researchers and extensionists, need to understand their mutual challenges and how they can contribute the solutions which present opportunities for learning. This means engaging in genuine dialogue and looking for situations where joint actions can have significant impact.

Hartwich and Jansen (2007) define innovation as a new idea, practice, or object that is successfully introduced into economic or social processes. In agriculture, this can include new knowledge or technologies related to primary production, processing and commercialization-all of which can positively affect the productivity, competitiveness, and livelihood of farmers and others.

According to Leeuwis (2004): 1) innovations require the integration of ideas, knowledge, experiences and creativity from multiple actors; 2) innovation design is a process of network building, social learning and negotiation; and 3) multiple actors need to be brought together, mobilized and connected to each other, and 4) innovation to be coherent, consists of a package of new technical and socio-organizational arrangements.

The World Bank (2006) asserts that innovations can comprise significant improvement but usually consist of many small improvements and continuous upgrading, and the nature of improvement may be of technical, managerial, institutional, or policy nature or a combination thereof. In this context, innovations have been typified and defined as follows:

- Technological innovations: comprise development and use of new products (new species, varieties, breeds, processing equipment, storage facilities) and management practices/techniques (irrigation, pest and diseases, agronomic practices).
- Organizational innovations: refers to entities created to support collaborative pursuit of specified goals and,
- Institutional innovations: refers to changes in the rules of the game or norms which prohibit, permit, or require certain actions and require changes in habits and practices of actors involved, including changes in policies.

## 2.2. Review of Basic Issues Concerning Cooperatives

### 2.2.1. Principles of cooperatives

According to ICA (1995), any cooperative should pass through the following guiding principles:

**1st Principle: Voluntarily and Open Membership.** Co-operative societies are voluntary organizations open to all persons able to use their services and willing to accept the responsibilities of membership without gender, social, racial, political or religious discrimination.

**2nd Principle: Democratic Member Control.** Co-operative societies are democratic organizations controlled by their members who actively participate in setting their policies and making decisions. Every member has equal voting rights and accordingly one member shall have one vote.

**3rd Principle: Member Economic Participation.** Members contribute equitably to, and democratically control, the capital of their cooperative. At least part of that capital is usually the common property of the cooperative. Members usually receive limited compensation, if any, on capital subscribed as a condition of membership. Members allocate surpluses for any or all of the following purposes: developing their cooperative, possibly by setting up reserves, part of which at least would be indivisible; benefiting members in proportion to their transactions with the cooperative; and supporting other activities approved by the membership.

**4th principle: Autonomy and Independence.** Cooperatives are autonomous, self-help organizations controlled by their members. If they enter into agreements with other organizations, including governments, or raise capital from external sources, they do so on terms that ensure democratic control by their members and maintain their cooperative autonomy.

**5th principle: Education, Training, and Information.** Cooperatives provide education and training for their members, elected representatives, managers, and employees so they can contribute effectively to the development of their cooperatives. They inform the general public - particularly young people and opinion leaders - about the nature and benefits of cooperation.

**6th principle: Cooperation among Cooperatives.** Cooperatives serve their members most effectively and strengthen the cooperative movement by working together through local, national, regional, and international structures.

**7th principle: Concern for Community.** Cooperatives work for the sustainable development of their communities through policies approved by their members.

### 2.2.2. Market Participation by Smallholders and Dairy Cooperatives

Field surveys have shown that many potential liquid milk-marketing households are hours distant away from any milk group. Setting up new groups would clearly reduce the travel time to group, and the actual number of households that would benefit depends on local population densities. It is also important to keep newly emerging milk groups small and geographically limited to ensure proximity and avoid large groups that would tend to increase average travel times (Holloway *et al*., 2000). Another study showed that the creation of new market outlet for fluid milk brought major improvements in the production, marketing and consumption behavior of smallholder households. The new marketing outlet may also promote involvement in more intensive dairying (Nicholson *et al*., 2000).

Co-operatives, by providing bulking and bargaining services, increase outlet market access and help farmers avoid the hazard of being encumbered with a perishable product with no rural demand (Jaffee, 1994). In short, participatory co-operatives are very helpful in overcoming access barriers to assets, information, services, and the markets within which small-holders wish to produce high-value items (Jaffee, 1994).

Like contract farming, producer co-operatives can offer processors/marketers the advantage of an assured supply of the commodity at known intervals at a fixed price and controlled quality (Delgado, 1999). They can also provide the option of making collateralised loans to farmers. The schemes also provides better relations with local communities than large scale farms, avoiding the expense and risk of investing in such enterprises, sharing production risk with the farmer, and helping ensure that farmers provide produce of a consistent quality (Delgado, 1999). Dairy development along the cooperative lines was considered to be the most effective

strategy for helping the rural poor without altering the village social structure and providing guaranteed market for milk at fixed prices, supply of cattle feed at a reasonable cost and efficient veterinary and extension services (Bavikar, 1988).

### 2.2.3. Major Benefits of the Cooperation

The theory of cooperative organization provides several reasons why farmers join the cooperatives. According to Schroeder (1992), cooperatives provide quality supplies and service to the farmers at a reasonable cost. By purchasing supplies as a group, the farmers offset the market power advantage of other private firms providing those supplies. The farmers can gain access to volume discounts and negotiate from a position of greater strength for better delivery terms, credit terms, and other arrangements. Suppliers will also be more willing to discuss customizing products and services to meet farmers' specifications if the cooperative provides them sufficient volume to justify the extra time and expense.

Increased farmers bargaining power in the market places is the other advantage of the cooperative. Marketing on a cooperative basis permits farmers to combine their strength and gain more income. The farmers can lower distribution costs, conduct joint product promotion, and develop the ability to deliver their products in the amounts and types that will attract better offers from purchasers.

According to Parliament *et al* (1990), a cooperative gives farmers a means to organize for effective political action. Farmers can meet to develop priorities and strategies. They can send representatives to meet with legislators and regulators. These persons will have more influence because they will be speaking for many, not just for themselves.

According to Folsom (2002), having a businesses owned and controlled on a cooperative basis helps farmers' entire community. Cooperatives generate jobs and business earnings for local residents. They pay taxes that help to finance schools, hospitals, and other community services.

According to Koopmans (2006), farmers may have several specific reasons for starting an agricultural cooperative: to mobilize more resources than they can individually supply, to create attractive alternatives for purchasing goods and services, to operate a business more efficiently than can be done on an individual basis, because they recognize that the benefits outweigh the duties of membership and because they recognize that as members of a cooperative they are part owners and not only clients. By becoming a member of a cooperative, each farmer can make use of the advantages of the cooperative: a good market price for their product and access to other goods, services, markets and credit.

### 2.2.4 The Origin of Farmers Milk Marketing Groups/ Cooperatives

The farmers' milk marketing groups are conceptualized and framed to operate as profitable milk units where small holders organize themselves in collecting, processing and marketing of milk and value-added milk products. This approach aims at maintaining and enhancing the groups so that they become independent entities at the community level (Tsehay, 1998).

According to Tsehay (1998), a milk marketing group can be viewed as a group of smallholder farmers who individually produce at least one liter of saleable milk/day, and are willing to form a group in order to collectively process and market their milk. The milk marketing groups are named following their locality's or peasant association's name. According to her, the idea of group work and formation of a group is not new to Ethiopia. Different traditional local groups can be identified. For example women in West Harerghe zone organize themselves voluntarily into groups known as 'milk equib' and 'butter equib'. Under these arrangements, individuals gather either their milk or butter and contribute it to other members in turn. When the turn of receiving comes, each member gets in a single instance the amount that she has contributed in smaller portions to the others. In this way, instead of going daily to market, with her own small amount of produce, the individual will go once weekly or fortnightly to market with a larger volume of produce to sell. The arrangement not only saves members from going to market daily, but also provides them, when they go to sell, with an amount of milk that brings them a more meaningful amount of money to take home.

Edir is another kind of grouping in rural and urban communities where individuals organize themselves and build up common savings through periodic contribution. Moreover, there is also debo where, seasonally, groups of farmers combine their labor for farm work support and as a group focus on each member's individual plot in turn. Such group formation is self initiated and is not imposed and the groups serve their purposes well in rural communities. Understanding of the rural set-up in terms of social fabric and the farming system practiced are key factors to long lasting formation of farmers' group in the peasant sector (Zerihun, 1998).

## 2.3 Review of Basic Issues concerning Innovation

### 2.3.1 Origins of the innovation systems

The innovation systems concept emerged through policy debates in developed countries in the 1970s and 1980s. These debates centered on the nature of industrial production in the developed world and the analytical frameworks required to explain patterns of industrial growth. At the time, industrial production was becoming more knowledge intensive as investments in intangibles such as research and development, software, design, engineering, training, marketing, and management came to play a greater role in the production of goods and services and in organizational competitiveness. Such investments often created tacit rather than codified knowledge. Unlike codified knowledge, which is explicit and recorded, tacit knowledge is difficult to articulate or write down; it is often embedded in skills, beliefs, or ways of doing things. Mastering tacit knowledge requires a conscious effort at learning by doing, by using, and by interacting (Mytelka, 1999).

Gradually the knowledge intensity of production has extended beyond the high-technology sectors to reshape a broad spectrum of traditional industries. Firms compete less on the basis of price and more on the basis of their ability to design novel products or improve the quality management of their production. Firms that anticipate or quickly adapt to changing consumer demand or changing production conditions are better placed to navigate between increasingly dynamic markets for consumer goods on the one hand and rapidly changing markets for raw

materials and business-to-business services on the other. As traditional barriers to trade and investment have been dismantled, innovation-based competition has diffused around the globe. Local firms everywhere feel pressure to engage in continuous innovation, and they are challenging governments to develop policies to stimulate and support an innovation process (World Bank, 2006).

Conventional economic models, which view innovation as a linear process driven by the supply of R&D, can not fully explain these industry trends or offer much guidance for policy makers. Alternative explanations of the innovation process have emerged from the evolutionary economics tradition and others. Several investigators observed that the more successful economies possessed what they described as an effective "national system of innovation." These systems developed in an institutional (often network-based) setting, which fostered interaction and learning among scientific and entrepreneurial actors in the public and private sector in response to changing economic and technical conditions. The continuous process of innovation that emerged from this setting was viewed as central to the economic success of countries such as Japan in the1980s (Lundvall, 1992).

### 2.3.2 The Innovation systems concept

An innovation system can be defined as a network of organizations focused on bringing new products, new processes, and new forms of organization into economic use, together with the institutions and policies that affect their behavior and performance. The innovation systems concept embraces not only the science suppliers but the totality and interaction of actors involved in innovation. It extends beyond the creation of knowledge to encompass the factors affecting demand for and use of knowledge in novel and useful ways (Hall *et al*., 2006).

**Key insights from the innovation systems concept**

***1. Focus on innovation rather than production.*** In contrast to most economic frameworks, which focus on production or output, the focus here is on innovation. Innovation is understood to be neither research nor science and technology, but rather the application of knowledge (of all types) in the production of goods and services to achieve desired social or

economic outcomes. This knowledge might be acquired through learning, research or experience, but until applied it can not be considered innovation. While this knowledge can be brand new innovation often involves the reworking of the existing stock of knowledge, making new combinations or new uses (Edquist, 1997). So, for example, the development by a research organization or a company of a new packaging material is an invention. In contrast, a company packaging its product in new way using new and/or existing information is also an innovation.

***2. Linkages, partnerships, networks.*** Innovation is an interactive process through which knowledge acquisition and learning take place. This process often requires quite extensive linkages with different knowledge sources. These sources may be scientific and technical, but equally they can be a source of other forms of knowledge, both tacit and codified. Patterns of interaction between different knowledge sources form a central component of an organization's or sector's capacity to innovate. The types of linkage involved in learning can vary, for example two or more organizations may decide to learn collaboratively, developing something jointly. This would be a partnership. Alternatively an organization might simply buy the goods and services of another organization. This would be a linkage, but not necessarily a partnership and would probably fall under normal contract relations, including purchase of licenses from holders of patterns. There may be other forms of connections more like a network which an organization might use to gather market and other early-warning intelligence on changing consumers' preferences or technological changes. These networks may also be used to provide access to inputs and output markets. Finally networks provide the "know who" of knowledge bases that can be turn to when the need arises (Hall *et al*., 2004). All these forms of linkages are important in an effective innovation system (see Appendix 1, for typology of linkages).

***3. New actors, new roles.*** In the linear model of innovation, especially with respect to developing country agriculture, public research organizations are the prime movers. Following this model, scientists have undertaken research, their extension services have transferred technology, and these roles have remained compartmentalized and relatively static, even as the external environment has changed (for instance, as the private sector began to participate more). The innovation systems concept recognizes that (1) there is an important

role for a broad spectrum of actors outside government; (2) the actors' relative importance changes during the innovation process; (3) as circumstances change and actors learn, roles can evolve; and (4) actors can play multiple roles; for example, at various times they can be sources of knowledge, seekers of knowledge, and coordinators of links between others (Hall *et al*., 2004).

***4. The role of institutions.*** Institutional settings play a central role in shaping the processes critical to innovation: linking or interacting, learning, knowledge flows and investment. The common attitudes, routines, practices, rules, or laws that regulate the relationships and interactions between individuals and groups largely determine the propensity of actors and organizations to innovate (Edquist, 1997). Some organizations have a tradition of interacting with other organizations; others tend to work in isolation. Some have a tradition of sharing information with collaborators and competitors, of learning and upgrading, whereas others are more conservative in this respect. Some resist risk-taking; others do not. Understanding this is important as innovation often requires investment (in training, in equipment, in marketing) and this involves a degree of risk taking (Hall *et al*., 2006).

Habits and practices also determine how organizations respond to innovation triggers such as policy changes, market and technological conditions. Because habits and practices vary across organizations and across countries and regions, actors in different sectors or countries may not respond in the same ways to the same set of innovation triggers. For this reason the fixation of innovation process in institutional contexts has to be accounted for innovation capacity development interventions and this will often involve tackling some of these habits and practices and tailoring policies and incentives accordingly. Interventions that seek to develop the capacity for innovation must give particular attention to ingrained attitudes and practices and the way these are likely to interact with and skew the outcome of interventions (Solomon and Engel, 1997).

***5. The role of policies.*** Policies are also important in determining how actors behave. However policy support of innovation is not the outcome of a single policy but a set of policies that work together to shape innovative behavior. This means that there is a need to be sensitive to the wide range of policies that affect innovation and seeks ways co-ordinate these.

Furthermore, habits and practices interact with policies, and so to design effective policies it is necessary to take into account the habits and practices of actors (Mytelka, 2000). For example, the introduction of more participatory approaches to research is often ineffective unless scientists' attitudes (and incentives) are changed. Similarly, food safety regulations might be rendered ineffective if the agencies charged with enforcing them have a tradition of rent-seeking behavior. Policies to promote innovation must be attuned to specific contexts.

***6. Coping with "sticky" information.*** A number of key insights discussed above emphasize that innovation can be based on different kinds of knowledge possessed by different actors: local, context-specific knowledge (which farmers and other users of technology typically possess) and generic knowledge (which scientists and other producers of technology typically possess). In an ideal innovation system, a two-way flow of information exists between these sources of knowledge, but in reality this flow is often constrained because information is embodied in different actors who are not networked or coordinated. In these circumstances, information does not flow easily; it is *sticky*. A central challenge in designing innovation systems is to overcome this asymmetry-in other words, to discover how to bring those possessing locally specific knowledge (farmers or local entrepreneurs) closer to those possessing generic knowledge (researchers or actors with access to large-scale product development, market placement, or financing technologies). According to the World Bank (2006), ways of dealing with this asymmetry include:

• *Encouraging user innovation*. For example, as the capacity of the private sector grows, the private sector will undertake a greater proportion of innovation, because it possesses the fundamental advantage of knowing the market.

• *Developing innovation platforms for learning, sharing, communicating, and innovating*. The structure of public research systems must adapt to permit a more open, thorough, and multifaceted dialogue with other key actors identified in the innovation system analysis.

• *Investing in public research and advisory systems.* Such investment must be based on careful identification of knowledge demands and joint strategic planning with the multiple stakeholders of the system.

Based on the key insights of the innovation system outlined above, It has been found that a lot of knowledge already exists which can be used to improve the livelihood of smallholder farmers. Innovation systems approach offers an opportunity for effective way to use, adopt, uptake or commercialize existing knowledge. The innovation systems approach moves away from a traditional linear research and development model in which research is completed and results are passed to users through extension. Instead, it emphasizes the need to nurture the demand for knowledge and technologies among a range of actors including farmers, researchers, extension officers, policy makers, private sector companies, entrepreneurs, non-governmental agencies and other intermediary organizations and encourage them to demand relevant knowledge.

### 2.3.3 Knowledge sharing in innovation systems

In exchange of agricultural knowledge, a crucial issue is the mode of communication between farmers, their organizations and scientists (Van Dusseldrop, 1992). Appropriate communication tools are needed to enhance the sharing of knowledge; such tools include face-to-face communication, searchable databases, websites, on-line discussion forums, synthesis documents that draw together current knowledge, forums, workshops, networking opportunities and knowledge brokering.

Knowledge sharing includes but is not limited to more well known concepts of communication and dissemination which imply a one way process of delivery of information, usually codified, from one party to another it rather, involves the interaction between people in ways in which they can achieve a two-way and mutual learning system, allowing them also to tap into the vital tacit knowledge that exists. Knowledge sharing should also be seen as an iterative and ongoing process, not something that happens at a final stage of some process; it can and should happen on multiple levels and between various groups (Solomon and Engel, 1997). Knowledge sharing can positively contribute to innovation systems through improving the generation of knowledge, including blending of formal and indigenous knowledge, facilitating a wider movement and use of the knowledge(out-scaling) and targeting relevant channels for knowledge to become institutionalized so that real support may be gained for positive actions on the ground (up-scaling).

According to De Silva *et al* (2005), knowledge sharing can then act as an enabling mechanism within innovation systems through four main avenues: identification, learning, out-scaling and up-scaling. Firstly, looking at identification, knowledge sharing can enable the identification of innovation through enhancing research processes to interact with stakeholders and understand local situations better. Secondly knowledge sharing approaches can enhance the process of mutual learning in which knowledge is gained from the local 'Homegrown' innovations as well as sharing knowledge from externally designed innovations. A third role of knowledge sharing in innovation is in out-scaling of innovation. Through adopting key approaches to bringing people together, knowledge sharing amongst a key group may better equip and motivate them to spread what they have learned or know with others, thus achieving a wider geographical spread of innovation knowledge and practices. The final way in which knowledge sharing can enable innovations is in facilitating up-scaling. Up-scaling, as a way of institutionalizing knowledge and practices through moving it up into relevant levels where support may be gained, is vital to gaining support for innovation and enabling its development as well as spread. Knowledge sharing approaches may also provide a mechanism for transferring knowledge to relevant groups in a meaningful way.

### 2.4 The role of farmers' cooperatives in the Ethiopian Innovation system

Farmers' cooperatives and unions are arguably the most significant private sector force emerging in Ethiopia's innovation system. Although Ethiopia's cooperative movement dates back to the previous *Dergue* regime, the experience was less than positive for many smallholders. Since then government policy has become more facilitative: measures such as voluntary membership, rights of withdrawal, and profit-sharing arrangements, have encouraged the cooperative movement significantly (Rahmato, 2002). Many of these reforms were highlighted by a formal Government proclamation supporting member-owned cooperatives in 1998.

At present, cooperative membership is estimated at approximately 4.5 million (ACDI/VOCA, 2005). They provide a wide variety of services, including input supply management, grain marketing, and the supply of consumer goods to members at prices that compete with local traders. Some cooperatives are also involved in seed multiplication and distribution schemes,

grain milling, distribution of veterinary medicines, and training of members in fields such as para-veterinary services for cooperatives' veterinary clinics (Rahmato, 2002). Farmer cooperatives in Ethiopia have found a clear niche in the production of high-value export crops such as coffee (ACDI/VOCA, 2005).

Plans are currently underway to establish 18,000 cooperatives country-wide. Ideally, these cooperatives would contribute directly to the government's strategy of promoting market-led agricultural development and commercialization of smallholders. However, cooperatives in Ethiopia may be able to generate even greater benefits for smallholders through resource pooling and collective marketing for many other commercial crops e.g., dairy, fruits, and vegetables (Spielman *et al*., 2006).

Specifically, cooperatives can play a crucial role in the procurement of inputs (seed, fertilizer, credit) and the sale of surpluses into markets where traders and processors frequently extract benefit from chronic information asymmetries, concentrations of market power, high transactions costs, and weak contract enforcement. They can also serve as portals or interfaces between smallholders and other innovation actors, e.g., public, private, and civil society organizations engaged in research, extension, business education, or entrepreneurship training. Of course, Ethiopian cooperatives also face many of the well-documented challenges that have been experienced by cooperatives in other countries, e.g., free-rider ship, membership commitment problems, government interference and acute politicization (Sykuta and Cook, 2001). In actual sense, based on their principles, cooperatives have to be autonomous, self-help organizations and controlled by their members.

### 2.5 Milk Marketing Systems in Ethiopia

As is common in other African countries (e.g., Kenya and Uganda), dairy products in Ethiopia are channeled to consumers through both formal and informal dairy marketing systems (Mohammed *et al*., 2004). Until 1991, the formal market of cold chain, pasteurized milk was exclusively dominated by the DDE (Dairy Development Enterprises) which supplied 12 % of the total fresh milk in the Addis Ababa area (Holloway *et al*., 2000). Unlike the early phases, the formal market appears to be expanding during the last decade with the private sector

entering the dairy processing industry. Recently, private businesses have begun collecting, processing, packing, and distributing milk and other dairy products. However, the proportion of total production being marketed through the formal markets remain small (Muriuki and Thorpe, 2001). Formal milk markets are particularly limited to peri-urban areas and to Addis Ababa.

The DDE remains the only government enterprise involved in processing and marketing dairy products. The DDE collects milk for processing from different sources, including large commercial farms and collection centers that receive milk from smallholder producers. The enterprise operates 25 collection centers located around Addis Ababa, 13 of them near Selale, 5 near Holeta and 7 around Debre Brehane (Mohammed *et al*., 2004).

The sale price of pasteurized milk changed over time. Until the 1980's, the DDE charged a price of 0.7 birr per liter. The price of milk increased from 1.00 birr in 1985/86 to 1.70 birr in 1990. However, the wide gap between production and sale of milk by DDE during the 1980-1990 reflects the failure of DDE to efficiently market its products; this is because they offer a price 15 to 25 cents less than that paid by private traders operating in the informal market (Yigezu, 2000).

However, since its inception the enterprise has only utilized its full capacity during the four years period from 1987 to 1990 (Staal, 1995). The reasons for low capacity utilization include management problem, financial difficulties, and unstable and low consumption levels of processed milk in the society due to fasting that prohibits the Orthodox Christians (about 35-40 % of the population) from consuming dairy products for almost 200 days every year (Yigezu, 2000).

The survey result conducted by Mohammed *et al* (2004) revealed that in addition to DDE, several private milk-processing plants have been established in Addis Ababa, two of which, Sebeta Agro Industry and Dinsho dairy industries, have already started marketing their products. Although their share of the market is still small compared to DDE, the entry of private firms in the formal milk market is a significant development indicating the

profitability and potential of private dairy investment in Ethiopia and that the policy environment is facilitating such entry.

The informal market involves direct delivery of fresh milk by producers to consumers in the immediate neighborhood and sale to itinerant traders or individuals in nearby towns. In the informal market, milk may pass from producers to consumers directly or it may pass through two or more market agents. The informal system is characterized by no licensing requirement to operate, low cost of operations, high producer price compared to formal market and no regulation of operations. The relative share and growth of the formal and informal market in the three phases was different. In all three phases, the informal (traditional) market has remained dominant in Ethiopia (Redda, 2001). The traditional processing and trade of dairy products, especially traditional soured butter, dominate the Ethiopian dairy sector. Of the total milk produced only 5 % is marketed as liquid milk due to underdevelopment of infrastructure in the rural area.

