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Assessment of Performance and Improving the Role of Dairy Cooperatives in the Milk Value Chain: The Case of Degem District, North Shoa Zone, Ethiopia

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Abstract
The study revealed that there were eight (six formal and two informal) marketing channels that smallholder farmers used as their milk outlets in Degem district. The function of the main actors was producing, trading, bulking, processing, retailing and consuming. 57% of the milk produced in the district was sold through traders, 24% was sold through the collection sites of large milk processors,13% was sold through the collection sites of small milk processors and only few 6% were through the primary dairy cooperative, the main reason for this was that the primary dairy cooperative did not have any cooling facilities and cooling tanks that forced them to collect the milk as early between 4 to 5 AM. The cooperative sells the milk every day to the union that transports the milk to Addis Ababa where the processors are found. The study also shows that 15,390 liter of milk was sold per day from the district. The only customers available having cooling facilities track in the district are traders and the large processors, which transport the milk to their own chilling center soon after collection. The results of the study indicate that all of the members of cooperative small holder milk producers mainly produced between 11-18 (18 during rainy season 11 in the dry from cross breed) liters of milk per cow per day and sell 8.5 -16 liters per cow per day. Testing for milk quality was done at collection point using Organoleptic, Alcohol and Lactometer tests; the milk price was determined by processors and the other actors follow this price. The price of milk is the same for all milk buyers (8.50ETB July, 2014). The majority of the producers 87.5% were not satisfied with the price of milk that was being offered by the buyers. It was noted that 32.5% of the producers were living more than 5 kilometres from the capital town of the Degem district Hambiso the main milk market place, this affected the milk quality, the greater the distance the lower the milk quality. The lack of milk cooling and chilling facilities in the district forces the dairy cooperative and small processors to transport every day to the large processor found in Addis Ababa, which contributes to an insufficient milk collection. But large processors have chilling facilities at the neighbouring Town Shola at Fiche 12 km far and mama at Debre tsige 35 km far from the district milk collection centre. Traders have cooling facilities equipped trucks, which they are using to transport milk to Addis Ababa and sold to both large and small processors.Rural smallholder milk producers, especially non-members of the cooperative are located far from the major urban milk markets. Thus, their main milk outlet is through the informal channels and they are forced to transport the milk by donkey over long distances to sell to traders and milk collectors in Hambiso, the capital town of the Degem district where the collection site was present. It was noted that several factors constrain the milk market environment which includes poor road infrastructure, increasing transport costs, long distances between producers and the milk markets, lack of collective marketing and insufficient coordination among the chain actors. Therefore, forming farmers organisations, and similar forms of collective action are an asset to reduce high transaction costs, increase bargaining power and obtain the necessary information. Improving the road infrastructure and introducing innovation to the existing marketing channels can open up new marketing opportunities for rural smallholder milk producers. Building farmer's capacity through training and improving coordination among chain actors will improve the milk business environment.

CHAPTER ONE. INTRODUCTION

This research on Assessment of Performance and improving the role of Dairy cooperatives in the milk value chain gives an insight of the Gendashano premier dairy cooperative, one of the dairy cooperative in Degem district North Shoa Zone in Oromia region. The objective of the research is to assess and improve the effectiveness of dairy cooperatives in Degam district from the perspective of chain development with a view to analyse the factors that milk collection of cooperative, support mainstreaming of value chain approaches or improvement of value chains. This report is based on desk research, survey and case study undertaken in the Degem district. The reports cover a brief research background, its objective, review of different literatures, the findings of the survey and case studies. In addition, it also covers discussion on the basis of the findings, conclusion and recommendation for the implementation of performance improvement dairy cooperative to

stimulate farmers to get better income from dairy farming in the Degem district of Ethiopia.

The research is applied research, as it was intended to find a solution to alleviate the immediate Performance of Dairy cooperatives problems of the small holder milk producers, and it is also an analytical research which was identified as the impact of various interventions and phenomena on the selected value chains.

1.1 Back Ground of the Study

Dairying is one of the investment areas, farmers can make to improve their standards of living. It is a developmental tool as it widens and sustains the major pathways out of poverty; securing the assets of the poor, improving smallholder productivity, and increasing market participation by poor, contributes up to 80 percent of agricultural gross domestic product in developing countries International Livestock Research Institute, World Bank classifies livestock as a high value market that is fastest and its importance is expected to increase growing agricultural market in most developing countries (World Bank, 2008). The Ethiopian Government's policy aims at developing a market-oriented economy, supporting investors, and linking up small-scale producers to markets. Provision of a reliable market for liquid milk: many Urban and peri-urban farmers are still discouraged by the seasonal fluctuations in demand and lack of market outlets. The value chain is a recent concept in Ethiopia. It has been promoted by different development organizations and Ethiopian Government with the objective of enhancing the livelihood of rural community and urban and peri-urban entrepreneurs.

The cattle population in Ethiopia is estimated to be about 53.9 million, out of which female cattle constitute about 55.4 percent. About 98.95% of the total cattle are local breeds and the remaining are hybrid and exotic breeds (CSA, 2013). Dairy production is a critical issue in Ethiopia-a livestock-based society-where livestock and its products are important sources of food and income, and dairying has not been fully exploited and promoted. Milk is being produced in all agro-ecological zones of the country. Cattle, camels, and goats are the main livestock species in Ethiopia that supply milk. The estimated milk production in the year 2008/09 is 2.76 billion litters from cattle and 162 million liters from Camels (CSA 2009). Ninety-seven percent of the milk produced from cattle is produced by the indigenous stock and the remaining 3% from improved, exotic-crosses and pure-grade cattle (LDMPS).

The annual milk production is estimated about 3.8 billion liters from cattle and 165 million liters from camel (CSA, 2013).

Agriculture in Ethiopian is the back bone of the country which covers 40% of gross income domestic product (GDP), 60% of export, and employing 85% of the country's population (word Bank,2012). In an attempt to develop a dairy production system of Ethiopia, dairy supply and marketing system needs to undertake radical changes. First of all, dairy farming needs to move out of the traditional subsistence mentality and develop a more market-oriented approach. For such a radical change to happen farmers need to be sure that what they will gain from the market will be more than what they will lose. For example, if market-oriented farming means selling to the local community, farmers may not perceive it as a profitable change, since the local demand may be limited and not sufficient to bear the costs of adapting the production system. A viable market-oriented farming system requires a wide access to market, including local but also remote markets.

To get access to distant markets, farmers need to link up with manufacturers able to extend the shelf-life of farmers' supply, as well as with traders and retailers, which can ensure a capillary distribution of final products. In short, dairy products cannot be expected to flow across Ethiopia unless a supply chain, bridging rural supply and urban demand, is in place. Degem is located 125 kilometres northwest of Addis Ababa. The altitude is between 2500 and 2600 meters. The average daily temperature is about 15 degrees centigrade with a minimum of 10 degrees and a maximum of 23 degrees. The average rainfall varies between 800-1200 mm per year.

The total population of Degem is around 99,143, of whom 49,205 were men and 49,938 were women; 6,066 or 6.12% of its population were urban dwellers. The majority of the inhabitants with 97.88% of the population practiced Ethiopian Orthodox Christianity while 1.11% of the population practiced traditional beliefs 85% of the income of the people is derived from farming activities. Additional income is generated from employment in industry and flower farms. One of the largest milk collectors in this area is the (cooperative) Union of Selale Dairy farmers. The milk suppliers own an average of three cows with a minimum of one cow and a maximum of fifty cows. Sixty percent of these animals are crossbreeds and forty percent is local breeds. The average milk yield of a crossbred cow is about ten liters a day. Local breeds yield about four liters a day. The most important income sources of the farming families are from the sale of milk, but they also keep sheep, horses, poultry and donkeys.

Although milk and milk products play an important role in the economy, the low productivity of local breeds, shortage of feeds, limited veterinary services and a general shortage and high cost of feed and exotic dairy breeds are some of the major Cause of the problem of the milk industry at large. The lowest price is always during the Orthodox Christian fasting period. Excess milk is the critical problem of the union and is searching for market.

This thesis should work out and find the means that can bring the actors to work together and create win-

win situation. There is a loose business linkage between raw milk suppliers and milk processing industry.

1.2 Justification

Basing on the fact that dairy sector can play a vital role in improving the livelihood of people in rural areas; Dairy industry has multipurpose benefit in terms of food availability, regular cash income and more employment opportunities in Degem District. In the district there is a primary farmer, dairy cooperative, but due to different reason its performance is not going well. As a result farmer complain the cooperative for more collecting much amount milk they produce and supply to the market. This is the gap that this study intends to fill by assessment of performance and improving the role of dairy cooperatives in the milk value chain through which rural smallholder farmers in Degem district can market their milk produce in order to earn better income. Market access is becoming major problems ahead of issues of productivity. That is why value chain concept becoming famous and kept the attention of development organizations and governments, with the objective of addressing the market linkage problem of the rural community (SNV Annual Report 2009, Page 17, 20, 31) (World Bank 2009, P.34).

1.3 Research Problem

Although there is a huge amount of milk produced by dairy farmers in the district, however, the performance of primary dairy cooperative operating in the district is weak as a result more milk was sold to another buyer in the district. Therefore, farmer loss benefits getting from dairy cooperative.

Problem Owner

Ganda shano dairy cooperative

1.4 Research Objective

To assess and improve the effectiveness of dairy cooperatives in Degam district.

1.5 Research Questions

Research question 1.

What are the current market channels/outlet of milk producers?

1.1 What is the current potential milk production in Degem district?

1.2 Who and what are the roles of the stakeholders involved in the chain?

1.3 What is the value share of each actor in milk value chain in the study area?

1.4 What the barrier that hinders the cooperative in buying milk from smallholder milk producers?

Research question 2.

What is the governance of Ganda shano dairy cooperative?

1. What functions does the dairy cooperative provide for smallholder milk producers farmers?
2. What is the performance of cooperative?
3. What are the challenges and opportunities for improving the performance of dairy cooperative?
4. What improvement practice could be implemented by cooperative? (More effective /new value chain) of milk producer in Degem.

1.6 Scope and Significance of the Study

Scope of the Study

The study was limited to the assessment of performance and improving the role of dairy cooperatives in the milk value chain in Ethiopia taking the Degem district Dairy Business Value Chain as a case. Selale area is the largest milk shed in Ethiopia involving a range of actors. Accordingly, this study represents dairy value chains in Ethiopia in relation to cooperative performance. The study was geographically focused only on Degem district in terms of coverage and depth to generate useful information on assessment of performance and improving the role of dairy cooperatives in the milk value chain and associated problems in the selected district.

Significance of the study

The output of this study gives some insights to dairy cooperative, NGOs, governmental organizations and other dairy value chain supporters who aim to improve the position and income of dairy farmers in the study area in particular and chain actors in general. The result and recommendations generated from this study give substantial help to dairy cooperative on the way it can strength, its performance and market linkage provision in order to improve market poison to the farmers. Furthermore, the output of this study is also useful to the dairy cooperative to design strategies based on the identified gaps to improve the income of its members.

Limitation of the Study

Some of the limitations of the study during data collected from the study area was mentioned as follows. There are 4 dairy cooperative in the Degem district, but I may not visit all of them due to the unsuitability of the area. Inadequate internet service to cooperative supplementary information from internet.

1.7 Definitions of Terminologies

Chain actors: who directly deal with the produce, process, trade and own them according to KIT and IIRR (2008).

Chain Supporters: are the service provided by various actors who never directly deal with the product, but whose service add value to the product for instance like bank, microfinance institutions, insurance companies, transporters, brokers and other supporters including NGOs, government agencies and research centers (KIT and IIRR, 2010).

Value chain Mapping: a value chain analysis systematically maps the actors involved in production, collection, processing, wholesaling, retailing and consumption of particular products. This mapping assesses the characteristic of actors profit and cost structure and flow of goods, money and information through the chain (Rduren, 2007).

Value Addition: Is a process of adding value to products to create profit/value, whether you have increased the initial product or not. It includes all products from one level to the next (Kahan, 2004).

Profitability: It is the return on investment given by profit divided by cost price expressed as a percentage (Kahan, 2004)

Margin: implies that a profit margin that depends on the organization's ability to manage the linkages between all activities in the value chain (Porter, 1985).

Association: Is refers to a corporate body consisting of a group of associated persons who usually meet periodically because of common interests, objective, or profession.

Dairy Farming: Is the management of dairy animals for milk production.

Producing Organization: is the way of small-scale farmers organizing themselves for collective action to achieve the need and interest unable during the working individual.

Farmers: This term is generally to mean all households who are engaged in agriculture and dairy farming that produce and sell milk at least once a year.

Milk: milk mentioned in this research paper is the food produced by dairy animals mainly cows.

Market: An actual or nominal place where the forces of demand and supply operate, and where buyers and sellers interact to trade goods, services, or contracts or instruments, for money or barter.

Market access: Openness of a country's market to foreign goods and services. Market access reflects the government's economic policies regarding import substitution and free competition.

Stakeholders: People who are directly involved in the milk chain in Degem district. These include actors, chain supporters and chain influences.

1.8 Conceptual Framework

The framework of this research is based on value chain analysis.

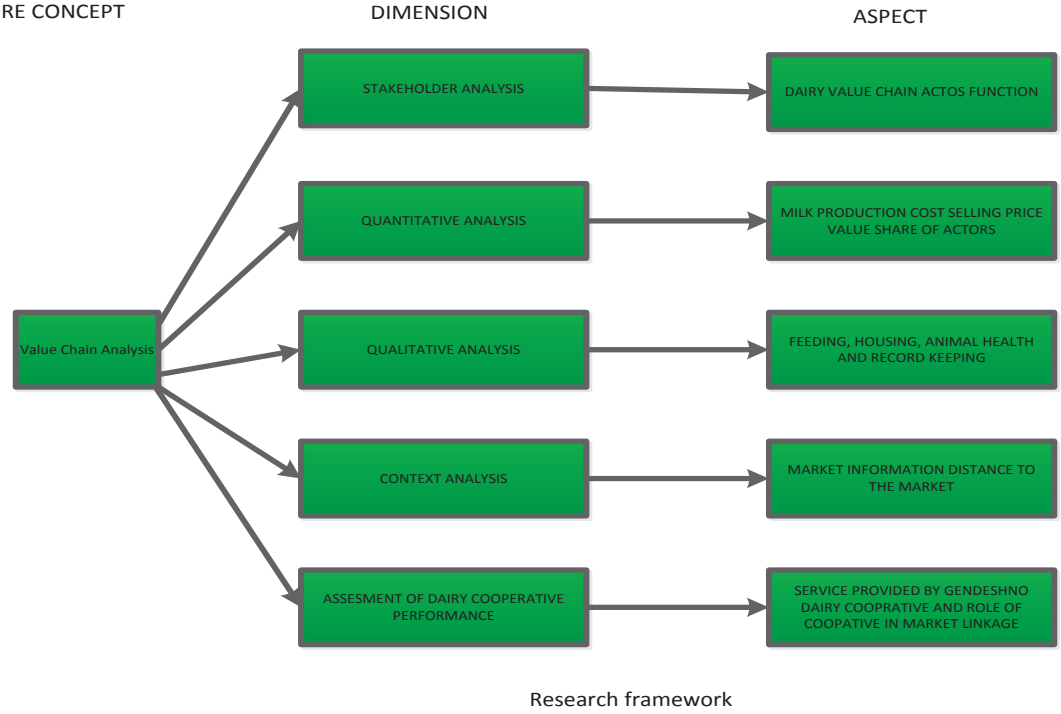

Figure 1: Conceptual framework

1.9 Organization of Research

This report is organized in such a way that It has six chapters. The first chapter describes about the research context and justification, problem statement, research objective, research questions and scope of the study. The second chapter deals with literature review, especially focus Assessment of Performance and Market linkage of Dairy cooperatives and milk supply chain in Ethiopia. The third chapter describes about the methodologies of the research which includes site selection, method of data collection and data analysis and presentation. The fourth chapter deals with the findings of the research. The findings are presented in charts and table for easy interpretation of findings. The findings of case studies are also described in this chapter. The fifth chapter is about the discussion on the basis of research findings and desk study. The last chapter deals about the conclusion and recommendation on the basis of discussion and also describes about the implementation of the recommendations of the research.

CHAPTER TWO. LITERATURE REVIEW

2.1 The Concept of the Value Chain

The small holder milk producers were unable to sell their surplus milk in urban markets. Milk from the peri- urban area was sold in urban market by traders who was making profit from it. The milk producers at long distance and remote areas like rural area of Degem were unable to sell their milk to cooperative. But with the development of dairy cooperative chains those milk producers got guaranteed market and fair prices for their milk. These cooperative dairy chains have established well organized structure in which each actor has its own role and all the actors get their fair value share. In this way the concept of value chain came into practice in Degem district. The Gendashno dairy cooperative along with three other competitors is functioning in Degem district. Being a good name in domestic market demand of quality milk from this district by cooperative increased, but milk procurement of Gendashno dairy was very small during last five years. To study the causes of this low procurement, research was done in the chain of survey and interviews with a checklist.

According IFAD (2010), a value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production, delivery to final consumers, and final disposal after use. Value chain analysis is a tool to enhance the competitive strategy in a business.

2.2 Milk Production in Ethiopia

In Ethiopia, the government is the major provider of livestock marketing services. In recent years due to establishment marketing cooperatives and private dairy enterprises, the government role and share in milk marketing and processing services in urban and peri-urban areas have reduced. On the same way, the dairy marketing cooperative is playing a significant role in providing the marketing service by buying milk from members and non-members, process it and sell products to traders and/or local consumers. The highland smallholder milk production is found in the central part of Ethiopia, where milking is nearly part of subsistence, smallholder mixed crop and livestock farming (Sintayehu et al. 2008). The smallholder milk production system is dominated by subsistence farming (Belete, 2006).

