

IMPACT OF MILK COOPERATIVE ON MEMBER PRODUCERS

A Case of Dumsi Village, Tanahun, Nepal



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Chain Management, Specialization Livestock Chain

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Ram Raj Lamsal

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DEDICATION

The research is dedicated to my late father; Ram Nedhi Lamsal and my mother Ms. Bishnu Maya Lamsal for their inspiration for the value of discipline, honesty and hard work. Their farsighted investment for my earlier education has made me to reach this far.

May my late father's soul rest in peace for ever and I wish a long life of my mother. For them, I dedicate this small piece of work whatever good may come out of it.

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ACRONYMS

ADB	Asian Development Bank
AGDP	Agricultural Gross Domestic Product
AI	Artificial Insemination
BMPCS	Baradi Milk Producers Cooperative Societies
CBS	Central Bureau of Statistical
CDCAN	Central Dairy Cooperative Association Limited Nepal
CFU	Colony-forming unit
CLDP	Community Based Livestock Development Project
CMA	Community Medical Assistant
DDC	Dairy Development Corporation
DLSO	District Livestock Service Office
DMPCS	Dumsi Milk Producers Cooperative Societies
DOC	Department of Cooperative
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
GDP	Gross Domestic Product
ICA	International Cooperative Alliance
KI	Key Informant
MOAC	Ministry of Agricultural and Cooperatives
MPA	Milk Producer Associations
MPCS	Milk Producers Cooperative Societies
NARC	Nepal Agriculture Research Council
NDDB	National Dairy Development Board
NRs	Nepali Rupees
PMPCS	Pokharibhanjyang Milk Producers Cooperative Societies
SCC	Somatic Cell Count
SMPCS	Sewor Milk Producers Cooperative Societies
SMPCS	Suryodaya Milk Producers Cooperative Societies
SNF	Solid Not Fat
SWOT	Strength, Weakness, Opportunity, Threat
TDMPCUL	Tanahun District Milk Producer's Cooperative Union Limited
VDCs	Village Development Committees
NRB	Nepal Rastra Bank

EQUIVALENTS

1 €	NRs. 96.20 (as of 13 August, 2010) (Source: NRB)
1 Ropani	0.05 Hectare
1 Hectare	20 Ropani
1 Metric ton (Mt)	10 Quintal
1 quintal	100 kg

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ABSTRACT

The objective of this study was to find the impacts of milk cooperative union on smallholder milk producers.

All of total 25 milk producers interviewed showed that their involvement in the cooperative enhanced their capacity to produce more milk and earn living. Before fourteen years, only few farmers produced more than 10litres of milk and majority produced 3-5litres of milk. Most farmers produced 11-30litres of milk after their involvement in the cooperative.

The average milk production per producers per day was 4litres before they become member. However, the average milk production reached 13litres/producer after they became member. The average milk production has increased by 218% in comparison to what they used to produce before 14 years when there was no milk cooperative. The total number of the cooperative members stands at 2500 in 2009. There was an annul increase of 7-8.6% member over a period of five years between 2005-09.

Twelve members could earn NRs. 9,696 to 28,800; eight between NRs. 4,896 and 9,600 and five members earned NRs 2,880-4,800 per month. They were able to earn this fixed amount because of the market guarantee provided by the milk cooperative.

The members saved NRs. 100-1000 per month from the saving and credit program cooperative. Forty four percent of the total respondents were saved NRs. 501 to 1000 per month. The members utilised their saving for providing children' education, buying dairy animals, land and saved in the Bank (NRs. 3-5 thousand per month).

The members highlighted mainly five areas of supports. The internal loan support was appreciated much. The other supports were animal health and infertility camp, free veterinary services, medicine on subsidy and insurance of dairy animals. The cooperative also provided free AI for the genetic improvement of local cows and improved pasture seeds.

The milk procurement trend of the Cooperative Union increased by 24% in 2009 compared to past five years. The milk collection in cooperative society increased by 3% and 12% in 2006 and 2007 respectively. The same for 2008 and 2009 was 2.3% and 4% respectively.

The members were also trained to equip with knowledge and skills on improved dairy husbandry practices, AI and veterinary treatment like deworming. The Tanahun District Milk Producer Cooperative Union had four different groups of suppliers of raw materials like veterinary medicine, feeds and seeds of improved grasses.