In recent years (1991-2000), promotional efforts have focused on dairy marketing. Milk marketing cooperatives have been established by the SDDP (Smallholders Dairy Development Program) with the support of Finnish International Development Association. These cooperatives buy milk from both members and non-members, process it and sell products to traders and local consumers. The cooperatives also process milk into cream, skim milk, sour milk, butter and cottage cheese.

Setting up a new dairy cooperative would clearly reduce the travel time of members, and the actual number of households that would benefit depends on local population densities. It is also important to keep newly emerging milk groups small and geographically limited to ensure proximity and avoid large groups that would tend to increase average travel times (Holloway and Ehui, 2002).

### 2.6 History of dairy development policies in Ethiopia

Recent political developments in Ethiopia coincide with three phases of dairy development policy. These include the imperial regime, characterized by almost a free market economic

system and the emergence of modern commercial dairying (1960- 1974), the socialist *Dergue* regime that emphasized central economic system and state farms (1974-1991), and the current phase under the structural adjustment program and market liberalization (1991to present) (Ahmed *et al*., 2004).

### 2.6.1 Imperial Regime: The emergence of modern dairying in Ethiopia (1960 -74)

In the first half of the 20th century, dairying in Ethiopia was mostly traditional. The first attempt to introduce modern dairy production in the country was made by the Imperial Government in 1947 with 300 Friesian and Brown Swiss dairy cattle received as donation from United Nations Relief and Rehabilitation Administration (Ketema, 2000). A small milk processing plant was established in Shola outside Addis Ababa to support commercial dairy production (Yigezu, 2000).

Government intervened through the introduction of high-yielding dairy cattle on the highlands in and around major urban areas. The Government also established modern milk processing and marketing facilities to complement these input oriented production effort. Most interventions during this phase focused on urban-based production and marketing including the introduction of exotic dairy cattle, feeding with high ratio of dairy concentrate feed modern dairy infrastructure and high management level (Ahmed *et al*., 2004).

In 1971, the Dairy Development Agency (DDA) was created as an autonomous body to provide guidance and assistance, e.g. extension and credit to farmers to establish commercial dairy farms in areas serving the cities and townships, and improve the quality and increase the quantity of milk and milk products (Ketema, 2000; Yigezu, 2000).

While promotion of commercial dairy production around Addis Ababa was going on; attempts were also made to improve dairy production of smallholder farmers in selected parts of the country through a number of agricultural development projects. Prominent among these are Swedish International Development Agency supported Chilalo Agricultural Development Unit (CADU), later renamed Arsi Rural Development Unit (ARDU) initiated in 1967 in the Arsi zone, and the Wolaita Agricultural Development Unit (WADU). Achievements of

ARDU in the dairy sector include the pioneering of the one-cow-unit dairy development package, in-country production of frozen cattle semen and crossbred dairy heifers, introduction of small-scale milk processing units and AI services to smallholder farmers, and the popularization of forage cultivation. Achievement of WADU include the establishment of the project's farm of 290 dairy cattle, the attempted introduction of AI and bull station services which led to positive attitudinal change to improved dairying, and reduced mortality rate from 17% to 5% due to animal health services. Also livestock was included in the Minimum Package Programme of the extension service of the Ministry of Agriculture initiated in 1972 to expand CADU's dairy development operation to other parts of the country (Nin *et al*., 2006).

However, the development projects and extension programmes implemented in other parts of the country made insignificant contribution to dairy output growth. CADU could not be replicated country wide because of the high cost per beneficiary and it accelerated the eviction of the landless tenants as landlords became more aware of the benefits from improved dairying and began to farm themselves. WADU experienced a high staff attrition rate, made more investment in infrastructure than on the extension service, and the project was very capital intensive. The dairy component of the minimum package programme under extension service of the ministry of agriculture was constrained by shortage of animal stock supply (ibid).

### 2.6.2 The Socialist regime (1974-1991)

In 1974, the imperial government was overthrown by the socialist Derg regime, which pursued a range of policies under a centralized economic system. During this phase, the government shifted attention from urban producers to rural producers. However, substantial resources remained devoted to establishing large-scale state farms to provide liquid milk for urban consumers. This phase was characterized by intensive effort by the government and donors towards developing the dairy sector through producers' cooperatives. The dairy development effort was geared towards rural producers who in fact were members of producer cooperatives. All the programs intended to bring about improvement in milk

production and an increment in income through introduction of improved feeding, breeding and health development programs while less attention was given to marketing and processing. The programs and projects implemented included the Minimum Package Program (MPP), Addis Ababa Dairy Development Project (AADDP), Dairy Rehabilitation and Development Project (DRDP), Artificial Insemination Service (AIS) and Selale Peasant Dairy Development Pilot Project (SPDDP) (Ahmed *et al*., 2004).

The consequences of these policy changes adversely affected the growth of the dairy industry in Ethiopia for the following 17 years (Ketema, 2000). The rural mixed farming systems which produced the largest share of milk in the country remained largely neglected. According to Staal (1995), cited in Ahmed *et al* (2004) dairy policy in the 1980s can be characterized as a severe misdirection of effort. The focus of substantial resources on parastatal institutions yielded little benefit to consumers or producers. Attempts to develop market-oriented dairying in rural kebeles were hampered by low producer prices and narrow attention on cooperatives. These same attempts also led to a complete neglect of the informal urban producers, who were the most important for urban milk supply but were forced to seek inputs and services they need without institutional support.

### 2.6.3 Democratic government and market reform policies (1991-present)

In 1991, the Ethiopian People's Revolutionary Democratic Front (EPRDF) came to power and embarked on policy reform that aims to bring about a market-oriented economic system. Dairy development strategy formulated during this period focused on creating an environment for greater smallholder dairy farmers' access to market to meet market demand, so that the producers will be stimulated gradually to produce more to satisfy the market (Tsehay, 2001).

To take advantage of the newly created market opportunities as a result of the economic reform measures, prominent dairy producers within a 100 km radius of Addis Ababa formed the Addis Ababa Dairy Producers Association (AADPA). By the end of 1992, 90% of all urban dairy producers enlisted. The main objective was the procurement of cattle feed rather than milk collection. The rural cooperatives were re-built giving attention to human capital (whose role would be to serve and not to govern) because of the lesson learned from the past

of the undesirable role of the government in cooperative affairs. A new proclamation in 1998 further helped to promote cooperatives of a new kind by liberalizing cooperatives from direct government control to an advisory role. Among the development projects, SDDP organized small milk processing and marketing units to raise income and nutritional standard of smallholder farmers through improved dairying. About 30 cooperatives were formed in the peri-urban areas of Addis Ababa. Due to input limitations, the project had to reduce the number of contract farmers from 1000 to 500. In addition to these focused projects, general improvement in veterinary services, breeding services including artificial insemination, and promotion of forage and feed production through the general extension service has also been observed (Nin *et al*., 2006).

The dairy extension package as part of the livestock development extension package was initiated in 1997. The main strategy was to focus on the rural, peri-urban and urban areas. During the beginning of the extension, dairy was prompted in urban and peri-urban area. Later on, however, the dairy (milk) extension package was also included for the rural areas. The rural dairy extension package was designed to include bull service, artificial insemination, animal feed, animal health, animal housing, breeding methods and calf management. For the peri-urban and urban areas, the distribution of cross bred in-calf heifers were included, but not for rural areas (EEA/EEPRI, 2006).

Overall, policy changes during this period were successful in reinvigorating a dairy sector that was gravely affected by the socialist regime. Macroeconomic policies, changes in cooperative legislation, and the openness of the manufacturing sector to private investment all resulted in positive changes giving growth in the dairy sector a new impulse in both the peri-urban areas where most development projects are located and in rural areas where mixed farming is practiced. The increased coverage of extension services (such as better management skills) and increased use of improved inputs (improved breeds and feed) and policy changes promoting dairy production have contributed to faster growth of output. Although the results obtained by the sector so far are positive when compared to the past, the historical performance of the dairy sector in Ethiopia has been disappointing given the potential the

sector is assumed to have or if it is compared with countries in the region like Kenya and Sudan (Ahmed *et al*., 2004 and Nin *et al*., 2006).

Moreover, the introduction of Market Oriented Dairy Production (MODP) in the country has shown the potential of stimulating the rural economy through increased demand for non-food. However, success of such activities in combating poverty and food insecurity depends on availability of marketing infrastructure and availability of farm inputs and necessary veterinary services for dairy farmers. Policies that encourage farmers' participation in markets and generation of cash income appear to be critical. The MODP also may be linked to increased intensification of crop production as implied by the recursive impact of incremental increase in income on purchases of inputs. The study recommended that agricultural extension programmes should also take this option into consideration (Ahmed *et al*., 2003).

### 2.7 Studies on Cooperatives in Ethiopia

In his study of cooperative movement in Ethiopia, at early days Kebebew (1978) emphasized that the state commitment for collective agriculture to flourish. This commitment manifested by the material and technical investment accompanied by educational programs designed to raise the social and political consciousness of the peasants. State investment in agriculture designed to modernize the methods of agricultural production is likely to attract those peasants who are dubious about the success of collective production.

A study conducted by Alemayehu (1984) in Kembata and Hadiya on service cooperatives revealed that most of the service cooperatives safeguarded the peasants against price exploitation by private traders. However, he noted that cooperatives' attempt to serve their members have been hampered by the cooperative poor spatial organization which necessitated the re-organization of some of the cooperatives based on physical geographic factors and on the size of the PA membership.

Getenesh (1988) used some performance measures such as liquidity ratio, net capital ratio, debt ratio etc. in her comparison of farmers' producer cooperatives in the highlands of Hararge. The result showed that size in terms of members and area didn't contribute

significantly to explain the performance differences in most cases, in contrast to wide spread assumption of this to be so.

Wegenie (1989) evaluated the performance of cooperatives both at micro and macro level and the problems of development of cooperatives. Macro level study indicated that the performance of cooperatives was poor when compared to the individual and state farms in terms of yield. The performance evaluation of the cooperatives at the micro level was specifically directed at looking their efficiency using the linear programming model. Comparison of the actual with the optimal pattern indicated sub optimality in their cropping pattern. In all cases his result suggested a reallocation of land away from the two basic products of the region i.e. wheat and barley to other crops. Land, in his optimal solution was found to be the limiting factor in all the cooperatives and he suggested that for an appropriate land holding and land allocation policy for each of the cooperatives which take resource availability of the cooperative into account. His study also indicated input-output pricing system, declining income of members, forced membership and absence of democracy in decision-making process as a problem for the development of cooperatives.

Tesfaye (1995) in his study of producers' cooperatives found that these organizations failed in the past not because of failure inherent in collective management but because of forced membership without the interest of the farmers and formation of the cooperatives in hurry without any sufficient preparation and feasibility study. The problem of intervention of the Derg regime in the affairs of these organizations i.e. using them for its political ends and the largeness and complexity of the organizations for the managerial capacity of the farmers were also a reason for the failures of the cooperatives.

Daniel (2006) studied the performances of primary agricultural cooperatives and members decision to use as marketing agents. On his findings he discovered that farmers' usage of the cooperative as a marketing agent for farm produces increase if the cooperative provide them with different additional services such as dividend payment and supplying of inputs (fertilizer, chemicals, AI, feed and seed).

## 2.8 Empirical Studies on the Performance of Agricultural Cooperatives

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.

A logit regression analysis was used by Tretcher (1999) 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 revolvement. 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.

The role of dairy marketing co-operatives in the Ethiopian dairy Innovation system was studied by Beekman (2007), using sample dairy cooperatives in Alamata and Fogera woreda.

Results of this study revealed that dairy cooperatives can play a significant role in promoting technological, organizational and institutional innovations, promoting linkages for access to services and marketing and in knowledge and information sharing. The outcomes of the study again revealed that dairy cooperatives are used to improve the livelihood of members, promote gender equity and help in changing the attitudes and behaviors of members of the cooperatives.

Impact assessment household survey at regional levels on both members and nonmembers of different cooperatives was undertaken by ACDI/VOCA (2005). The assessment findings indicated that cooperatives have made a significant impact in assisting smallholder farmers through the provision of timely agricultural inputs at reasonable prices and the creation of market outlets for their products at the prevailing market prices to their members. Equally important, the findings put the significant role played by the sampled cooperatives in the provision of credit, income generation, technical assistance, value added services, consumer goods retailing, tractor service and transportation facility.

## 2.9 Conceptual Framework

Innovation is becoming central to the ability of farmers, agro-enterprises and countries to cope, exploit and compete in rapidly evolving technical and economic conditions (Hall *et al*., 2006). In the agricultural sector there has been a long tradition of development assistance investments in public-research systems. Yet there is growing recognition that while public agricultural research is necessary, on its own it is not sufficient to create a dynamic innovation capacity. Fresh direction, however, is coming from recent insights that recognize the innovation process involves not only research, but also a wide range of other activities, actors and relationships associated with the creation and transmission of knowledge and its productive use. As a framework for applying these insights, the concept of an innovation system is emerging as a potentially valuable tool to help rethink the role and contribution of agricultural research (Hall *et al*., 2001).

The innovation systems framework conceptualized innovation in a more systemic, interactive and evolutionary terms whereby networks of organizations, together with the institutions and policies that affect their innovative behavior and performance, bring new products, new processes and new forms of organization into economic use (Edquist, 1997).

Institutional settings play a central role in shaping the processes critical to innovation-linking or interacting, learning, knowledge flows and investment. The innovation systems framework distinguishes institutions from organizations i.e. enterprises, research institutes, farmer cooperatives, non governmental organizations, etc. Institutions on the other hand are understood as the sets of common habits, routine practices, rules or laws that regulate the relations and interactions between individuals and groups (Edquist, 1997). It is these habits and practices that determine the propensity of actors and organizations to innovate.

Innovation involves the extraction of economic, ecosystem and social value from knowledge. It involves putting ideas, knowledge and technology to work in a manner that brings about a significant improvement in performance. It is not just an idea-but rather it is an idea that has been made to work. Moreover, innovation results from the application of ‘new’ knowledge, accumulated knowledge or creative use of existing knowledge.

This study aimed to analyze the function of Ada’a dairy cooperative in enhancing technological, organizational and institutional innovations; promoting linkages and in knowledge and information sharing; which all have social and economic significance. Accordingly, the knowledge shared from multiple sources through the cooperative in terms of technological, institutional and organizational innovations leads to improve members’ livelihood.

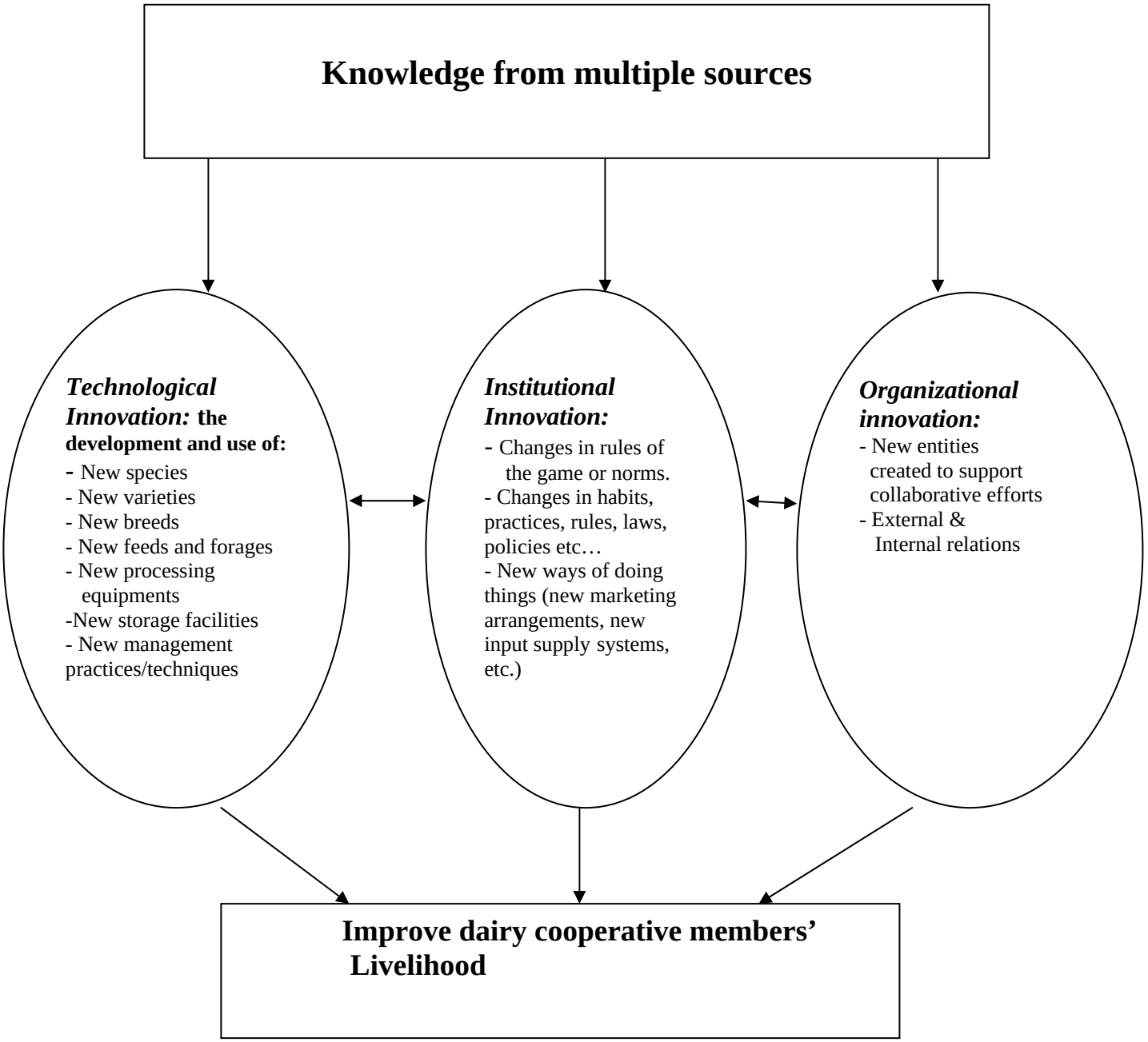


Figure 1. Conceptual framework of the study

# 3. METHODOLOGY

The information discussed in this session includes the features of the study area where the research was conducted and the methodologies adopted in the sampling and data analysis.

## 3.1. Description of the Study Area

### 3.1.1. An overview of the Oromiya Regional State

The Oromiya regional state lies in the central part of the country with larger protrusions towards the south and west directions. It has an area of 353,690 $km^2$ (OPEDB, 2000). The region has 17 administrative zones and 251 districts. The population of the region was 25.81 million, of which the economically active population (15-64) accounted for 64.5% and the total average household size was estimated at 4.8 person (CSA, 2006). The estimated livestock population was 41.6 million. The total estimated arable land of the region is 30.7% (OPEDB, 2000). Teff, wheat, maize, barley, sorghum, bean, pea, lentil etc. are some of the widely cultivated crops in the region. Cattle, Sheep, Goat, Horse, Donkey, Mule and Chickens are the common livestock species found in the region.

### 3.1.2. An overview of the East Shoa Zone

East Shoa zone has an area about 14,050 $km^2$ that is divided into 11 districts and three administrative towns. The estimated population of the zone in 2006 was about 2,475,945 (economically active age group 15-64 was about 52.4%); and the average family size per household was about 5.2 person (CSA, 2006). The zone has an estimated livestock population of about 5.3 million and arable land of about 44.0% of the total area (OPEDB, 2000). Teff, maize, barley, sorghum, bean, pea, fruits, vegetables etc. are some of the widely cultivated crops in the zone. Cattle, Sheep, Goat, Horse, Donkey and Chickens are the common livestock found in the region.

### 3.1.3. Ada'a District

Ada'a district is one of the 11 districts in East Shoa Zone, Oromiya Regional State, located about 45 km South-East of the capital, Addis Ababa and is very close to the other major urban centers like Adama and Modjo. The district covers an area of 1750 $km^2$, stretching East of the Bole International Air Port to the North-West of the Koka dam. The population in Addis Ababa, Adama, Mojo and Debrezeit create a large market for most agricultural commodities. There are 27 kebele administrations in Ada'a district in addition to 9 urban kebeles in Debrezeit municipality. The total population living in Debrezeit town is 84,943 of which 64.6 % are females, and the number of people living in the rural and peri-urban areas is 144,289 of which 49 % are females. From the total land size of the woreda, 81.76%, 0.01%, 2.79% and 6.22% are used for annual crops, perennial crops, grazing and forest lands respectively.

Agriculture is the mainstay of the people in the district. Households in Debrezeit town and it's environ are employees and/or pensioned staffs in different organizations in Debrezeit and near by towns. In addition, there are traders, firm owners and dairy farmers in the town. The agro-ecology of the district is suitable for diverse agricultural production. Crop and livestock production are the major sources of income and livelihood of the people in the district. The district is nationally known for its best quality tef production, which dominates the agricultural production system, followed by wheat and pulses, especially chickpea. Selected wheat producers are linked to Kaliti food complex to supply durum wheat with predetermined quality on a premium price. Farmers are embarking on market oriented chickpea production where producers are supplying Kabuli type for export and to food processing company through the Yerer cooperative Union.

Livestock is an integral part of the production system. Production of Cattle, Sheep, Goat, Horse, Donkey, Mule and Poultry are a very common practice and there is an existing market-oriented production system. Information obtained from the district agricultural office revealed that the total livestock population of the district in 2007 was 291,539 of which both local and crossbred cows accounted 11.68%. There is a fast growing smallholder dairy production system with a strong milk marketing cooperative and private owned dairy farms. The area of Debrezeit is certainly the most developed milkshed of the country, providing most of the dairy

products available in the market of Addis Ababa, the largest and most diversified market of Ethiopia.

There are a number of farmers' primary cooperatives in the district organized under eleven types of cooperatives (Table 1). Among these, there are 21 multipurpose cooperatives with 21,093 members (16.90 % females), 34 Saving & Credit cooperatives with 2,311 members (43.88 % females) (DCPO, 2007). In the district there is one dairy cooperative (Ada'a Dairy Cooperative), which is the biggest and advanced dairy cooperative in Ethiopia, both in terms of number of members and volume of production with its own feed and milk processing plants. One of the known unions ("Yerer" farmers' cooperative union) which is found in the district, has started to import and distribute fertilizer, purchase of improved seeds (wheat, chickpeas) from farmers and undertakes grain marketing activities for both local and export market.

Infrastructures like telecommunication, electric power and schools are highly advancing in the capital of the district. Moreover, the National Veterinary Research Institute, Faculty of Veterinary Medicine, the Debrezeit Agricultural Research Center etc. contributed a lot for the development of the rural poor, particularly for Debrezeit farmers and the country as a whole. Rural roads that branched to different kebeles and villages have played significant role in the supply of inputs and outputs of agricultural products.

The district has the potential for both crop and livestock production, which is mainly undertaken by smallholder farmers. There are also a relatively growing number of commercial farms and agro-processing industries operating in the area. The district agricultural potential and the infrastructure and institutional arrangements have encouraged the emergence of private service providers such as animal feed factory, private animal health institutions, agro processors and private livestock farms.

Table 1. Different types of Primary cooperatives in Ada'a woreda

| No | Types of primary cooperatives | Number of coop. | Members | | | Capital in Birr |
|---|---|---|---|---|---|---|
| | | | Male | Female | Total | |
| 1 | Multi Purpose cooperatives | 21 | 17528 | 3565 | 21093 | 4,741,509.48 |
| 2 | Saving and Credit cooperatives | 34 | 1297 | 1014 | 2311 | 867,110.25 |
| 3 | Mining cooperatives | 20 | 1253 | 34 | 1287 | 389,970.26 |
| 4 | Irrigation cooperatives | 4 | 170 | 13 | 183 | 769,294.75 |
| 5 | Dairy cooperative | 1 | 450 | 400 | 850 | 5,010,738.00 |
| 6 | Apiculture cooperatives | 3 | 57 | 4 | 61 | 13,306.00 |
| 7 | Recreation cooperative | 1 | 10 | 2 | 12 | 41,950.00 |
| 8 | Loading and un-loading cooperatives established by daily laborers | 5 | 53 | - | 53 | 132,800.00 |
| 9 | Fattening cooperative | 1 | 19 | - | 19 | 3480.00 |
| 10 | Forest cooperatives | 2 | 171 | - | 171 | 5378.00 |
| 11 | Consumer cooperative | 1 | 68 | 12 | 80 | 4686.30 |
| | Total | 93 | 21076 | 5044 | 26120 | 11,980,223.04 |

Source: Annual report of Ada'a woreda cooperative office, 2007.