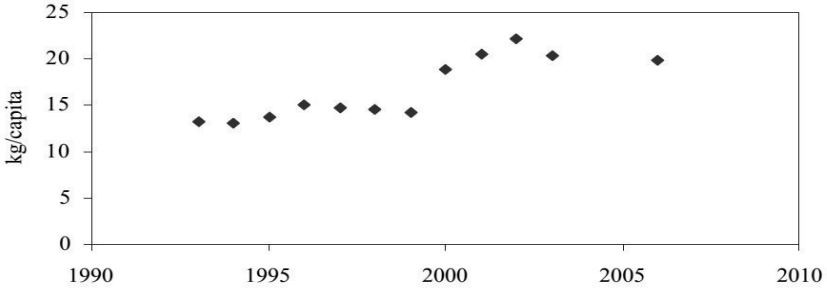

Figure 2: Production of cow milk in Ethiopia
Source: FAOSTAT, 2010.

2.3 Linkages through Marketing Cooperatives

Marketing cooperatives are composed of individual producers with a mutual interest in marketing their produce collectively. By forming marketing cooperatives, producers can achieve economies of scale. By negotiating as a group, producers can get a better price for their produce. Through marketing cooperatives, producers can save the time and expense of taking their produce to the market themselves. Furthermore, producers can reduce the risk of being left with piles of unsold produce rotting in the fields while they wait for a buyer. They can also grade and sort their produce, and possibly store and process it before selling. Groups of producers may help each other with fieldwork such as cow rearing, feeding and milking. They can also try to market their own produce if

they are dissatisfied with the prices that traders offer.

2.4 Equipment and Transportation of Milk

The type of apparatus used in milk processing may become a source of contamination. The apparatus should be easily cleanable and resistant from the disinfectant. After the milking, all apparatus should be cleaned and disinfected with suitable disinfectant and should be stored in a clean environment. The equipment it should be cleaned with clean water before using (Fias Co farm, 2012). After milking the milk should be cooled down up to 4 to 6 degree centigrade (FAO, 2010). If there is no chilling facility, the milk should be kept under the cooling condition as much as possible or should be delivered to the collection centers quickly. If both conditions are not feasible, a preservative lacto peroxidase can be added to extend its shelf life for 7/8 hours. This method is easy and cheap for farmers in developing countries (Bennett et al, 2000).

2.5 Market Outlets of Milk and Milk Product

In Ethiopia the dairy farmers have three markets-outlets for the milk left out from consumption. These are sold to neighbours in the informal marketing channel, dealers or milk groups/ cooperatives (in some cases retailers). The availability of these markets-outlets through the establishment of milk groups and cooperatives as well as the milk-collection centers have given dairy farmers a broader choice of marketing their milk instead of depending on local traders and neighbourhood buyers.

According to Ahmed et al., (2003) Up to 90% of the milk marketed is through the informal channel. This imbalance between formal and informal sectors makes enforcement and regulation of standards and taxation difficult because there are no entry and exit barriers to the liberalized market system.

The current pricing by the processors does not motivate farmers to produce good quality milk because all raw milk is sold at the same price regardless of quality. This also gives dishonest milk vendors leeway to adulterate milk.

SNV Netherlands Development Organization Study on Dairy Investment Opportunities in Ethiopia, 2008 the milk collectors. The growth in milk production is only 1.2% while population growth is 3% per annum. This suggests a wide gap between the potential supply and demand (Ahmed et al., 2003).

2.6 Milk Supply in Addis Ababa

According to the study conducted by Teferra Abreha (2006) from the Addis Ababa Urban indicates that in the Addis Ababa milk shade there are about 66,766 cattle and 31,062 (46.5%) are estimated to be crossbred dairy animals. The total estimated milk supplied to Addis Ababa annually is presented in Table 1. Considering the total population of 3 million in Addis Ababa, the estimated per capita consumption has increased from about 16 liters in 1998 (Azage and Alemu, 1997) to about 22 liters. However, assuming an average consumption of250 ml of milk per person per day, the total annual requirement will be 273,750,000 L, indicating a shortfall of 208,247,000 liters. The current supply therefore only fulfills about 24% of this assumed demand.

Table 1: Annual milk supply to Addis Ababa city

Source	Amount (L)
Addis Ababa Urban farmers	45,243,000
DDE	4,500,000
Sebeta Agro-Industry	8,760,000
Individual milk collectors	4,000,000
Others	2,000,000
Total	65,503,000

Source: Teferra Abreha, 2006

2.7 Advantages and Disadvantages of Market linkage.

According to FAO (2007) linking producers directly to traders involves individual producers that act on an individual basis or may work in informal or formal groups to reduce costs. Advantages of this type of linkage include; long term sustainability due to trust between the members, formal producer organizations are usually not required and traders may provide services like training in production and produce handling. Difficulty access to better markets and short term different payment are among disadvantages on the side of the producer.

2.8 Milk Marketing in Ethiopia

Table 2: Projection of human population and milk requirements in Addis Ababa

Years	Population (000)	Milk (liters)
2000	2,395	115,568,400
2010	3,328	154,152,960
2020	4,246	196,674,720
2030	5,080	235,629,840

Source: Wolday Amaha and Kifle Eshete, Food supply & distribution systems in Addis Ababa Feb.2002.

2.9 Profit Margins of Chain Actors

According KIT&IIRR (2008), during participating in chain activities, actors incur costs. The incur costs depending on the business and risks they have to be bear In products where value addition is done, the share value of the farmer is usually higher than in situations where the final products undergone and adding value to them.

2.10 Information Flow

According to Vorst (2000) it is vital to distinguish the key information system issues to chain management for efficient flow of physical products, information and money for a transparent and fruitful value chain. Product flow from input supplies to consumers while money flow from consumers to input supplies, but information flow in both directions while actors proactively sharing relevant information. According to Kota et al., (2003) communication and information sharing quickens advance in chain coordination, create awareness and efficiency through the reduction of transaction costs and faster relaying of necessary information.

2.11 Dairy Cooperative

Dairy cooperative society, Cooperatives is 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" (1995 International Co-operative Alliance Statement on the cooperative identity, incorporated into 2002 International Labour Organization (ILO.).

2.12 Constraints to production

In research carried out by the FAO, the most frequently reported constraints by farmers are poor animal breeds (92%), low milk supply (88%) and lack of feed (83%). The areas, which need technical support as identified by the respondents at the milk collection centres are packaging (68%), record keeping (100%), financial management (100%), quality control (100%), marketing (100%) and cooperative administration (100%). More than 65% reported that they are ready to pay for these services (FAO, 2008).

2.13 Evaluation of the Performance of Degem Primary Dairy Cooperative

The spider (MIDCA, 2010) was applied to the cooperative to evaluate the performance of dairy cooperative in Degem district.

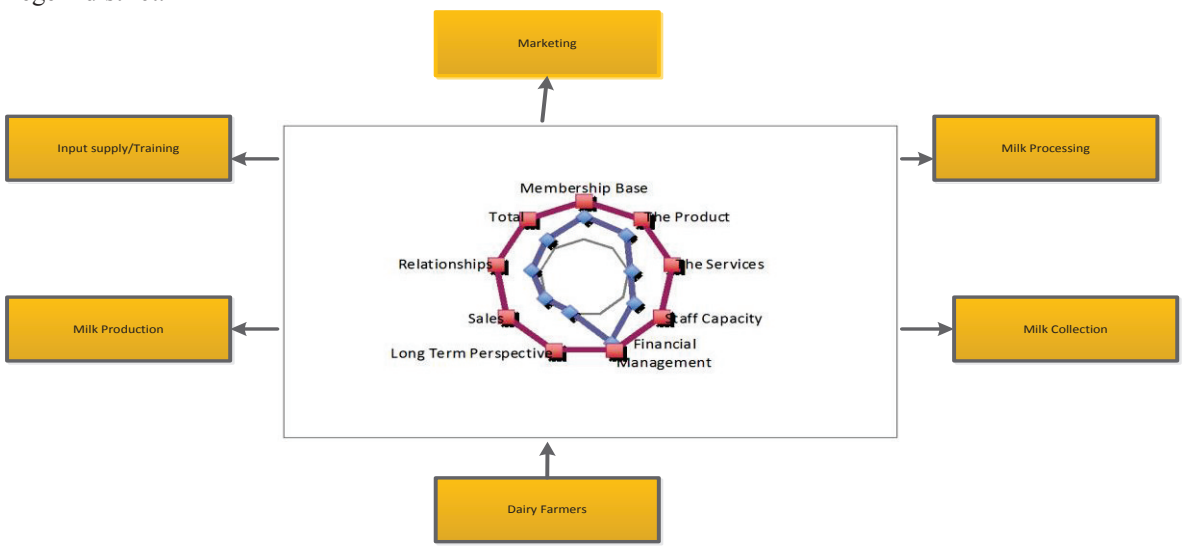

Figure 3: Spider web model for evaluation of the performance of Gandashano Dairy cooperative. Source: MIDCA, 2010.

The research was used MIDCA, 2010 spider web model to evaluate the performance of the dairy cooperative. Different indicators, including membership base, product, services, staff capacity, financial management, long term perspective, sales and relationships for producer association were used to score, which parts of the association are performing well and where the gaps are there. The indicators are scored to monitor the individual parts performing and the average score reflects the overall cooperative performance level.

Membership base

To keep a healthy relationship between members and cooperative, it continually important involves those interested in the cooperative and to constantly reach out to potential supporters whom might not be directly involved. Membership of organizations and societies that focus on the common interest of their members. Organizations provide tools and solutions to members to increase their productivity and ensure better services.

The Services

Fruitful cooperatives can help their members in many ways. Cooperative marketing farm products and providing farm input, credit and other services vary widely in success. There are two primary types of agricultural services cooperatives: these are input supply and marketing include transportation, packaging, distribution and selling farm products and provision of credit services.

Relationship

Farmer member form agricultural cooperative to obtain the required service and improve their farm's income rather than to realize a high return on their investments. Without the proper attention to members' relations, members' loyalty will often deteriorate. In such conditions, members use, control and ownership of the cooperative will fall.

Financial Management

The ability to manage its finance is critical to the performance of producer organization. It includes: planning, accountability and the use of the financial system. Financial planning is the ability to forecast the organization's future monetary needs and to allocate for the use of resources. The financial systems allows, the governance structure to understand the current financial status and thus to take appropriate actions that will help financial viability.

Staff Capacity

Staff capacity is the key determinant of an organization's success and is often the face of the agency to customers and stakeholders. Keeping a well-trained, well qualified worker is a decisive function of the organization. Competent and committed staff workers are very important for the success and performance. The performance of an organization greatly depends on the presence of and the performance of the leadership which leader influence the attitude, behaviors and value of the other towards organizational goals (Vecchio, 2007). Standard leadership activities include tracing, the direction for development, networking and ensuring output.

Sales

Small scale producers generally have interests in organizing themselves in order to obtain access to markets and obtain better selling prices. In the developing countries, agriculture is dominated by small scale farmers, which characterized by the spread in the remote areas and poor infrastructure and this in turn affect the income of farmers.

Long Term Perspective

The mission and vision of an organization are the lifeline of sustainability. They establish its purpose of being today and goal of tomorrow. A clear define mission offers organizations a realistic lens for everyday activities. On the other hand, the clear define visions the organization has outlined its aspiration for the future tasks. What they aspire to be mission and vision offer distinct perspectives, but they are interrelated in a sense that they both driven on organization to express a single purpose. Thus, written declaration of mission and vision are very important for the organization to define the basic purpose of the organization and description of the long term achievement of the organization.

Product

The cooperative offer the members' different advantages including Animal feeds on credit base, Traing on milk quality, quality control and transportation. The product of small scale farmers is characterized by low volume, quality and remoteness area. The producers cannot sell milk on quality base, but the dairy cooperative improves the income of the small scale farmers through collecting, transporting and selling milk to processor based on quality.

CHAPTER THREE. METHODOLOGY

3.1 Description of the Study Area

This study was conducted in Degem district of North Shao Zone, Oromia National, Regional State which is located in Northwest of Addis Ababa (Fig 4), of Ethiopia at 125 km on the main road to Gojam. The area receives an average annual rainfall of around 1100 mm, more than 85% of which falls in the main rainy season (June to September). The maximum altitudes of Degam are 3500 and m. a. s. l. whereas the minimum altitudes

are 1550 meters above sea level (m.a.s.l), and the average annual temperature ranges from 8 – 20^{o}C. The area is characterized by highland agro-ecology with mixed crop-livestock farming systems in which livestock in general and dairy production in particular contributes significantly to livelihoods. The major crops grown in the district are barley, wheat, tef, oats, faba bean, field pea, and lentil. Degam district has 16 PAs and 2 towns. Fitche is the capital town of the zone as well as that of Hmbiso is the capital of Degam. In Degam the district has three agro-ecological zones, namely lowland, midland and highland which covers about 38%, 32% and 30% of the total area of Degam, respectively.

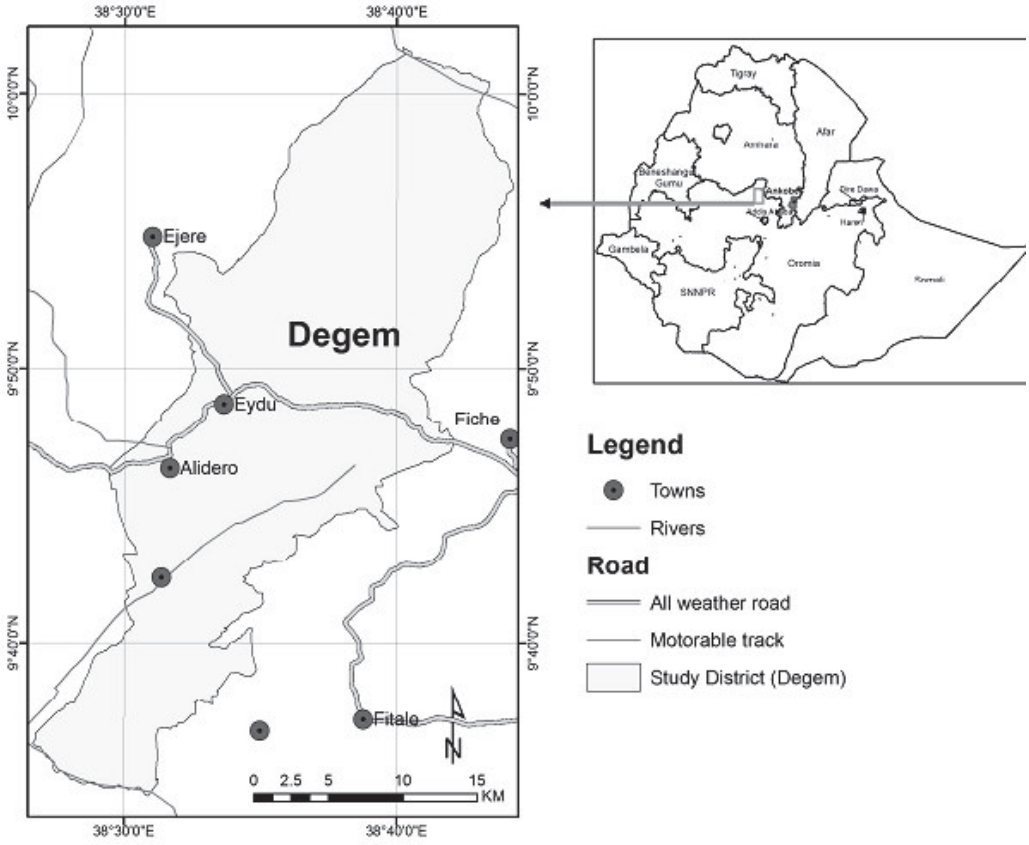

Figure 4: Location and Physical Features of Degem district.
Source: field study result, 2014.

3.2 Type of Research

The research consists of case study, survey and Focus group discusion. Both quantitative and qualitative data were collected from both members and non-members of cooperative milk producers, district livestock resource, development and health office, district cooperative development office and Gendashano dairy cooperative staff like a general manager, salesperson, Trader, processor and milk retailers.

3.3 Method of Data Collection

3.3.1 Desk Research

Before the start of the fieldwork, the desk study was conducted to find reviewing relevant literatures related to the research topic from latest scientific journals, books, report and internet help to conceptualize the research problem clearly and accurately. Secondary data was also collected from the district livestock resource, development and health office and district cooperative development office.

3.3.2 Case Study

Case studies with a face to face interview with the actors and stakeholders in the milk value chain were carried out. Checklist for different stakeholders were used to carry out these case studies. This was combined with observation and content analysis of the reports and policy documents on livestock in order to obtain in-depth information on the whole milk value chain and service provision of Gendashano dairy cooperative. The following stakeholders involved in the milk value chain were interviewed by using a structured questionnaire to collect the required information.

Table 3: summary of stakeholder interviewed

No	Stakeholders	Number of interviewees	Their role in milk value chain
1	Farmers (Coop member and non-members)	40 (20 each)	Chain actors
2	Gandashano dairy cooperative	5	Chain actors
3	District livestock resource, development and health office	1	Chain supporter
4	District cooperative development office	1	Chain supporter
5	Retailers	1	Chain actors
6	Trader	2	Chain actors
7	Processors	2	Chain actors
	Total	**52**	

Table 4: Summery of Data Source and Tools for Data Collection.