The MPCS provided NRs. 32/litre of milk to the member producer and sold at NRs. 38 per litre to the TDMPCUL. TDMPCUL sold unpacked (open) milk to the consumers at NRs. 44/litre. The milk chain showed that actors involved in this milk value chain were mainly producers, Milk producer Cooperative Society and the TDMPCUL. So the price taken per litre of Milk varied from actors to actors while it runs through the value chain maintained by different actors. The chain analysis showed members benefits from the activities of the cooperative. The producers benefited by 72.73 percent whereas the cooperative union and the society share the level of benefits with the marking of 2.3 and 13.6percent respectively. The expenditure of TDMPCUL for 2008/09 was NRs. 32.6million and the income was 33.9million. The gross margin was NRs. 1.29million with a net income was NRs. 0.96. (€9764). Therefore, the analysis showed that the TDMPCUL was economically viable during 2008/09.

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Cooperative is a way of bringing people together to conduct activities to support for their livelihood and economic situation in Nepal. It inspires the members to have the common goal to meet their economic, social and cultural needs with joint and collective approaches. The cooperative in Nepal was introduced for the first time when the first five year plan 1956 made provision about it. The cooperative has been directly contributing for economic life of people. There are different types of cooperative in Nepal such as saving and credit, multipurpose, agricultural, consumer, science and technology, coffee, milk cooperative. Milk cooperatives are supporting to institutionalize the production, processing and selling of milk (Thakuri, 2010). Milk production in Nepal is an integrated part of the traditional production system which is dominated by small farmers (Singh and Pundir, 2002). As an effort to assess the contribution and support of cooperative in people's life, this thesis analyzes the milk cooperative and its impact on smallholders' milk producers in the village of Nepal.

This study is based on the research conducted in the Tanahun District Milk Producer's Cooperative Union Limited (TDMPCUL), located in Tanahun district, Gandaki Zone in the western region of Nepal. This cooperative union was first started in 1996. In the beginning, there were five cooperative societies and only 150 share members were involved in the union whereas now it has 14 milk producers' cooperative societies (MPCS) which work as milk collection centers in different parts of the district with 2500 share members. The cooperative society collects milk from smallholder milk producers and supply it to the cooperative union i.e. TDMPCUL. The cooperative union provides benefits and facilities to the milk producers through cooperative societies. The members of the cooperative societies comprise of smallholder rural milk producers, who has been producing and supplying milk in the cooperative society since a long time. The cooperative societies were operated by a team of milk producers themselves. The societies collect milk from the different areas of this district. The network of these societies formed the cooperative union (TDMPCUL), which is operated by a body formed through the elected members each from the level of milk producer cooperative society.

About 2500 smallholder milk producers supply milk to the cooperative union through the 14 MPCS. Different milk producer's cooperative societies have different members, which collect milk at each Cooperative Society (MPCS) and bring it to the Tanahun District Milk Producer's Cooperative Union Limited (TDMPCUL). Each MPCS collect milk two times a day (in the morning and evening) and supply it to the cooperative union once a day. However, if much milk is collected in the evening, then the milk is supplied again to the cooperative union, where the chilling vat is big enough to stock the milk collected from different cooperative societies. The cooperative union collects about 2100 liters of milk per day. Most of the liquid milk is sold to the local consumers by the TDMPCUL through its different selling booths (Table 1.4). Certain amount of milk is used for butter, yoghurt and ice-cream making and rest of the milk is supplied to the processing plant (Sujal Food Pvt. Ltd) located 49km west of the district. The cooperative union, besides the competitive price of milk, provides different service and benefits to the members producers through MPCS. Following flow chart illustrated more about the cooperative union's linkage to the different milk cooperative stakeholders.