According to the data presented in Table 1 above, the participation of females as a member of the cooperatives especially on multipurpose (16.9%), mining (2.64%), irrigation (7.10%) and apiculture (6.56%) are much lower than males. On the other hand, females are not participating as members of daily laborers, fattening and forest cooperatives; but females participation is almost proportional to males in saving and credit (43.88%) and dairy cooperative which accounted 47%.

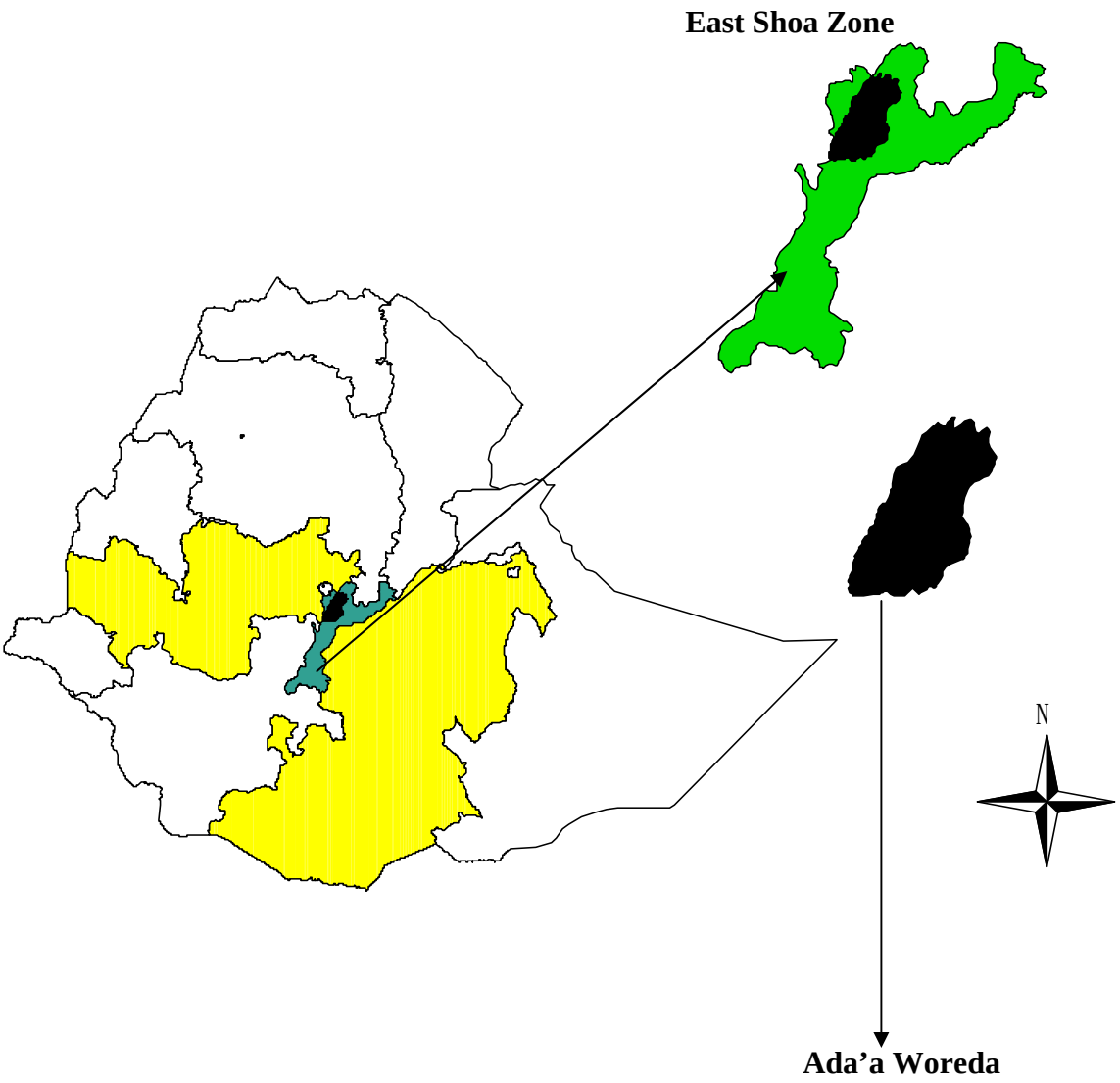


Figure 2. Map of the study area

Source: Ada'a Woreda Agriculture and Rural Development office.

## 3.2 Sampling Procedure

### 3.2.1 Selection of the study area

Ada'a dairy cooperative, as a case study, was selected purposively for several reasons. Among the several areas in the country where cooperative movement is strong, the study area is the front-runner in setting up and organization of dairy cooperative. As compared to many other dairy cooperatives in Ethiopia, Ada'a dairy cooperative is well developed in terms of membership, access to market and providing dairy related services to members. The cooperative primarily collects milk from members, undertakes processing activities, providing dairy related technologies (AI, concentrate feed, veterinary services), provide training and advisory services and work in close collaboration with different actors involved in dairy related activities.

### 3.2.2 Sampling Design

Ada'a dairy cooperative was purposively taken for this study in order to investigate the role of this cooperative in stimulating innovation, creating linkages, and transferring knowledge. First a list of members of the cooperative was obtained from the cooperative office. The members were stratified into two groups based on their residence i.e. urban and peri-urban. From the total members of the cooperative, 90 % of them (765) were living in Debrezeit town but the rest 10 % (85) of them were living in peri-urban areas. The total members of the cooperative under each category were used as a sampling frame i.e 765 and 85 for urban and peri-urban respectively. Members from each group were selected randomly using Probability Proportionate to Size (PPS). Based on that, the total sample size for this study was 150 dairy producer members of the cooperative; which constitute 135 and 15 from both urban and peri-urban areas respectively. From the total sample size used in this study, 47.33 % were female members of the cooperative.

### 3.3 Types of data and method of data collection

Both primary and secondary data were collected to analyze the proposed research topic.

#### 3.3.1 Primary Data

***Producers' survey:*** to generate information at household level, a survey was undertaken using pre-tested structured interview schedule. Household level information entails dairy producers' socio-economic characteristics, dairy production system, market access, the contribution of the cooperative towards stimulating technological, institutional and organizational innovations and access to information and communication with different actors. Pre-tested interview schedule on ten members of the cooperative was undertaken in both urban and peri-urban areas. Five enumerators were recruited based on their proficiency in local language, educational background and prior exposure to data collection. They were trained on the contents of the interview-schedule and procedures to follow, while conducting the interview. During data collection trained enumerators interviewed the sample respondents using the structured interview schedule; and the researcher made personal observations and continuous supervision to reduce errors.

***Focused Group Discussion (FGD):*** Focused group and key informants discussions were conducted using checklists with the management committee of the cooperative, selected group members of the cooperative with different age and sex categories, milk customers and staffs of the district cooperative and agricultural offices. During group discussion with members of the cooperative the interviewer guides a conversation among a small group of six to eight members. The group discussed and developed the topic with some direction from a facilitator. The role of the facilitator was in the background and ensuring that the group boundaries and tracks are kept.

### 3.3.2 Secondary Data

Secondary data relevant for this research work were collected from the offices of Ada'a dairy cooperative, the district Agriculture and Rural Development office, the district cooperative office, the Federal and Regional cooperative bureaus, and other published and un-published documents prepared by different governmental and non governmental organizations.

## 3.4 Method of Data Analysis

Following the completion of the data collection, the data were coded and entered in to Statistical Package for Social Science (SPSS version 12) computer program for analysis. Data were analyzed using different quantitative and qualitative statistical procedures and methods. Descriptive statistical tools were used to analyze the quantitative data. The important statistical measures that were used to summarize and categorize the research data were means, percentages, frequencies, minimum, maximum and standard deviations. Descriptive tools were supplemented by qualitative analytical methods (mainly for those data acquired through the participatory/ qualitative methods) like interpretation and explanation of various opinions, views and concepts; and summarizing, categorizing, and presentation of these in convenient forms. The performance of dairy cooperatives in promoting linkages for access to services and marketing was analyzed using actors linkage tools based on participatory focal group discussion and individual interview. Moreover, Strength, Weaknesses, Opportunities and Threats (SWOT) analysis was used to summarize the results of the three objectives.

# 4. RESULTS AND DISCUSSION

In this chapter the findings of the study are discussed in detail based on the results obtained through household interview, group discussions and key informants discussion. Moreover, the historical development of the cooperative, household characteristics, requirements to be members of the cooperative, financial status of the cooperative and resources and facilities of the cooperative are also discussed accordingly.

## 4.1 Historical development of the cooperative and characteristics of sample households

### 4.1.1 Historical development of the cooperative

Ada'a dairy cooperative is a formal cooperative which was established in September 1996 with a capital of Birr 3,400.00 collected from the sale of shares to its 34 founding members (29 males and 5 females) who purchased a single share of Birr 100 each and an additional Birr 10 as registration fee; with the major objective of supplying feed to its members at a reasonable price. The association, although informally established in 1996, got its legal certificate of registration from the Oromiya Regional State on June 20, 2000 in accordance with article 9 of cooperative society's proclamation no. 147/ 1998.

It is the first dairy cooperative in the country to be registered after having fulfilled all the registration criteria enshrined in the new cooperative proclamation, and has become exemplary to other two leading cooperatives in the country, namely Selale and Yetnora dairy marketing cooperatives.

Box 1. Evolution of Ada'a dairy cooperative

The government change in 1991 provided a turning point for dairy production and service provision in *Debrezeit* area. Most staff members of the National Air force based in *Debrezeit* were made redundant with and without pension. This sudden staff displacement forced the air force veterans to look for other income sources besides government pension and dairy was selected by some of the veterans. This enhanced the number of dairy producers and thereby the amount of milk production. Feed shortage and milk market problem evolved as a challenge to the dairy development which resulted in the establishment of *Ada'a* dairy cooperative by the initiation of the founder members and the support of the district cooperative office; to solve the problem collectively and for reducing dependence on government or private sectors for services and inputs, and assured market outlet and fair price for milk to members. Subsequently, other private service providers have grown. The involvement of *Ada'a* dairy cooperative in milk collection could be taken as a milestone in the evolution of the dairy service delivery that encouraged many dairy producers in the urban and peri-urban subsystem to engage in market oriented dairy development leading to the booming of private dairy related service providers.

Source: Results of focused group discussion, 2008.

The centralized milk collection, processing and marketing activities of the cooperative were started in January 2000 based on supply increment. The amount of milk collected from the founder members was 308 liters per day or about 24,319 liters per month from 400 dairy animals. Today, members of the cooperative have reached 850 (450 males & 400 females), and the dairy stock has risen to 3000 with an estimated supply of 8000 liters of milk per day. The daily supply of milk from each farmer ranges from 2 liters to 40 liters per day, about 10 liters on average. In addition, the cooperative collects a limited amount of milk from non members in the surrounding area. Along with the milk marketing activity, the cooperative provides feed, veterinary and AI services to all its members and its objectives have been amended from time to time.

The objectives of the cooperative at the time of the survey were:

1. Establish participatory milk collection, processing and marketing network,
2. Assist in transforming subsistence production into market oriented dairy system and ensure participation of small farmers in market economy,
3. Provide input services such as processed feeds, animal health and artificial insemination,
4. Create job opportunity,
5. Ensure the supply of safe, hygienic and quality milk and milk products,
6. Assist participation of subsistence rural dairy farmers in agriculture led industrialization process through establishing urban-rural link,
7. Protect the environment through better management of animal products and waste.

### 4.1.2 Demographic characteristics of sample members of the cooperative

The average age of the sample respondents was 51 years and the minimum age was 26 and the maximum was 74. About 47.3 % of the sample respondents were women, much higher than many studies would have (Table 2). It is safe to say that unless the gender dimension is addressed explicitly, most innovation processes will not be gender neutral and that, in fact they often will discriminate against the opportunities for women to participate in, and benefit from innovation processes. Most (74.7%) of the respondents were literate who attended grades 7-12 ( 48 %), followed by 14 % who attended grades 1-6 and 12.7 % joined higher learning institutes including air force diploma program. The involvement of the retired staff of National Air force at Debrezeit in dairy sector was the major driving force for the involvement of literates in the urban dairy subsystem during the 1991 government change in the country. Subsequently, respondents with BSc. and above were involved in the cooperative. With regards to Religion the majority of the sample respondents (87.3 %) were Orthodox Christian followed by 6.7 % Protestants, 5.3 % Muslims and only one respondent from Catholic. As the data indicated, in the study area most people are followers of Orthodox religion and discussion with the executive committee of the cooperative revealed that the two months main fasting time coming every year has great impact on milk and milk products marketing, this is because, followers of the religion didn’t buy and consume milk products from the cooperative, but supplied excess milk for sale higher than the previous months.

Table 2. Respondent characteristics

| Variables | Number | Percentage |
|---|---|---|
| Education level (%) | | |
| Unable to read and write | 16 | 10.7 |
| Read and write | 22 | 14.7 |
| Grade 1-6 | 21 | 14 |
| Grade 7-12 | 72 | 48 |
| Grade > 12 | 19 | 12.7 |
| Total | 150 | 100 |
| Sex (%) | | |
| Female | 71 | 47.3 |
| Male | 79 | 52.7 |
| Total | 150 | 100 |
| Marital Status (%) | | |
| Married | 122 | 81.3 |
| Un-married | 7 | 4.7 |
| Divorced | 8 | 5.3 |
| Widowed | 13 | 8.7 |
| Total | 150 | 100 |
| Religion (%) | | |
| Orthodox | 131 | 87.3 |
| Muslim | 8 | 5.3 |
| Protestant | 10 | 6.7 |
| Catholic | 1 | 0.7 |
| Total | 150 | 100 |

Source: Own survey data, 2008.

### 4.1.3 Livelihood sources

The main livelihood sources of the members of the cooperative are livestock rearing, farming, small trading, daily labor, remittance and monthly salary. Dairy farming is the main livelihood source for all members of the cooperative but not necessarily the sole source of their livelihood. Members of the cooperative, who are living in Debrezeit town, have no access to arable land and grazing land, whereas members of the cooperative who are living in the peri-urban areas have on average of 0.2 hectare arable and 0.03 hectare grazing land, due to that crop production accounts for 60 % of their livelihood. The average total income of members of the cooperative which is obtained from the sale of milk is Birr 18,109.43 per year. Members of the cooperative on average have 2.66 crossbred cows; these types of cows are the major contributors for the income obtained from the sale of milk.

### 4.1.4 Membership criteria of the cooperative

Cooperative membership is open to every dairy producer at least with one cow and resides in Debrezeit town and its surroundings, capable of paying a registration fee and buys at least one share. Registration fee is birr 50 whereas a single share had been sold for birr 100.00 during the establishment and reached birr 250 now a days. In addition to this a new member must purchase 10 shares to benefit from all cooperative business especially to take advantage of the newly established dairy processing plant. A member can have a maximum share of 10 % of total capital of the cooperative. The cooperative has a constitution or by-law which is the fundamental instrument of the cooperative that defines the duties and responsibilities of all office holders and the various committee members. The by-law is also under continuous revision following the change in the organizational objectives of the cooperative. Discussion with the executive committee of the cooperative revealed that it is the by-law of the cooperative which guides the cooperative to behave as business organization and every member of the cooperative has to be willing to implement his obligation and observe and respect the objectives and by-law of the society.

During the survey time, there were 650 members who supplied milk to the cooperative. The rest has either sold their cows or changed location but still members of the cooperative. But members with milking cows are preferentially treated during dividend share, where 70 % is accounted for fully participating members in the supply of milk and purchase of products and services and 30 % for share holdings.

### 4.1.5 Resources and facilities of the cooperative

The cooperative has two office buildings, a milk processing and feed processing plants. The cooperative uses two trucks to transport milk from the collection center and to transport milk to Addis Ababa Shola milk. A three wheeler is used to collect milk from the collection centers and two wheel motor bikes that are being used for AI service provision. Cream separator, milk churner and 5000 liter deep cooler are some of the dairy equipments that the cooperative uses for the day to day activity. During the survey time, there were 60 employed personnel and 20 daily laborers working in the cooperative.

### 4.1.6 Financial sources and capital of the cooperative

Members of the cooperative on average had 4 shares, and by the end of the year, allocation of the net profit was distributed in the form of dividend based on the guideline given in the proclamation and by-law of the cooperative. In this pursuit, the cooperative assigned 30 % of the net profit as a reserve fund until 30% of the authorized capital is attained. Moreover, 20 % and 2 % of the net profit is allocated for expansion activities and social services respectively. In addition, 3 % of the net profit payable as an incentive to direct participating board members and employees. The residual 45% is considered to be dividend payment on patronage (70 % to fully participating members in the supply of milk and purchased products and services and 30 % for share holding), until the subscribed capital of birr 15 million is attained by the cooperative. The cooperative didn’t distribute dividend on cash for the last two years but added on the share of members according to their participation. The main income sources of the cooperative include: contribution of members, sale of shares, registration fee from new members, and profit obtained from the sale of milk, milk products and other dairy inputs.

The profit and loss statement of the cooperative according to the audit report of the year 2004 and 2005 is indicated in Table 3. Based on the data revealed in Table 3, the cooperative was profitable in both years. Moreover, the net capital of the cooperative in 2004 was birr 713,014, in the year 2005 it was birr 1, 208, 477.99 and at the end of 2007, it was birr 5,010,738 much higher than the previous years; of which 26.2% is share capital, 60.3% obtained through donation, and the rest 13.5% is a reserve fund.

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Table 3. Profit and loss statement of the cooperative

| Items | Year | |
|---|---|---|
| | 2004 | 2005 |
| **Revenue ( in Birr)** | | |
| Sales | 4,633,902.95 | 5,150,243 |
| Cost of goods sold | 3,711,593.01 | 4,471,668.72 |
| Gross profit | 922,309,.94 | 678,574.28 |
| Other Income ( from sale of feed) | 3,821.25 | 6,878.35 |
| | **926,131.19** | **685,452.63** |
| **Expenses ( in Birr)** | | |
| Direct Expenses | 275,934.71 | 293,981.99 |
| General and administrative Expenses | 127,328.11 | 157,487.85 |
| Financial expenses | 2,241.65 | 1,942.46 |
| **Net Profit for the Year ( in Birr)** | **520,626.72** | **232,040.33** |
| Dividend | 364,438.70 | 162,428.23 |
| General reserve | 78,094 | 34,806.05 |
| Reserve for job expansion | 52,062.67 | 23,204.03 |
| Reserve for social services | 26,031.35 | 11,602.02 |

Source: Audit report of the cooperative, 2007.

### 4.1.7 Dairy products movement

Sample members of the cooperative on average produced 23.49 liter of milk per day. Most of the milk produced 22.6 (96.21%) was sold as raw milk mainly to the cooperative. The remaining 0.84 liters (3.57%) was consumed in the household and 0.06 liter (0.25%) was processed into yoghurt and butter.

## 4.2 The role of Ada'a dairy cooperative in promoting Innovation

The role of Ada'a dairy cooperative in promoting technological, institutional and organizational innovations has been discussed in the subsequent parts.

### 4.2.1 Technological Innovation

Ada'a dairy cooperative has introduced technological innovations starting from its inception time till the present to its members. Group discussion with key informants and executive committee of the cooperative and results of the household survey revealed that the role played by the cooperative to introduce milk processing technologies and milk handling equipments as part of technological innovation.

**Processing of milk to milk products**

One of the technological innovations introduced by the cooperative was the introduction of centralized processing of milk in to milk products after separating the cream using the butter churning machine. The cooperative was using electrical cream separator and butter churner for milk processing. Refrigerator was being used as preservation practice after processing. The cream separator separates 300 liter of milk within an hour. The cooperative has two cream separators and separate creams from 600 liter of milk within an hour. The separated cream stays under refrigerator. After seven days the cream will be taken out and churned to change it to butter.

In addition to the previously used processing equipments the cooperative had established the new milk processing machine with Birr 6, 245,000 in May 2007 which can process

pasteurized milk, butter, cheese and yogurt. During the survey time the machine was partially started its operation and supplied pasteurized milk and other processed products (butter and cheese) to the market. Concerning to milk processing inside the home, all sample respondents of the cooperative replied that, “we didn’t process milk in to milk products after we joined the cooperative.” Additionally the respondents confirmed that, since the cooperative takes the initiative of processing milk into milk products like butter and cheese, members are able to purchase quality milk products from the cooperative. This, in turn, helped them to decrease the workload of processing in their home.

**Introduction of milk handling and quality testing equipments**

One of the major factors affecting the quality of dairy products is related to milking utensils. The type and quality of milking utensils used as well as methods and frequency of cleaning milking utensils affect the quality of milk and its products ( Sintayehu *et al*., 2008). With regards to the type and quality of milking utensils, all respondents were used plastic made utensils (95%) and the rest used clay pot and plastics for storage and transportation.

Unlike plastic utensils which is susceptible for microorganisms and which was adopted by all sample members before, the cooperative introduced an aluminum cane for the handling, storing and supplying of milk. The milk supplied by members was tested for quality using lactometer to see fat content, whether cream is separated or not and adulteration of water into milk. All members of the cooperative were using these aluminum cans for milk handling and transportation after they got advice from their cooperative; at the same time all members are aware of milk hygiene and quality standards of the cooperative.

### 4.2.2 Institutional Innovation

Ada’a dairy cooperative has been enhancing marketing activities and provision of dairy inputs for the dairy producers. Many farmers never considered dairy as a business before they joined the cooperative; but they sold their milk only to individual consumers, hotels and cafeterias which all didn’t provide them a sustainable market for their product. Discussion with sample

respondent members of the cooperative revealed that, it is after they become members of the cooperative that they started to give value for milk; buy more crossbred dairy cows and started to sale milk openly in the market. This time almost all members of the cooperative who have the dairy cow/s are selling their milk exclusively to the cooperative, but there are some farmers who are selling their milk to both the cooperative and other buyers or milk processing industries like Mama, Lema, Fana, Shola, Enat and Genesis farms due to price difference. On the other hand, the cooperative is providing dairy inputs which may include AI, concentrate feed, fodder seed and animal health services to its members.

**Institutional Innovation in the provision of concentrate feed and forage seed**

Since the objective of establishing the cooperative was to supply feed (hay and wheat bran) to members, the cooperative has been supplying feed since its inception in 1996. Now a days, the cooperative is supplying balanced concentrate feed processed from Niger-seed cake, corn (maize), straw, bole (salty soil), calcium (gypsum), wheat bran; at a reasonable price and proper quality since 2006 by establishing new feed processing plant. The cooperative was selling for birr 173.00 for a quintal of feed compared to private feed suppliers selling at birr 230-250 per quintal during the survey time. Molasses is also supplied as a supplementary feed. About 70% of the sample respondents which constitute 40 % of women replied that it is after they joined the cooperative that they started to get balanced concentrate feed with proper quality. Adaptable variety of forage grasses and legumes such as elephant grass and Alfa- alfa was introduced by the cooperative and planted by few farmers (3%), who have land that can be allocated for it. Discussion with the management committee of the cooperative revealed that, given the limited availability of feed raw material ingredients, it almost become impossible to fulfill members' demand of feed, due to that, the feed processing machine of the cooperative was not fully operational. All sample members of the cooperative replied, the difficulties that they encountered to get and buy animal feed as demanded from their cooperative; hence they are forced to buy from private feed suppliers with high cost and less quality.