Sub-questions	Data	Data Source	Tools for data collection
1.	What are the current market channels/outlet of milk producers?	Literature Farmers and district Agricultural office	Questionnaires interview and desk
1.1	What is the current potential milk production in Degem district?	Literature: Interne, Journals and books Smallholder dairy farmers,	Questionnaires interview and desk
1.2	Who and what are the roles of the stakeholders involved in the chain?	Literature: Internet, Journals and books	Questionnaires and interview
1.3	What is the value share of each actor in milk value chain in the study area?	Executive/Chairman of the cooperative	Questionnaires and interview
1.4	What the barrier that hinders the cooperative to buy milk from producers?	Literature: Internet, Articles, Journals and books	Questionnaires and interview
2	What is the governance of Ganda shano dairy cooperative?	Literature: Internet, Articles, Journals and books	Questionnaires interview and desk
2.1	What functions does the dairy cooperative provide for smallholder milk producers farmers?	Literature: Internet, Articles, Journals and books Executive/Chairman of cooperative	Questionnaires interview and desk
2.2	What is the performance of cooperative?	Literature: Internet, Articles, Journals and books Executive/Chairman of cooperative	Questionnaires and interview
2.3	What are the challenges and opportunities for improving the performance of dairy cooperative?	Literature: Internet, Articles, Journals and books Executive/Chairman of cooperative	Questionnaires interview and desk
2.4	What improvement practice could be implemented by cooperative? (More effective /new value chain) of milk producer in Degem.	Literature: Internet, Articles, Journals books and group discusion	Interview (checklist)

Research Design

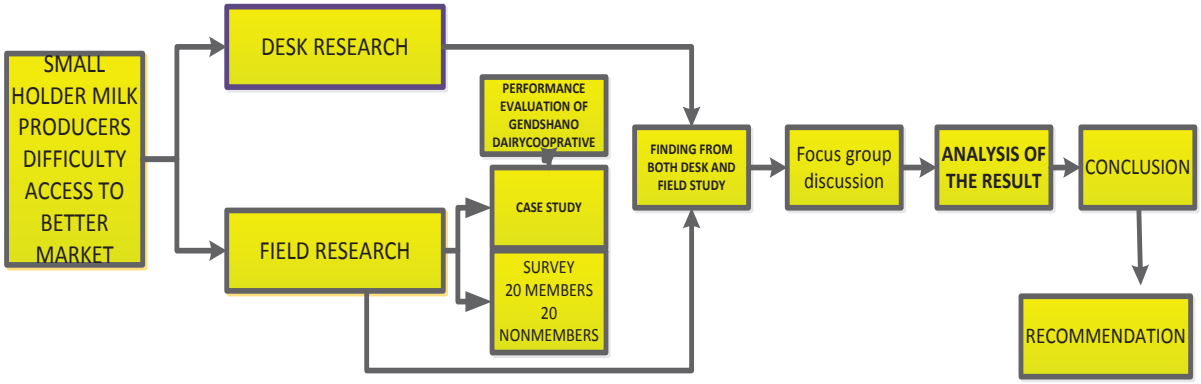

Figure 5: Research Design

Interview Conducted with Gendashano Dairy Cooperative General Manager

Detail discussion was made by the general manager of Gendashano dairy cooperative to gather relevant information on the reason of less amount of milk purchase from the farmers, the services of the cooperative providing to the dairy farmers , membership criteria, the capacity of the cooperative to accept new members, the current status of the cooperative and other related issues which can hinder the performance of the cooperative. Furthermore, the interview was also conducted with the cooperative accountant, casher and salesperson to gather information on the selling price of milk at different sites, the volume of milk sold in different years, the cost incurs, the revenue generated from the selling of milk and the trend of milk collected.

Interview Conducted with District livestock Resources, Development and Health Office.

The interview was conducted by the head of district livestock research, development and health office to collect secondary data on livestock population of the district, constraints and opportunities of milk production and the milk marketing situation in the district, the support they give for the district milk producers and Gendashano dairy cooperative and trends of milk production in the district.

Interview Conducted with Degem District Cooperative Development Office

The Interview was conducted with Degem district cooperative development head office to collect information on the total numbers of primary dairy farm found in the district, the relation between the district cooperative development office and Gendashano dairy cooperative, the way in which dairy cooperative organized in the district, the criteria need to be a member of the cooperative, the support district cooperative office give for district dairy farmers and Gendashano dairy cooperative and other related issues.

The Interview was Conducted with Milk Traders

The interview was conducted by milk traders located in Degem town to gather the necessary information on the types of milk products they are collecting and trading, purchasing price, selling price, major suppliers and major buyers.

The Interview was Conducted with Milk Processors Collect Milk from Degem

The interview was conducted with milk processors that are collecting milk from the Degem town to gather the necessary information on the types of milk products they are collecting and processing, purchasing price, selling price, major suppliers and major buyers. Large processors are also whole sellers in the milk value chain in their works as a wholesaling function to distribute the processed milk to the retailers in the Addis Ababa.

The Interview was Conducted with Milk Retailers

The interview was conducted with milk retailers located in Addis Ababa city to gather the necessary information on the types of milk products they are trading, purchasing price, selling price, major suppliers and major buyers.

3.3.3 Survey

The survey was conducted in the Degem district from the mid of July to August 23, 2014. The survey had a questionnaire that was administered to the dairy farmers in Degem District. The farmers were grouped into two clusters according to the membership to a dairy cooperative member and non-members Small holder farmers. A convenient sampling technique was used in sampling the farmers. The farmers were selected from within a radius of 30 km from Degem district where dairy cooperative is located. 40 farmers were selected from the two clusters of farmers. 20 farmers from each cluster were interviewed to obtain a broad range of primary data on their activities in the chain and also the constraints they face with more emphasis on marketing of dairy product, assess milk production potential, problems related with milk production and marketing, trend of milk production and marketing, the services provision of Gendashano dairy cooperative, reason for why cooperative are not buying more milk and supporters involved in the milk value chain in the Degem district, the relationship between the district dairy farmers and Gendashano dairy cooperative and other related issues.

3.3.4 Focus Group Discussion

The focus group discussions were conducted at the end of case study and survey to discuss about the results of the findings and draw a new value chain map with stakeholders who were included in the study that will link the dairy producers to the market more efficiently, increase their income and improve the position of the cooperative in the dairy value chain.

3.3.5 Sample Size and Sampling Procedure

Before conducting field research, discussion was conducted by the head of Degem district livestock resource, development and health office and Gendashano dairy cooperation to select the respondents. Based on the information about district livestock resources, development and health office and the cooperative, 40 dairy farmers were purposefully selected for members and randomly selected for non-members to collect the required information. Following this, 20 members of cooperative as there are only 20 active members and 20 non-members of the cooperative were selected and interviewed. The interview was conducted with the selected respondents to generate the relevant data by using a structured questionnaire. For the case study, Gendashano dairy cooperative, district livestock research, development and health and district cooperative development agency and milk traders, milk processors that are collecting milk from Degem district and milk retailers were purposefully selected to collect the required information with the help of research field interview guideline questionnaire**.**

3.4 Data Processing

The collected quantitative data was checked, rearranged, coded, entered SPSS statically software of version 21 and edited before analysing. The qualitative data were summarized, rearranged and narrated.

3.5 Method of Data Analysis

To process and analysis the collected data value chain mapping, stakeholder matrix, SWOT, Spider web model, Microsoft office excel workbook pre-designed excel and SPSS statically software version 21 were used. Value chain mapping was used to have a visual representation of the whole chain in the Degem district with its price and volume label at each actor's level and to show the quantitative and qualitative data collected during the field research. Microsoft office excel workbook pre-designed excel was used to draw some graphs of district livestock population and for calculating financial data. The SWOT analysis tool was used to analysis the strengths, weakness, opportunities and threats of Gendashano dairy cooperative. On the other hand, the spider web model was used to evaluate the performance of Gendashano dairy cooperative. The field survey data collected through structured questionnaire was analysed using descriptive statics such as percentages, frequencies, mean and standard divation. These analysis results were presented in the form of tables and graphs. Moreover, data collected through interview was analysed through narration and interpretation**.**

CHAPTER 4: RESULTS OF SURVEY AND INTERVIEWS

This chapter explains the finding of the study (desk research, Survey and interviews) that was conducted among dairy smallholder farmers in Degem district North Shoa Zone of Ethiopia with a structured questionnaire during the field study. Farmers are grouped into members and nonmembers of dairy a cooperative while the interviews through structured key informant was conducted with executive members of the Gendashano dairy Cooperative (cooperative committees), District livestock resource, development and health office, District cooperative development office, milk Trader, Processors and Retailers to degenerate detail information on milk value chain and improvement of dairy cooperative performance.

The area is characterized by poor infrastructure, making it difficult for the farmers, particularly from rural areas far from the main road to access the milk market in Hanbiso capital town of Degem where there is a main milk collection center. In the district all the actors purchasing milk (cooperative, union, Traders and collectors of processors) are paying the same price of 8.50 Ethiopian Birr (price on July 2014) per liter of raw milk. The district was also the area where the milk Trader dominates the total volume of raw milk purchased (57% of milk out of 15,390Lit per day).

4.1 Gendeshano Primary Dairy Cooperative and its Role in Milk Value Chain

Gendeshano primary dairy cooperative was established in 1990/91 interrupted and re-established in 2001/2 due to different reasons and finally renewed and start functioning in 2007/8 with 30 members 3 females and 27 males. Know a total of 80 small holder milk producers 20 members and 60 non-members are selling milk to cooperative 300 liter per day.

The main objective to establish the Gendeshano primary dairy cooperative was to help the local small holder milk producers to rationalize milk Production, improve milk quality, to create market linkage for their product, to and improve the income of the smallholder milk producers. Currently the Gendeshano primary dairy cooperative has 20 active members. The main criteria of for membership are: interest, capital, age, 20 ETB

entrance fee, 500ETB to buy the share from the union, applicant's area and the activities engaged. The cooperative commonly use Organoleptic, alcohol and lactometer test for quality control at the collection point.
The main benefit milk producer gets from the cooperative are:
Input supply such as formulated quality animal feeds on credit basis that will deduct from the milk price paid every 15 days, Technical service: Training on dairy cow management, milk handling, quality milk production, Market service: provision of market information and link producers to potential buyers through the cooperative.

Constraints in Gendashano Primary Dairy Cooperative

Lack of cooling facilities in the district, which forces the dairy cooperative to collect milk at an inconvenient time (4- 5A M) and transport the milk to Addis Abeba every day to sell it to milk processor through the union. 300 liter of milk was rejected per month because of quality. The cooperative accept only 27 to 29 latometer readings of milk.

Low membership, shortage of budget, high turnover of non-members only because of collection time. Fluctuation of milk price and low level of fat content because some of the farmers remove the cream and sell the milk. Lastly, law enforcement of milk quality test.

Opportunity of Gendashano Primary Dairy Cooperative

Willingness of farmers to join cooperative if time of collection is improved.
The presence of quality animal feed factory which is owned by the union.
They are shareholders with 25,000 ETB in the union and have a good relationship with the dairy union.

4.1.1 Services of Gendashano Dairy Cooperative

According to the general manager of Gendashano dairy cooperative, the cooperative is giving different services to the members and the district small holder milk producers. The services of Gendashano dairy cooperative giving are:

Provision of Input Supply

Gendashano dairy cooperative is providing input such as quality animal feeds that was mixed in union animal feed factory but they do not give AI service that was requested by farmers.

Technical Services

Gendashano dairy cooperative provides different technical services such as training on dairy cow management, milk quality management, milk storage, and handling and experience sharing with other model dairy farmers one to two times per year.

Market Services

Gendashano dairy cooperative providing different market services such as provision of market information, link milk producers to potential buyers.

4.1.2 Gendashano Dairy Cooperative Membership Criteria

Gendashano dairy cooperative is open a type of cooperative that means every milk producers who fulfil the criteria of membership can be a member of the cooperative. The Ethiopian cooperative society proclamation No. 147/1998 allow any person who has an interest and above 14 years to become a member of any cooperative volunteers. In Ethiopia, it is possible to establish open or close cooperative or association membership depending upon the type of cooperative, willingness of new entrants and annual budget. Of the total agricultural cooperative, 92% are with open membership on the condition that the new entrants pay share capital 500ETB and registration fee. Degem district cooperative development head officer revealed that, there are settled criteria to be fulfilled by the new entrants to become a member of the cooperative. These criteria are: the age of the applicants should be 14 and above, the applicants should be a resident of the same area or village, the applicants should have enough capital to pay a registration fee and purchase, share, the new applicant should have also interest to work with others and the new applicants should have a dairy cow from their home. Currently, the entrance fee of the cooperative for new entrant is 500 ETB however the time of milk collection is the most limit for the small holder farmers to be the members of the cooperative. Quality control for antibiotics is an issue to processing industry, as for processing (yoghurt) one needs milk without traces of antibiotics. So far antibiotics may be not a large problem as the use of antibiotics by the small-scale farmers was very limited. Development of joint quality standards, adopted by the dairy industry may help increase the general quality of milk in the formal chain.

4.2 Milk Trader

Interview results are shown below.

The first Trader was called Solomon, Solomon buys milk in Degem district at 11 collection points a total of 4500 Liter per day, he sells the milk to the large and small processors in Addis Abeba after transporting it about 125 km with his own fully equipped cold chain track. He buys milk based on quantity at 8.50 ETB after checking quality using organoleptic, alcohol and lactometer test from the district and sell based on quality at 10.50 ETB.. Solomon had no any formal contract with farmers, but has an informal oral contract. According to the contract, Solomon paid the farmers after every 15 days. He has employed five men and assists him in milk collection, especially in record keeping, quality testing, measuring and loading of milk.

These employers would go every morning to collect milk from the producers and did their regular activities. He had a total of more than 480 smallholder farmers.

The second trader was called Tesfaye. Tesfaye was buying milk from a producer, he was follow the price set by large processor on the price of milk there was no negotiation. He checks on the quality of milk by using the organoleptic, alcohol lactometer. He had 3 employees that collect milk from farmers at each 11 collection center. He collects 4300 liters of milk per day at 8.50 ETB per liter of milk. There were no written contracts with farmers; he collected whatever volume of milk was found at the farm. The payment of milk was done after 15 days. He had a total of 400 smallholder farmers that supply the milk to him every day.

Major constraints of Milk Value Chain in the Degem District

During the field study time, the major constraints identified were:

At Input supply level: high cost of cross breed cow, Shortage of improved animal forage and shortage of artificial insemination.

At Production level: Low volume of milk, low productivity of local zebu cows.

At Marketing level: Perishability of the products during long fasting of the Ethiopian Orthodox church, Mismatched between supply and demand.

At Processing level: low raw milk supply Lack of processing facilities and shortage of foreign currency to import cooling and chilling facilities.

At Retailing level: Lack of facilities for storage of processed products.

At Consuming level: Consumers did not want to buy pasteurized milk.

Milk and Milk Products Retailers

The retailer includes a supermarket and small shops, in the formal chain and kiosk in informal chain. They are involved in activities of purchasing from processors and sell to final consumers such as urban households, hotel and restaurant and institutions like school and college in the formal chain and raw milk from informal private collectors and sell to final consumers like low income consumers and tea cafés. They explained during the interview time that they were purchasing one liter of processed milk by 17 ETB from the processor and resell at 20 ETB(17-20 supper market price, but shops buy at 14 and sell 18 per liter) in the Addis Ababa city.

Milk Value Chain Supporters and their Roles

There are different milk value chain supporters in the study district that were identified during the field study

4.3 Dairy Value Chain Supporters and Their Roles

Degem District livestock Resource, Development and Health Office

The interview conducted with Degem district livestock resource, development and health office revealed that, district livestock resource, development and health office is giving different technical support such as training and advice on cross breed production problems, dairy cow management, milk handling and quality control. The office is also giving different input supply such as AI, to improve milk production and their position in the milk value chain in the district. Moreover, the district livestock resource, development and health office are also giving support such as conduct feasibility study with district cooperative development office for organizing small holder primary dairy cooperatives. Milk production is the main source of income for many farmers in the district next to crop production. The main milk pick production season in the study area is in the summer during the rainy season due to high availability of feeds between June and September. According to the secondary data of the district livestock research, development and health office, there are 22,430 local zebu cows and 12,320 cross cows in the district. On average 540 litre per lactation from local breed and 1500-2400 Litre per lactation of milk is produced in the district. From the total local and cross breed cow 5,931,788 litre of milk was harvested in the district in 2013. The milk yield from local cows and cross cows are increasing in the district mainly because of expansions of improved forage and increment of cross breed cows. The following photo shows when the interview was conducted with Degem district livestock resource, development and health officers and expert.

Degem District Cooperative Development Office

Degem district cooperative development office is giving different supports to the district small holder dairy farmers to improve milk production and their position in milk value chain. The services Degem district cooperative development office provides to the district small holder dairy farmers are: technical support such as training farmers on the cooperative rules and regulation, market services such as market information, search market outlet for farmers' products, collecting farmers' interest for the cooperative establishment, conduct feasibility study and check the potentiality of the area for milk production before organizing the farmers in to cooperative, and Auditing . The following photo shows when the interview was conducted with the Degem district cooperative development head officer.

Stakeholder Matrix

The Major Actors involved in the milk chain are small holder farmers, cooperative, union, trader, small processor, large processor, wholesaler retailer and consumer. The stakeholder analysis is done in order to find out their functions in the chain and subsequently identify their constraints in the milk Chain.

Table 5: Function of milk chain actors and supporters/influencers

Actors	Functions
Private feed selling shops, union/cooperative	They sell supplementary feeds to the farmers (on credit base specially cooperative).
Small holder dairy Farmers 2000 (1550 males and 450 Femals)	They raise cattle, produce milk and sell to customers, Trader, processor (small and large) and premier dairy cooperative.
Traders 2 (solomon and Tesfaye) buy at 8.50 and sell at10.50ETB buy a total of 8800 lit of milk per day 65% to large and 35% to small processor.	Collect milk direct from several producers and sell to small and large processors in Addis Ababa by transporting the milk using a truck equipped with cold tanker
Cooperative (4 primary dairy cooperative)	Collect milk direct from several producers, both members and nonmembers and sell to the Union.
Union Selale Dairy Union sells 73% to large 27 % to small processors.	Collect milk from cooperative and sell to small and large processors in Addis Ababa by transporting the milk using a truck that is not equipped with cold tanker so that they are collecting and moving very early from 4- 5 AM that is why they collect the smallest amount of milk per day.
Processor Collectors (large 2 and Small 1) Sebeta Agro Industry and Lame Dairy Enterprise and family large 3700 lit small 2000 lit per day.	Processors are establishing their own milk Collection centers. And collect the raw milk from farmers an transport to their chilling units to maintain the quality of the milk.
Retailers	They sell milk to the consumer in shops and supermarkets
Consumers: .	Consumers are final users of milk. These are consumers at the level of household and cafes, restaurants, hospitals and Ethiopian Airline.
Supporters/Influencer	
Local government	Provide extension service in animal health, AI Maintenance of roads
NGOs SNV,VOCA and USAID (through land o' Lakes)	Provision of training to the farmers and experts, SNV supports the development of small business initiatives. It furthermore provides assistance for new dairy processors in accessing finance from private banks. It provides capacity building for producers and processors, and facilitates linkages between them.
Oromia Credit and Saving Share Company	Provision of limited credit service.