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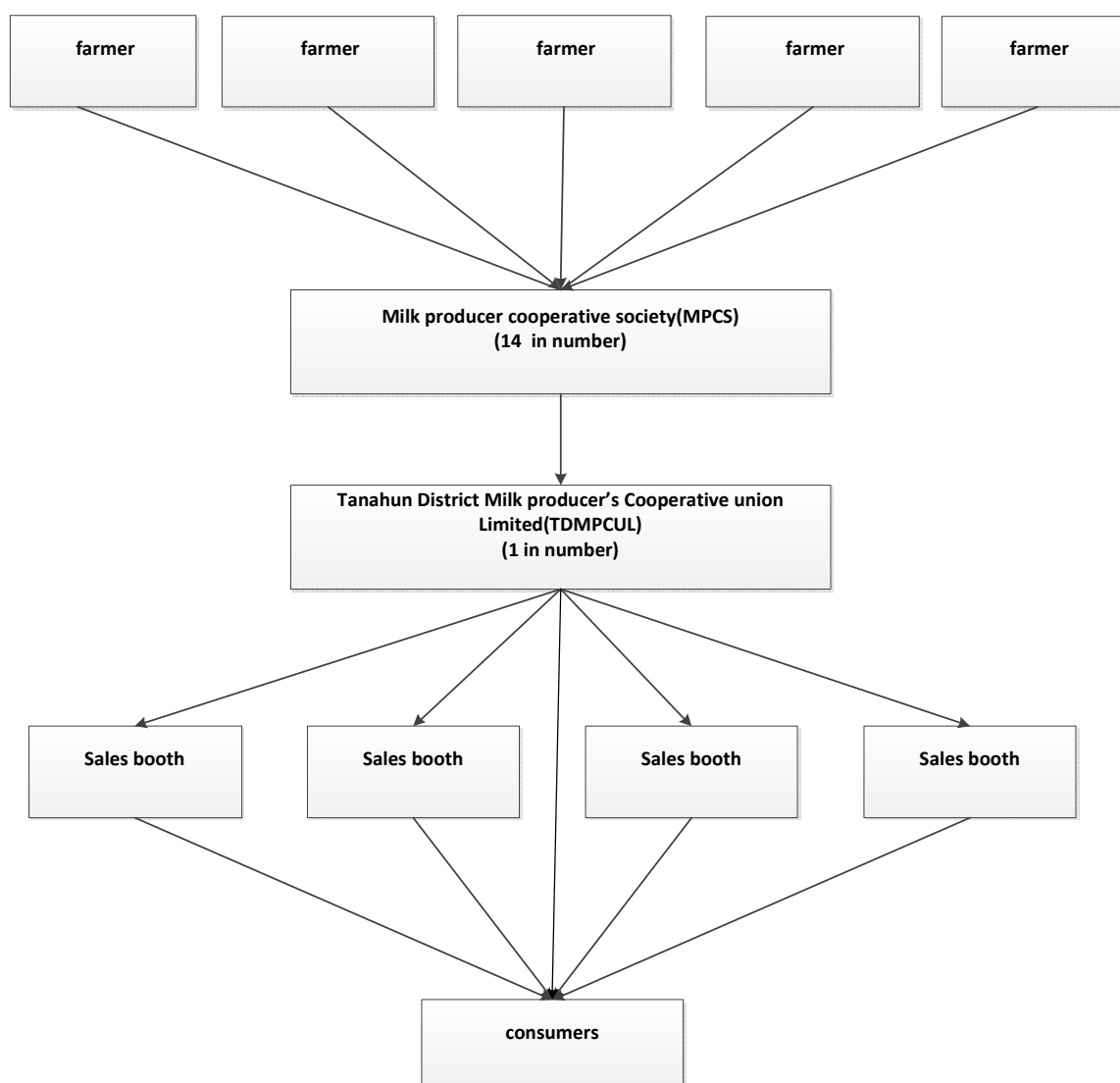


Figure 1.1 Milk supply from producers to consumers
Source: own study, 2010

A detail study of Dumsi village based MPCS (one of the 14 MPCS in the district) called Dumsi Milk Producer Cooperative Society was carried out in order to observe and analyze the link and cooperation between the milk producer cooperative union and member producers. It was also to limit the study area and to be more focus on specific geographical area. Dumsi village is one of the areas where different level of milk producers with various background of socio-economic conditions, ethnic group and gender are involved in the milk production activities. The Dumsi milk producer cooperative society was established at 1994 before the Tanahun District Milk Cooperative Union of Tanahun came into the existence. There were 105 milk producer members. At present they have about 495 milking animals' buffalo-265 (54%) and cow 230 (46%).The cooperative union was established with the joint e

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efforts of such MPCS in the district. Dumsi Milk Producers' Cooperative Society including other Milk Producing Cooperative Societies located in the district started to supply milk to the TDMPCUL.

Despite various research activities performed in the dairy sector, the impact created by Tanahun District Milk Producer Cooperative Union Ltd on smallholder milk producers is not assessed yet. Thus, this study is an effort to find out the real situation of the impact created by the TDMPCUL on smallholder milk producers. The finding of this report could be helpful to formulate the further policy to enhance the income level of household and the entire sector concerning with dairy activities. Also, it might be useful to replicate in other community of the district and under similar socio-economic situation in Nepal.

This thesis comprises of six chapters. The first chapter deals with introduction including the background, objectives of the study. Chapter two and three deals with the methodology and literature review respectively. The forth chapter analyzes the data collected from the field and fifth chapter presents discussion comparing with literature review and cross tabulation. The last or the sixth chapter presents conclusion and recommendation on the basis of findings which concludes this report.