**Institutional Innovation in the provision of AI service**

The other dairy input which has been supplied by the cooperative is AI service, which is currently provided by the cooperative through its own fulltime AI technician since 2003. Accordingly all sample respondents have replied that, "we have access to get mobile AI service from the cooperative." When the cooperative started AI service the payment was 2 Birr/cow, but during the survey time, the payment was 10 Birr/cow. Members of the cooperative raised the support of the cooperative to provide the service with 10 Birr as compared to private AI service providers who charged 20 Birr/cow. However, there is a problem on the quality of the service provided by the cooperative technician especially on timeliness and some members prefer to use the WoARD AI technician.

**Institutional Innovation in the provision of Animal health care service**

The cooperative was providing animal health arranging to its members by its full time veterinarian for routine and emergency services. During the survey time, the veterinarian has resigned and recruitment process was underway to fill the gap. Moreover, the cooperative has a contractual arrangement with one animal health professional for preventive vaccination of dairy animals; vaccines procure supplied from the National Veterinary Institute in Debrezeit. Members were paying Birr 1.50 per one animal for vaccination service at the time of data collection, which is much better than private service providers charged 5 Birr/animal. Results of the household survey revealed that 63.3 % of the sampled members of the cooperative which account 29.3 % of women were served by the cooperative veterinarian for clinical and delivery services, of which 56.7% of them have replied that, "we have got the services sometimes", because the cooperative did not have its own permanent professional, the rest 6.6 % have replied that, "we get the service whenever we need." On the other hand 36.7% of the sample respondents replied that, "we are getting the service from private veterinary technicians and Debrezeit Veterinary Institute, since the cooperative couldn't satisfy our demand."

**Institutional innovation towards milk and milk products marketing**

The cooperative collects milk two times a day, in the morning and evening time. One of the institutional innovations introduced by the cooperative in milk collection is the establishment of geographical based milk collection centers. Accordingly, the cooperative has increased the milk collection centers from 6 at the beginning to 14 during the survey time; where members travel 0.2 to 1 km to supply milk on foot and the average time they traveled was 15 minutes. This has reduced the distance to be traveled by a member to the previous collection center. One interesting effort by the cooperative within this milk collection is the establishment of two satellite milk collection sites which are located some 10 kilometers from Debrezeit. The milk supplied by members is tested for its hygiene using lactometer at each collection centers and through seeing, smelling and filtering. The centralized milk collection center of the cooperative undertakes processing and refrigerator as a preservation practice. Milk collection records are maintained using computers and every regular milk supplier member of the cooperative has his/her own milk collection book/card.

Members are paid every 15 days for the milk they supplied; it means that they are paid on a credit basis. Group discussion with different group members of the cooperative revealed that suppliers of the milk are happy to get their payment fortnightly, which is accumulated money to fulfill their need; to this end, 90% of the sample respondents have replied that, “The payment system of the cooperative which is undertaken two times per month is advantageous to get an accumulated money for immediate use and further investment and because of such system, we considered ourselves as if we have a monthly salary.”

The milk supplied at the central collection center is collected through truck using 50 liter plastic containers (ROTO) before transported to *Shola*, major selling point of the cooperative located 50 km from *Debrezeit*. Out of the total milk supplied by a member 10% of it will serve for cooperative strengthening purpose and this was decided by the general assembly of the cooperative at the early stage of its establishment. But, this 10 % operating cost is not reduced with increased number of milk suppliers, amount of milk and number of transport vehicles. During the group discussion, members were resentfully raising this unit cost of

providing the marketing service, but discussion made with the management committee of the cooperative revealed that it was the decision of the general assembly of the cooperative until the cooperative will get its subscribed capital of Birr 15 million.

The cooperative sells raw milk, cheese and butter to consumers, hotels, cafeterias, organizations, etc. in addition to supplying raw milk to *Shola* milk processing industry. Milk marketing data of the cooperative in 1999 E.C is presented in Appendix 2. The demand of customers for milk is met most of the times. Sometimes supply falls short of demand particularly during non fasting season. Customers have good level of satisfaction with regards to milk quality, because of strong milk control practice as compared to others such as *Mama* Milk. Customers also have good level of satisfaction with regards to quantity of milk supplied. Moreover, customers expect better quality product from the cooperative because there are times when milk is returned from *Shola*, due to quality problem. There is no any differential payment for better quality or stable supply by the cooperative.

Facilitating linkages with milk market is the other institutional innovations of *Ada'a* dairy cooperative. The marketing service was started in 2000 after four years of the cooperative establishment. The cooperative started this market linkage of selling raw milk with *Mama* Milk in *Sebeta* agro industry through a formal agreement between 2000 and 2003. However, due to unfair treatment of the agreements and even strong effort to dissolve the cooperative by Mama, the cooperative decided to stop the agreement with Mama and entered new agreement with *Shola* milk in Addis Ababa since 2004. The new market link benefit the cooperative and its members in terms of decreasing transport cost from going to *Sebeta* town and receiving stable and competitive milk price. During the four years of *Mama's* agreement the cooperative was getting constant price, whereas during the *Shola* arrangement the cooperative has got five times price adjustment in the last three years.

In the area *Mama*, Genesis farm and Lema milk are the major competitors of the cooperative in milk marketing who provided alternative market for dairy producers. These changes have resulted in decreasing the distance to travel, accurate measurement technique implementation and competition resulted in reasonable price earnings. To collect more milk the cooperative

is also inviting non members to benefit from the service and there by supply milk. But due to the competitive milk market, other competitors are paying more (a difference of 0.30-0.50 Birr for a liter of milk at the time of the survey) and non members are not interested to supply milk to the cooperative, even if there are few numbers who are supplying in an undetermined manner.

The cooperative is also establishing milk processing plant which is supposed to increase the marketing service efficiency and thereby benefit the cooperative members by increasing profit margin and milk market price. The machine is already installed and to some extent started its operation to supply its own brand pasteurized milk (*Ada'a milk*) to the market; starting from April 1, 2008, packed with 250 milliliter. The new initiatives taken by the cooperative which is different from other suppliers is that the volume of packing started from 250 milliliter for the ease access of the poor compared with others who packed with a minimum of 500 milliliter, and the marketing section of the cooperative has started to advertise the milk in Debrezeit town and Addis Ababa. During the survey time, the cooperative sold the pasteurized 0.25 liter milk with Birr 1.40 for whole-sellers and retailers and customers were bought with Birr 1.60 and Birr 2 in Debrezeit and Addis Ababa respectively. However, members are complaining for the delay in function of the processing machine and put their concern as Mama has a role for the machine delay since the cooperative will be competitive in the milk market. When the processing machine is fully operational the cooperative expects to collect 15,000 liter of milk per day and can get a gross profit of Birr 450,000.00 per month. It also intends to produce diversified milk products to satisfy diverse customers need and milk with different fat level.

Members of the cooperative have access to buy processed products (butter and cheese) from their cooperative and all sample members of the cooperative confirmed that unlike to non-members, members of the cooperative have access to buy these products on credit base especially during holidays. On the other hand the cooperative has designed coupon sell for milk and milk products by which customers can buy once and able to use the coupon until it lasts; to this end customers (especially employees of different organizations) have appreciated the system which helps them to buy the coupon once and use it for the whole month.

**Institutional Innovation towards man-power and organizational structure of the cooperative**

The board members of the cooperative were educated with diversified experience and knowledge; moreover, there are significant numbers of educated and diverse experienced staff members who were working in the office, processing plant and milk collection centers. The cooperative had 80 staff members of which 60 employed personnel and 20 daily laborers. Among these 80 staff members, 39 of them were females but the rest 41 were males; and in all milk collection centers females were playing the leading role. The cooperative has competent and reliable financial personnel team but there were lack of trained and skilled technical staff that can manipulate the newly established processing plant, give proper dairy related advisory services and undertake proper quantity and quality control of members supply.

The organizational structure of the cooperative encompasses the general assembly at the top following by two main bodies called executive committee and controlling (regulatory) committee which are accountable to the general assembly of the cooperative. It is the general manager of the cooperative who is managing the day to day activities of the cooperative and has four main departments under it: production and distribution, major input, livestock health and production and administration and finance (See Appendix 3). Each department is responsible to undertake its respective activities using the manpower found under it and the organizational structure of the cooperative leaves a room or vacancy for different posts to fulfill the entire objectives of the cooperative; but it was observed that the chain of command in decision making and principles of management is lacking between management and board of directors of the cooperative, at the same time there was no hierarchical structure in management in terms of the reporting lines, regular follow up and close supervision at the cooperative. It is the management committee of the cooperative who determined the price to be paid to members based on the market condition and feed cost; but all sample respondents replied that, “the management committee of the cooperative didn’t give us a timely response for market change; and the price that we got for one liter of milk is less than from 0.30 to 0.50 Birr from other buyers like Mama and Lema.” On the other hand the management committee

of the cooperative has the responsibility of keeping every documents and books of accounts of the cooperative, but to this end they didn't update members registration book and due to that there are some members of the cooperative who didn't fully participate in the cooperative activities.

**Institutional Innovation towards the financial and facility perspective of the cooperative**

From financial perspective the cooperative developed computer assisted/supported financial accounting system using Peachtree accounting software designed to reflect transparency and accountability along with structured and convenient financial pool system; to ease financial transactions and management. At the same time the cooperative has strong financial positions to meet its current operations (see section 4.1.6).

Existence of basic communication facilities (telephone and internet) to lead the daily business operation of the cooperative, and the current owned lands at the cooperative office, in the feed processing machine and collection centers allow further expansion of production and marketing.

**Institutional Innovation of the cooperative on development issues**

As discussed in section 2.2.1, one of the internationally accepted guiding principles of cooperatives is that, "cooperative societies have to work for the sustainable development of their communities through policies approved by their members." To this end, Ada'a dairy cooperative have started different developmental initiatives which may include, the introduction of bio-gas technology on selected sample women members of the cooperative and the cooperative financially supported HIV/AIDS clubs.

On the other hand, the cooperative also addressed gender dimension of which 47.33% of its members are women, 48.75% of the employed staffs are women and women were playing a leading role in the milk collection centers as a sales agent. Moreover, the cooperative gives prior attention to women on dairy related trainings. Separate group discussion with women

members of the cooperative revealed that, being member of the cooperative helped them to strengthen their social network with others, to get income and employment opportunities at the organization and household level. This result was proved at the time of focus group discussion with the group of women. Case study 1 presented below confirms the findings.

**Case study 1**

*In the study of women dairy producers' benefit from their cooperative, generally interesting things were observed. The case study done in Kebele 2 of Debrezeit town was confirming the result of the study.*

*At the time of focus group discussion with women members of the cooperative at center 2 milk collection center W/ro Yeshi Kassa told the following benefit that she got through the cooperative.*

*W/ro Yeshi is 45 years old, widowed and, lives in Debrezeit town, Ada'a district. W/ro Yeshi was a well known model dairy farmer in Debrezeit town. She has four crossbred dairy cows relatively with better management. W/ro Yeshi had only one crossbred cow when she joined the cooperative in 1990 E.C.; it was through time that she bought three other cows from the income she obtained in sale of milk. With regards to the benefits she got from the cooperative she explained, "The cooperative created me job opportunity to lead my life through participating in home based dairy production and buying the milk that I supplied; I lead my life and my families mainly from the income that I got from the sale of milk; moreover the cooperative provided me three times training in the last three years which helped me to undertake better dairy production and marketing. The cooperative also helped me to get AI, concentrate feed and animal health services much better than private providers in terms of quality and cost. One of my daughter is also employed in the cooperative milk collection center as a sales agent."*

### 4.2.3 Organizational Innovation

According to the World Bank (2006), organizational innovation refers to entities created to support collaborative pursuit of specified goals. Ada'a dairy cooperative has different types of external relation with a multitude of actors from governmental, non-governmental and private organizations as well as other cooperatives and dairy associations to achieve its specified objectives. The details are discussed in section 4.3.1.

On the other hand, the cooperative has developed its internal linkage with members, by which members are the major entities to support the specified goals and objectives of the cooperative. To achieve the entire objectives and goals of the cooperative, the internal communication and relation among members, executive committee and staff members of the cooperative have to be strong (Koopmans, 2006).

Group discussion with different members of the cooperative revealed that the internal communication between the management committee of the cooperative and members were poor. This is because the management committee of the cooperative didn't clearly open their door for members to follow the day to day activities of the cooperative.

On the other side results of the household survey confirmed that about 60 % of the sample respondents didn't trust the management committee of the cooperative because of their informal tie from top to bottom i.e. elected board members of the cooperative as well as staff members of the cooperative were highly tied with blood and friendship relation. According to cooperative societies proclamation number 147 (1998) in the case of Ethiopia, the term of office of the management committee shall be three years and members of the management committee shall not be elected for more than two consecutive terms. They may be dismissed at any time by the general assembly. Taking this proclamation into consideration the management committee of Ada'a dairy cooperative have stayed for 11 years against the proclamation (from 1998-2008). Monitoring such an issue is the responsibility of the general assembly of the cooperative and cooperative promotion offices at different levels; but the district cooperative office didn't undertake any measure to correct such issue. Group

discussion with key informants of the cooperative revealed that, even if the cooperative has been trying to undertake several activities, members complain on the timeliness and effectiveness of the services stating that, “we would have been better serviced if we had got better management body.” More specifically, they were raising the mismanagement in the cooperative leadership including abuses by employees by under measuring, adulteration and stealing during milk collection and transportation to Addis Ababa. The poor governance in the cooperative leadership is aggravated by lack of members’ participation in the cooperative decision making process. Similarly, Franscesconi and Ruben (2007) cited the internal corruption as an important deterring factor in the cooperative expansion.

Because of such internal differences between the two parties, many times members of the cooperative had requested the management committee to call the general assembly for new election, even if it was challenging finally they were successful and undertook democratic election on March 23, 2008 and replaced the previous board members with new once, which is composed of five members ( chair person, vice chair person, secretary and two board members) which all are accountable to the general assembly of the cooperative. Further group discussion with different male and female members of the cooperative revealed that, “it is the right time to dismiss the previous management committee of the cooperative because of their under performance.” All sample members of the cooperative were confident with the new board members, since they were elected in a democratic manner.

### 4.3 Promoting Linkages for access to services and marketing

According to Solomon and Engel (1997), linkages enable actors to exchange resources such as information, money, labor and other materials; or immaterial assets, such as power, status and goodwill. Interactions between actors and organizations are central to an effective innovation system. The purpose of this subsection is to list all actors who are working with the cooperative and its members, to provide information on how these actors are functioning in collaboration with the cooperative for bringing social or economic change and the strength and weakness of the interaction. The detailed analysis is presented into two subsections.

Section 4.3.1 deals with the different actors from public, private and NGO/CSO, and their roles and section 4.3.2 puts actors' interaction map.

### 4.3.1 Actors and their roles in marketing and dairy service delivery

Ada'a dairy cooperative has different types of relation (such as technical, financial assistance, experience sharing, banking service, input supply, marketing etc) with a multitude of actors. The cooperative is performing good in promoting market oriented dairy development through creating market link between the urban and peri urban sub systems, collaborating with other dairy associations, public organizations, NGOs, projects and donors affiliated on Market Oriented Dairy Development ( MODD) nationally, regionally and internationally to enhance dairy development. With this regard, the cooperative have had strong linkage with researchers from ILRI-DZ station, who have been advising the cooperative since its start and giving various capacity building supports. Moreover, the cooperative is member of the national and East and South Africa dairy associations. The cooperative has strong linkages with DzARC, IPMS, VOCA, SNV, LAND O'LAKES, and Genesis Farm, all envisaged MODD through partnership building strategy. These linkages are sustaining the cooperative effort to promote MODD through financial and capacity building supports.

All sample members of the cooperative replied that, they had a very limited marketing and service linkages with actors before they joined the cooperative but they got more actors after they joined the cooperative. Group discussions with the management committee and key informants' of the cooperative revealed that there are different governmental, non-governmental, private organizations, other cooperatives and dairy associations working on marketing, service provision and knowledge and information sharing in collaboration with the cooperative. Moreover, members are supplying milk to the cooperative and the cooperative provides marketing, dividend, dairy inputs and training and advisory services to its members. There was also member-to-member interaction which helped members of the cooperative to share dairy related innovations; by which the cooperative played a significant role in facilitating the interaction.

#### 4.3.1.1 Linkage of Ada'a dairy cooperative with the public sector

**Cooperative promotion offices at different levels (Federal, Regional and District)**

Group discussion with the board members of the cooperative and key informants' discussion revealed that Ada'a dairy cooperative has strong linkage with the cooperative offices established at Federal, Regional and District levels, which may include:

- The federal cooperative commission together with the government of Ethiopia created an enabling environment for the cooperative to achieve its objectives through preparing a cooperative rules, regulations and guidelines, which are consistent with the international cooperative principles; which in turn helped the cooperative in preparing its own by law and internal laws.
- The regional and district cooperative offices provided an auditing services to the cooperative.
- Supported the cooperative to get financial sources from other donors and credit institutions like from Oromiya cooperative bank through preparing project proposal and through giving letter of recommendations.
- The regional and district cooperative offices provided technical support through giving advisory services especially for the cooperative management bodies.
- The regional and district cooperative offices provided training for selected members of the cooperative and the management committee and link the cooperative with other training providers such as VOCA.

Moreover, the executive committee of the cooperative usually request technical support from the district cooperative office and provides feedback; and put their perception on the status of linkage they have with the district cooperative office as strong. On the other hand, discussion with staff members of the district cooperative office revealed, the district cooperative promotion office monitors the cooperative activities only by collecting periodical reports. It means cooperative offices found at different levels didn't provide up to date market information to the cooperative, except giving training and advisory services periodically. Additional discussion held with staff members of the district cooperative promotion office revealed that, "more attention with regards to technical support was given to farmers'

multipurpose cooperatives that are distributing fertilizer to their members; this is because multipurpose cooperatives are used to take fertilizer loan with the collateral of the regional government; due to that it is the performance of multipurpose cooperatives with respect to loan recovery that have significant impact on the evaluation of experts working at the district and regional levels."

Sample respondents were asked about the services that they got from the district cooperative office and 80 % of them, which constitute 45 % of men and 35 % of women, replied that they didn't get any service from the district cooperative office; but the rest 20 % replied that they got training and advisory services through the district cooperative office.

**Agriculture and Rural Development offices at different levels (Federal, Regional and District)**

Group discussion with the cooperative management committee, key informants discussion and results of the household survey revealed that members of the cooperative have strong linkage with the agricultural offices especially with the district once. To this end 30 % of the sample respondents which constitute 12 % of women confirmed that, they had good relation with the district agricultural office even before they joined Ada'a dairy cooperative; with respects to provision of training, advisory, AI and animal health services. The rest 70 % which constitute 35.33 % of women have replied, "we got support from the district agricultural office after we joined the cooperative." According to a participatory group discussions held with the management committee of the cooperative and key informants' the linkage of Ada'a dairy cooperative with Agriculture and Rural Development offices was focused on the following areas:

- Staff of the district agricultural office, especially DAs provided dairy related advisory services to members of the cooperative who are living in the peri-urban areas and members of the cooperative who are living in the town were also getting advisory services by going to the district agricultural office.

- The regional Agricultural and Rural development bureau assisted the cooperative materially through the provision of semen for the AI center of the cooperative and boat shoe for technicians who are working on milk processing.
- The regional and district agriculture and rural development offices assisted the cooperative through providing information to participate on an exhibition; and because of that information the cooperative got a national award in 2007.

**Ada'a Woreda Administration and Municipality of Debrezeit town**

Discussion with the management committee of the cooperative revealed that Ada'a woreda administration and Debrezeit town municipality had helped the cooperative by giving land for the establishment of processing machine, office construction and milk collection centers. Additionally these two bodies have played a significant role to advertise the activities of the cooperative in any forum they participated. The executive committee of the cooperative put their perception on the status of the linkage they have with Ada'a woreda administration and Debrezeit town municipality as strong.

**Semen and Liquid Nitrogen suppliers**

Kaliti and Asella AI centers were the main bodies that supplied semen and liquid nitrogen to the cooperative. But the board members of the cooperative put their perception on the status of linkage they have with Kaliti as strong, but that of Asella as weak, due to timeliness of getting the services.

**4.3.1.2 Linkage of Ada'a dairy cooperative with Research Organizations**

**Debrezeit Agricultural Research Center**

Results of the household survey revealed that small number of the sample respondents (18 %) had linkage with Debrezeit research center before they joined the cooperative, and 25 % of the sample respondents replied that they are acquainted with the center after they joined the dairy cooperative. Because of the good cooperation created between the cooperative and the

research center sample members again replied that, “we got access to training, advisory services, fodder seed, visiting, crossbred cows and heifers from Debrezeit research center through the cooperative.” Group discussion with women members of the cooperative revealed that it is after they joined the dairy cooperative that they got crossbred cows and heifers on sale from Debrezeit research center. Participatory group discussion with the management committee of the cooperative confirmed that currently they have good linkage with the center especially on training and technical support on milk quality testing; and put their perception on the status of the linkage they have as strong.

**Cooperative relation with ILRI/IPMS project**

Group discussion with the executive committee of the cooperative, staff of IPMS project in Debrezeit and key informants discussion confirmed that IPMS is closely working with the cooperative towards improving the milk quality and gender relation in the society. Accordingly, IPMS is supporting the cooperative in providing training on improved dairy husbandry and distribute aluminum cans to members for milk handling through credit loan secured from the same. As part of gender equality initiatives, IPMS supported the cooperative through computer facilities and trainings so that female headed members can engage in secretarial services. Moreover, IPMS is supporting the cooperative effort in establishing dairy training center through audiovisual material (such as computers, printer and LCD) support. IPMS also provided a revolving credit; provide market information and played a significant role in project preparation for the cooperative to win a UN award accounted $ 15,000.

Independent group discussion with members of the cooperative who lived in peri-urban areas confirmed that it was the IPMS project who initiated them to join Ada’a dairy cooperative, they also replied that IPMS supported them in giving bull service using one model farmer. On the other hand 4 % of the sample respondents replied that, “we got crossbred cows on sale from ILRI.” Results of household survey revealed that 85 % of the respondent members of the cooperative are directly or indirectly have contact with ILRI/IPMS project especially on training. Board of directors of the cooperative put their perception on the status of the linkage they have with ILRI/IPMS as strong.

#### 4.3.1.3 Linkage of Ada'a dairy cooperative with Non Governmental Organizations.

**Cooperative relation with LAND O'LAKES**

Results of group discussion with the management committee of the cooperative revealed that, LAND O'LAKES supported the cooperative in giving training and advisory services to the management bodies and staff members of the cooperative, helped representatives of the cooperative to participate on international workshop and advice the cooperative to establish a strong dairy association for common voices. Board of directors of the cooperative put their perception on the status of linkage they have with LAND O'LAKES as strong.

**Cooperative relation with SNV-BOAM**

Group discussions with the management committee and key informants of the cooperative revealed that, SNV-BOAM was providing training and advisory services to members of the cooperative, board of directors and employees. Moreover, SNV-BOAM supported the cooperative by donating dairy equipments as aluminum milk cans. Board of directors of the cooperative put their perception on the status of the linkage they have with SNV-BOAM as strong.

**Cooperative relation with VOCA Ethiopia**

The cooperation of VOCA Ethiopia and Ada'a dairy cooperative was in terms of providing training and advisory services especially for board members and technical staff bodies at the milk collection centers. Moreover, VOCA assisted the cooperative for the preparation of feasibility documents which helped the cooperative to be shareholder of Oromiya cooperative bank. Board of directors of the cooperative put their perception on the status of linkage they have with VOCA Ethiopia as strong.

**Cooperative relation with Eyerusalem orphanage center**

The linkage between Eyerusalem orphanage center and Ada'a dairy cooperative was in terms of training provision on dairy management and marketing. About 14% of the sample respondents which constitute 8% of women replied that, "we got training from this

organization through the cooperative within the last two years." Board of directors of the cooperative put their perception on the status of linkage they have with Eyerusalem orphanage center as medium.