Source: field study result,

4.4 Milk Value Chain Analysis

4.4.1 Formal Milk Chain

As demonstrated in (Figure 6 and 7) there were eight different milk channels found in the study areas two of them are in informal chain whereas six are in the formal chain. These include: 1. Farmers ⟶ Consumers 2. Farmers ⟶ Private milk collector ⟶ kiyoks ⟶ consumers 3. Farmers ⟶ Traders ⟶ Small processors ⟶ retailers (shop) ⟶ Consumers. 4. Farmers ⟶ Traders ⟶ large processors ⟶ retailers(supper market) ⟶ consumers. 5. Farmers ⟶ Small processors (collection unit) ⟶ retailers ⟶ consumers 6. Farmers ⟶ large processors ⟶ retailers ⟶ consumers 7. Farmers ⟶ Cooperative ⟶ Union ⟶ small processors ⟶ retailers ⟶ consumers. 8. Farmers ⟶ cooperative ⟶ union ⟶ large processor ⟶ retailers ⟶ consumers.

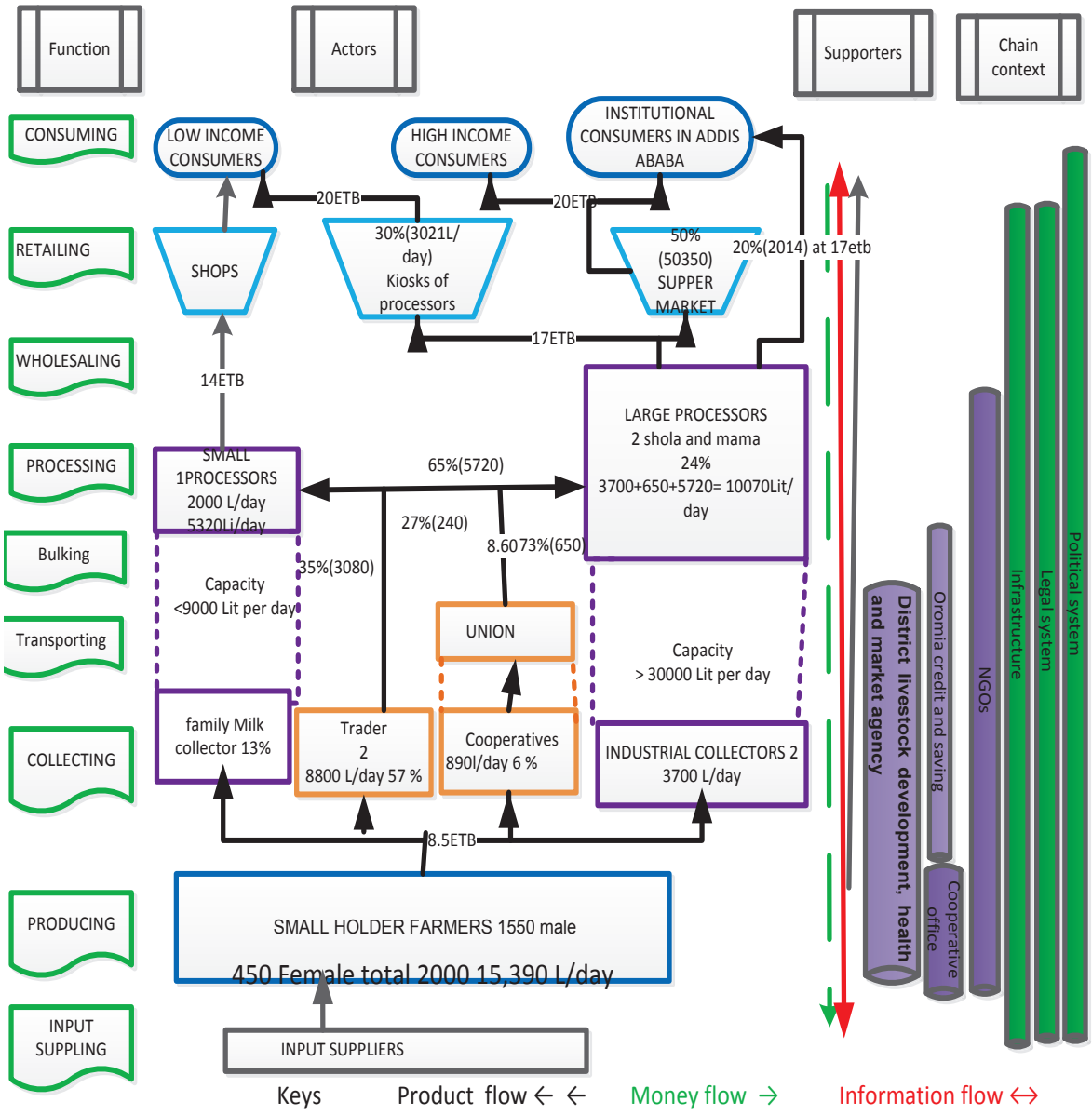

Figure 6: Current Formal milk Chain Map of Degem District
Source: field study result, 2014.

4.4.2 Informal Milk Chain

In the study area, 70 % of milk is supplied to the final consumer through informal channels (locally processed one). In the informal market, milk may pass from producers to consumers directly or it may pass through two or more market agents. In the study area informal system is characterized by no licensing requirement to operate, low cost of operations, high producer price compared to the formal market and no regulation of operations.

Informal Chain Map for Milk Value Chain in Degem District

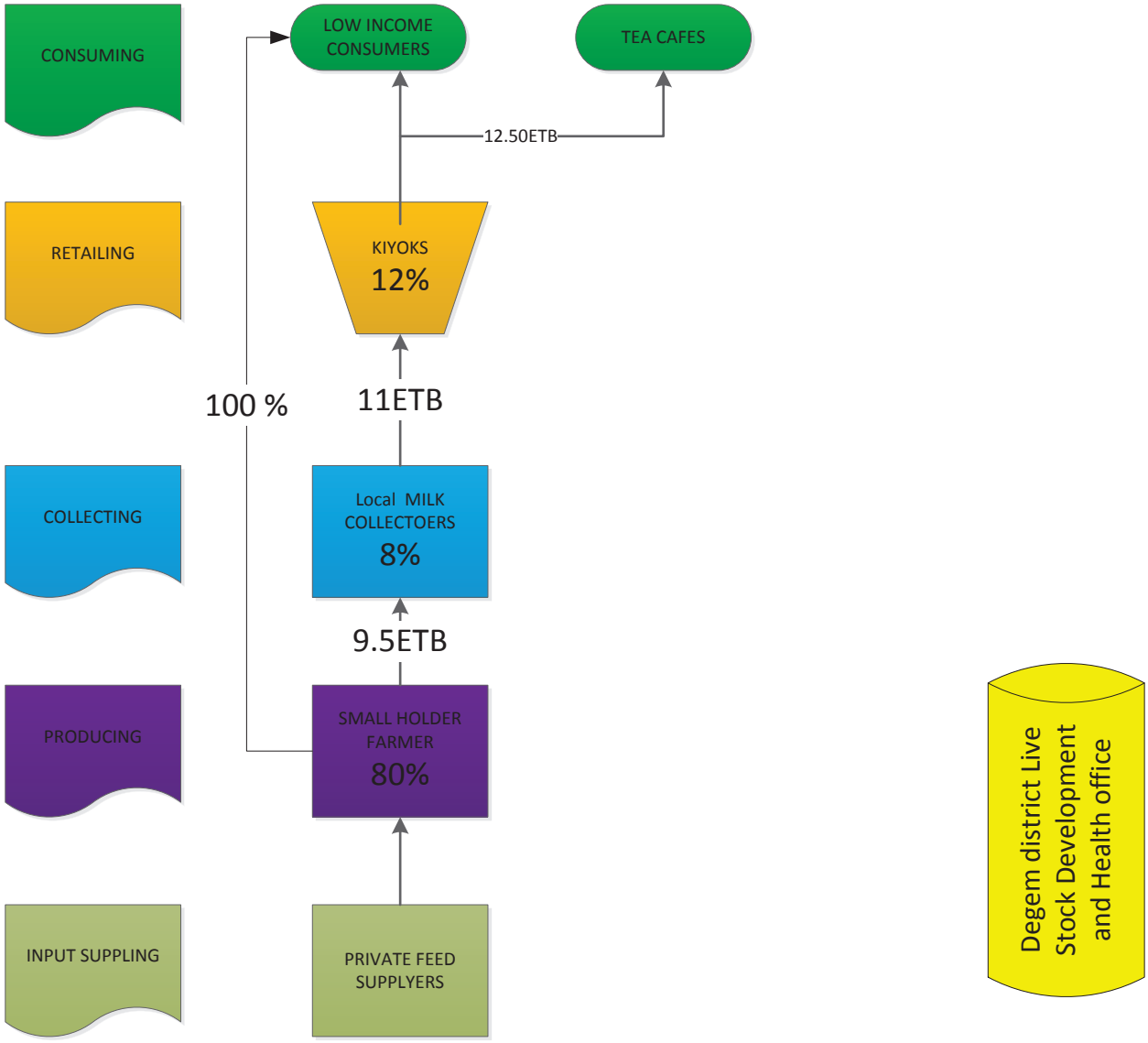

Figure 7: Current Informal milk Chain Map in Degem District.
Source: field study result, 2014.

4.4.3 The Milk Chain Actors, Supporters and Influencer

The results of the study show that there are several actors in the milk marketing channel in Degem district from the producers (farmers), Cooperative, union, traders, collection point of small and large processors, small processor (family), large processor (DDE and Sebeta Agero-industry) and consumers. The trader buys the milk from the farmers at the farm gate in bulk and sell it to the small and large processor, who process and sell the milk to consumers in the capital City of Addis Ababa through shops and supermarket. The retailers sell the milk direct to the consumers (individuals, hotels, restaurants and Hospital). In the informal value chain the private milk colletors also buy milk directly from the producers, but in small quantities and sell also in small quantities to local consumers and the producers also directly sell to the final consumers in the neighboring.

The trader buys the milk following with the price determined processors and buy about 57 % of the milk (8800Liter) sold from producers per day. The milk chain had actor a union who have an animal feed processing factory that sold the formulated and quality supplementary animal feeds (concentrate) to primary cooperative that will farther sold the feed to the farmers on credit basis, which will be deducted from milk payment after 15 days while the ministry of livestock through local government provided extension service to the farmers. There was also a non-government organization that assisted the producers in keeping quality of milk by giving training to the district Agricultural experts and development agents that will further train the farmers (Table 5).

These are actors, chain supporters and chain context. The various bodies involved in this chain are explained here below.

Chain Actors

Input Suppliers: The most important inputs in the production of milk are animal feeds, breeding service (bull and Artificial Insemination) providers, Vet drug suppliers and Vet service providers. Vet Service providers: The Government is the main service provider in the region. There are no private vet service providers in Degem district.

The National Artificial Insemination Center (NAIC) The National Artificial Insemination Center (NAIC) is the government source of improved dairy breed genetics. According to LoL181, the center produces 300,000 units of bull semen per year (2010) with the goal of increasing that level to 600,000 by 2015. It has 10 centers around the country that distribute semen and liquid nitrogen to A/I technicians. The 1,700 A/I technicians, who are employees of the regional governments, are located at the district level. The government A/I system is heavily subsidized with the A/I service and semen costing 4 ETB.

Feed: the major portion of feed supplies comes from hay. The Degem district is gifted with hay supply. Other animal feeds like wheat bran, edible oil seed cake, concentrates and minerals are also required. Residue of local beer like drink (Tela) is also an important feed item. Cooperatives also distribute animal feeds for their members. Members are selecting for the feeds, of the cooperative for its genuine quality and better price. Processed animal feed suppliers are few in numbers. There are 3 to 4 retailers of animal feed in two towns of Degem district. For all of the traders, feed sales are a side business in addition to their retail products.

Small Holder Farmers: there is only one type of dairy farmers in Degem district, namely traditional farmers. There are no any commercial farmers. The traditional farmers involved in the milk value chains are those who hold a cross breed cows which are commercially viable to supply milk as a routine daily business. Based on the study, the average total cow holding per household is about 2 to 8 milking cows. These farmers are milking an average of 2.7 litres of milk per day per cow from local zebu in dry season, and 4.65 Litre during the rainy season while farmers are also milking an average of 8.35 litres of milk per day per cow from cross in dry season, and 13.45 Liter during rainy season. The traditional processing and trade of dairy products, especially traditional butter and cottage cheese (ayib), dominate the Ethiopian dairy sector. Of the total milk produced only 5% is marketed as liquid milk, among others due to the underdevelopment of infrastructure in the rural area (Tefera, 2008).

Cooperatives/Union:

Most of the cooperatives are transformed from the originally formed farmers' group who form collection centers in different parts of Degem area. Some of the cooperatives formed the SDCU. SDCU is the only union in North Shewa Zone of Oromia region. It is protected by law to have only one Union in one zone and one cooperative in one Kebele. Kebeles are the lowest unit in Government Administration. There are about 4 dairy cooperatives in Degem area and all of them are a member of SDCU. Cooperatives are managed by a board of directors and administered by 5 elected executive members. In addition to the executive members audit and inspection committee elected by and reported to the General Assembly is undertaking audits and inspection activities. Executives are non-salaried on a voluntary basis in accordance with the principles of cooperatives. Allowance may be paid to cooperative executives for field works.The number of members in coop ranges from 20 to 171.

Processors

The processors believed that the establishment of the collection centers helped them to enhance the bargaining power of the unions, had they have been fully dependent on them. Processors like Family and cooperative do not have a truck equipped with cold tanker and chilling unit in Degem district: Processors are actors are classified into two categories, large scale and small scale processors. These processors are mainly delivered to supermarkets and large hotels, hospitals and Ethiopian Airline. The other group of processors are small size processors with a capacity of processing about 5000-9000 liters per day. There are about three dairy processors in Addis that are collecting milk from a study area with a processing capacity ranging from 5000 to 60,000 liters of milk per day.

Major Private dairy processors collecting milk from Degem district

It shows that Sebeta is collecting the largest portion of the milk and followed by Family (table 6).

Table 6: Capacity of milk processors and Amount of milk collected from Degem per day.

S/No	Dairy Processers	Location	Year of Establishment	Daily Processing Capacity, (liters)	Attained Average Capacity, (liters)	The amount of milk collected per day from Degem
1	Sebeta Agro Industry (Mama Dairy)	Sebeta	1998	35000	30000	3400
2	Lame Dairy Processing (former	Addis Ababa	2007former DDE (1964)	60000	30000	300
3	Family	Addis Ababa	2000	9000	6000	2000

Source: field study result,

Supermarkets: There are about 100 supermarkets in Addis Ababa. These supermarkets are buying about 50 to 150 litres of pasteurized milk per day or every other day. Because of the perishable nature of the milk, most of the supermarkets order the safest stock size to avoid possible loss.

Kiosks: There are thousands of kiosks in Ethiopia. These kiosks are major sales outlet of large volumes of milk from informal chain.

Shops They are the main outlet of formal chain the delivery vans of the milk processors are delivering milk door to door to these shops. Households and individuals are major customers of these shops.

Consumers: Consumers are final users of milk. These are consumers at the level of household and cafes and restaurants. Most of the regular household consumers are those who can afford to expend Birr 120 and above. Most of the households prefer the whole milk supplied by house to house suppliers of urban dairy cow holders.

Institutional Buyers: These are big institutions like; hotels, hospitals, universities and airlines. The majority of them are sourced from dairy processors. Lame Dairy Enterprise for instance supplies Black Lion Hospital, and has special milk specifically pasteurized to children attending at the children's unit of the hospital.

Chain Supporter

Oromia Credit and Saving Share Company

Government micro-finance institutions such as Oromia Credit and Saving Share Company and special savings and credit associations provide credit to some 35% of the producers in the area Firew et al. (2011).

NGOs: the role of NGOs in the development of the milk value chain is great. Organization like SNV, USAID (through land o' Lakes) and VOCA are providing a lot of support in strengthening the milk value chain. The type of support provided includes Capacity building through training, Facility provision, financing, and other technical supports.

Government: The role of government in the livestock sector is immense. Government is the major service provider of Vet medical supplies, Vet services and AI services. Cooperation Agency and offices are providing technical support to the coops and union of marketing, management, accountancy and auditing services free of charge. In addition, this structure also initiates and facilitates the formation of cooperatives and unions. Zonal and District Administrations are providing lands and other supports to cooperatives and union.

4.4.4 Chain Context

National Standards: Ethiopian has the are standards for dairy products developed by the Standard and Quality Organization. In the study area some of the professionals in the dairy sector expressed that there is the weak or absence of enforcement of the quality standard of pasteurized milk.

Infrastructure: The absence of road outside the main road has affected many households to reach the milk market. Some are travelling up to 15 km to reach the milk collection centers and these farmers are not members of any dairy cooperative. Based on the survey farmers claimed that Lack of chilling centers at the various milk collection centers considered as a major setback in expanding the milk collection radius from the main road. Many of the towns along the main road (Degem district) have accessed the hydropower electricity.

Economic Environment: the growth in the economy is expected to increase the household income of the society which in turn increases the demand for milk products. The demand for milk is increasing.

Culture and Society: There are about 210 Ethiopian Orthodox Christians fasting days per a year. The fasting seasons of the Ethiopian Orthodox Christians are the loose season for the milk and milk products. Based on the survey conducted, the demand for milk declines by about 25% during fasting seasons, but the farmers and Agricultural experts are complaining that milk are sold in the place out of Degem district where it can get a buyer even during this fasting time, so that the price of milk should not drop in unfair amount.