1.2 Background

Nepal is a developing country with per capita income of \$447 per annum with wide income disparities and poor access by a large section of the population to basic social services (ADB, 2009). It is a small land locked country situated in south Asian region bordering with two different highly populous nations of the world China in north and India in south, east and west. It has the total area of 147,181 sq km. It has an extreme climate condition. The altitude is ranging from 70 to 8848 metres above Sea level. World highest peak Mt. Everest-height of 8848 meters is located in northern range of the country. Administratively it is divided into 5 development regions, 14 zones, 75 districts, 58 municipalities and 3915 Village Development Committees (VDCs). Wards of VDCs and Municipality are the smallest administrative units of the country. Geographically it is further divided into three different broad agro-ecological regions, Mountain in the north, Hills in middle and Terai (plain area) in the south, from east to west across the country in order to facilitate the equitable distribution of development, planning and administrating activities from the government of Nepal. The southern part of the country is almost covered by the plain area (23.1% of land), middle range with hill (41.7 % of land) and the northern part with Mountain (35.2% of land) respectively. The cultivated land holding by the different regions is about 52.9 % in plain, 40.3% in Hills and 6.8% of land is located in mountainous region (Chhetry, 2002). The total population is recorded about 27 millions and more than 60 different ethnic groups are accommodated in the country, whereas the distribution of population is 46.7% in plain area, 45.5% in Hilly area and 7.8% in the Mountain. The population distribution is closely related to the cultivated land covered by the different ecological regions (CBS, 2008). About 80% of Nepal's population still live in rural area and the country is characterized by small land holdings, rapid population growth, and fragile ecological situation, causing the chronic poverty in many parts of the country. In addition the political transition that Nepal is currently undergoing is proving to be arduous, weakening the country's focus on reform and development agenda (ADB, 2009).

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1.2.1 Livestock and dairy sector in Nepal

Livestock plays an important role in the socio-economic life of the people. It is an important source of quality food like meat, milk and eggs, also the source of income and employment to the rural farmers specially women. Livestock sector accounts nearly one third (29.8%) of the country's Agricultural Domestic Products (AGDP) (CBS, 2003). Dairying accounts for about two thirds of the livestock sector. The average growth of milk production over the last decade was about 2.6 percent per year. Dairy farming in Nepal is dominated by small farmers scattered within the different milk shed area of the country, so the cost of production is generally higher than the other country. In Nepalese farming system, there are lean and flush seasons in milk production due to feed availability and the seasonal breeding pattern of buffaloes (Pradhan et al., 2003).

The livestock sector in Nepal is well supported by the several institutions and organizations for the development of the project. Ministry of Agriculture and Cooperatives is the main responsible governmental body which controls and regulates to all the other sectors concerned with the livestock development activities. Under MOAC, Department of Livestock Services (DLS) and Nepal Agricultural Research Council (NARC) are two organizations responsible for livestock extension and research activities in the country. Besides this Department of Cooperative (DOC) and Department of Food Technology and Quality Control are two other departments which are directly concerned with dairy sector. Dairy Development Corporation (DDC) is responsible for marketing (buying from and selling to) consumers after processing, whereas National Dairy Development Board (NDDB) formulates the dairy development policies and coordinates between public and private sector existing dairy activities in the country.

Most of the rural people in Nepal depend on agriculture. Majority of their income depend upon livestock products. People grow and keep cattle and buffalo to produce milk for their livelihood and income. The total population of cattle and buffalo recorded is estimated to be 7.17 million and 4.68 million respectively (Ministry of Agriculture and Cooperatives, 2009). The cattle and buffalo population is increasing at 0.06% and 2.7% annually. Among them 13% of cattle and 26% of buffalo are in milking condition in the country, whereas 28.56% and 71.35% of the milk production is shared by the cattle and buffalo respectively. The total milk production from cattle is 0.41 and buffalo 1.031 million MT in a year (MOAC, 2009). But in the case of study area, Tanahun district only has shared 1.3% age of cattle and 2.22 % of buffalo of the total national population of livestock in the country. Whereas the population of milk animal of cattle is 1.28% and buffalo 2.23%, but in term of milk production it has shared only 2.14% of the total production of the country (Table 1.1). Major milk producing areas of this district has recorded those 300 days of lactation length for cross breed cow and 324 days for cross breed buffalo (Annual report, DLSO, Tanahun, 2009). The following table shows the livestock population in Nepal.

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Table 1.1 Livestock population and total milk production of Nepal

S. N.		Population('000)		Milking animal(000)		Milk production(Mt.)(000)		
		cattle	Buffalo	Cattle	Buffalo	Cattle	Buffalo	total
1	Country total	7175	4680	933	1211	414	1031	1445
2	Western hill region	679	887	102	270	43	216	259
3	Tanahun	93	104	12	27	6	25	31

Source: MOAC, 2009

In term of the use of milk, the national scenario of milk marketing sector has been assumed that about 50% of the total milk production is consumed at household level to produce Ghee and other products. Of the total, 35% of the milk is sold through informal market e.g. Hotel, Restaurant and supplying to the individual household. And remaining part or 15% of the total milk produced by the producer is marketed through the formal channel (Pant, 2010).