#### 4.3.1.4 Linkage of Ada'a dairy cooperative with Milk customers

Group discussions with the executive committee of the cooperative and key informants' revealed that, there are different milk, butter and cheese buyers from the cooperative. These customers of the cooperative could include Shola, Mama, Oxford, Hotels, Genesis farm, Management institute, RATSON, INOVA, Compation, Family milk, Air force, individual customers, members of the cooperative and Lema farm. Members are the major milk suppliers of the cooperative and there are also non members who supplied milk in small quantity. Among these customers at the time of survey, Shola played a significant role in purchasing milk from the cooperative, together with that, Shola supported the cooperative in giving technical advice especially on milk quality, handling and preservation; moreover, Shola supplied materials to the cooperative on sale such as alcoholmeter which is used to measure the alcohol contents of the milk. On the other hand Genesis farm sold different materials for the cooperative on credit base and supported the cooperative technically like on maintenance work. Board of directors of the cooperative put their perception on the status of linkage they have with Shola, Genesis, Oxford and RATSON as strong, but medium with Air force and weak with Mama, Hotels, Management institute, INOVA, Lema, Family milk and Compation.

#### 4.3.1.5 Linkage of Ada'a dairy cooperative with Credit Organizations

**a) Cooperative relation with Oromiya Cooperative Bank**

Ada'a dairy cooperative is one of the primary cooperative who bought share during the establishment of Oromiya cooperative bank in 2003. The bank also provided credit for the cooperative. Data obtained from household survey revealed that 4.7 % of the sample respondents had got credit from the bank for dairy related activities in 1999 E.c. Board of directors of the cooperative put their perception on the status of linkage they have with Oromiya cooperative bank as strong.

**b) Cooperative relation with Commercial Bank of Ethiopia**

All the saving and current accounts of the cooperative are kept in commercial bank of Ethiopia, but there was no any credit relation held between the cooperative and the bank. Discussion with the executive committee of the cooperative revealed that, commercial bank throughout the country are giving credit only for multipurpose cooperatives especially for fertilizer loan, since the government takes a line share of collateral for such cooperatives. Board of directors of the cooperative put their perception on the status of linkage they have with commercial bank as weak.

**c) Cooperative relation with RABU Bank (UK)**

Discussion with the executive committee of the cooperative revealed, the cooperative has strong linkage with RABU bank found in United Kingdom. The linkages were in terms of giving donation financially and materially. The bank gave donation for the purchase of animal feed especially molasses which may extend for five years. Moreover, the bank promised to support the cooperative materially (to purchase truck, milk van and processing equipments) with an estimated cost Birr 585,000.

**4.3.1.6 Linkage of Ada'a dairy cooperative with Private dairy input suppliers**

Private organizations, institutions and individuals providing dairy input services in collaboration with the cooperative include: feed suppliers, veterinary drug shops, full time and part time veterinarians and assistant veterinarians.

**a) Cooperative relation with private feed suppliers**

There are different private feed suppliers working in collaboration with Ada'a dairy cooperative; including East Africa flour factory, Awash flour factory, Alemu hay supplier and exporter. Discussion with key informants of the cooperative revealed that, currently the feed processing machine of the cooperative didn't fulfill the demand of members of the cooperative, due to that it is the private sector who played a significant role in the supply of

feed, but their prices are higher than the cooperative i.e. the cooperative was selling for Birr 173.00 for a quintal of concentrate feed compared to private feed suppliers selling at Birr 230-250 per quintal during the survey time. All sample respondent members of the cooperative replied that it is the private sector that fulfilled the gap of demand and supply occurred in the cooperative. The cooperative also is buying feed ingredients from these sectors. Board of directors of the cooperative put their perception on the status of linkage they have with Awash flour factory as strong, medium with East Africa flour factory and weak with Alemu hay supplier and exporter.

**b) Cooperative relation with Private Animal Health Service providers**

Group discussion with the executive committee of the cooperative revealed that, at the time of the survey the cooperative had no its own veterinarian since the previous veterinarian has resigned his job and recruitment process was under way. To fulfill this gap the cooperative had a contractual agreement with one animal health professional for preventive vaccination of dairy animals. Further discussion revealed that the linkage of the cooperative with Debrezeit Veterinary Institute was weak, except on sudden medication activities, but 8 % of the sample respondents had got animal health services from the institute during the last three years. In addition to this all sample respondent members of the cooperative replied that it is the private sector that fulfilled the gap of demand and supply occurred in the cooperative in terms of animal health service provision. Accordingly, board members of the cooperative put their perception on the status of the linkage they have with the private animal health professional as strong.

#### 4.3.1.7 Linkage of Ada'a dairy cooperative with other dairy cooperatives

The cooperative has cooperation with other dairy cooperatives (Lume, Selale, Sebeta, Jima and Akaki). The linkage among them was only in experience sharing on dairy management and marketing. Board of directors of the cooperative put their perception on the status of linkage they have with all these dairy cooperatives as weak.

#### 4.3.1.8 Linkage of Ada'a dairy cooperative with Professional Associations

Ada'a dairy cooperative has a two way collaboration with professional associations namely Ethiopian dairy association and East and South Africa dairy associations which aimed at influencing the national and regional policies. The associations are trying to lobby government policy to give due attention for the dairy sector. Discussion with the executive committee of the cooperative revealed, "even if the government of Ethiopia has followed a market oriented production system in the agricultural sector, the attention given to different enterprises in terms of market information, credit and monitoring activities are not uniform from enterprise to enterprise and the type of activities undertaken. As an example they raised, as compared to dairy farm, floriculture farm has got priority attention by government bodies at the same time the attention given to cooperatives which undertake fertilizer distribution and grain/coffee marketing activities in terms of information and credit provision is much higher than the attention given to the dairy cooperatives." So according to their explanation it is to lobby government policy that the cooperative becomes member of these professional associations with the initiation of LAND O'LAKES. The management committee of the cooperative put their perception on the status of linkage they have with these dairy associations as strong.

### 4.3.2 Actors Interaction Map

Actors interaction is mapped using actor linkage map which is ego-based map. By using ego based maps one can look at individual actors and see who they link up with. Following Puskur (2007) the actor linkage maps are particularly useful when focusing on one actor and his or her linkages with other groups. Accordingly, the cooperative was placed in the center and key informants and executive committee of the cooperative were asked to identify key actors they have linkage and draw the map (Figure 5). Moreover, members of the cooperative were undertaking a participatory actor's linkage map and identified those actors who supported them before and after membership (Figures 3 and 4). This would help us to understand the changes or dynamics of the system. Participant members of the cooperative, key informants and executive committee of the cooperative were asked about their perception to distinguish whether the linkages were strong or weak; which was represented using strong and dotted

lines. The weak interaction among actors radiate from the actors' habit and practice of poor knowledge and information sharing; and missing actor/role that are critical for coordinating the service delivery system (Hall *et al*., 2004. These weak interactions call for strong efforts to strengthen the capacities of relevant actors for interacting and learning.

**Actors Linkage Map (before cooperative membership)**

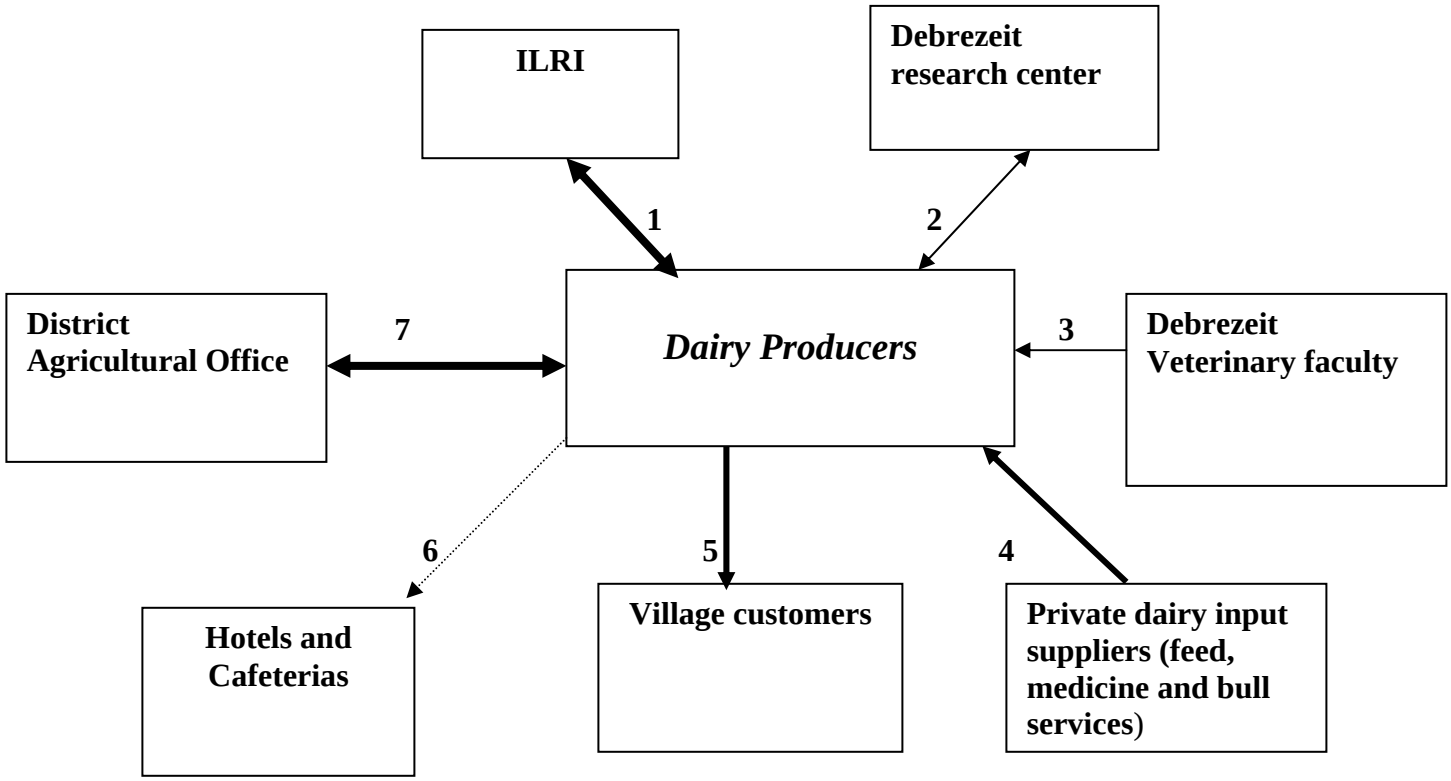



Figure 3. Actors Linkage Map using dairy producers.

Source: Focus group discussion, 2008.

**Linkage description**

**1** Provision of training, advisory services and crossbred cows and the dairy producers were giving feedback,

**2** Provision of training and advisory services and producers were giving feedback,

**3** Provision of Animal health services,

**4** Provision of feed, veterinary and bull services,

**5** Supply of milk and the village customers were the major milk buyers,

**6** Sale of milk,

**7** Provision of AI, training and advisory services and producers were giving feedback.

As indicated in figure 3 above before joining the cooperative, dairy producers had linkages with ILRI, Debrezeit Research center, district agricultural office, Debrezeit veterinary faculty, private dairy input suppliers, individual milk buyers and hotels and cafeterias for the purpose of marketing, dairy input provision and capacity building services. The dairy producers were also put the status of the linkage they had with the district agricultural office and IlRI as the most important linkage, strong with village customers and private dairy input suppliers, medium with Debrezeit research center and veterinary faculty as well as weak with hotels and cafeterias. Women dairy producers put the linkage they had with the district agricultural office, ILRI and village customers as the most important from the others.

**Actors Linkage Map (after cooperative membership)**

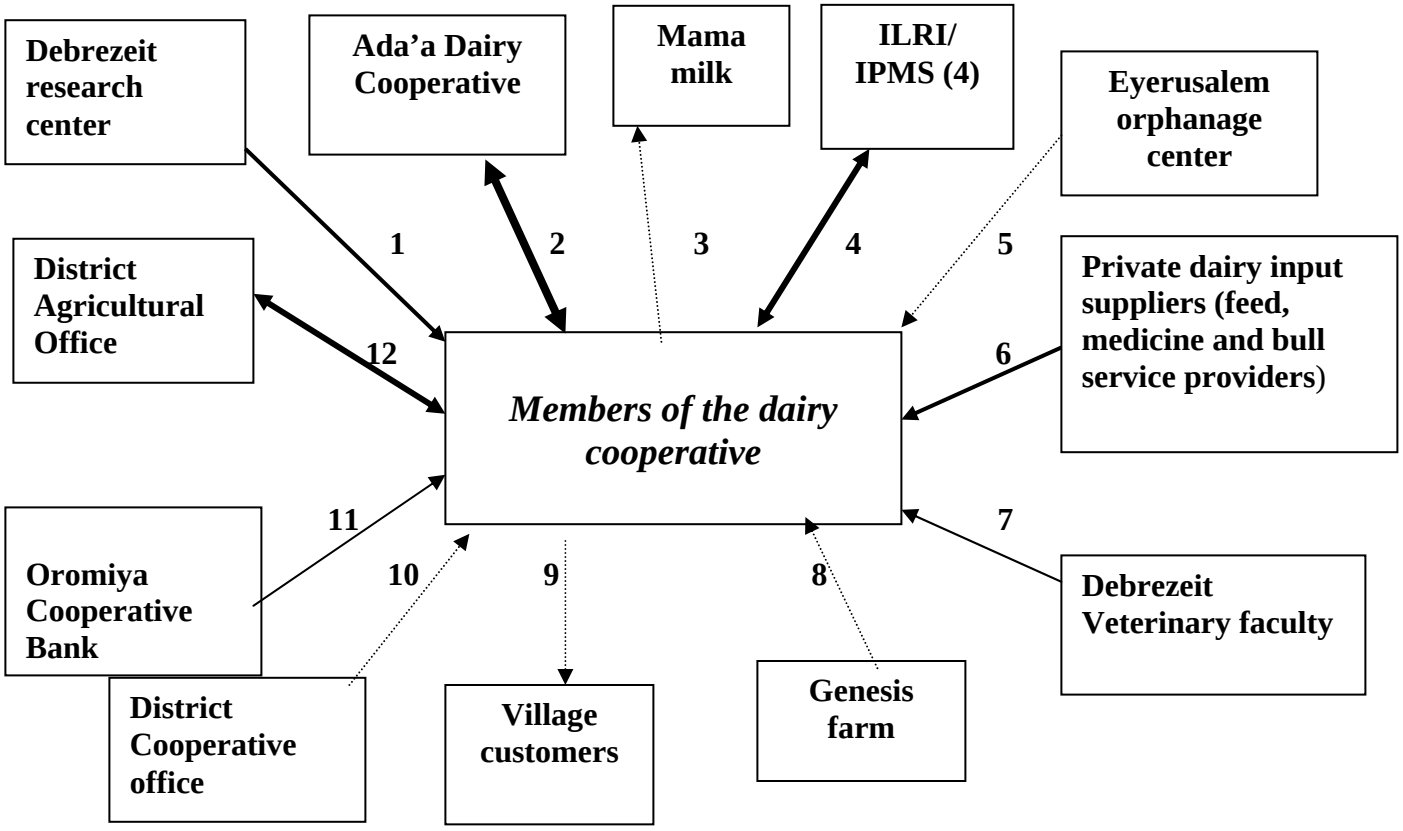



Figure 4. Actors Linkage Map based on selected members of the Cooperative.

Source: Focus group discussion, 2008.

**Linkage description**

**1** Training, advisory service, provision of crossbred cows and fodder seed,

**2** Marketing services (buying milk from members and sales processed items to members), provision of dairy inputs (AI, feed, animal health services, fodder seed), creates a forum for member to member extension, dividend to members, and provision of training and advisory services. On the other side members of the cooperative are supplying milk to the cooperative, buy processed items and dairy inputs, vote on a meeting and share the profit/loss of the cooperative,

**3** Some members' sale some amount of their milk when there is price difference,

**4** Provision of training, advisory, crossbred cows, AI and bull services and members are giving feedback,

**5** Provision of training,

**6** Provision of feed, animal health and bull services,

**7** Provision of animal health services,

**8** Visit program to members,

**9** Some members' sales some amount of their milk for the sake of social relation,

**10** Training and advisory services,

**11** Provision of credit for some members,

**12** Provision of AI, training and advisory, veterinary medicine and vaccination services and members residing in the peri-urban are giving feedback to DAs.

As indicated in figure 4, members of the cooperative have acquainted with additional actors like Ada'a dairy cooperative, Genesis farm, the district cooperative office, Oromiya cooperative bank, Eyerusalem orphanage center and Mama Milk which all are undertaking market oriented dairy development activities, after they joined the cooperative. Members of the cooperative were also put the status of linkage they have with Ada'a dairy cooperative, the district agricultural office and IlRI as the most important linkage; strong with private dairy input suppliers and Debrezeit research center; medium with Oromiya cooperative bank and Debrezeit veterinary faculty as well as weak with the district cooperative office, Mama milk, Eyerusalem orphanage center, village customers and Genesis farm. Women members of the cooperative put the linkage they have with their cooperative, district agricultural office, ILRI and Debrezeit research center as the most important linkages from the others.

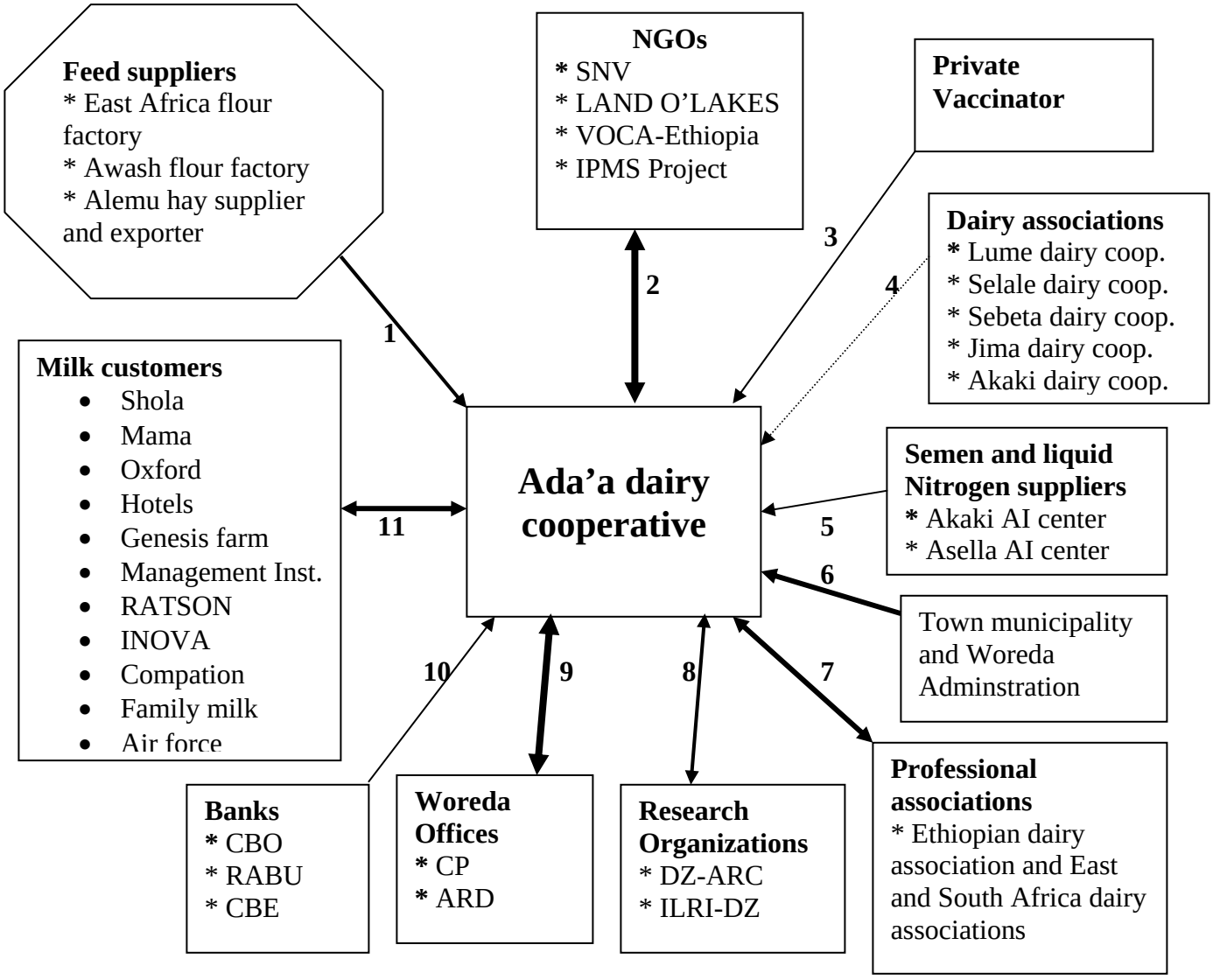



Figure 5. Actors Linkage Map using the management committee and key informants.

Source. Focus group discussion, 2008.

**Linkage description**

**1** Feed business,

**2** Capacity building and financial support and the cooperative boards give feedback,

**3** Vaccination service,

**4** Experience sharing relation,

**5** Supplying of Semen,

**6** Support in giving land for the cooperative,

**7** Experience sharing relation,

**8** Technical assistance and the cooperative boards also give feedback on certain activity,

**9** Technical assistance and the cooperative boards also give feedback on certain activity,

**10** Bank services,

**11** Milk and milk products marketing.

As indicated in figure 5, members of the management committee and key informants put the linkage of the cooperative as strong with NGOs, research organizations, government offices, professional associations, the woreda administration office, Debrezeit town municipality, Oromiya cooperative and RABU banks, Awash flour factory, private vaccinator, Kaliti semen center, Shola, Genesis and Oxford. On the other hand they put medium for the linkage of the cooperative with East Africa flour factory and Air force. Finally they put weak linkage of the cooperative with commercial bank of Ethiopia, Alemu hay supplier and exporter, Asella semen center, milk customers as Mama, Hotels, Management institute, INOVA, Compation, Lema, family milk and other dairy cooperatives.

Moreover, results of focused group discussion with the management committee and key informants of the cooperative revealed that the linkage held between the cooperative and other bodies are considered as partnership for joint problem solving, network for facilitating information flow, advocacy linkages to inform and influence policy, alliance for collaborating in marketing products and linkages to supply input and out put markets. But there were no written rules and regulations which described the role and responsibilities of each actor (public, private, NGOs and CSOs) to facilitate effective linkage with the cooperative and there were no strong regular based meetings held between the cooperative and these actors.

### 4.4 The role of the cooperative in knowledge and information sharing

Linkages among actors and the related linkage mechanisms are a quite significant part of a knowledge and information system: they show how actors communicate and work together (Solomon and Engel, 1997).

The cooperative has been giving continuous training on improved dairy husbandry (milk processing, hygiene, handling and quality in milk processing, feeding and feed formulation, on farm forage, animals waste management, small scale silage making, breed improvement and animal health care ) in collaboration with ILRI DZ, DZ-ARC, SNV, LAND O'LAKES, district agricultural office, Eyerusalem orphanage center and IPMS. Moreover, training was organized in collaboration with VOCA-Ethiopia on cooperative management and record keeping. Together with the training the cooperative is giving advisory services especially using technical staff working at the milk collection center and by facilitating member to member extension. The cooperative was used training and provision of advisory services as a means to share knowledge and information in dairy innovation.

#### 4.4.1 The role of the cooperative in providing market oriented training to members

Group discussions with different group members of the cooperative and results of the household survey revealed that the cooperative played a significant role to share dairy related information to its members. About 55 % of the sample respondent members of the cooperative replied that they have access to training through the cooperative for the last three years. According to their response the district agricultural office, the dairy cooperative, Debrezeit research center, IPMS project, SNV-BOAM, LAND O'LAKES and Eyerusalem orphanage center were playing a significant role to provide the training that ranges from a minimum of three and a maximum of ten days. The contents of the training were on the health care of dairy animals and calves, proper ways of milking and hygiene, proper ways of feeding , milk handling and transportation, use and production of bio-gas from animal waste, sign of dairy cows readiness for insemination and dairy marketing.