Survey of Small Holder Dairy Farmers in Degem District

4.5 Demography of the Sample

The demography of interviews producers revealed a gender proportion of 85% males and 25% females, indicating that males are dominating the Subsector. The sample size for the survey (n=40) was clustered into members and non-members of dairy cooperative. The majority (82.5%) of the farmers interviewed had a dairy farming experience of more than 7 years.

4.5.1 Educational level of Households (HHs)

Several studies indicate that the educational level of farming HHs has a positive association with utilization of new dairy technologies and farming practices for both members and non-members of the cooperative Mesfin Dejene, et al. (2009). It was noticed that the literacy level of the sample HHs in the study areas was 60% for both the members of dairy cooperative and non-members (Table 7). On the other hand, 40% of the sample HHs were not able to read and write which is slightly in agreement with the Mesfin Dejene, et al. (2009) who reported that 53.3 % of the head of HHs participated in adjacent the on-farm feeding trial at the Kuyu District, North Shoa were illiterate while 40.0% had primary education.

Table 7: Educational level of sample HHs in the study areas

Level of education Male Female Total

Level of education	Male		Female		Total	
	N	%	N	%	N	%
Total Members of dairy cooperatives	17	100	3	100	20	100
Illiterate	7	41	1	33.33	8	40
Primary school	6	35	1	33.33	7	35
Secondary school	3	18	1	33.33	4	20
Diploma and above	1	6	0	0	1	5
Total Nonmembers of dairy Cooperatives	15	100	5	100	20	100
Illiterate	6	40	2	40	8	40
Primary school	3	20	3	60	6	30
Secondary school	4	27	0	0	4	20
Diploma and above	2	13	0	0	2	10

Source: field study result,

4.5.2 Age of the Respondents

Table 8 shows the age of the respondents. According to the result, the age of both members, non-members of dairy cooperative fall between 18 and 60 years old. The members of the dairy cooperative had an average age of 40.3, whereas non- members had an average age of 35.5 years old. The majority of farmers interviewed are full time farmers. Taking milk to an MCC each day would be a main duty for them and means of transport mainly on foot. This shows that members have better experience in dairy farming join the cooperative in voluntary bases.

Table 8: Age distribution of the respondents

Frequency	Minimum Age	Maximum Age	Mean
Members	28	54	40.3
Non- members	18	60	35.5

Source: field study result,

4.5.3 Characteristic of the Respondents

Religion of the Respondents

Regarding to the religion of respondents, 75% respondents are orthodox ,15% Protestant and 10% are Muslims followers. The survey result indicates that orthodox religion is the most dominate religion in the study district. This has an impact on milk market as a long fasting period of Ethiopia Orthodox religion consumers in the study area do not consume milk during this period.

Table 9: Religion of respondents.

What is your religion?	Frequency	Percent	Valid Percent
Orthodox	30	75.0	75.0
Protestant	6	15.0	15.0
Muslim	4	10.0	10.0
Total	40	100.0	100.0

Source: field study result,

Recognition of the Availability of Dairy Cooperative in the Study District

All the members and non-members of cooperative know that there is a dairy cooperative in the district and most of them are willing to join if the time of collection of milk will improve.

Access to Credit Service: All members of cooperative have access to credit service while 75 %of non-members of the cooperative have no access to credit service due to collateral issues and others.

Table 10: Access to credit services

Type of Coop		Frequency	Valid Percent
Members	Yes	20	100.0
Non- members	Yes	5	25
	No	15	75

Source: field study result,

4.5.4 Economic Characteristic of the Respondents

4.5.5 The Main Source Income of the Respondents:

For 75% of the dairy cooperative members the main source of income was milk production and 25% was a crop production, but for non-members of cooperative milk production and crop production are equally important source of income in the Degem district this shows that the more milk you have the more members of cooperative to secure market.

Table 11: Source of income.

Type coop	Source of income	Frequency	Percentage
Members	Milk production	15	75
	Crop production	5	25
	Total	20	100
Non-members	Milk production	10	50
	Crop production	10	50
	Total	20	100

Source: field study result,

4.5.6 Land Ownership and land use Pattern

Land is an important asset for farmers. The average land holding of sample HHs was 2.74 hectares (Table 12) which is slightly in agreement with the average land holdings (2.87 ha) of the HHs at adjacent Kuyu district (Mesfin, et al., 2009) The farm is allocated to several uses, such as crop cultivation, grazing, hay, following and others. In the study areas, only 24% of the total farmland was allocated for grazing.

Table 12. Average land ownership of sample HHs (hectares)

HH	N	Average	Minimum	Maximum	SD
Male	32	2.94	2	4	0.67
Female	8	1.94	1	4	1.05
Total	40	2.74	1	4	0.85

Source: field study result,

In the study are men and women are involved in the livestock sector, the land owner was given to both sex if women are HH but in different ways; and they face different constraints. Women have important roles in managing dairy cattle. They are often involved in feeding, watering and milking animals reared close to home, such as in intensive and mixed systems and in processing and marketing of livestock by-products. Women are most typically primarily in the roles that revolve around the home, deferring matters of sales and marketing, other than in nearby locations, to men.

4.5.7 Dairy cow ownership of both members and non-members of cooperative

The study indicates that 80% of the majority members of cooperative have 4 and above cows while the non-members have 3 and above. Results indicate that co-operative farmers produce slightly more milk than independent farmers and this can be attributed to an improvement in access to training and extension services.

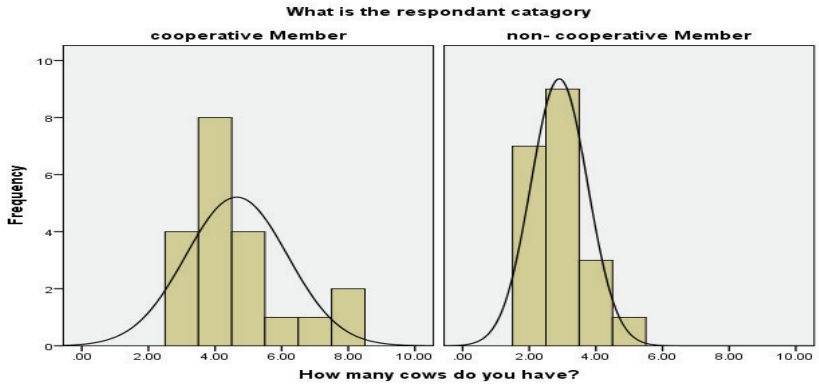

Figure 8: Dairy cow ownership of both members and non-members of cooperative.
Source: field study result,

4.5.8 Livestock Ownership Socioeconomic Improving Dairy value Chain.

There is an increasing trend in the total number of livestock available in Degem District during 2012/3 to 2013/4 (Table4) indicating that there is a huge pressure on land due to higher stocking rate.

Table 13: Livestock population of Degem District.

Livestock population of Degem District (TLU) in 2012/3 and 2013/4

Livestock	Number		*CF	Tropical Unit (TLU)	Livestock	Percent TLU increase/decrease from (2012/3 to 2013/4)
	2012/3	2013/4		2013	2014	
Cow (Zebu breed)	1896	20330	0.7	1,327	14231	11
Cow (Cross HFX zebu)	7485	12320	0.7	5,240	8624	1.6
Oxen (Zebu breed)	20458	22880	0.7	14,321	16016	1.1
Oxen (Cross HFXzebu)	4000	4520	0.7	2,800	3164	1.1
Heifer cross breed	6589	7146	0.75	4,942	5360	1.1
Heifer zebu breed	1986	2060	0.75	1,490	1545	1.0
Bull zebu	2000	2820	0.75	1,500	2115	1.4
Bull cross	458	548	0.75	344	411	1.2
Calf zebu breed	3200	3585	0.25	800	896	1.1
Calf cross breed	1599	2178	0.25	400	545	1.4
Sheep young	12003	15200	0.06	720	912	1.3
Sheep Adult	27213	30086	0.1	2,721	3009	1.1
Goat young	2014	12100	0.06	121	726	6.0
Goat Adult	15201	16068	0.1	1,520	1607	1.1
Mule	142	151	0.7	99	106	1.1
Donkey	23256	25138	0.5	11,628	12569	1.1
Horse	2982	3284	0.8	2,386	2627	1.1
Poultry local breed	3004	35220	0.01	30	352	11.7
Poultry cross breed	2813	3422	0.01	28	34	1.2
Total	138299	219056	8.64	52,415	74848	47.5

CF: Conversion Factors to TLU (Jahnke 1982); 1 TLU=250kg of live weight.

Source: field study result,

4.5.9 Place of Milk Selling by Members and Non-members of dairy Cooperative

Respondents who are members and non- members of the cooperative were asked the place to whom they were selling their milk. Accordingly, for the question do you sell your milk to the Gendashano dairy cooperative? Respondents (78%) of the members of the cooperative responded that, they were selling their milk to Gendashano dairy cooperative? And the rest respondents (22%) replied that, sometimes they were not selling their milk to Gendashano dairy cooperative rather they were selling the milk to milk traders (time of collection of traders 6-7AM) because of inconvenient time of collection of cooperative (time of collection of cooperative 4-5AM) otherwise they are willing to sell.

4.5.10 Cooperatives

There are 4 dairy cooperatives in Degem district and all of them are a member of SDCU. Cooperatives are managed by a board of directors and administered by 5 elected executive members. In addition to the executive members audit and inspection committee were elected and reported to the General Assembly that undertaking audit and inspection activities. Cooperatives employed additional staffs for the office such as guards. Executives are non- salaried on a voluntary basis in accordance with the principles of cooperatives. Allowance may be paid to cooperative executives for field works. The number of members in coop ranges from 30 to 170.

4.5.11 Relationship between Cooperatives and Unions

Dairy cooperatives get credit facility for the purchase of inputs (feed and vet supplies) from the Union. Union sells a quality animal feed that was manufactured in its own factory to cooperative on credit. Coops also sell raw milk to the Union on credit. The Union pays the price set by the primary cooperative to members (with a difference of 10 cents), which follows local spot prices. Contracts are made based on volumes and price. Cooperative bought and has a share of the members of the union and receives the annual dividend distribution from the union, which was the important cash inflow that improves the liquidity of the cooperatives. Cooperative actually distributes part of the dividend they received to their members. According to the existing cooperatives proclamation, 70% of the income is distributed as a dividend to members and the remaining will be retained by the coops and unions.

4.5.12 Members' view on the Services of Gendashano Dairy Cooperative

Study indicates about the services they get from the Gendashano Dairy cooperative. Accordingly, respondents (38%) replied that they were received better services that help them to improve milk production from the

Gendashano Dairy cooperative. The majority of respondents (62%) has responded that they did not get the services they need from the Gendashano Dairy cooperative. The interviewed farmers explained that they did not get the services they need, including special time of collection should have to be improved, training, input supply and market information. The survey shows that the Gendashano Dairy cooperative is not giving the required uniform services for all its members. During general cooperative needs training in management skills, and their members need training on proper management of their cows and milk.

Information and Data

The study indicates data generation, consistency and documentation are poor throughout the value chains, especially at farm levels. Few producers maintain records by members of the cooperative whereas non- members not have any record keeping.

4.5.13 Factors influence Dairy farmers for not being a member of the Cooperative

Majority interviewed non- members 85% were responded that inconvenient time of collection is the main reason for not being a member of dairy cooperative and followed by long distance 8%. On the other hand, 7% respondents stated that unavailable adequate information and quality requirement in the area is the main reason for not being a member of the association.

4.5.14 Milk Production in Degem District

The aim of the research question was to find out the relationship between milk production and marketing in Degem. Degem is the highest amount of milk produced and with more number of cross breed. Most of the interviewed members of cooperative small scale dairy producers in the study area produce on average 13.5 and 4.5litres of milk/ day/ cow from crossbreed and local cow respectively in rainy season and 8.3 and 2.5 milk/ day/ cow from crossbreed and local cow in dry season. The non-members of cooperative small scale dairy producers in the study area produce on average 10.5 and 4 litres of milk/ day/ cow from crossbreed and local cow respectively in rainy season and 7 and 2.2 milk / day/ cow from crossbreed and local cow in dry season the difference are mainly due to input and technical support.

Table 14: Milk production in Degem district.

District	Number of HH keep Dairy Cow	Number of cow		Milk Production in liter per year
		Local Zebu	Cross ZebuXHF	
Degem		20330	12320	5,931,788

Zebu 540 Liter/lactation and cross 1500 liter per lactation per year.

Source: field study result.

4.5.15 Select of Channels

There are eight channels available in the district at which six of them are formal and two are informal about The majority 70% of the producers sold their milk direct to consumers this is low compared to other districts in Ethiopia out of the total milk produced in the country only 2% of the milk reaches the final market through formal milk marketing channel. However, 98% of it reaches through informal channels (Van der Valk and Tessema, 2010).

In the formal chain the study shows that 57% (8800Lit per day) of the producers were selling milk Trader, large milk processor 24% (3700Lit per day), 13% (2000 Lit per day) small milk processor and 6% (890 lit per day) to the cooperatives shown in (Figure 9).

There are 45 milk collection center in the district out of which 22 are belong to Trader.

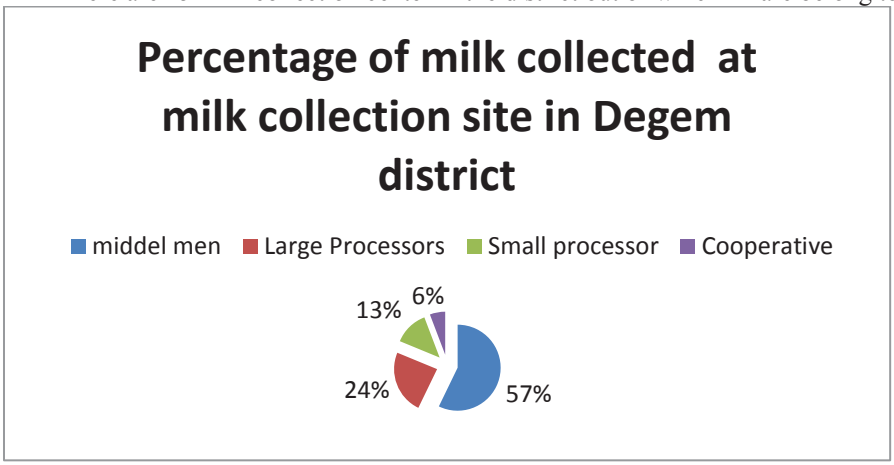

Figure 9: Percentage of milk collected per day in Degem

Source: field study result.

The study shows that overall 15,390 liter per day of milk was collected by different actors.

Most of the farmers prefer to sell the milk due to reliable market and good in measuring milk but inconvenient time of collection.

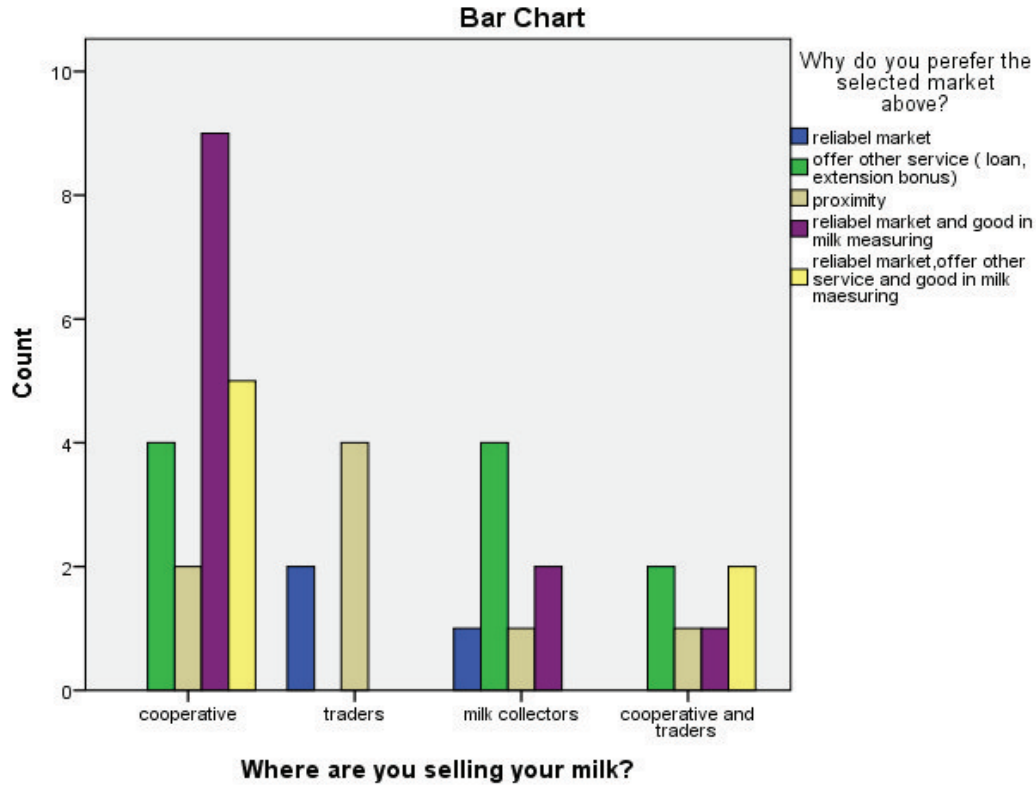

Figure 10: preferred place of selling of milk in the formal milk chain.
Source: field study result.

4.5.16 Physical Infrastructure for Smallholder Milk Producer

Transport Infrastructure

Through interview and observation, it was noted that most of the roads out of the main road were not in good conditions which are creating transport problems and forces the farmers to transport the milk by donkey. The main means of transport used for transporting milk were the donkey and hand caring in the district (Picture 9)

4.5.17 Storage infrastructure

There were no storage facilities the morning milk was sold but not all the evening milk was sold. Through interview and observation it was noted that most the farmers are not sold evening milk so as a they will milk the cows very lately at night and save it in cool place using the advantage of the temperature and sold it in the morning by mixing it with the morning milk and some of the farmers add salt as preservative to increase the shelf life of the milk which may affect the quality of the milk if all the above are not possible it were consumed at home, processed and for the calves to suckle freely.