Tanahun district (the study area) is one of the 75 districts of Nepal, which is in the western hilly region of the country. It is in Gandaki zone and lies between hilly and plain (Terai) part of the country. It is located in between of 83°75' to 84°34' eastern longitude and 27°3' to 28°05' Northern latitude. It has 46 Village Development Committees (VDCs) and one municipality named Vyas. According to the population census conducted in 2001, total households in Tanahun district are 62,898 and total population is 315,237. The district covers a total of 155,902 hector of lands. Out of the total land, 65,065 hector is arable land. The literacy rate of the district is 71.85 (Female 62.8 and Male 80.9) which has a total of 8 colleges, 21 Higher secondary, 95 secondary, 60 lower secondary and 447 primary schools. Besides, there are several private schools and collage in the districts.

The only municipality of Tahanun i.e. Vyas municipality (where the milk cooperative union is located) is the study area of this thesis. The municipality has 11 wards. In order to make the specific focus to the case, the discussion with individual milk producers and suppliers of cooperative society in Dumsi Village was conducted. The Dumsi village (where a detail study was conducted) lies in word no 5 of Vyas municipality, which is extended about 10 K.M. in distance (North) from the district-headquarter. This is one of the remote villages within the municipality. The people resided in this village have the agriculture background and livestock farming is an integral part of their livelihood. Most of the people in Dumsi village are involved in cattle farming activities focusing on milk production.

1.2.2 Milk production

People reside in the rural part of the country still depend on agricultural based jobs/professions and income. For their livelihood and earning, the people are also engaged very much in milk producing and selling activities. Being scattered in different part of region, the dairy milk producers are putting their efforts individually. (Table 1.2) 1.45 million MT milk was produced in 2008/2009 in Nepal (MOAC, 2009). Out of the total milk production, buffalo contributed 71% whereas cow shared 29% of milk. Cross breed with Jersey and Holstein Friesian cattle and Murrah buffaloes is the major milk producing dairy animals in the country (Acharya, 2006). Most of the people in Nepal prefer to keep buffalo as they are easy to keep and produce much more milk with high fat content in comparison to the cow. The buffalo also have high salvage value and well adopted with locally available feed resources, perform well in

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poor quality roughages and more resistant to disease (Rasali, 2000). The following table comparatively shows the milk production in different years in Nepal and proportionate contribution of buffalo and cow.

Table 1.2 Total milk production of Nepal

S. N.	Product	2004/05	2005/06	2006/07	2007/08	2008/09
1	Total milk Production (MT)	1274228	1312140	1351394	1388730	1445419
2	Cow Milk	379637 (29.80%)	385290 (29.36%)	392791 (29%)	400950 (29%)	413919 (28.60%)
3	Buffalo Milk	894591 (70.20%)	926850 (70.64%)	958603 (71%)	987780 (71%)	1031500 (71.40%)

Source: MoAC, 2010

With regards to milk production in Tanahun district, it is produced in different milk shed areas of the district. Buffalo are the main source of milk production followed by the cattle. The milk production in the country fluctuates due to the seasonal breeding pattern of buffaloes and feed availability in the country. Normally, September-February is considered as a flush season and rest of the months of the years are the lean season for milk production.

But, in the case of Tanahun district, about 27000 (26%) of the buffalo out of 104,000 are in milking stage, which are producing the total of 25MT (80.64%) of the total milk production, whereas about 12,000 (13%) of the cattle out of 93,000 of the total population are in the milking stage and sharing 6MT. (19.36%) milk production in Tanahun district (MoAC, 2010).

1.2.3 Milk collection and marketing

The TDMPCUL has made a well structured milk collection network covering throughout the milk shed areas of the district. It has about 2500 member producers in different milk shed area. They collect milk in every morning and evening time to their own milk producing cooperative societies. Farmers usually carry milk by themselves to the MPCS directly in a small wooden pot, small aluminium can or a small plastic bucket. TDMPCUL has all total 14 village level milk collecting centre called milk producing cooperative society (MPCS), which collect the milk twice (morning and evening) a day. In the collection centre, the milk is collected by the staff appointed by the MPCS. The staffs measure the volume of milk as well as fat and SNF too while collecting it from the farmers. The MPCS then transport the collected milk to the Tanahun District Milk Producer Cooperative Union Limited (TDMPCUL) in aluminium cans having capacity of 40 litres, either through public transport, tractor or manually whatever is available. Transportation of the milk is done without any means of cooling facilities using in the vehicle, which may cause disturbance to the total milk while transporting it into the route. Every morning cooperative society brings the milk to the TDMPCUL. If the milk collection is more in evening, then they also send it to the TDMPCUL. TDMPCUL collects the milk about 2100 litres a day (Table 1.3) and sale it within the local market. Part of the milk is used for different milk products like Butter (Ghee), Yoghurt, Paneer and ice-cream and remaining part of the milk is supplying to the processor.