Among the 55 % sample respondents who participated on the training, 35 % of them were women, this is to encourage women because of their responsibilities with respect to caring, feeding and watering dairy animals and even selling of milk. Concerning to training evaluation, all respondents replied the importance of the training to change their mind-set to participate actively on dairy business; but they claimed on the aspects of the training which were concentrated on theoretical aspects rather than practical issues. The rest (45%) of the sample respondent members of the cooperative replied that, “we didn’t get the chance of training for the last three years.” But group discussion with the executive committee of the cooperative confirmed that there are some members of the cooperative who are not interested to participate on training because of their personal reasons.

Concerning to training given to the executive committee and technical staff of the cooperative the district cooperative office, SNV-BOAM, LAND O’LAKES, VOCA-Ethiopia, ILRI/IPMS and Debrezeit research center were playing a significant role on areas of marketing, dairy record keeping, milk quality testing, cooperative management, planning a cooperative activities, selection of appropriate breeds for milk production, ways of preparing concentrate feed and the use of AI and animal health care services.

### 4.4.2 The role of the cooperative in providing Advisory services

One of the mechanisms used by the cooperative in order to share dairy related information is through providing advisory services. The cooperative provided advisory services especially on dairy production and marketing in collaboration with the district agricultural office, ILRI/IPMS, Debrezeit research center, SNV and the district cooperative office. Sample respondents were asked about their access to advisory services, and all of them from both sexes have replied that, “we have access to advisory services from the cooperative, district agricultural office and NGOs working in the area.” About 75% of the sample respondents residing in the town replied that it was after they become member of the cooperative that they got dairy related training and advisory services. Most of the sample respondents (85.33 %) have got advisory services using innovative members of the cooperative, going to the

cooperative office and nearby milk collection centers: when they sale milk and buy processed products in the last three years (Table 4), but the rest got the services from the district agricultural office (8%), and NGOs working in the area (7%) and Debrezeit research center (2%).

Table 4. Agents/ organizations provided advisory services

| No | Organization/ Agents | Number | Percent |
|---|---|---|---|
| 1 | Ada'a dairy cooperative using innovative members and employees in the office and milk collection centers | 128 | 85.33 |
| 2 | Staffs of the district agricultural office ( DAs) | 12 | 8 |
| 3 | NGOs ( ILRI and SNV) | 7 | 4.67 |
| 4 | Debrezeit research center | 3 | 2 |
| | Total | 150 | 100 |

Source: Own survey data, 2008.

As indicated in Table 4, most respondents (85.33%) which constitute 40% of women and 45.33% of men replied, they got advisory services using innovative members and employees working in the office of the cooperative and milk collection centers. On the other hand those members of the cooperative who were residing in the peri-urban areas replied they got advisory services from DAs working with them and few members of the cooperative were replied their access to get the services from ILRI/ IPMS, SNV and Debrezeit research center.

Respondents were also asked about the major dairy production and marketing related advisory services that they got through the providers, accordingly health care of dairy animals, milk hygiene, feeding, concepts of milk marketing, importance of AI, uses of crossbred cows, waste management, type of equipments used for milk handling and transportation were mentioned during household survey and group discussions.

Discussion with the executive committee of the cooperative revealed that organizations as SNV-BOAM, ILRI/IPMS, LAND O'LAKES, VOCA, the district cooperative and agricultural offices were the main actors in providing advisory services for elected cooperative bodies and staff members of the cooperative; especially on areas of marketing, dairy record keeping, milk quality testing, cooperative management, selection of appropriate breeds for milk production, ways of preparing concentrate feed and the use of AI and animal health care services. The majority of the sample respondents (85.33%) who have got advisory services through the cooperative were asked to evaluate Ada'a dairy cooperative about its advisory services, with respect to timely giving the services, relevance of the services, monitoring its feed back, and identifying the right targets, Table 5 shows the result.

Table 5. Evaluation of Ada'a dairy cooperative about its advisory services.

| Evaluation | Excellent | | Very good | | good | | poor | | Very poor | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % | Number | % | Number | % |
| Timeliness | - | - | 10 | 7.81 | 110 | 85.94 | 8 | 6.25 | - | - |
| Relevance | 4 | 3.13 | 10 | 7.81 | 104 | 81.25 | 9 | 7.03 | 1 | 0.78 |
| Feedback | - | - | 1 | 0.78 | 94 | 73.44 | 20 | 15.63 | 13 | 10.16 |
| Targeting | 5 | 3.91 | 15 | 11.72 | 103 | 80.47 | 5 | 3.91 | - | - |

Source: Own survey data, 2008.

As indicated in Table 5, most respondents (95.94%) which account 35.94% of women evaluated the timeliness of advisory services provided by the cooperative as very good and good; they further explained the ease access of getting the service when need arises from innovative members, employees of the cooperative in the office and milk collection centers. On the other hand 92.19% of the respondents which account 46.19% of women evaluated the relevance of the service as excellent, very good and good; but 7.81% of the respondents evaluated the relevance of the service as poor and very poor. Concerning to monitoring the feedback of the advisory services, 74.22% of the respondents which constitute 40% of women evaluated as very good and good; but the rest 25.78% evaluated as poor and very poor. About 96.10% of the respondents which constitute 41.10% of women evaluated the cooperative about its advisory service with respect to identifying the right target as excellent, very good and good.

### 4.4.3 Members access to new knowledge and information from the cooperative

Group discussion with different group members of the cooperative and results of the household survey revealed that members of the cooperative have got new knowledge and information with related to dairy technologies, dairy marketing and changing in their attitude and culture; which all are discussed in the subsequent parts.

**Related to dairy technologies**

All sample respondent members of the cooperative replied that the information that they got on dairy technologies through the cooperative which may include: the use and importance of AI, the importance of crossbred cows towards increasing milk yield, the need for animal health care, quality milk production and milking, the use of concentrate feed, the use of aluminum can for milk handling and the possibility of getting quality processed products through the cooperative have changed their mind-set to apply and use dairy technologies and products. Because of the knowledge and information shared by the cooperative it is hardly to get a member, who didn't know the advantages of crossbred cows and the importance of AI, animal health care and concentrate feed. Separate group discussion with women members of the cooperative revealed that it is after they become members of the cooperative that they got more dairy related information (milking, health care, milk handling, the use of AI, and concentrate feed) and started to apply in their home.

**Related to changing in attitude and culture**

Results of the household survey and key informants discussion revealed that, the cooperative have played a significant role in changing the attitudes of members towards dairy production and marketing. About 41.4 % of the respondent members which constitute 22.4% of women replied that they started to give value for milk and started to sale milk in an open market after they joined the cooperative. They further replied, before the cooperative, "we were producing milk mostly for home consumption but now we are producing milk mainly for the market i.e. the cooperative helped us in changing our mind to relate dairy production with market." Moreover, 36 % of the respondent members which constitute 17% of women confirmed that,

“we started to think about dairy as a business and income source after we joined the cooperative.”

**Uses of income from dairy**

Cooperative membership increases incomes and savings. The relatively stable income from dairy marketing via the cooperatives helped members to specialize in dairy. Central collection and processing of milk increased efficiency, and less milk is wasted. Through the cooperative, supply is more secure and quality can be better controlled (Beekman, 2007).

With additional income obtained through the cooperative, more children are educated, there is increased consumption of consumer goods (such as clothing, household furniture, medicine, and radios), improvement to dwellings, better nutrition, more labor hired, increased purchase of on-farm equipment and livestock, increased crop production, and more off-farm activities developed ( ACDI/ VOCA, 2005). Respondents were asked about the change that they observe in their life from the income they got through the cooperative. Accordingly, 85 % of the sample respondents which constitute 41.33 % of women and 43.67 % of men replied, the income they obtained from the sale of milk helped them to fulfill their household expenses and to teach their children; 5.3 % of them which constitutes 3 % of women replied, they lead the life of their families from the sole income they got from the sale of milk. About 3 % of the respondents replied that the income obtained from the cooperative helped them to undertake further off-farm activities as grain milling and horse cart services. The rest 6.7 % of the sample respondents which constitutes 3 % of women replied they further able to buy dairy cows, milk equipments, improved their shelter, as well as hiring labor from the income obtained in sale of milk.

### 4.5 Perception of members on the actual benefit from the cooperative

Sample respondent members of the cooperative were asked about their perception on the actual benefit that they got from their cooperative and the results are indicated in Table 6.

Table 6. Perceived actual benefits of members from the dairy cooperative

| No | Benefits | Strongly agree | | Agree | | Disagree | | Strongly disagree | | $\chi^2$ | P |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | % | No. | % | No. | % | No. | % | | |
| 1 | Better access to outside support services | 10 | 6.70 | 80 | 53.33 | 50 | 33.33 | 10 | 6.7 | 14.298*** | 0.003 |
| 2 | Better access to improved dairy technology | 19 | 12.67 | 96 | 64.00 | 26 | 17.33 | 9 | 6.0 | 1.982 | 0.576 |
| 3 | Better access to dairy inputs at reasonable price | 30 | 20.00 | 70 | 46.67 | 40 | 26.67 | 10 | 6.7 | 1.688 | 0.430 |
| 4 | Better access to market | 24 | 16.00 | 122 | 81.30 | 4 | 2.70 | - | - | 1.109 | 0.574 |
| 5 | Better access to social support services | 16 | 10.70 | 129 | 86.00 | 4 | 2.70 | 1 | 0.7 | 6.851 * | 0.077 |
| 6 | Acquired knowledge and skills in improved dairy management | 12 | 8.00 | 120 | 80.00 | 17 | 11.33 | 1 | 0.7 | 3.956 | 0.266 |
| 7 | Acquired business skills | 6 | 4.00 | 91 | 60.70 | 49 | 32.70 | 4 | 2.7 | 7.170 * | 0.067 |
| 8 | More income since joining the cooperative | 25 | 16.67 | 96 | 64.00 | 23 | 15.33 | 6 | 4.0 | 0.172 | 0.982 |
| 9 | More saving since joining the cooperative | 5 | 3.30 | 78 | 52.00 | 64 | 42.70 | 3 | 2.0 | 3.495 | 0.321 |
| 10 | More consumption of food since joining the cooperative | 7 | 4.70 | 83 | 55.30 | 57 | 38.00 | 3 | 2.0 | 4.480 | 0.214 |

Source: Own survey data, 2008.

Note: ***, * significant at 1% and 10 %, respectively.

Based on the results indicated in Table 6 above, 60.03 % of the sample respondents which constitute 28% of women were perceived as strongly agree and agree in getting better access to outside support services through their cooperative, but the rest 39.97% of the respondents were disagree and strongly disagree on getting better access to outside support services through their cooperative. About 83 % of the sample respondents which constitutes 39 % of women were perceived strongly agree and agree on better access to improved dairy technologies through the cooperative, but the rest 17 % (8% of women) were disagree and strongly disagree on better access to improved dairy technologies. About 66.67 % of the sample respondents which constitute 34.67 % of women were perceived strongly agree and agree on better access to dairy inputs at reasonable price through their cooperative, but the rest 33.33 % ( 12.66 of women) were disagree and strongly disagree on better access to dairy inputs.

Almost all respondents (97.33 %) which constitutes 47.33 % of women were perceived strongly agree and agree on better access to market (selling and buying), but the rest 2.7 % were disagree and strongly disagree on better access to market. A significant number of the sample respondents (96.7%) which constitute 46.33 % of women were perceived strongly agree and agree on better access to social support services during time of crisis but the rest 3.3 % were disagree and strongly disagree on better access to social support services. Again a significant number of the sample respondents ( 88 %) which constitute 45 % of women were perceived strongly agree and agree on acquiring knowledge and skills on improved dairy management through their cooperative, but the rest 12 % ( 2.33 % of women) were disagree and strongly disagree on acquiring knowledge and skills on improved dairy management.

About 64.7 % of the sample respondents which constitute 29.33 % of women were perceived strongly agree and agree on acquiring business skills but the rest 35.3 % were disagree and strongly disagree on acquiring business skills. On the other hand 80.67 % of the sample respondents which constitute 40.33 % of women were perceived strongly agree and agree on getting more income since joining the cooperative, but the rest 19.33 % ( 7 % of women) were disagree and strongly disagree on getting more income since joining the cooperative.

More than half of the sample respondents (55.3 %) which constitutes 26 % of women were perceived strongly agree and agree on improving their savings since joining the cooperative but the rest 44.7 % ( 21.33% of women) were disagree and strongly disagree on improving of their savings since joining the cooperative. Finally about 60 % of the sample respondents which constitute 32% of women were perceived strongly agree and agree on the improvement of their consumption since joining the cooperative but the rest 40% ( 15.33 % of women) were disagree and strongly disagree on the improvement of their consumption since joining the cooperative.

Statistical test using chi-square indicated that there is a significant difference in perception on better access to outside support services after joining the cooperative between male and female members of the cooperative at 1 % significant level. Moreover, perception on better access to social support services and acquired business skills are significant at 10 % significant level.

### 4.6 SWOT Analysis

Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis summarizes the contributions of the dairy cooperative in stimulating technological, institutional and organizational innovations; the performance of the cooperative in promoting linkages for access to services and marketing and the role of the cooperative in enhancing knowledge and information sharing and the possibilities for future contributions and the need for improvement. The strength and weaknesses of the cooperative was put according to group discussion held with selected female and male members of the cooperative (Table 7). Moreover, SWOT analysis of the cooperative was put following group discussions with the executive committee of the cooperative and key informants: milk buyers, selected members and other partners of the cooperative (Table 8).

Table 7. Strength and weaknesses of the cooperative (by members of the cooperative)

| **Strength** | **Weaknesses** |
|---|---|
| *Cooperative membership encourages members to market their milk and help them to get sustainable market. | * Shortage of manpower (only one technician) in the provision of AI service by the cooperative. |
| *Milk processing through the cooperative is more efficient, less milk is wasted and high quality dairy products are becoming better marketable and available to everyone. | * Lack of undertaking a timely adjustment on the price of milk as compared to other private competitors. |
| * Through the cooperative, members have more access to knowledge about marketing and innovations in the dairy sector. | *Poor internal communication and mutual trust between management bodies and members. |
| * Significant numbers of women (47.33%) are empowered to participate in the cooperative, and the cooperative gives priority in training and employment for women. Moreover, women are getting income from the sale of milk which further enhanced their savings and investment. | * Unable to provide concentrate feed according to the demand of members and the under-capacity of the feed processing machine. |
| *The cooperative established geographical based milk collection centers and sites for the ease access of members to supply milk. | * Unable to start operations timely by the management committee of the cooperative (example, the delay in function of the milk processing machine). |

Table 7 continued….

| **Strength** | **Weaknesses** |
|---|---|
| *The cooperative provides mobile AI, concentrate feed using its feed processing machine and animal health services. | *Inadequacy in providing animal health services. |
| *The existence of the newly established processing machine encourages members to supply more milk to the cooperative. | * Unable to give equal chance of training and employment opportunities. |
| * The fortnight based milk payment system of the cooperative helped members to get accumulated money for further investment. | *All training provided through the cooperative are theoretical oriented rather than practical based. |
| * The linkage of the cooperative with different organizations working on dairy marketing and service provision has enhanced to undertake MODD activities. | * Members have no clear information about the financial status and the progress of their cooperative. |
| * The presence of the cooperative helped to undertake farmer to farmer extension in dairy production and marketing. | * The cooperative still takes 10 % of members supply as a norm which was decided at the earl stage of its establishment, moreover members didn't get accurate measure for the milk they supplied. |

Source: Group discussion result, 2008.

Table 8. SWOT analysis (by the executive committee and key informants)

| **Strength** | **Weaknesses** | **Opportunities** | **Threats** |
|---|---|---|---|
| ***From Finance perspective*** | ***From Finance perspective*** | ***From customers and producers need.*** | ***Social*** |
| *Developed computer assisted financial accounting system using Peachtree accounting software. | *Inadequate working capital or cash flow particularly when the processing plant starts its function fully. | *If they get the required quality products, there are potential customers. | *Religion among the Orthodox followers has impact on milk and milk products marketing. |
| ***From HR and Management perspective*** | ***From HR and Management perspective*** | ***Customers need*** | ***Economic*** |
| *Educated board members with diversified experience and knowledge in the dairy sector. | *Lack of structured and clear benefit packages available to keep up the motivation of employees. | *Reliable and continuous supply with quality. | *Prohibitive banks policy for collateral requirement. |
| *Significant number of educated and diverse experience of the management bodies in the industry as well as working in the same industry for long period. | *Inability of the existing organizational structure to accommodate existing and new programs vis-à-vis lack of trained and skilled technical and support staff members. | *Affordable prices for products at convenience supply. | *Unorganized and weak dairy related associations. |

Table 8 continued….

| **Strength** | **Weaknesses** | **Opportunities** | **Threats** |
|---|---|---|---|
| ***From membership perspective*** | ***From membership perspective*** | ***Dairy producers need*** | ***Environmental*** |
| *Committed members to the organization vision and voluntarily acting members. Educated members that share their capacity and experience with each other. | * Unwillingness of some members to participate in capacity building training and unnecessary interference of some members on the management of the cooperative. | *Genuine and quality measure for the supplied milk, timely and convenient mode of payment system and competitive price for the supplied milk. | *Challenge to waste disposal and cleanness.<br>* Packing plastics are not easily decomposable. |
| ***from facility perspective*** | ***from facility perspective*** | ***Dairy producers need…*** | ***Political*** |
| *Existence of basic communication facilities to lead the daily business operation of the cooperative.<br>* Current owned land allows further expansion to the extent that can accommodate increased production. | *Lack of cooling tanker and a mini laboratory testing equipments at collection centers.<br>* Insufficient advertisement and promotional works to attract new members or potential customers to prefer Ada'a products. | *Improved field level technical support services vis-à-vis organizing intermittent dairy farm management training to members as well as providing market information. | * Lack of appropriate policy favoring the dairy sector with respect to feed policy and credit. |

Table 8 continued….

| **Strength** | **Weaknesses** | **Opportunities** | **Threats** |
|---|---|---|---|
| *Milk and feed processing plants with technologically flexible capacity that can produce diversified products. | ***On internal policy*** *Insufficient and incompatible HR, finance, production and operations manuals and procedures. | *The establishment of the newly established processing machine will encourage members and others to supply more milk to the cooperative. | ***Technological*** * Lack of dairy, feed and AI technology institutes. |
| *Possessed 14 strategically located milk collection centers and 2 satellite milk collection sites and owned ground bore water supply and standby power generator. | *Lack of promoting members to openly communicate with the board members in giving ideas and poor management of members' data. | *If the feed processing machine of the cooperative starts its operation fully, there is an opportunity of fulfilling the demand of members and the market. | * Lack of packing supplier organizations in the local market. |

Source: Focused group and key informants discussion, 2008.

# 5. SUMMARY, CONCLUSION AND RECOMMENDATION

## 5.1 Summary and Conclusion

This study was undertaken to explore the role of dairy cooperatives in stimulating innovation and market oriented smallholders' development by taking Ada'a dairy cooperative as a case study. It entails the specific objectives of investigating the role of the cooperative in promoting innovation, promoting linkages for access to services and marketing and enhancing knowledge and information sharing. Primary data was collected from 150 smallholder dairy producer members of the cooperative randomly selected with Probability Proportionate to Size (PPS) using sampling frame from both urban and peri-urban members of the cooperative. This was supplemented by information from focal group discussion with dairy producers, board members of the cooperative and key informants. Qualitative and quantitative methods were deployed to analyze the collected data.

The evolution of the cooperative revealed that the cooperative was established following the government change in 1991 by which most staff of the National Air force based in Debrezeit were made redundant with and without pension. This sudden staff displacement forced the air force veterans to look for other income sources and dairy was selected by some of the veterans. This enhanced the number of dairy producers and thereby the amount of milk production. Feed shortage and milk market problem evolved as a challenge to the dairy development which resulted in the establishment of Ada'a dairy cooperative in September 1996.

The study result showed that the cooperative has started to enhance innovations in the dairy sector which may include technological, institutional and organizational innovations, promoting linkages for access to marketing and services and in sharing knowledge and information. With regards to technological innovation the cooperative introduced milk processing using its own milk processing machine and started to produce quality products like pasteurized milk, butter and cheese. All sample respondent members of the cooperative confirmed the advantage of this technology in terms of getting quality processed milk

products and decreasing their drudgery of processing in their home. Moreover, the cooperative introduced an aluminum made milk handling equipments for the quality and safe transportation and storage of milk.

The cooperative had many activities with respect to institutional innovations, with respect to: provision of dairy inputs, marketing, manpower, organizational structure, organizational facility, finance, and addressing developmental issues. Dairy inputs as concentrate feed, AI and animal health care services are provided by the cooperative to its members. Institutional innovations of the cooperative towards milk marketing include: the establishments of geographical based milk collection centers and satellite milk collection sites, designing milk quality testing standards, maintaining computerized record system for the supplied milk, designing a fortnight based payment system, facilitating linkage with milk market, selling milk products on credit base to members, and designing coupon sell to customers.

The cooperative sales raw milk, cheese and butter to consumers, hotels, cafeterias, organizations, etc. in addition to supplying raw milk to Shola milk processing industry. Customers have good level of satisfaction with regard to the quality and quantity of milk supplied by the cooperative, but there are times by which milk is returned from Shola due to quality problem.

The cooperative is also effective in achieving its objectives of providing feed and milk marketing services through minimizing the high transaction cost for the sale of milk and reduce seasonal price fluctuations; increase production and productivity of dairy farms and improve the overall income of member farmers; supply inputs to member farmers at reasonable price and better quality; and provide training and advisory services in dairy cattle management, production and marketing. Evaluation results on the performance of the cooperative revealed that sample members are agree and strongly agree on the statements for better access to inputs at reasonable price, marketing through the cooperative, knowledge and skills on improved dairy management, better access to outside and social support services, acquired business skills; and more income, saving and consumption since joining the cooperative. However, members complain on the timeliness and effectiveness of the input

services (feed, AI and animal health) supplied by the cooperative. More specifically, they were raising the mismanagement in the cooperative leadership for the delay of the cooperative milk processing machine, under performance of the feed processing machine, in providing competitive price of milk and abuses by employees by under measuring, adulteration and stealing during milk collection and transportation.

The cooperative is performing good in promoting market oriented dairy development through creating market link between the urban and peri urban sub systems, collaborating with other dairy associations, public organization, NGOs, projects and donors affiliated on Market Oriented Dairy Development ( MODD) nationally, regionally and internationally. Some of the identified linkages are strong and important between the dairy producers and organizations involved in the supply of dairy inputs, capacity building and marketing. Whereas, the others are links those that an organization has for the purposes of accessing a technology and experiential sharing or collaborating on a joint activity. These linkages are weak but would be more important for supporting continuous improvement of service delivery to take place. The weak interaction among actors emanates from the actors' habits and practices and missing coordination function. These observed habits and practices that hinder actors' collaboration demand organizational innovation to reframe habits and practices for collaboration based on learning and trust. Moreover, the missing role/actors demand institutional innovation to change the role of the public sector or to encourage others to play different roles or play existing roles more effectively.

Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis summarized the contributions of the dairy cooperative in stimulating technological, institutional and organizational innovations; the performance of the cooperative in promoting linkages for access to services and marketing and the role of the cooperative in enhancing knowledge and information sharing and the possibilities for future contributions and the need for improvement. Accordingly results of the analysis revealed that, the cooperative has strong and weak sides with respect to marketing, provision of knowledge and information, creating internal and external linkages, in the provision of dairy inputs, with regards to resources, with respect to organizational procedures and environmental sanitation.