4.5.18 Milk Procurement to the Farmers in Degem District

Payment Methods

Farmers sell their produce both on cash and credit, but much of the milk is bought on credit, which then causes cash flow problems since there would be delays payment from the customers. The non-members dairy farmers do not have access to credit due to the fact that they have no collateral. This is in line with the finding of KIT (2010) who reported that financial institution are not willing to lend money to small scale agribusiness since they say is too risky and involves a high transaction cost and doubt the ability of the farmers to repay back the loan.

All the small scale farmers 100% indicated that they accept both cash and credit, whereas the dominant payment methods is credit in the study area**.** Totally in the district milk procurement is based on quantity 8.5 per liter of milk while they are selling based on quality after they transport to processors in Addis Ababa. Cooperatives, Traders, small and large processors collecting the milk from Degem district generally pay once every two weeks as shown below.

Means of communication

Majority small holder producers had mobile phones, although not frequently used in villages where there was no electricity; it was difficult to keep up with current related market information.

4.5.19 Milk Collection Centre

There were milk collection centers that are owned by producers which is belongs to a dairy cooperative, but the time of collection is very early (4-5AM) that makes difficult for farmers to sell milk at this time even if the most farmers want to sell their milk to cooperative. In the district there are also milk collection centers that belong to small, large processor and traders that collect the milk every day as shown in (Picture 11).

The amount of milk collected from Gandashano primary dairy cooperative for the last five years are increasing as shown below (figure 12)

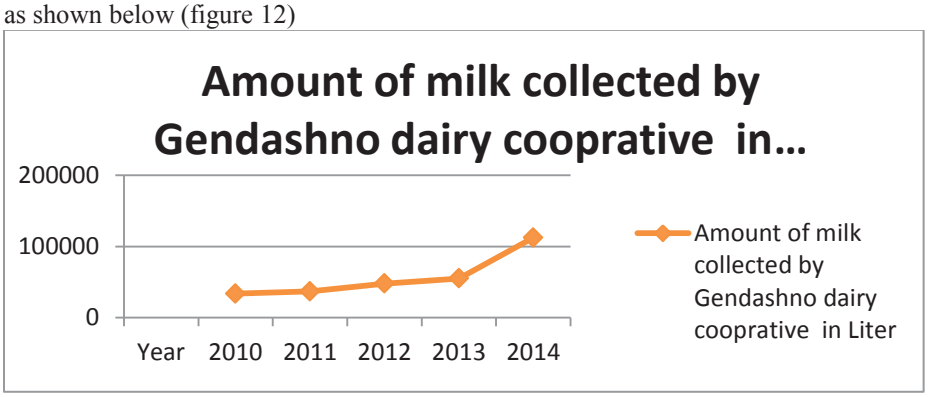

Figure 11: Amount of milk collected by the Gendashano dairy cooperative per year
Source: field study result.

4.5.20 Marketing

The milk marketing issues are a paradox. Consumers are complaining about the shortage of milk supply and whereas, producers, especially at farmers level are complaining about the lack of a market for their milk. The uneven supply of milk, which is caused by the seasons (dry and wet seasons), and the irregular demand of a certain group of consumers because of the fasting seasons contribute a lot for the irregular delivery of milk. Some households do not think of milk in their menu as it disappears often from the shops or supermarkets and do not notice when it is excessively supplied.

Cooling of Milk

With improved education and income of the people, the demand for hygienically produced and processed milk and dairy products is expected to improve. With increased refrigeration facilities at the retail outlets, the storage of chilled milk and frozen dairy products becomes easier. Milk is traditionally collected by un-chilled in the villages and brought to the collection centers of dairy plants, establishment of milk collection centers in the milk pockets with chillers offer a good investment as the quality and quantity of milk procured will be improved.

4.5.21 Milk Quality Requirements of the Milk Market

The study sought to know the milk quality requirements of the milk market in the area and the options involved hygiene, water content, and milk fat. Since the milk procurement was done on milk quantity based there is no any reward for the farmers even if they try to keep the quality except for the members of a cooperative that will get the reward by selling milk based on quality for processors. Milk quality was tested in the collection level by all actors using Organoleptic, Lactometer and alcohol test to insure the quality as most of the collectors sold based on the quality to the processor.

Quality and Standards of milk in Degem District

The dairy value chain is not carefully managed to guarantee quality and adherence to standards. The high levels of spoilage are indicative of the risks the following are listed several quality-related constraints and challenges in the district.

Lack of aggressive livestock disease control, Lack of effective quality control at the various stages of milk production and transaction, Lack of efficient liquid milk collection, Lack of cooling facilities, Lack of enforcement of quality control regulations and standards and Lack of mandatory standards.

Currently there is no ISO or HACCP certified domestic dairy producers or processors collecting milk from the district, but one processor, Mama Dairy, is in the process of obtaining HACCP certification. Lastly, there must be a critical, controlling point established from grass to glass to insure the quality of milk.

4.5.22 Common Milk Testing In Degem District

Different milk testing methods which can be easily carried out during the reception time of milk in the collection center. Among them, some very simple milk testing procedures that are suitable for small-scale farmers and small collection centres are given below.

Organoleptic test: This is a very common and simple test generally performed in all milk collection centres. It does not need any tools and chemicals for testing and it is also a cheapest and quickest method. But this method is not very reliable for generalize of the quality of milk. If there are any doubts arise in the organoleptic test, other tests can be done for the assurance of the hygienic quality of the milk.

Density meter or lactometer test

The lactometer along with the fat content test is valuable to identify the addition of water in the milk. At 15 degree Celsius, the normal density of the milk ranges from 1.028 to 1.033 g/ml, whereas water has a density is higher, and then the milk might have been skimmed. If the results of the fat content test are low and the density is low, then water might have been added to the milk (Draaijer, 2002).

Alcohol test

The different strength ethanol alcohol is used for this test. Generally 68% ethanol alcohol is used to test the abnormality of the milk like colostrum, mastitis milk. This test can perform by mixing equal (2 ml) volume of milk and alcohol. If the milk contains more than 0.21% acid, it will coagulate (Draaijer, 2002).

Organoleptic tests

The organoleptic test permits the rapid segregation of poor quality milk at the milk receiving platform. No equipment is required, but the milk grader must have a good sense of sight, smell and taste. The result of the test is obtained instantly, and the cost of the test is low. Milk which cannot be adequately judged organoleptic ally must be subjected to other more sensitive and objective tests.

Procedure: Open a can of milk.

- Immediately smell the milk.
- Observe the appearance of the milk.
- If still unable to make a clear judgement, taste the milk, but do not swallow it. Spit the milk sample into a bucket provided for that purpose or into a drain basin, flush with water.
- Look at the can lid and the milk can check cleanliness.

Judgement:

Abnormal smell and taste may be caused by:

- Atmospheric taint (e.g. barn/cow odour).
- Physiological taints (hormonal imbalance, cows in late lactation- spontaneous rancidity).
- Bacterial taints.
- Chemical taints or discolouring.
- Advanced acidification (pH < 6.4).

The Alcohol Test

The test is quick and simple. It is based on the instability of the proteins when the levels of acid and/or rennet are increased and acted upon by the alcohol. Also increased levels of albumen (colostrum milk) and salt concentrates (mastitis) results in a positive test.

Procedure:

The test is done by mixing equal amounts of milk and 68% of ethanol solution in a small bottle or test tube. (68 % Ethanol solution is prepared from 68 mls 96%(absolute) alcohol and 28 mls distilled water). If the tested milk is of good quality, there will be no coagulation, clotting or precipitation, but it is necessary to look for small lumps. The first clotting due to acid development can first be seen at 0.21-0.23% Lactic acid. For routine testing 2 mls milk is mixed with 2 mls 68% alcohol.

The Lactometer test

Addition of water to milk can be a big problem where we have unfaithful farm workers, milk transporters and greedy milk hawkers. A few farmers may also fall victim of this illegal practice. Any buyer of milk should therefore assure himself/herself that the milk he/she purchases is wholesome and has not been adulterated. Milk has a specific gravity. When its adultered with water or other materials are added or both misdeeds are committed, the density of milk changes from its normal value to abnormal. The lactometer test is designed to detect the change in density of such adulterated milk. Carried out together with the Gerber butterfat test, it enables the milk processor to calculate the milk total solids (% TS) and solids not fat (SNF). In normal milk SNF should not be below 8.5%, according to Kenya Standards (KBS No 05-l0: -1976).

Procedure:

Mix the milk sample gently and pour it gently into a measuring cylinder (300-500). Let the Lactometer sink slowly into the milk. Read and record the last Lactometer degree (ºL) just above the surface of the milk. If the temperature of the milk is different from the calibration temperature (Calibration temperature may be=20 ^{0}C) of the lactometer, calculate the temperature correction. For each ºC above the calibration temperature, add 0.2ºL; for each ºC below calibration temperature subtract 0.2 ºL from the recorded lactometer reading.

Table 15: Calibration Temperature of Lactometer 20ºC.

Sample	Milk temperature	Lactometer reading	Correction	True reading
No.1	17 ºC	30.6 ºL	- 0.6 ºL	30.0 ºL
No.2	20 ºC	30.0 ºL	Nil	30.0 ºL
No.3	23 ºC	29.4 ºL	+ 0.6 ºL	30.0 ºL

Source: field study result.

For the calculations, use lactometer degrees, and for the conversion of density write 1.0 in front of the true lactometer reading i.e. 1.030 g/ml. Clever people may try to adulterate milk in such a way that the lactometer cannot show the adulteration. But look to see if there is unusual sediment from the milk at the bottom of the milk can and taste to find out if the milk is too sweet or salty to be normal. Samples of milk from individual cows often have lactometer reading outside the range of average milk, while samples of milk from herds should have readings, hear the average milk, but wrong feeding, may result in low readings. If the reading is consistently lower than expected and the milk supplier disputes any wrong doing arrange to take a genuine sample from the supplier (i.e Inspect milk right from the source see figure 14).

4.5.23 Price Determination

In the study area milk prices were determined dominantly by large processors and the rest actors follow same purchasing price of milk, which is 8.50 ETB per liter as July, 2014. This price was quite low compared with the over 9.50 ETB per litre price set by producers when selling direct to consumers.

Price, Satisfaction

The study showed that the majority of the producers 87.50% were not satisfied with the price of milk that was being offered by the buyers Farmers indicate this as ' The price of milk is lower than the price of water in the district', as shown by cross tabulation (Figure13).

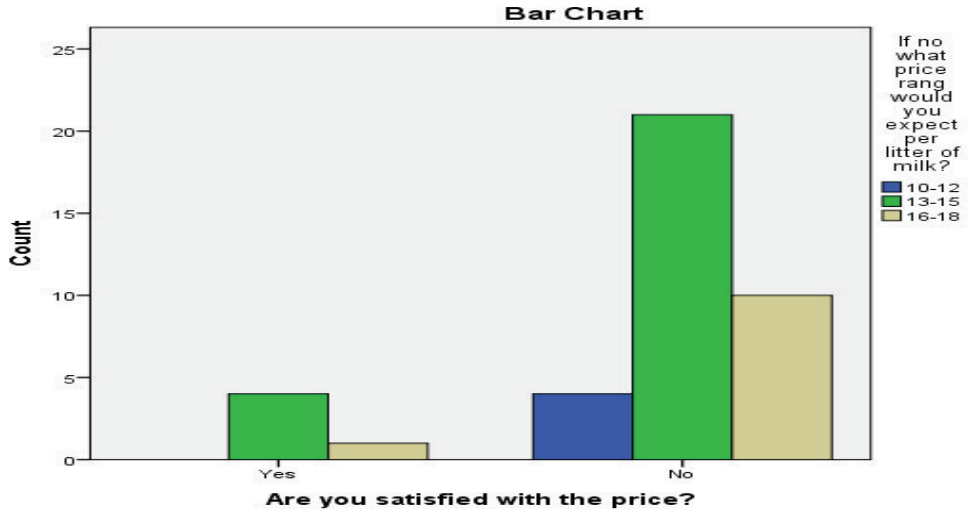

Figure 12: Level of satisfaction with the current price of milk.
Source: field study result,

4.5.24 The Amount of Milk Produced and Sold per day by the Farmer

From the study it was observed that most of the members of the cooperative were producing an average of 18 litres of milk per day of these they were selling 16 and consume only 2 litres per day. Whereas non-members of the cooperative were producing an average of 14.5 litres of milk per day of these they were selling 12.5 and consume only 2 litres per day. Results indicate that cooperative farmers produce slightly more milk than non-members, farmers and this can be attributed to an improvement in access to training and extension services.

Table 16: Amount of milk produced, consumed and sold per day by the farmer.

	Milk yield				Milk yield			
	Rainy season				Dry season			
Members	Max	Min	Mean	SD	Max	Min	Mean	SD
Zebu breed	6	3	4.5	0.87	3	2	2.5	0.47
Cross breed	18	10	13.5	1.93	10	6	8.3	1.27
Average milk production per day (litre)			18				11	
Average milk consumed per day (litre)			2				1.5	
Average Sold			16				8.50	
Non-members								
Zebu breed	6	3	4	.94	2.5	2	2.2	0.26
Cross breed	16	8	10.5	2.7	8	6	7	0.94
Average milk production per day (litre)			14.5				9.5	
Average milk consumed per day (litre)			2				1.5	
Average Sold			12.5				8	

Source: field study result.

4.5.25 Gender Responsibility in Milk Activities

In the survey conducted it showed that, major activities identified purchase of input, feeding of cows, selling of milk, cleaning of the barn and income control. Accordingly, purchasing of inputs mostly controlled by men, feeding of cows mostly done by female, cleaning of the barn and selling of milk mostly conducted by a female, and finally controlling of income was dominated by male. As understood from result men were less involved in selling and cleaning of banrs because in the culture of Degem selling of milk is a woman's activity. However, income the households gained from milk was highly dominated by men (Figure 14).

Gender role in milk selling

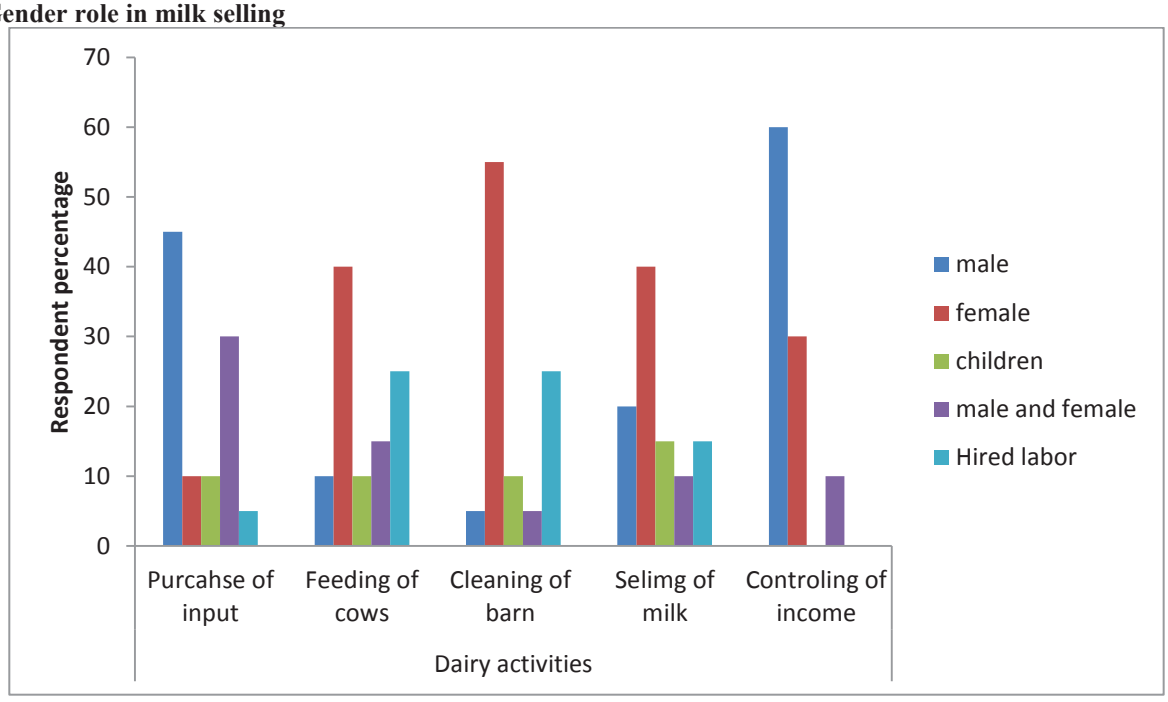

Figure 13: Gender role in dairy activities
Source: field study result.

4.5 Evaluation of the performance of Gendashano dairy cooperative

To evaluate the performance of Gendashano dairy cooperative, Spider web model (MIDCA, 2010) was applied. The result of performance evaluation of Gendashano dairy cooperative is shown in the following (figure 15)

MIDCA				
	Organization:	Gendashano dairy cooperative		
		Max	Score	%
Production	Membership Base	15	8	53%
	The Product	30	20	67%
	The Services	15	8	53%
Internal Organization	Staff Capacity	25	11	44%
	Financial Management	35	27	77%
	Long Term Perspective	15	7	47%
Market	Sales	25	16	64%
	Relationships	25	11	44%
	Total	185	108	58%

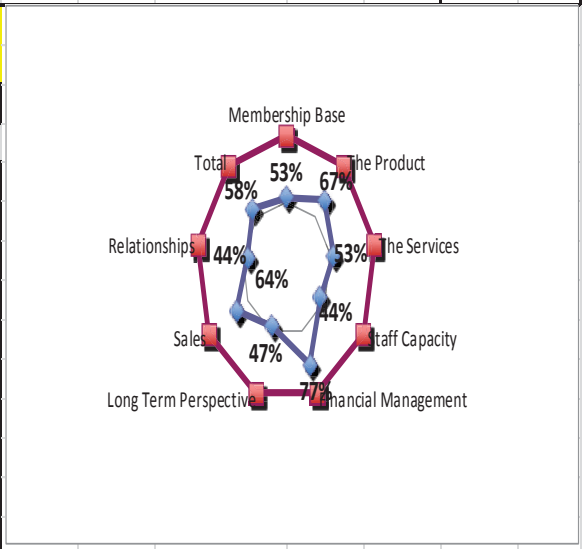

Figure 14: Results of the performance evaluation of Gendashano dairy cooperative.
Source: field study result.