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Table 1.3 Daily milk collection from the cooperative societies

No.	Milk Producer's Cooperative Society	Daily Milk collection (litre)
1	Dumsi Milk Producers Cooperative Society	450
2	Sewor Milk Producers Cooperative Society	250
3	Baradi Milk Producers Cooperative Society	340
4	Pragati Milk Producers Cooperative Society	300
5	Pokharibhanjyang Milk Producers Cooperative Society	50
6	Charkune Milk Producers Cooperative Society	35
7	Suryodaya Milk Producers cooperative society	90
8	Bhukbhuke Milk Producers Cooperative Society	40
9	Chandreshwori Milk Producers Cooperative Society	50
10	Magde Milk producers cooperative society	100
11	Vyas Milk Producers Cooperative Society	20
12	Chintutar Milk producers Cooperative Society	55
13	Chandresurya Milk producers Cooperative Society	20
14	Belbas Milk producers Cooperative Society.	300
Total		2100

Source: Field survey 2010

The above table shows that the Tanahun District Milk Producer Cooperative union limited (TDMPCUL) collects milk from various milk cooperative societies in different volumes. Among the cooperative society, Dumsi milk cooperative is one of the highest milk suppliers to the union. Because of this reason also, this study chose Dumsi Milk producer's cooperative society to explore specific case pertaining to the services and benefits from the milk cooperative to the member producers. Tanahun district milk producer cooperative union limited sales milk regularly through its four different selling booths located around the territory. Certain volume of the milk is supplied to the four different booths every day early in the morning. Part of the milk is sold by itself from the TDMPCUL directly and also prepared different by-products in the same place where it is located as mentioned below.

The collected milk is used or utilized for various purposes. The TDMPCUL uses the collected milk mainly in six different activities like selling of liquid milk, yoghurt making, butter, ice cream, Paneer making and supply to the processer. The milk products like Paneer, Butter, yoghurt and ice-cream are relatively higher in price than that of the milk itself. The following Table 1.4 shows the details of milk used in different activities.

Table 1.4 Milk used for different activities by the TDMPCUL

S.N.	Activities	Volume of milk used(litre/day)	% age of the milk
1	Liquid milk selling	1197	57.00
2	Yoghurt making	210	10.00.
3	Butter making	147	7.00
4	Paneer making	84	4.00
5	Ice-cream making	84	4.00
6	Supply to the processer	378	18.00
Total		2100	100.00

Source: Field survey 2010

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1.2.4 Milk pricing

Dairy sector/activity is an essential part of mixed farming economy of Nepal. To very limited extent the *Chauri* (Yak) also are accepted as a milk producing animal. Milk production from indigenous breed is small quantities and high concentrated in term of total solid and fat content than the milk produced by improved breeds. The local cow produces milk with 3-6% and Yak with 7-9% fat. Milk is an important component of farm product which is able to generate cash income. In regards to the pricing of the milk, it is based on the fat and SNF content in the milk (MoAC, 2005). In most of the countries, payment of the milk is done on the basis of compositions like fat and SNF content in the milk, but some of the countries already have incorporated the hygienic quality of the milk in addition with fat and SNF for the purpose of payment. Quality payment system can be introduced and make affordable too for the developing country if the local situation is appropriate (FAO, 2000).

1.2.5 Milk consumption pattern

Livestock production can make a good use of resources like milk meat and egg which provides with high quality protein and important nutrients in order to improve the health and physical fitness for the human life (Speedy, 2003). The share of buffalo milk production in the country was about 71% and followed by cow milk with 29% (MoAC, 2010). The annual per capita milk consumption in Nepal is 49kg (134g/day) which is very low compared even to other South Asian countries (FAO, 2010), Where as per capita milk consumption in the country India has 241 gram per day .But the requirement is 250 gram per day. Per capita consumption of milk in India is highest among the South Asian countries, even though it is still below the world average per capita consumption 285 gram per day (Srivastava, 2009).

1.2.6 Development of Cooperative in Nepal

The cooperative movement in Nepal was started with the first five year plan on 1956. For the first time thirteen cooperative societies were registered in the Chitwan district of Nepal. The cooperative registered for the first time was Bakhan credit cooperative committee, established in Bakhanpur village in Chitwan district with the share capital of rupees ten from each member. The government of Nepal initially planed to establish about 4500 Agricultural multi-purpose cooperative societies but only 378 cooperatives were registered within the period of first five year plan 1956-1961 A.D. In the period of second three year plan 1963-1965 a land reform programme was introduced by the government and integrated with the cooperative programme as well. In order to prepare the manpower and to improve the cooperative activities, a cooperative training centre was established in 1963. The training centre started to provide the training course to the staff of cooperative department, cooperative societies as well as the executive members of the board of directors of the societies to enhance basic knowledge and information about the cooperative activities. The cooperative operated a cooperative development fund in the beginning and financed within the members. Later, on 1963 the financing system becomes formally institutionalized with the establishment of a cooperative Bank with the objective of developing cooperative sector in the country but later on in 1967 the government of Nepal provided NRs 10 million as a share capital for the establishment of Agriculture

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development bank of Nepal with the objective of providing credit to all the farmers all over the country but not only the member of cooperatives (Thakuri, 2010).