The cooperative has different opportunities with related to current and potential customers (supermarkets, sales commission agents, kiosks and hawks, retailers, schools, Research Institution, Universities, NGOs, other cooperatives, and government and private clubs), which all are untapped and interested to sustain with the cooperative; if they get the required quantity and quality products. On the other hand, urbanization along with modernization would bring about increased consumers. In terms of policy aspect, there is strong support from the government for cooperatives including 15% VAT and income tax exemptions. Moreover, the policy and institutional environment for dairy service delivery is an important condition for dairy service provision. In this regard, the country Rural Development Policies and Strategies (RDPS) backed by different strategies and programs (PASDEP, capacity building) and legal framework (proclamations and regulations) are important steps forwards for the commercialization of the sector with out any restriction on non public service providers to participate in the market.

Religion among the Orthodox followers, inflation, weak purchasing power of the consumers, prohibitive banks policy for collateral requirement, unorganized and weak dairy related associations, challenge to waste disposal, non degradable of packing plastics, lack of appropriate policy favoring the dairy sector with regards to feed, lack of technological supported dairy input suppliers, lack of animal feed and AI technology institutes and lack of getting packing suppliers in the local market are the social, economic, environmental, political and technological threats or challenges for the effective promotion of dairy innovations by the cooperative.

Finally to expand proven initiatives, strengthen good practice and addressing the weakness, the cooperative could adopt organizational innovation such as participatory decision making with members and important actors, knowledge management activities, policy advocacy works and cost effective service delivery.

## 5.2 Recommendations

**1.** To use the opportunities of dairy marketing, the cooperative has to fulfill both the needs of members and customers. To fulfill members need, the cooperative has to fulfill their expectations with regards to providing competitive price for milk driven by the prevailing market price through maintaining stable and regulated market information, genuine and quality measure for the supplied milk, establish additional mobile and permanent milk collection centers for reasonable quantities and improved field level technical support services vis-à-vis organizing intermittent dairy farm management training to members. To fulfill customers need the cooperative has to create a reliable and continuous supply system along with availing quality products and should extract affordable prices for products at convenience supply in terms of volume, packaging, time and place. To this end, the cooperative has to collect more milk from both members and non members and develop a convenience package of products so that customers may choose products at their limit and purchasing capacity.

**2.** Organizational innovation is required by the financial institutions to serve the dairy producers in terms of providing credit for the cooperative and members and include additional services like livestock insurance as one option to improve the finance services. In addition, institutional innovation is required by the cooperative to forge network among the finance sector and create a link with dairy producers and other stakeholders in the milk value chain. With this regard, the role of dairy associations at all levels has paramount importance to advocate for responsive credit system for the sector. To mitigate credit problem, the establishment of saving and credit cooperatives and creating a horizontal financial linkage among cooperatives can also ease the problem.

**3.** In order to improve the local marketing service and making local producers more market oriented and competitive, organizational innovation is needed to organize more milk marketing group/ cooperatives in accessible urban, rural and peri urban areas and link them with milk collectors and processors. The establishment of more milk marketing cooperatives will help smallholder dairy producers to get inputs and services with proper quality and fair price and will improve their market share.

**4.** Dairy production and marketing research system has to be concentrated on the institutionalization of agricultural innovation system perspective that gives a room to create network and partnership among actors in knowledge generation, diffusion and utilization and more user-orientation, responsive to demand and improving both the management of existing resources and the efficiency of service provision and marketing in the dairy sector.

**5.** The public sector has a central role to bring together all of the actors needed for the dairy innovation to function or to reach sufficient scale. The public sector's role is important: to improve patterns of interaction between all relevant actors, to provide and enforce an enabling regulatory framework for the differentiated product markets (such as regulatory role in animal feed, milk and milk products), to support small-scale farmers in becoming partners in innovation systems and adding value to their assets and skills (for example, through public-private partnerships) and to provide financing and infrastructure to bring inventions to market or to reach a sufficient share of the global market. Thus policies are required to change the role of the public sector or to encourage others to play different roles or play existing roles more effectively with in the innovation system framework. Private sector actors and other actors outside government are becoming important players in dairy innovation, thus public sector must reconfigure their roles and relationships in light of these developments. Producers associations (like dairy associations/ cooperatives and trade unions) and professional associations like ESAP, EVA and AESE should participate in policy analysis and advocating for the right enabling policies and legislation update and participate in formulation of the national policies related to the dairy sector.

**6.** Cooperative offices established at different levels ( Federal, Regional and District) have to provide equal services to all cooperatives in terms of monitoring their activities, evaluating their performance, in giving up to date market information and in the provision of technical support with respect to cooperative marketing and management. Moreover, these offices have to give due attention for the implementation of the cooperative proclamations and rules with regards to election of the management committee, term of offices, in the preparation and implementation of by-laws and internal laws of cooperatives established in the primary, secondary and highest levels.

**7.** For an innovation to be dynamic, it has to bring a socially inclusive and environmentally sustainable economic growth, to this end, the cooperative has to create close linkage with the Ethiopian organic disposing association to take appropriate measures and looking for alternative uses of animal and industrial wastes like by installing biogas digesters at household and organizational levels which has double advantages of using as an alternative energy sources and in making the environment safe, healthy and clean.

**8.** The cooperative has been used training and advisory services to share knowledge and information to its members together with that, the cooperative should expand knowledge and information sharing using different medias (in collaboration with other actors), such as open field days, workshops and feed-back meetings, exchange visits, production of brochures, posters, leaflets, and information dissemination through program partners via their communication tools and networks. The use of multi-medias for information and knowledge sharing will help the cooperative to attract more members, customers and in expanding its market share.

# 6. REFERENCES


ACDI/VOCA, 2005. Agricultural Cooperatives in Ethiopia. USAID, Ethiopia.

Ahmed, M.M., Bezabih E., M.A Jabbar, M.A., F.Tangka and S.Ehui, 2003. Economic and nutritional impacts of market-oriented dairy production in the Ethiopian highlands. Socio-economics and Policy Research Working Paper 51. ILRI (International Livestock Research Institute), Nairobi, Kenya.

Ahmed M., M., Ehui, S. and Yemesrach A., 2004. Dairy Development in Ethiopia. EPTD Discussion Paper No.123, International Food Policy Research Institute, Washington, DC.

Alemayehu Lerenso, 1984. State commerce and service cooperative in Kembata and Hadiya Zones: an economic geography analysis. Unpublished master's thesis, School of Graduate Studies, Addis Ababa University, Addis Ababa.

Azage Tegegne, Berhanu Gebremedhin and D. Hoekstra, 2006, September 5-7. "Input supply system and services for Market oriented Livestock Production in Ethiopia." Paper presented at the 14th annual conference of the Ethiopian Society for Annual Production (ESAP) on: Institutional arrangements and challenges in market oriented livestock agriculture in Ethiopia, Addis Ababa.

Bavikar, B. S., 1988. Dairy Cooperatives and Rural Development in Gujarat, in D.W. Attwood and B.S. Bavikar (Eds). 1988, Who Shares? Cooperatives and Rural Development, Oxford University Press, Delhi. 56p.

Beekman, G., 2007. The Role of Dairy Cooperatives in the Ethiopian Dairy Innovation System: the case of Alamata and Fogera Dairy Cooperatives. Unpublished Report, Addis Ababa: (Improving Productivity and Market Success of Ethiopian Farmers).

Center for Cooperatives, 2004. Working together for stronger cooperatives. University of Wisconsin, Madison, U.S.A.

CSA, 2006. Population projection based on: the population and housing census of Ethiopia.Vol1: Part 4. Statistical report on population size. Addis Ababa, Ethiopia.

Daniel Belay, 2006. Performance of Primary Agricultural Cooperatives and Determinants of Members' Decision to use as Marketing Agent in Adaa Liben and Lume Districts. Unpublished master's thesis, School of Graduate Studies, Alemaya University, Alemaya.

Delgado C., 1999. Sources of growth in smallholder agriculture in sub- Saharan Africa: The role of vertical integration of smallholders with processors and marketers of high value items. AGREKON (Journal of the Agricultural Economics Association South Africa) 38: 165-189.

District Cooperative Promotion Office, 2007. Unpublished annual report, Debrezeit.

De Silva, S., I., Yusupova and I.,Abdullaev, 2005, August 18-22. "Role of knowledge sharing in enabling innovation systems through improved research learning, out-scaling and up-scaling." Paper Presented at the Innovation Africa Symposium, International Water Management Institute, Colombo.

Edquist, C., 1997. Systems of Innovation Technologies: Institutions and Organizations. London: W.W. Norton.

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

Ethiopian Economic Association/Economic Policy Research Institute, 2006. Evaluation of the Ethiopian agricultural extension system with particular emphasis on the Participatory Demonstration and Training Extension System. Addis Ababa, Ethiopia.

FARA, 2007. Enhancing African Agricultural Innovation. FARA's 2007-2016 strategy paper. Accra, FARA.

FDRE, 2006. Ethiopia: Building on Progress; A Plan for Accelerated and Sustained Development to End Poverty. Volume I: Main Text. Ministry of Finance and Economic Development, Addis Ababa.

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

Folsom, J., 2002. Measuring impact of cooperatives in Minnesota. Minnesota: USDA/ Rural Development.

Franscesconi N.G. and R. Ruben, 2007, April 23rd - 25th. “Impacts of Collective Action on Smallholders’ Commercialization: Evidence from Dairying in Ethiopia.” Paper prepared for presentation at the I Mediterranean Conference of Agro-Food Social Scientists. 103rd EAAE Seminar ‘Adding Value to the Agro-Food Supply Chain in the Future Euro Mediterranean Space’, Barcelona.

Getenesh Sintayehu, 1988. Result analysis and result comparison of farmers’ producers’ cooperatives in the highlands of Hararghe. Unpublished master’s thesis, School of Graduate Studies, Alemaya University of Agriculture, Alemaya.

Hall, A.J., M.V.K. Sivamohan, N. Clark, S. Taylor and G. Bockett, 2001. Innovation Theory: Institutional Arrangements and Implications for Developing New Technology for the poor. World Development 29(5): 783-797.

Hall, A.J., L.K. Mytelka and B. Oyeyinka, 2004. Innovation Systems: Concepts and Implications for Agricultural Research Policy and Practice. Maastricht, United Nations University.

Hall, A.J., L.K. Mytelka and B. Oyeyinka, 2006. Concepts and Guidelines for Diagnostic Assessments of Agricultural Innovation Capacity: UNU-MERIT working paper series 2006-017. United Nations University, Maastricht Economic and Social Research and Training Centre on Innovation and Technology.

Holloway, G., C. Nicholson, C. Delgado, S. Staal and S. Ehui, 2000. How to make milk market: A case study from Ethiopian high lands. Socio-economics and Policy Research Working Paper 28. ILRI (International Livestock Research Institute), Nairobi, Kenya. 28p.

Hartwich, F. and H.G. Jansen, 2007. The role of government in agricultural innovation: Lesson from Bolivia. Research Brief No. 8. Washington DC: International Food Policy Research Institute.
.

Holloway, G., Nicholson C., Delgado C., Staal S., and Ehui S., 2000. Agroindustrialization through Institutional Innovation: Transaction costs, Cooperatives and Milk-Market Development in the East-African Highlands. *Agricultural Economics*, 23: 279-288.

Holloway, G., and S.Ehui, 2002. Expanding market participation among smallholder livestock producers: A collection of studies employing Gibbs sampling and data from the Ethiopian highlands, 1998- 2001. Socio-economics and Policy Research Working Paper 48. ILRI (International Livestock Research Institute), Nairobi.

International Co-operative Alliance, 1995. Statement on the Co-operative identity. ICA, Manchester.

Jaffee, S., 1994. Perishable profits: Private sector dairy processing and marketing in Kenya. In: Jaffee S. and Morton J. (eds.), Marketing Africa's high-valued foods: Comparative experiences of an emergent private sector. Kendall-Hunt, Dubuque, Iowa, USA. pp. 199-253.

Kebebew Daka, 1978. Cooperative movement in Ethiopia. Unpublished master's thesis, School of Graduate Studies, Addis Ababa University, Addis Ababa.

Ketema Hizkias, 2000. Dairy development in Ethiopia: In the role of village dairy co-operatives in dairy development. Smallholder Dairy Development Project (SDDP) Proceeding, Ministry of Agriculture (MOA). Addis Ababa.

Koopmans, R., 2006. Starting a cooperative: Farmer-controlled economic initiatives, (2nd ed.). Wageningen: CTA.

Leeuwis, C., 2004. Communication for rural innovation: rethinking agricultural extension, (3rd ed.). Oxford: Blackwell.

Leonard D. and Swap W., 1999. When Sparks Fly: Igniting Creativity in Groups. Boston: Harvard Business School.

Lundvall, B., 1992. National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning. London: Pinter Publishers.

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

MoARD, 2007. New Agricultural Extension Service Process Description and Working Procedure, Addis Ababa.

MOFED, 2006. "Ethiopia: Building on Progress; A Plan for Accelerated and Sustained Development to End Poverty." Volume I: Main Text. Addis Ababa.

Mohammed, A.M., Ahmed, Simeon Ehui and Yemeserach Assefa, 2004. Dairy Development in Ethiopia. EPTD Discussion Paper No. 123. International Food Policy Research Institute, NW Washington, D.C.

Muriuki, H.G. and W. Thorpe, 2001. Smallholder dairy production and marketing: Constraints and opportunities. P. Smith. Princeton, New Jersey: Princeton University Press.

Mytelka, L.K., 1999. Competition, Innovation and Competitiveness in Developing Countries. Paris: Organization for Economic Cooperation and Development (OECD). Pp 15-27.

Mytelka L.K., 2000. Local systems of Innovation in a Globalized World Economy: Industry and Innovation, 7 (1).

Nicholson, C. F., Getachew Gebru, S.K. Ehui, B.I. Shapiro and C. Delgado, 2000. Producer milk groups in Ethiopia's highlands: A framework for assessing impacts and a review of group performance. In: The role of village dairy co-operatives in dairy development: Prospects for improving dairy in Ethiopia. pp 82-103. Proceeding of a workshop, held from 22- 24 April 1998. Ministry of Agriculture, Addis Ababa, Ethiopia.

Nin, A. P., J. , Mohammad, Zelekawork P. and Elias M., 2006. Dairy Development in Ethiopia. In Steven J. Staal, Alejandro Nin Pratt, and Mohammad Jabbar. A Comparison of Dairy Policies and Development in South Asia and East Africa, Country Case Studies from South Asia and East Africa – Kenya, Ethiopia, Pakistan and India, and Final Synthesis: A report prepared for the FAO Pro-Poor Livestock Policy Initiative, Nairobi. pp 21-25.

OPEDB, 2000. Physical and Socioeconomic Profile of 180 districts of Oromiya Region. Addis Ababa.

Parliament, C., Z. Lerman and J. Fulton, 1990. Performance of cooperatives and investor owned firms in the dairy industry. *Journal of Agricultural Cooperation*.5: 1-16.

Puskur, R. and J. Hagmann, 2006. Synthesis Report- Workshop on Alternative Service Delivery Systems. Unpublished Report, Addis Ababa: (Improving Productivity and Market Success of Ethiopian Farmers).

Puskur, R., 2007. Developing a Strategy for Scaling out Agricultural Innovation. Unpublished Guideline, Addis Ababa: International Livestock Research Institute.

Rahmato, D., 2002. Civil society organizations in Ethiopia. In B. Zewde and S. Pausewang (Eds.), Ethiopia: The Challenge of Democracy from Below, pp.103-119. Stockholm, Sweden: *Nordiska Afrkainstitute and Forum for Social Studies.*

Redda, T., 2001, March 12-16. "Small-scale milk marketing and processing in Ethiopia." In proceedings of South-South Workshop on Smallholder Dairy and Marketing Constraints and opportunities, Anand.

Schroeder, L.C., 1992. Economies of scale and scope for agricultural supply and marketing cooperatives. *Review of Agricultural Economics*. 14: 93-103.

Sintayehu Yigrem, Fekadu Beyene, Azage Tegegne and Berhanu Gebremedhin, 2008. Dairy production, processing and marketing systems of Shashemene-Dilla area, South Ethiopia. Improving Productivity and Market Success of Ethiopian Farmers: Project Working Paper 9. International Livestock Research Institute, Nairobi.

Solomon, M.L.and P.G. Engel, 1997. Net Working for Innovation: A participatory actor oriented methodology. The Netherlands:KIT press, Amesterdam.

Spielman D., Martha Negash, K., Davis, and Gezahegn Ayele, 2006, June 6-8. "The Smallholder Farmer in a Changing World: The Role of Research, Extension and Education in Ethiopian Agriculture." Paper submitted for ESSP Policy Conference 2006 "Bridging, Balancing, and Scaling up: Advancing the Rural Growth Agenda in Ethiopia", Addis Ababa.

Staal, S. J., 1995. Peri urban Dairying and Public Policies in Ethiopia and Kenya: A comparative Economic and Institutional Analysis. Unpublished doctoral thesis, Department of Food and Resource Economics, University of Florida, Gainesville, Florida.

Sykuta, M.E. and M.L., Cook, 2001. A new institutional economics approach to contracts and cooperatives. *American Journal of Agricultural Economics*, 83: 1273-1279.

Tesfaye Lemma, 1995. An analysis of cooperativisation approach to agricultural development in Ethiopia: with special attention to producers' cooperatives. Unpublished master's thesis, School of Graduate Studies, University of Reading, England.

Tesfaye Lemma, 2007, February 24. “Towards responsive communication for rural innovation services for Ethiopia: cases for reengineering the national agricultural extension system (PADETS).” In Proceeding of CIDA-UPCD Conference organized by Hawassa University, Awassa.

Tesafye Lemma., R. Puskur, Azage T. and D. Hoekstra, 2008, April 7-9. “Exploring innovation capacity in the Ethiopian dairy systems.” Paper presented on the international conference on: Advancing Agriculture in Developing Countries through Knowledge and Innovation, International Food Policy Research Institute, Addis Ababa.

The American Heritage Dictionary, 2000. The American Heritage Dictionary of the English Language, Washington: Houghton Mifflin Company.

Tretcher, D.D., 1999. Impact of diversification on agricultural cooperative in Wisconsin. *Agribusiness*. 12(4): 385-394.

Tsehay Redda, 1998, April 22-24. “Prospects of Ethiopian dairy development.” Proceeding of the Role of Village Dairy Cooperatives in Dairy Development: Prospects for Improving Dairy in Ethiopia, Addis Ababa.

Tsehay Redda, 2001, March 12-16. “Small.scale milk marketing and processing in Ethiopia.” In Proceedings of the South - South Workshop on Smallholder Dairy Production and Marketing-Constraints and Opportunities, Anand.

Van Dusseldrop, D.B., (1992). “Project for Rural Development in Third World: Preparation and Implementation.” *Knowledge sharing*, Wangengen Agricultural University.

Wegenie Yirko, 1989. The development of agricultural producers’ cooperatives in Ethiopia: cases from Arsi region. Unpublished master’s thesis, School of Graduate Studies, Addis Ababa University, Addis Ababa.

World Bank, 2006. Enhancing Agricultural Innovation: How to go beyond the strengthening of Research Systems.Washington, DC: Agriculture and Rural Development.

Yigezu Zegeye, 2000. “DDE’s Experience in milk collection, processing and marketing: In The role of village dairy co-operatives in dairy development.” Smallholder Dairy Development Project (SDDP) Proceeding, Addis Ababa: Ministry of Agriculture.

Zerihun Alemayehu, 1998, April 22-24. “The past experience and present status of Agricultural Cooperatives in Ethiopia.” Proceeding of the Role of Village Dairy Cooperatives in Dairy Development: Prospects for Improving Dairy in Ethiopia, Addis Ababa.

# 7. APPENDICES

Appendix 1. Typology of linkage and learning types

| Type of linkage | Purpose | Type of learning |
|---|---|---|
| Partnership | Joint problem solving, learning, and innovation. May involve a formal contract or memorandum of understanding. May be less formal, such as participatory research. Highly interactive. May involve two or more organizations. Focused objective defined project. | Mainly learning by interacting, but also by imitating and searching. |
| Paternalistic | Delivery of goods, services, and knowledge to consumers with little regard to their preferences and agendas. | Learning by training. |
| Contract purchase of technology or knowledge services | Learning or problem solving by buying knowledge from elsewhere. Governed by a formal contract. Interactive according to client contractor relations. Usually bilateral arrangement. Highly focused objective defined by contract concerning access to goods and services. | Learning by imitating and mastering; might involve learning by training. |
| Networks | May be formal or informal, but the main objective is to facilitate information flows. Provides "know who" and early warning information on market, technology, and policy changes. Also builds social capital, confidence, and trust, and creates preparedness for change, lowering barriers to forming new linkages. Board objective. | Learning by interacting and searching. |
| Advocacy linkages to policy process | Specific links through networks and sector association to inform and influence policy. | Interactive learning. |

Appendix 1. continued ….

| Type of linkage | Purpose | Type of learning |
|---|---|---|
| Alliance | Collaboration in marketing products, sharing customer bases, and sharing marketing infrastructure. Usually governed by a memorandum of understanding. Can involve one or more organization. Board collaborative objective. | Learning by doing |
| Linkages to supply input and output markets. | Mainly informal but also formal arrangements connecting organizations to raw materials and input and output markets. Includes access to credit and grants from national and international bodies. Narrow objective of access to goods. | Limited opportunities for learning; some learning by interacting. |

Source: Hall *et al*, 2004.

Appendix 2. Milk and milk products marketing data of the cooperative in 1999 E.c.