The spider web model was applied to evaluate the performance of the gendashano dairy cooperative. Different indicators such as membership base, product, services, staff capacity, financial management, long term perspective, sales and relationships for cooperative were used to score, which parts of the association are performing well and where the gaps are there. The scoring is done by using MIDCA checklist formats by interviewing the association general manager, accountant and sell person. Based on the performance of the cooperative, the following discussion was made For an extensive description of the application of the spider web see (See annex: 15).

Membership Base

There are 2000 potential milk producers in the district who have fulfilled the criteria of membership to cooperative. But the numbers of milk producers that joined to Gendashano dairy cooperative were only 30 with the proportion of 27 men and 3 female. Out of the total members, the numbers of active members who actively participate in the cooperative activities were 20 and the remaining 10 were inactive. Both the general manager of Gendashano dairy cooperative and the members of the cooperative agree on the inconvenient time of milk collection that needs to be improved by fulfilling cooling facilities.

Products

The productivity of milk per cow was improved because the cooperative was given a different input supply such as quality feeds and technical support as training and advice to the farmers. The average price paid to the members is also increased. The cooperative general manager explained during the interview, even though the average milk production per cow of the members of the cooperative, improved, compare to the potentiality of the area, the production is still low. For this there are different factors. One factor is the shortage of AI service, shortage of improved breeds, forage technologies and Animal disease.

Services

Gendashano dairy cooperative is providing different services for its members. These services including input supply such as quality animal feed, training on dairy cow management, milk production, and milk quality management. Even though Gendashano dairy cooperative provides different services to the small holder dairy farmers the services of the cooperative should have to give more emphasis on milk collection time improvement as it was the main problem of the cooperative which made to collect lowest milk in the district.

Staff Capacity

The cooperative has 5 workers who are currently working in Gendashano dairy cooperative. Most of the cooperative management staff hasn't gotten long term and short term training. Thus, they were not well fit and technically sufficient to realize their task and responsibility to serve the members of the association in a proper way. The association is audited once a year by the external auditors, but the audit result is not announced to the members of the cooperative.

Long Term Perspective

The cooperative has no written declaration of mission and vision to define the fundamental purpose of the cooperative and description of the long term achievement of the cooperative. This has a negative impact on the cooperative to achieve its objective.

Sales

Small scale milk producer farmers generally have interests in organizing themselves in order to get market access and better selling prices. The cooperative was giving different market services such as providing quality animal feed, selling the milk on quality based by transporting to milk processors in Addis Ababa, provision market information, link to potential buyers, starting from 2010, the volume of milk sold and the price received from milk sold increases. In 2010, the cooperative was sold 33,804Liter of milk with the average unit selling price 6.00 ETB at cooperative center built in 2014 the volume of milk sold was increased to 112,534 liter with the average unit selling price 8.50 ETB.

Relationship with Stakeholders

The association has relationship with different stakeholders such as the district livestock resource, development and health office, district cooperative development office, dairy Union and milk processor companies. But there is low cooperation and weak relation among the cooperative and these stakeholders.

4.6 Actors Shares in Milk Value Chain

Based on the collected data, the share value of each actor involved in the formal and informal milk value chain were calculated. The data used to calculate variable costs of small holder milk producers incurred to produce 2940 Liter of milk per cow per year as is indicated in (table 17). Survey data, case study and secondary data were used to calculate the value share of different actors involved in formal and informal milk marketing channels.

Table 17: Profit or loss of small holder dairy farmers in Degem district per cow per year.

(100 ETB= 3.88 Euro)

No	Gross output	Unit	Quantity	Average Unit price	Total		
1	Average milk Production	Liter	14*210 day=2940	8.5	24990		
	Total revenue				24990		
2	Variable cost						
2.1	Cost of feeds	Kg &					
		Role of grass	3kg & two roles of roughage	5	15		
			Per cow per day for 7	12	24		
			Months		39	210	8190
			1.5 kg and 2.5 sack of crop	5	7.5	150	4875
			Residues for 5 months	10	25		
			Total		32.5		
							13065
2.2	Cost of AI service	Number	1	12	12		
2.3	Cost of Vet service	Number	1	680	680		
2.4	Cost of water and Electricity	Birr	Estimated		50		
2.5	Total variable cost	Birr			742		**13807**
3	Gross margin						11183
4	Fixed cost						
4.1	Cost of labor per year	Number	1	200 per month	2400		
4.2	Cost of shelter	Birr	Estimated		2600		
4.3	Depreciation	Birr	10 years useful life time		260		
4.4	Total fixed cost				5260		
5	Total overall cost				**19067**		
6	Net profit				**5923**		

Source: field study result.

Table 18: Profit or loss of Gendashano Dairy cooperative per year (100 E Tb**=3. 88 euro).**

S/No	Gross output	Unit	Quantity	Average unit Price at	Total
1	Average milk purchase per year	Liter	112,534.00	8.5	956539
2	Selling of milk to Union	Liter	112,534.00	8.6	967792.4
3	Total Revenue	ETB			967,792.40
4	Gross Profit	ETB			**11,253.40**
5	Variable cost				
5.1	Transport cost	ETB			0
5.1	Cost of Alcohol for testing	ETB	2l/month	55ETB/lit*12*2	1,320.00
5.2	Cost of milk collectors for collection of milk from MCC	ETB			0
6	Total Variable Cost	ETB			**1320.00**
7	Fixed cost				
7.1	Salary for guard per year	ETB	2	2400	4800
7.2	Deprecation Cost for milk tank	ETB			500
8	Total fixed cost	ETB			5300
9	Overall cost				**6,620**
10	Net profit				**4,633.40**

Source: field study result, 2014.

Table 19: Variable cost of milk Processor incurred to collect and processing milk per day.

S/No	Variable Cost	Quantity	Unit Price	Total Price
1	Cost of Transport of milk from MCC to Processing Plant	12 lit of diesel	20	240
2	Cost of plastic for packaging for milk	5700	2.5	14250
3	Cost of electric city	1 day	780	780
4	Cost of bulking	5700	0.55	3135
5	Cost of transport of processed dairy product to retailer	150 lit of diesel	20	3000
6	Cost of milk collector for collection of milk from MCC	14*2=28 28	20	560
7	Total variable cost to collect and process 5700 Lit of milk/day			**21965.00**

Source: field study result.

The share of smallholder farmers and other actors involved in different milk marketing channel of the degem district is described in(table 20).

Table 20: Value shares of the dairy cooperatives in milk value chain per litre of milk.

Chain Actors	Variable cost (ETB)	Revenue Price *quantity of milk produced	Gross income Revenue variable cost	Added Value Revenue-previous actor's revenue	Gross margin, Gross income ×100/revenue	Value share Added value×100/retail price
Small holder Producer	4.7	8.5	3.8	8.5	44.7	42.5
Dairy cooperative	0.01	8.6	8.59	0.1	99.9	0.5
Union	0.5	10.5	10	1.9	95.2	9.5
Large Processor	3.85	17	13.15	6.5	77.4	32.5
Retailer supper market	1.35	20	18.65	3	93.3	15
Total value share						100

Source: field study result.

Table 21: Value shares of the Union per liter of milk.

Chain Actors	Variable cost (ETB)	Revenue Price *quantity of milk produced	Gross income Revenue variable cost	Added Value Revenue-previous actor's revenue	Gross margin, Gross income ×100/revenue	Value share Added value×100/retail price
Small holder Producer	4.7	8.5	3.8	8.5	44.7	47.2
Dairy cooperative	0.01	8.6	8.59	0.1	99.9	0.6
Union	0.5	10.5	10	1.9	95.2	10.6
Small Processor	3	14	11	3.5	78.6	19.4
Retailer shop	1.35	18	16.65	4	92.5	22.2
Total value share						100

Source: field study result.

Table 22 : Value share of Small processor per litre of milk.

Chain Actors	Variable cost (ETB)	Revenue Price *quantity of milk produced	Gross Income Revenue – variable cost	Added Value Revenue-previous actor's revenue	Gross margin, Gross income ×100/revenue	Value Shear Added value×100/retail price
Small holder Producer	4.7	8.5	3.8	8.5	44.7	47.2
Small Processor	3	14	11	5.5	78.6	30.6
Retailer shop	1.35	18	16.65	4	92.6	22.2

Source: field study result.

Table 23: Value share of large processors per litre of milk.

Chain Actors	Variable cost (ETB)	Revenue Price *quantity of milk produced	Gross Income Revenue – variable cost	Added Value Revenue-previous actor's revenue	Gross margin, Gross income ×100/revenue	Value Shear Added value×100/retail price
Small holder Producer	4.7	8.5	3.8	8.5	44.7	42.5
Large Processor	3.85	17	13.15	8.5	77.4	42.5
Retailer Suppermarket	1.35	20	18.65	3	93.3	15

Source: field study result.

Table 24 : Value share of Trader per litre of milk.

Chain Actors	Variable cost (ETB)	Revenue Price *quantity of milk produced	Gross Income Revenue – variable cost	Added Value Revenue-previous actor's revenue	Gross margin, Gross income ×100/revenue	Value Shear Added value×100/retail price
Small holder Producer	4.7	8.5	3.8	8.5	44.7	47.2
Trader	1.85	10.5	8.65	2	82.4	11.1
Small processor	3	14	11	3.5	78.6	19.4
Retailer shop	1.35	18	16.65	4	92.6	22.2

Source: field study result.

Table 25: Value share of Trader per litre of milk.

Chain Actors	Variable cost (ETB)	Revenue Price *quantity of milk produced	Gross Income Revenue – variable cost	Added Value Revenue-previous actor's revenue	Gross margin, Gross income ×100/revenue	Value Shear Added value×100/retail price
Small holder Producer	4.7	8.5	3.8	8.5	44.7	42.5
Trader	1.85	10.5	8.65	2	82.4	10
Large processor	3.85	17	13.15	6.5	77.4	32.5
Retailer sup	1.35	20	18.65	3	93.3	15

Source: field study result.

Table 26: Value share of actors involved in informal milk marketing channel.

Chain Actors	Variable cost	Revenue Price *quantity of milk produced	Gross Income Revenue – variable cost	Added value Revenue-previous actor's revenue	Gross Margin Gross income ×100/revenue	Value share Added value×100/retail price
Small holder farmers	4.7	9.5	4.8	9.5	51%	76%
Local milk collector	2.5	11	8.5	1.5	77%	12%
Kiosks	1.35	12.5	11.15	1.5	89%	12%
Total value share				**12.5**		100%

Source: field study result.

Table 27: Value share of smallholder dairy farmers sell of their raw milk to local consumers.

Chain Actors	Variable cost (ETB)	Revenue Price *quantity of milk produced	Gross Income Revenue – variable cost	Added Value Revenue- previous actor's revenue	Gross margin, Gross income ×100/revenue %	Value Share Added value×100/retail price %
Small scale Producer	4.7	9.5	4.8	9.5	50.53	100
Consumer	9.5	0	0	0	0	0

Source: field study result.

Data collected from surveys, case study and secondary data was used to calculate the value share of different actors involved in formal and informal milk value chain of the Degem district is shown in figure.

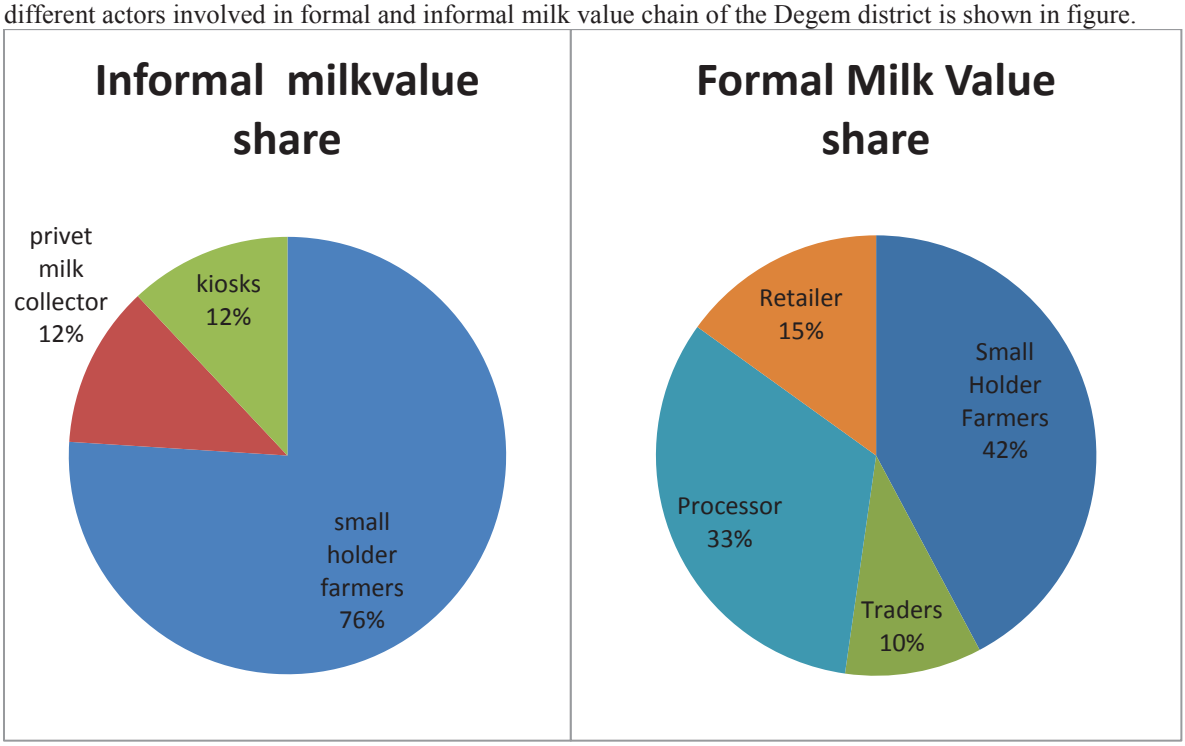

Figure 15: formal and Informal milk value shares(table 25 and 26).
Source: field study result.

4.7 Challenges and Intervention Needed to Degem District Milk Value Chain.

Table 28: challenges and intervention needed

Challenges	Intervention needed
Low milk collection by cooperative	Improve milk collection time (establish appropriate milk collection time)
Milk production and consumption Culture	Development interventions can build on the existing Experiences.
Improve enabling environment	Establish effective platforms for vertical and horizontal value chain dialogue
Limited access to financial services	Implement value chain financing. Improving business planning and management, improving the ability of financial institutions to evaluate loans implement an insurance scheme.
Weak cooperative management	Develop buyer-seller collaboration between cooperatives and processors Increase access to training in business skills, technical skills, quality management, governance Increase focus on delivery of services valued by members.
Improve milk quality	Improve quality management processes control, testing, handling, reduce adulteration promote consumer demand for assuring quality Apply quality standards.
High levels of post-production wastage, spoilage	Improve milk handling Improve collection arrangements Increase numbers of collection centers Increase numbers of cooling centers.
Issues related to feed: High cost, Poor quality, availability	Increase private feed suppliers, increased bulk purchasing by cooperatives and farmers organizations,foster high yielding forage crop technology.
Low use of crossbred cows	Increase availability of quality semen and providers of crossbred cows, encourage A/I service providers, encourage private cross breed heifer production, Strengthen public sector A/I and animal health service provision
Low milk yield per cow	Improve feed and other management practices, Improve animal health services.

Source: field study result.

CHAPTER FIVE: DISCUSION

5.1 What are the current market channels/outlet of milk producers

5.1.1 Milk production In Degem District

Most of the interviewed members of cooperative small scale dairy producers in the study area produce on average 13.5 and 4.5litres of milk/ day/ cow from crossbreed and local cow respectively in rainy season and 8.3 and 2.5 milk/ day/ cow from crossbreed and local cow in dry season. The non-members of cooperative small scale dairy producers in the study area also produce on average 10.5 and 4 litres of milk/ day/ cow from crossbreed and local cow respectively in rainy season and 7 and 2.2 milk/ day/ cow from crossbreed and local cow in dry season. This finding is slightly exceeding the finding of Anteneh (2008) who reported that average milk yield per cow per day from cross breed and local cow were 9.63 and 2.10 liters respectively. This variation in the average milk yield per cow between cross breed and local cow is due to the difference in climatic condition, management and feed systems. Degem is high land with potential vegetation cover where as Deberezit where Anteneh conduct the research was midland with low vegetation coverage relative to Degem.

5.1.2 The roles of the Stakeholders involving in the Value Cain.

Function of Degem Gendashano Dairy cooperative in Milk Value Chain

Gendashano dairy cooperative is one of the largest cooperative in Degem district North Shoa zone. It has 30 members who used to supply milk to the cooperative and 20 active members at the time being. The dairy cooperative is involved in different dairy activities such as milk collection, transporting and selling the raw milk to the milk processors through the union in the Addis Ababa city. Bargaining Association enhances the economic benefit of small scale producer by horizontal integration, i.e, collectively and selling the members' produce (Bijman and Wollni, 2008). From 2010 to 2014, the cooperative was collected 33,804 36,925 47,931 55,025 and112, 534 litre of milk from 20 members and average of 60 non-members of the cooperative. The volume of milk procurement by the cooperative is low compared to the potentiality of the area. As a result of low numbers and bad milk collection time that was induced by absence of cooling and chilling service which may prolong the collection time of milk and give accesses for both members and non-members of cooperative to supply more milk

5.1.3 The Value Share of Actors in the Chain

The study indicates that; the largest amount of the value share went to the milk producers in the district. Smallholders have a relatively higher share (47%, table 21) as compared to processor (19 %, table 21). However, this does not mean that smallholders are the one who get more profit due to the fact that; for a farmer to produce the milk it requires more investment. Farmers are incurred costs such as feeding, labor, veterinary services, and housing costs which are normally not documented by a majority of smallholders.