By the time of third five year plan period 1965-1970, the total number 1489 cooperative societies were established in 56 different districts out of 75 districts of Nepal. But the financial condition of the cooperative societies remains poor in general. So the Government initiated a separate Agricultural development program to the farmers at the village level for the sustainable development of the cooperative. The process of cooperative development in Nepal has been accelerated since then. However, this sector still lacks a proper guidelines and required resources (Thakuri, 2010). Mostly the cooperative societies concerned with financial activities are functioning or focused on the urban areas while sectoral cooperatives concerned with other activities are based in peri-urban areas of the country (Acharya, 2008). Most of the cooperatives have the transaction focusing on savings and credit activities. According to department of cooperatives, presently there are 9720 primary cooperative societies which are federated into specific subject cooperative unions at the district level; ultimately they form central level cooperative association and a national level cooperative federation in the national level. The national level federation is the apex level representative body of all the cooperatives working in the field. Among the 3392 Savings and Credit Cooperatives, 2532 Multi-purpose Cooperatives and 1564 Milk Cooperatives are there in the country. The following (table 1.5 gives an overview of types of cooperative and their number in Nepal (Department of Cooperatives, 2008).

Table 1.5 Types of Cooperatives, numbers and employees in Nepal

S.N.	Types of Cooperative	No. of Cooperatives	No of employee
1	Savings and Credit	3392	5358
2	Multi-purpose	2532	9070
3	Dairy	1564	488
4	Agriculture	1218	419
5	Electricity	226	1
6	Small farmers	215	208
7	Consumers	103	83
8	Science & Technology (Radio, Television)	84	30
9	Coffee	66	2
10	Health	30	96
11	Tea	22	0
12	Others(Herbal medicine etc)	268	73
Total		9720	15828

Source: Annual report, Department of Cooperatives, 2008

however, the saving and credit cooperative constitute the largest share 35%, multipurpose cooperative 26% and Dairy cooperative has share only 16% of the total cooperatives numbers in Nepal.

It is estimated that the total contribution of the cooperative sector to GDP is about 1%, whereas the contribution in the financial sector is around 7% (Khanal, 2007).

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1.2.6.1 Function and responsibility of cooperative

- It unites people and make responsible to the development of the society.
- It acts as a bridge between the people and government.
- It helps to adopt people-friendly policy, rule and regulation to operate the cooperative smoothly.
- It enhances the bargaining power of the member producers.
- It promotes market guarantee for the products produced by the member producers
- It collects the money from city to the village level
- It searches the international market for the products.

1.2.6.2 Present scenario of cooperative

In the village level there are different types of village level cooperative association concerning with different sectors. All together there are about 9720 cooperatives associations which includes different sectors like saving and credit, Agricultural, Vegetable, Coffee, Bee keeping, Sugarcane farming. But in the case of dairy sector, there are only 1564 Milk producer cooperative societies (MPCS) in the country. Initially the milk producers formed their Milk Producers' Association and later on milk producers' cooperative were formed to channel milk marketing in the formal sector. In order to establish a cooperative society it needs to involve minimum 25 milk producer farmer together. Involvement of minimum five such cooperative societies can form a district level milk producer cooperative union (DMPCUL). Now there are all total 37 different DMPCUL in the country, which regulates and provides a guideline to the MPCS located at the grassroot level. By the unification of such DMPCUL can formed a central level dairy cooperative association called Central Dairy Cooperative Association limited Nepal (CDCAN). The CDCAN can further connect with national level institution called National Cooperative Federation (Thakuri, 2010). The federation is guided and supported by the international body named International Cooperative Alliance (ICA) as mentioned in the figure 1.2.