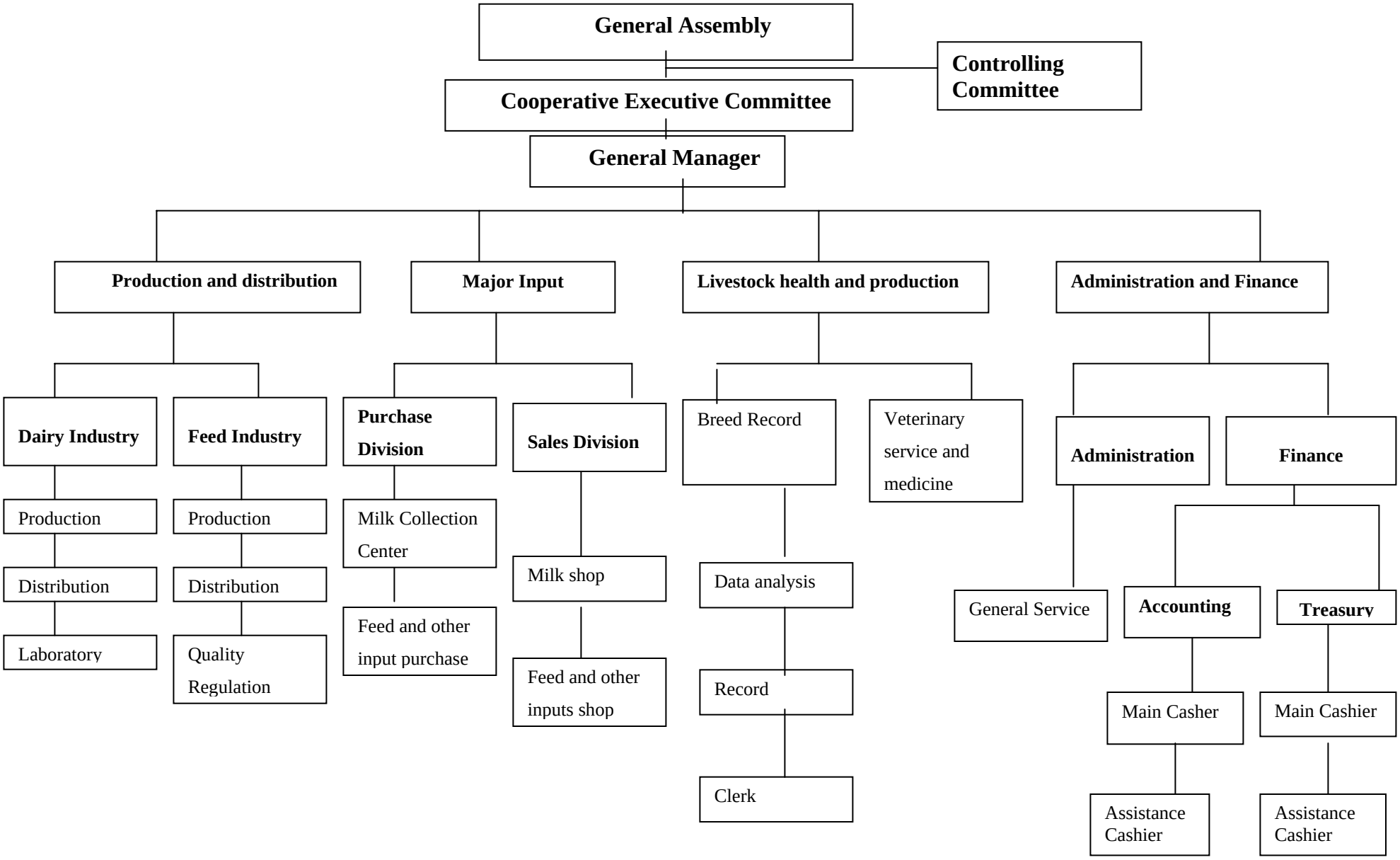
| No. | Month | Milk collected in liter | Purchased Price ( in birr) | Milk sold in liter | Selling price ( in birr) | Processed to butter (in kg.) | Selling price | Processed to cheese ( in kg.) | Selling price | Gross profit |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | September | 189,104 | 366,861.76 | 145,390 | 367,836.7 | 1021.1 | 30,633 | 4367 | 28385.5 | 59993.44 |
| 2 | October | 196,589 | 399,075.67 | 172,296.5 | 447,970.9 | 847.1 | 23,718.8 | 2753 | 12388.5 | 85002.53 |
| 3 | November | 201,436 | 408,915.08 | 184,782 | 480,433.2 | 451.4 | 12,639.2 | 1721 | 8605 | 92762.32 |

Appendix 2. continued ….

| No. | Month | Milk collected in liter | Purchased Price ( in birr) | Milk sold in liter | Selling price ( in birr) | Processed to butter (in kg.) | Selling price | Processed to cheese (in kg.) | Selling price | Gross profit |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | December | 202,628 | 411,334.84 | 164,200 | 426,920 | 1006.3 | 31,859.46 | 4271.5 | 25629 | 73073.60 |
| 5 | January | 207,129 | 424,471.87 | 173,085 | 450,021 | 1265.5 | 44,292.5 | 4438 | 31066 | 104,907.63 |
| 6 | February | 211,562.5 | 429,471.88 | 154,914 | 402,776.4 | 1460.5 | 47,466.25 | 5119 | 20476 | 41,246.77 |
| 7 | March | 202,897 | 411,880.91 | 140,110.5 | 326,457.47 | 1530.10 | 61204 | 9743 | 38972 | 14,752.56 |
| 8 | April | 191,003.50 | 511,894.74 | 171,279.5 | 488,146.58 | 471.50 | 23575 | 2459.5 | 17216.50 | 17,043.34 |
| 9 | May | 191,618.5 | 517,369.95 | 171,778 | 523,922.9 | 601.6 | 27072 | 2255 | 15785 | 49,409.95 |
| 10 | June | 198,100 | 620,065.50 | 163,042.5 | 497,278.6 | 962.10 | 43294.5 | 3912.5 | 23475 | 56,016.40 |
| 11 | July | 196,648.5 | 629,275.20 | 162.312.5 | 503,168.75 | 757.3 | 34078.5 | 3514.5 | 14058 | 77,969.95 |
| 12 | August | 161,383 | 526,108.56 | 124,223 | 391,302.45 | 1122.2 | 50499 | 5455.5 | 30005.25 | 54,301.88 |
| **Total** | | 2,350,099 | 5,656,725.96 | 1,765,101 | 5,306,234.9 | 11496.7 | 430,332 | 50009 | 266,062 | 726,480.40 |

Source: Annual report of the cooperative.

Appendix 3. Organizational Structure of the cooperative



Appendix 4. Producers (Members) Survey Interview Schedule

Identification Number (code) ----------

Peasant Association name ----------

Name of enumerator----------

Date of interview----------

Signature ----------

Household head Name _____

**I General information**

Name of the respondent _____

1. Age of respondent _____
2. Sex 1. Male 2. Female
3 Marital status 1= Single 2= Married 3= Divorced 4=Widowed
4. Religion 1. Orthodox 2. Muslim 3. Protestant 4. Others/ specify _____
5. Education level 0= illiterate 1= can read & write
   2=primary school (grade 1-6) 3= secondary school (grade 7-12)
   4= Higher education
6. Total number of household members (family size) ----------

7. Are you involved in any activities of formal and informal Organizations in your area? (Social participation) 1= Yes 2= No
8. If yes, type of organizations & type of membership

| SN | Organization/ institution | Max. Weight | Measures used Maximum score = 36 | Frequency of Participation |
|---|---|---|---|---|
| 8.1 | Farmers cooperatives/union | 10 | | |
| 8.2 | Peasant association | 8 | | |
| 8.3 | Women's association | 7 | | |
| 8.4 | Religious organizations (Mosque/ church) | 5 | | |
| 8.5 | Informal associations (Idir, Ekub. Mahber) | 4 | | |
| 8.6 | HIV club | 2 | | |
| 8.7 | Others ( specify)<br>1. _____<br>2. _____<br>3. _____ | | | |

**Weight:** Leaders of the Cooperative=10, Committee=7, ordinary member=5
Leader of peasant association=8, committee member=6, ordinary member=4
Leader of women's association=7, Committee= 5, ordinary member=3
Leader of religious organizations=5, member only=3
Leader of informal associations=4, member only=2
Leader of HIV Club= 2, member only=1
**Frequency of participation**: 0= Never 1= Sometimes 2= whenever conducted 3= Always

**9. Farm size (in timad) and tenure**

10. Allocated arable land size (own land) _____ Allocated grazing land size ( own land) _____

11. Rented in (Cash/Share) arable land _____ Rented out arable land _____

12. Rented in grazing land _____ Rented out grazing land _____

**13. Number of livestock owned at present**

| S.N | Kind of livestock | Crossbred | Local breed | Total |
|---|---|---|---|---|
| 13.1 | Oxen | | | |
| 13.2 | Cow | | | |
| 13.3 | Young bulls | | | |
| 13.4 | Calves | | | |
| 13.5 | Heifers | | | |
| 13.6 | Sheep | - | | |
| 13.7 | Goats | - | | |
| 13.8 | Chicken | | | |
| 13.9 | Horse | - | | |
| 13.10 | Mule | - | | |
| 13.11 | Donkey | - | | |

**14. Dairy Herd Production, Consumption, marketing and division of labor in dairy related activities.**

14.1 Number of dairy cows and frequency of milking ( 1999 E.c)

| Cows | No of dairy cows | No of milking cows | Average yield per day ( in liter) | Lactation period | Average liter of milk consumed ( per day) | Average liters of milk sold ( per day) | Amount of milk used for processing |
|---|---|---|---|---|---|---|---|
| Local cows | | | | | | | |
| Crossbred cows | | | | | | | |
| Total | | | | | | | |

* Lactation period: 1=for 2 months, 2= for 3months, 3= for 4months, 4= for 6 months, 5= for a year

14.2 Labor division in the management, operation and marketing of dairy related activities

| Sn | Activities | Responsible person/s ( √) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Men | Women | Boys | Girls | Men & Women | Boys & Girls |
| 1 | Cleaning the shelter of the dairy animals | | | | | | |
| 2 | Cleaning the dairy animals | | | | | | |
| 3 | Milking | | | | | | |
| 4 | Feeding | | | | | | |
| 5 | Watering | | | | | | |
| 6 | Processing milk in to milk products | | | | | | |
| 7 | Transporting milk for sale | | | | | | |
| 8 | Selling processed milk products like butter and cheese | | | | | | |
| 9 | Buying dairy inputs ( feed, medicine, etc | | | | | | |
| 10 | Fetching forages/ grasses | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 11 | Grazing dairy animals | | | | | | |
| 12 | Dairy animals care | | | | | | |
| 13 | Caring for calves | | | | | | |
| 14 | Buying dairy animals | | | | | | |
| 15 | Selling animals | | | | | | |
| 16 | Decisions on the money obtained from sales of animals | | | | | | |
| 17 | Others ( specify) _____ _____ | | | | | | |

**15.3. Dairy marketing activities**

15.3.1 Did you sell milk during 1999 E.c?

1. Yes 2. No

15.3.2 If yes to 15.3.1 what motivated you to sell milk?

1. The existence of Ada'a dairy cooperative in the area
2. The need for additional income in the family
3. The presence of many milk buyers in the area
4. Because of my neighbors' are selling milk
5. Others (specify) _____

15.3.3. If yes to 15.3.1 are you satisfied while you are selling milk and milk products?

1. Yes 2. No

15.3.4 If yes to 15.3.1 for how long you sold milk in 1999E.c?

1. For the whole year
2. For half a year
3. For 9 months
4. For 3 months
5. Only for a month
6. Others ( specify) _____

15.3.5 If yes to 15.3.1, specify the main reasons why you sell milk?

1. to get additional income for the purchase of dairy inputs
2. the income obtained from sell of milk helps me to send my children to school
3. the income obtained from sell of milk helps me to fulfill household expenditure
4. to fulfill membership requirement of the dairy cooperative
5. others ( specify) _____

15.3.6 If you didn't sell milk last year what was the main reason

1. Price too low
2. No surplus to be marketed
3. No market
4. Others (specify) _____

15.3.7 To whom you are selling your milk?

| No | Milk receiving Agents | For how long you sold milk to the mentioned agents ( in years) |
|---|---|---|
| 1 | Dairy Cooperative | |
| 2 | Local assemblers | |
| 3 | Consumers | |
| 4 | Traders in the district market | |
| 5 | Others ( specify)<br>1._____<br>2. _____<br>3. _____ | |

15.3.8 Have you changed your clientele in the last few years?

1. Yes 2. No

15.3.9 If yes to 15.3.6 what are some of the reasons for that?

1. _____
2._____
3._____

15.3.10 How much was the quantity of milk sold in liter during 1999E.c

| Milk receiving agents | Quantity of milk sold ( in liter) | Amount of money received ( in birr) |
|---|---|---|
| To the dairy cooperative | | |
| To others ( Specify<br>_____<br>_____<br>_____<br>_____ | | |
| Total | | |

15.3.11 If you are selling your milk to the dairy cooperative, what are the main reasons?

1. To fulfill membership requirements
2. To get dividend
3. B/c selling to the dairy cooperative helps to get market at any time including fasting time
4. Selling to the cooperative is better in order to get better price
5. The cooperative milk collection centers are near to my home
6. Others (specify) _____

15.3.12 If you are selling your milk to others, what are the main reasons for that?

1. The cooperative is not ready to purchase
2. The cooperative has no milk collection center near to my place
3. Price difference/ the cooperative didn't pay competitive price
4. The cooperative didn't pay dividend (members' patronage) timely
5. Others (specify) _____

15.3.13 How many hours you need to travel to get the following ( on foot)

1. Dairy cooperative _____hrs
2. Local assemblers' _____hrs
3. Large Consumers (Hotels, cafeterias, etc) _____hrs
4. Small consumers (households) _____hrs
5. Traders _____hrs

15.3.14 Where did you sell your milk before you become member of the dairy cooperative?

1. There was no culture of selling milk (only using for home consumption)
2. Local markets
3. Directly to consumers
4. Others (specify) _____

15.3.15. What are the major milk marketing constraints you have observed?

1. Fluctuation in the quantity of milk obtained from cows
2. Distance of milk collection centers from my home
3. Lack of getting adequate market especially during fasting time
4. Inadequacy of labor in the household to transport milk
5. Spoilage of milk during transportation
6. Unable to get market information
7. Others (specify) _____

15.3.16 Did you process your milk like to change it to butter and cheese after you join the dairy cooperative?

1. Yes 2. No

15.3.17 If yes to 15.3.16 what is the main reason of processing?

1. For home consumption
2. To get better market price than selling milk
3. There is high demand of milk products than selling the milk
4. Others ( specify)_____

15.3.18 If no to15.3.16 what is the main reason?

1. There is no high demand for butter and cheese as compared to milk
2. Processing of milk to butter and cheese requires labor and time
3. There is no secured market for cheese and butter; like the dairy cooperative didn't receive these products.
4. Others ( specify) _____

**16. Membership of the dairy marketing cooperatives and benefits obtained**

16.1 When did you join the dairy Cooperative _____E.C

16.2 Initially where did you get information to be member of the cooperative?

1. From the district cooperative office
2. From friends/ relatives
3. From NGOs working in the area
4. From the executive committees of the dairy cooperative in my place
5. Others ( Specify) _____

16.3 What information were you given about the cooperative initially?

1. Being member of the cooperative can ensure market stability
2. Being member of the dairy cooperative help members to get dairy Inputs ( Feed, Artificial insemination, Veterinary service, etc.) and credit.
3. Being members of the cooperative can ensure to get profit
4. Training and educational services can be provided through cooperatives
5. Members can get a forum to exchange their technical knowledge
6. Others ( specify) _____

16.4 What were the requirements you had to fulfill to be member of the cooperative?

1. Paying registration fee
2. Paying share
3. Respecting the by-laws of the cooperative
4. having dairy cows
5. Others (specify) _____

16.5 Have you read the by-laws of the cooperative when you joined the cooperative?

1. Yes 2. No

16.6 If No, why?

1. The executive committees of the cooperative didn't told me to observe the By-law's of the cooperative
2. I don't have information about the presence of the by-law
3. Others (specify) _____

16.7 What were the main reasons that motivated you to be member of the dairy cooperative?

1. To get secured market for the milk that I have
2. To get dairy inputs (feed, dairy breeds, veterinary service, advisory service, etc) timely and with fair price.
3. To get dividend from the cooperative
4. To get education, training & extension advisory services from the cooperative
5. To get credit from the cooperative
6. Others (specify) _____

**17. Technological, organizational, institutional and marketing innovations that members have tried to get from the dairy cooperative**

17.1As a member of the dairy cooperative do you have access to the following services from your cooperative:

| No | Services/ technologies | Mark(√) | Frequency of getting the services | | | Remark/ Reasons |
|---|---|---|---|---|---|---|
| | | | Whenever needed | Sometimes | Never | |
| 1 | Marketing ( Buying & Selling) | | | | | |
| 2 | AI services | | | | | |
| 3 | Concentrate feed | | | | | |
| 4 | Forage seed | | | | | |
| 5 | Veterinary medicine | | | | | |
| 6 | Improved breeds / crossbreed cows | | | | | |
| 7 | Credit services | | | | | |
| 8 | Extension Advisory services | | | | | |
| 9 | Training and education services | | | | | |
| 10 | Dividend payment | | | | | |
| 11 | Employment opportunity | | | | | |
| 12 | Equal treatment among members (with out social, gender, cultural and other discrimination). | | | | | |
| 12 | Create forum for experiential and information sharing among members | | | | | |
| 13 | Create forum to have close linkages ( technical, marketing, service provision, etc.) with the district agricultural office | | | | | |
| 14 | Create forum to have close linkages ( technical, marketing, service provision, etc.) with the district cooperative office | | | | | |
| 15 | Create forum to have close linkages ( technical, marketing, service provision, etc.) with other kinds of primary or secondary cooperatives in the area | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 16 | Create forum to have close linkages ( technical, marketing, service provision, etc.) with the NGOs working in the area | | | | | |
| 17 | Create forum to have close linkages (technical, marketing, service provision, etc.) with the private agencies like input suppliers and customers in the area. | | | | | |
| 18 | Create forum to have close linkages (technical, marketing, service provision, etc.) with the private milk processors like Genesis farm in the area. | | | | | |
| 19 | Others ( Specify)<br>_____<br>_____<br>_____ | | | | | |

- Frequency of getting the services: 0= Never 1= Sometimes 2= whenever needed

**18. Surplus Appropriation**

18.1 Did the cooperative appropriate dividend to members for the last twelve months?
1. Yes 2. No

18.2 If yes, did you get money as patronage refund / dividend from the cooperative last year?
1. Yes 2. No

18.3 If yes, how much was the amount of money you got as dividend last year?
_____birr.

18.4 If no, do you know the possible reasons?
1. Didn't market products through the cooperative
2. The general meeting of the cooperative decided to re-invested the money for expansion of tasks
3. The cooperative didn't make profit
4. Others (specify) _____

**19. Actors involved and support provided to members**

**19.1 Mark the actors and the type of support provided (other than the dairy cooperative)**

| **No** | **Actors Name** | Mark (√) | **Support provided** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | District Ag. office | | | | | | | | | | | | |
| 2 | District cooperative office | | | | | | | | | | | | |
| 3 | Debrezeit research center | | | | | | | | | | | | |
| 4 | NGOs working in the area ( specify) _____ _____ | | | | | | | | | | | | |
| 5 | Private dairy inputs providers (specify) _____ _____ | | | | | | | | | | | | |
| 6 | Genesis dairy farm | | | | | | | | | | | | |
| 7 | Lema milk | | | | | | | | | | | | |
| 8 | Microfinance institutions ( specify) _____ _____ | | | | | | | | | | | | |
| 9 | Private dairy farm | | | | | | | | | | | | |
| 10 | Others ( specify) _____ _____ | | | | | | | | | | | | |

**1= training, 2= advisory services, 3= credit provision, 4= provision of AI services, 5= provision of bull services, 6= provision of veterinary medicine, 7= veterinary services, 8= concentrated feed, 9= fodder seed, 10= breed, 11=others (specify)**

19.2 How do you get these actors?

1. It is being member of the dairy cooperative which helped me to get these actors
2. I have got information from the district agricultural office/ DAs to get these actors
3. Self initiative
4. others ( specify) _____

19.3 Specify the name of actors you have contacted before you become members of the dairy cooperative and those actors after you become members of the dairy cooperative

| No | Name of actors before member of the dairy cooperative | Name of actors after becoming members of the dairy cooperative |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

## 20. KNOWLEDGE AND INFORMATION

### 20.1 Training

20.1.1 Have you ever participated on dairy production training for the past three years? 1) No 2) Yes

20.1.2 If the answer for Q. 20.1.1 is no, what was the reasons?

1. _____
2. _____
3. _____

20.1.3 If yes, specify the training type and the organization organized the training.

| **Training Type/ contents** | **No of days** | **Year** | **Organization** | **Training evaluation*** |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

* Do you think that the training was helpful to gain knowledge and skill to solve your practical problems related to dairy production and marketing? 1) Yes 2) No.
If no, why? _____

### 20.2 Advise

20.2.1 Do you get dairy advisory service on dairy production and marketing? 1. Yes 2. No

20.2.2 If the answer for Q. 20.2.1 is no, why?

1. No service provider nearby
2. There is a possibility of sharing advice among members
3. No need for service
4. Others (specify) _____

20.2.3 If the answer for Q 20.2.2 is yes, for how long do you get the service?
_____Years

20.2.4 Who provides the advisory service?
1. The dairy cooperative 2. NGOs (specify) _____
3. Private dairy farms (specify) _____
4. Development agents in the area
5. Others (specify) _____

20.2.5 How do you get the advisory service?
1. Farm to farm visit by the development agent
2. from member to member through the cooperative (like through innovative members of the cooperative)
3. Going to the service providers (eg. When supplying milk)
4. Others (specify) _____

20.2.6 If the answer for 20.2.5 is choice no 1, how frequent were you visited by development agents last year? _____
1. Once per month 2. Twice per month 3. Three times per month
4. Four times per month 5. Others, specify _____

20.2.7 If the answer for 20.2.5 is choice no 1, how frequent you were undertaking knowledge and information sharing using innovative farmers of the cooperative during 1999 E.c _____

20.2.8 If the answer for 20.2.5 is choice no 3, specify the arrangement to get the service for each service provider.

_____

_____

20.2.9 What are the major dairy production and marketing related information and knowledge that you have been delivered by the advisory service? Please describe for each service providers.

_____ _____

_____

20.2.10 How do you evaluate the different advisory service providers?

| **Service providers** | **Evaluation*** | | | | |
|---|---|---|---|---|---|
| | Timeliness | Relevance | Costliness | Feed back | Targeting |
| Ada dairy cooperative | | | | | |
| NGOs | | | | | |
| WOARD/DA | | | | | |
| Private dairy farm | | | | | |
| Other (Specify)<br>1. _____<br>2. _____<br>3. _____ | | | | | |

* 1. Excellent 2. Very good 3. Good 4. Poor 5. Very poor

20.2.11 As a member of the dairy cooperative what are the new knowledge and information that you get from your cooperative as compared to joining the cooperative?

With related to access to technology:

1._____
2._____
3._____

With related to marketing:

1. _____
2._____
3._____

With related to changing in attitudes and culture:

1. _____
2. _____
3. _____

With related to getting new knowledge and information:

1._____
2._____
3._____

20.2.12 In your opinion what are some of the changes you observed in your life after getting such knowledge and information from your cooperative?

_____
_____
_____

20.2.13If the advice you are getting from your cooperative and other actors is not as per your information and knowledge need, could you please mention relevant information and knowledge that you need to enhance market oriented dairy production.

1. _____
2. _____
3. _____

**21. Other issues on the long-term success of the dairy cooperative**

21.1. Did you believe that the dairy cooperative is doing a good job in solving the problems the farmers are facing these days?

1. Yes 2. No

21.2. If No, what is/are the major commonly felt problems that isn't/aren't solved by the cooperative in your area?

1. Lack of having enough milk collection centers near to my home
2. Lack of providing adequate dairy inputs for members
3. Lack of having enough materials like chilling plant and refrigerators to preserve milk and milk products
4. Lack of commitments by the management committees for the long term success of the cooperative
5. Others (specify) _____

21.3. In general, do you believe that farmers will overcome their commonly felt problems by working together such as establishing cooperative in the future?

1. Yes 2. No

21.4. If No, what is/ are the possible reasons?

1. Lack of responsibility for common work
2. Misuse of the cooperative by some individuals
3. Lack of commitment by the members
4. Political influence/ intervention
5. Others specify_____

21.5. Would you be willing to contribute money to improve the performance of the cooperative? 1. Yes 2. No

21.6. If No, what are the possible reasons?

1. I don't trust the management body
2. I can't afford
3. The government should improve it
4. Others/ specify_____

21.7. Do you want to continue your membership of the cooperative?

1. Yes 2.No

21.8. If yes, what is/are the possible reason(s)

1. I get goods and services which are not available elsewhere
2. It purchases (assures a market for) our products
3. I don't want to isolate from other farmers
4. There is external pressure
5. Others/ specify_____

21.9 If no, why?

1. _____
2. _____
3. _____

**22. Perceived Benefits of members from the dairy cooperative**

| ***Benefits to members (actual/potential)*** | | | | |
|---|---|---|---|---|
| Better access to outside support services | Strongly disagree | disagree | Agree | Strongly agree |
| Better access to improved technology | Strongly disagree | disagree | Agree | Strongly agree |
| Better access to inputs at reasonable price | Strongly disagree | disagree | Agree | Strongly agree |
| Better access to market | Strongly disagree | disagree | Agree | Strongly agree |
| Better access to social support services during time of crisis | Strongly disagree | disagree | Agree | Strongly agree |
| Acquired knowledge & skills in improved dairy management | Strongly disagree | disagree | Agree | Strongly agree |
| Acquired business skills | Strongly disagree | disagree | Agree | Strongly agree |
| More income since joining co-op | Strongly disagree | disagree | Agree | Strongly agree |
| More savings since joining co-op | Strongly disagree | disagree | Agree | Strongly agree |
| More consumption since joining co-op | Strongly disagree | disagree | Agree | Strongly agree |

0=strongly disagree, 1= disagree, 2= Agree, 3= strongly agree