5.1.4 Factors influence Gendashano Dairy Cooperative to Collect Enough Milk.

Milk Collection Time

There is a complaint about time of milk collection by producers on cooperative while no complains on the others collectors (processor and traders collection time 6-7 AM). This complains are from producers in villages situated comparatively at long distance (more than 5 km) from the collection center. The milk collection vehicle goes early in the morning (4-5 AM) So producers have to deliver milk to the cooperative very early in the morning making them difficult to manage their other works.

According to the general manager of the cooperative and district cooperative development head office, the absence of cooling and chilling facilities in the district forces the cooperative to collect the milk very early and supply to the union which sold the milk to the processor by transporting to Addis Ababa. This is the main problem why Gendashano dairy cooperative was not collected enough milk from small holder farmers in the district.

Members of Cooperative.

It was also funded from the study that from about 2000 small holder milk producers in the Degem district Gendashano dairy cooperative has only 30 members even if they are planned to add more members as indicated by the committee of the cooperative during the interview they are not yet achieved this was mainly because of inconvenient milk collection time.

Milk Rejection by Union on the basis of Quality

In Degem frequency of milk rejection on quality basis of the cooperative is higher than competitors. The average times of milk rejection per cooperative per year is about four times the existing competitors. The frequency of milk rejection is high in cooperative because they have a good name for quality milk products in the market, sell the milk based on quality through the union and to keep that quality of product at high level cooperative do not accept low quality milk.

The study shows that there is a kind of restriction on the amount of milk supplied to the union during the rainy season when there was an excess milk supply in the district the milk supply was determined by the amount of shareholding of the members in the union. In the dry season there is no any restriction on the amount of milk supplied to the union by cooperative so that Gendashano dairy cooperative will collect the milk that was supplied at the collection point within the time set for both members (20) and non-members (60) of cooperative.

Distance of Farmers from Collection Site

From the study it shows that most non-member farmers are far from the collection site as the result it was difficult for them to supply the milk to cooperate in the time frame of collection of cooperative.

Capital

The interviewed with the general manager of cooperative and committee indicates that as the milk was collected in the credit basis from both members and non-members of cooperative there is no problem related to capital for milk collection, but there is a capital limitation in fulfilling cooling and chilling facilities which needs more intervention in the very short time by finding sources of fund or credit discussion with stakeholders including the union. The union was supporting the cooperative in fulfilling the material shortage that is used for milk collection.

Bonus Milk Price.

These are the extra money per liter of milk paid by the milk union from its profit as the owner of milk union is the milk producers so profit made in the previous financial year is distributed as dividends to milk producers for per liter of milk in the next financial year not on the basis of quality but on the basis of the quantity of milk delivered during that year. There is no any bonus payment for the quality produce milk price by competitors.

5.2 Performance of Gendashano Dairy Cooperative

Membership base

There are more potential dairy farmers who want to join cooperative who have fulfilled the criteria. Only nearby small holder farmers of this area become members of cooperative the association should have to give the room for the non-members that are far from the collection site by expanding the collection site with cooking facilities. .

Products

The productivity per cow was improved because the association was given a different input supply such as quality animal feeds and technical support such as training and advice for farmers. There are different milk products that can diversify the income of farmers, but the cooperative involved only in the raw milk collection

and selling.

Services

Gendashano dairy cooperative is providing different services for its members. These services including input supply as such quality animal feeds, and training, milk producing, milk quality management and a perfect measure of milk. Even though majority non-members of the cooperative are willing to join dairy cooperative because of the inconveniences of milk collection they are not yet gone.

Staff Capacity

There are 5 workers who are currently working in Gendashano dairy cooperative. 80% of the cooperative management staffs need a kind of training on cooperative management. Thus, they were well qualified and technically sufficient to discharge their task and responsibility to serve the members of cooperative properly.

Financial management

The association is well managed and use its own financial resource for business activities by planning and accountability. The association is audited once a year by the external auditors, but the audit result is not announced to the members of the association.

Long Term Perspective

The cooperative has no written declaration of mission and vision to define the fundamental purpose of the cooperative and description of the long term achievement of the cooperative. This has a negative impact on the association to achieve its objective because the association is moving without a strategic plan.

Sales

The cooperative is giving different market services such as market information, link Dairy farmers to potential buyers. The volume of milk sold processors by cooperating through a union is increasing from year to year. In 2010, the volume milk sold was 33804Liter but in 2014 this volume was increased to 112,534.The price received by the members also increased.

Relationship with Stakeholders

Small holder dairy farmers, stakeholders are: district livestock resource, development and health office, district cooperative development office, Union, milk processor companies and milk retailers. But there is low cooperation and weak relation among the cooperative and these stakeholders.

5.3 SWOT Analysis of Gendashano Dairy Cooperative

From the study finding, the following are the strengths, weaknesses, opportunities, and threats of Gendashano dairy cooperative in the milk value chain in Degem district.

Table 29 : SWOT analysis of Gendashano dairy cooperative

Strength	GendaShano dairy cooperative has created strong marketing segments for its members in the Addis Ababa city for sustainable marketing of raw milk through the sell dairy Union. Increasing in milk collection from to 33,804Lit in 2010 year to 112,534Liter in 2014. The cooperative depend on its own financial resource. GendaShano dairy cooperative provides quality animal feed manufactured in its own union on credit base for its members which helps to maintain quality of milk. GendaShano dairy cooperative sold the milk of its member based on quality, though the union in the Addis Ababa city and bring additional income for the members. GendaShano dairy cooperative has established 2 milk collection centers, which are easily accessible to its members to easily deliver their milk. The cooperative has good quality of milk.
Weaknesses	Lack of cooling tanks and laboratory equipment at milk collection centers for better milk quality control. Low commitment and investment on cooling facilities which leads in changing the time of collection of milk and improve the amount of milk collected. Low members' participation in to the dairy cooperative. Limited skill in dairy cooperative management. Less accountability and transparency from the management of GendaShano dairy cooperative to inform its members on financial status and the progress of their cooperative. Low linkage of cooperative with external support to get financial support from different business environment such as different NGO and actors.
Opportunities	High potential of milk production in the district. Willingness of farmers to join the cooperative if the time of collection will improve. Increasing of milk demand due to expansion of urbanization and increase of household income. There is a potential market since current. Production is not meeting demand. Under capacity operation of milk processors in the country. Presence of good government policy which help dairy cooperative to improve its position in the milk value chain. Presence of high income customers from the capital city of the country who need GendaShano dairy milk and milk products.
Threat	Absence of milk quality control of government. Price fluctuation of milk Presence of 210 days of the Orthodox Christians fasting period has great effect on milk market. High competition for milk from informal/ local markets. Increasing the cost of modern milk equipment and foundation stock. There are strong competitors from the trader

Source: field study result.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

From the field survey results the main reasons low milk collection of Gendashano dairy cooperative was in identified and shown as follow.

1. The cooperative has low performance of Membership base, Services, Staff Capacity, Long Term Perspective and Relationship with Stakeholders.
2. The major constraint of the primary dairy cooperatives in Degem district they have training needs on cooperative management skills, and their members need training on proper management of their cows and milk.
3. An inconvenient milk collection time that was induced as the result of the absence of cooling and chilling centers in the district.
4. Inadequate information available for farmers in the study area is influence farmers not to be supplied milk to the cooperative.
5. Non- members of the cooperative were traveled long distance and do not have access to sell the milk to cooperative as the time of collection for the cooperative was very early (4-5PM).
6. Most of the members of the cooperative were not happy with the services of Gendashano dairy cooperative because of the services of the cooperative inconvenient especially the time of milk collection.
7. The cooperative has no written mission and vision to define the fundamental purpose of the dairy cooperative and long term objective achievement of the cooperative.
8. The cooperative has no strategies to mitigate low collection of milk.

6.2 Recommendations

From the performance results of Gendashano dairy cooperative (figure 17), the cooperative was underscored in the area of membership base, service provision, staff capacity, long term perspective and relationships,. The following new spider web model is proposed for the cooperative to improve its performance.

MIDCA

		Organization:	Gendashano dairy cooperative	
		Max	Score	%
Production	Membership Base	15	11	73%
	The Product	30	20	67%
	The Services	15	12	80%
Internal Organization	Staff Capacity	25	15	60%
	Financial Management	35	27	77%
	Long Term Perspective	15	12	80%
Market	Sales	25	18	72%
	Relationships	25	16	64%
	Total	185	131	71%

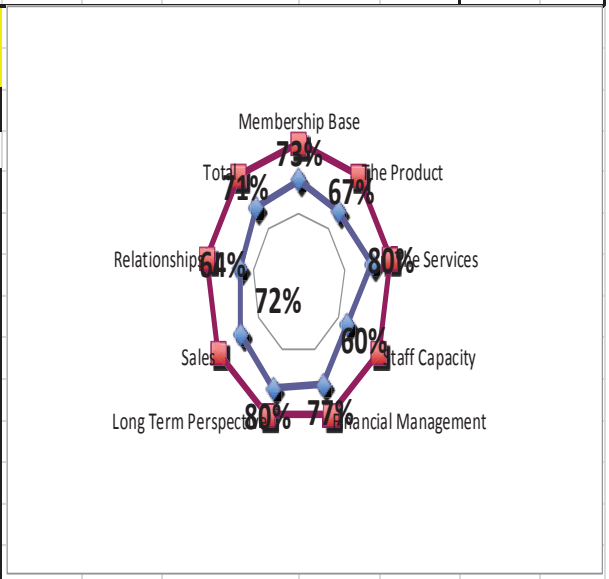

Figure 16: The new proposed spider web for Gendashano dairy cooperative.

Membership Base

Inconvenient time of milk collection is the main reason for new farmers are not being a member of the Gendashano dairy cooperative. Prolonging collection time is required to expand the members of cooperative as it gives a chance for farmers coming from distance to sell their milk.

Services

Most members of cooperative were not getting uniform services from the cooperative.

There should be member-oriented services to attract, encourage and satisfy all its members because of the commitment of the members are very important for the success of the cooperative.

Staff Capacity

They have training needs on cooperative management skills, and their members need training on proper management of their cows and milk and Improve management skills.

Financial Management

Due to the low inconvenient time of milk collection the cooperative purchasing low amount of milk, this will reduce the overall income of the cooperative members and milk supply to the union. The cooperative should improve the time of collection of milk in order to increase the profit of its members.

The cooperative is audited once a year by the external auditors. The audited result is needed to announce officially to the members of cooperating in order to build trust and transparency among the members and the cooperative.

Long Term Perspective

The cooperative has no written mission and vision to define the fundamental purpose of the dairy cooperative and long term objective achievement of the cooperative. The cooperative need to have official mission and vision so that it is easy to reach its target.

Partnership

Identify stakeholders willing to work with the cooperative and need to assure service provision to small holder dairy farmers. The cooperative should have to fulfill the chilling facilities by discussing with partnership and invest in it so as to increase the numbers and milk collected from the district.

At District Level

Time of milk collection should be improved in such a way that it will be accessible distance potential farmers of the district.

The cooperative should have to give bonus/incentive to its members when the member's continue to deliver the same volume of good quality milk to make the members more committed.

The cooperative should have to expand its collection centers to rural areas where they can collect huge volumes

of milk per day to increase the participation of distance farmers and milk amount.

Awareness creation intensive training and workshop is required for the district farmers in a sustainable manner with respect to dairy activities and benefits of cooperative.

Farmers' accessibility to information infrastructure such tells communication is low because the information technology is not widely developed in the district. There is a need to develop an information infrastructure such as Tel communication with solar charging apparatus to assure information shared in the rural area.

6.2.1 Upgrading Strategy for Gendashano Dairy Cooperatives

There are several possible strategies to mitigate low collection of milk by cooperative upgrading of storage and transportation technologies throughout the chain in the district.

Improve raw milk quality need for more asset specific investments (investment in cooling and chilling facilities etc.).

For farmers, efficient bulking and up-scaling in the different phases of the supply chain appears to be a better strategy for increasing the formal market.

One form of developing the informal market towards a supply (and demand) of more industrialized dairy products is by stimulating small rural enterprises with smallholder, labour-intensive processing technologies (such as hand-driven churners for butter production).

Invest in the establishing milk processing factory with the Union, and improve its positions in the value chain of sub-sector. The expansion of the members with collaboration with district cooperative office and increase quality milk collection by providing technical support, credit service and training which leads to supplying more milk to newly established milk processing company.

For cooperatives, the ownership relation between cooperatives and individual members needs to be well defined, that is, property rights and titles to assets need to be clear to all. It may be necessary to subdivide daily operations (sales of feed to members, collection of milk and sales) into separate companies managed by the cooperative but owned by specific members.

Invest in cooling and chilling facilities that will work with a solar system and improve the quality of milk produced.

From focal group discussions new chain map drawing the following recommendation was given by the group.

For Milk Union

As the union has a plan to build his own milk processing plant in near further, he has to secure enough milk supply from the cooperatives.

The union should offer extra incentive per liter of milk delivered according to the quality of that milk to the milk producers in the Degem rather than giving dividend as a just bonus milk price on volume basis. The union should improve the quality of concentrate and supply at a reasonable rate to the milk producer through cooperative without force to buy it. The union should prepare a special plan for "Improvement of Milk Production, collection and Quality'' which includes training of members of cooperative and milk producers about the strategy of feeding dairy animals, motivation of farmers for fodder cultivation, clean milk production and implement it on a priority basis, effectively and efficiently by the extension department of the union.

For Gendashano dairy Cooperatives

The Gendashano cooperative should establish bulk milk cooler at every village level. In first phase villages in the margin means of long distance and in the next phase nearer villages can be selected. Union should provide low interest or interest free loan to milk producers for dairy animal purchase to counteract the Competitors procurement strategy, cooperative should organize training workshops for farmers to implement a union plan of improvement of milk production, collection and quality.

For Milk Producers

Increase the land under fodder cultivation, especially the cultivation of improved varieties of fodder for more yield. Plantation of improved grass on the borders of the field. The use of feeding method feeding the mixture of fodder crops, dry & green crop residues, concentrate and mineral mixture so as to increase dry matter intake, maintain rumen pH, increase milk production and improve milk quality.

6.2.2 New proposed chain map

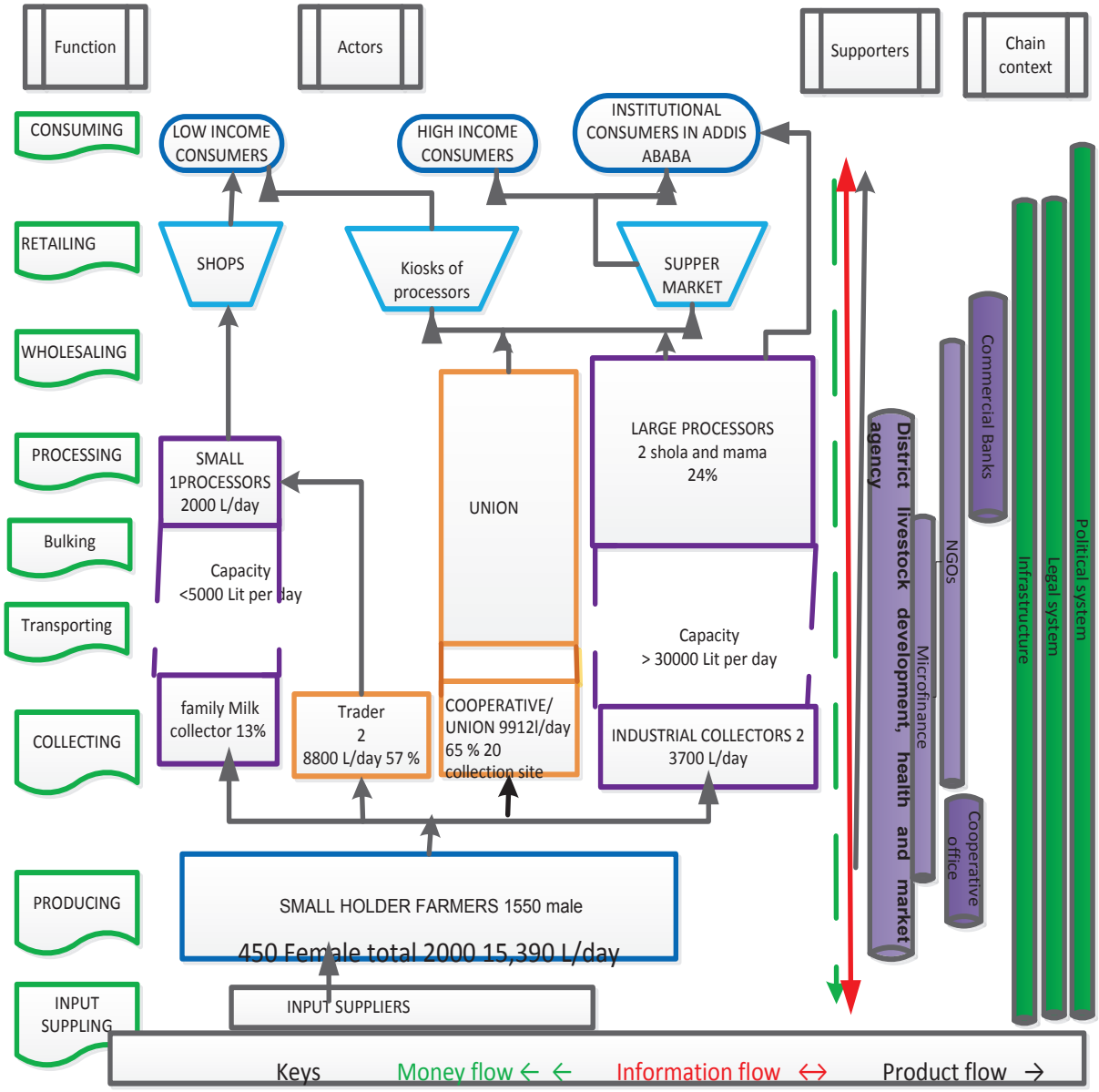

Figure 17: proposed milk chain map.
Source: field study result.

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