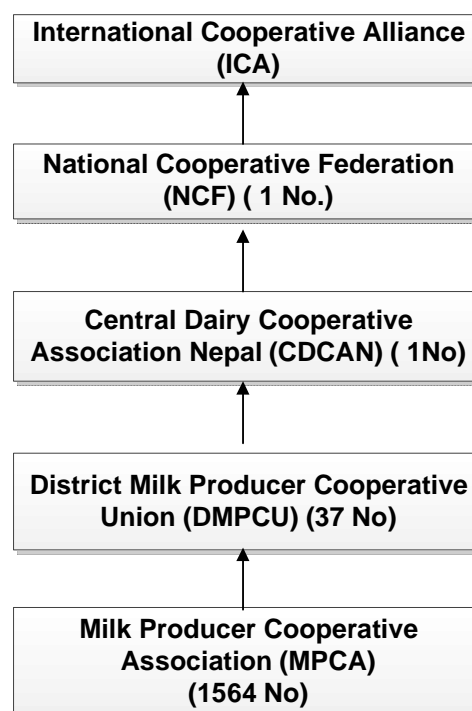


Figure 1.2 Hierarchy of Cooperatives

1.2.6.3 Development of Milk Cooperative

History of Nepalese Dairy was started at 1955 in the first five year plan as a Dairy Development Commission (DDC). In the year 1962 Dairy Development Commission was converted into the Dairy Development Board (DDB). In order to meet the growing demand of milk in the country, Dairy Development Board converted into the Dairy Development Corporation (DDC) in 1969, under the Corporation Act of 1964. Regarding increasing the milk production by involving the high participation DDC

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initiated the Milk Producer Associations (MPA's) in the farmers' level (NDDDB, 2001). The DDC spread its milk collecting network throughout the country and starts to collect the milk through the farmers owned Milk producers cooperatives societies. Ultimately they collect the excess milk than that of their local requirement. So that it inspired to established the powder plant to utilize the excess milk, which now has been playing a special role in contributing to uplift the economic status of rural farmers

The organized dairy development cooperative activities in Nepal have been started with the establishment of the Dairy Development Corporation (DDC). This is the pioneer and major actor in the field of Nepalese dairy development movement. It was established along with the objective of providing fair price and the guaranteed market for the milk produced by the rural farmers and to develop an organized marketing system for milk and milk products in urban areas (DDC, 2010).

Most of the farmers involved in milk production are small land holders along with the same problem. There are about 0.3 million peoples involve in the milk production activities (as information available by CDCAN). To obtain a fair price along with the market guarantee, this can be obtained only through the collective approaches. So they need to be organized to form the producers' associations. The common needs of the milk producers are to be fulfilled so they begin to organise. Initially they start to form their association and later on the association converted into society. As further developed of the society they were able to form a district level milk producer cooperative union limited by the unification of minimum of five different MPCs as well (Votila and Dhanapala, 2008). Currently there are all total 1564 root level milk cooperative societies and 37 district level cooperative unions, which can make a central level body called Central Dairy Cooperative Association Limited Nepal (CDCAN). Under the new cooperative Act 1992, a National Cooperative Development Board (NCDB) as an apex body of the dairy sector, was initiated to strengthen the cooperative movement in 1992. The Government of Nepal also initiated National Dairy Development Board (NDDDB) in order to coordinate the private and public sector dairy development programme as well as to formulate and recommend for the policies and plan regarding to strength the dairy sector of Nepal. (NDDDB, 2001)

1.3 Problem statement

Despite operation of milk producer cooperatives union in Tanahun district for last 14 years, the changes brought by the cooperatives in the study area are unknown. Cooperative has provided different facilities to the farmers such as internal loan support, dairy animal insurance programme, technical support including animal treatment when needed, free A.I. service support for the genetic improvement of local cow, seed of improve grasses, training on livestock husbandry and market guarantee of the products. Cooperative has a great influence to the member producers. The benefits the cooperative provided to smallholders and the overall impact created is not assessed yet. It has not reported to the concern authority by which, considerably low attention has been paid by the authority. There isn't any formal study and report on the field. Thus, the important roles played by the milk cooperative are little understood in the absence of concrete evidences on the part of the cooperative. Therefore, the important activities played by the cooperatives are not justified clearly to the authority.

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1.4 Justification

This report helps to highlight the impact created by the cooperative to the member producers. The activities performed by the cooperatives would be easy to replicate to the society having similar situation. This study also helps to make familiar more about the activities of the cooperatives, by which it makes easy to understand the importance of cooperative by the concern authority, which support to formulate and execute appropriate policies regarding sustainable development in dairy sector. Ultimately cooperative could be able to receive more facilities in economical, technical and any other relevant sectors from the government. The supports enhance the efficiency of the cooperative to provide support more to the member producers to uplift the living standard through increased income.

1.5 Scope of the study

The role of cooperative sector in developing country like Nepal is very important as this sector offer opportunities for people to involve in economic activities and earn their living. It helps to ensure participation of different people in the various activities and enhance solidarity among the members. It helps to foster self-responsibility, equity and solidarity among the members of the cooperatives. Farmers involved in the cooperatives have access to sale their product (milk) to generate income with market guarantee. Cooperative collects all the products and sale it to the market at relatively high price, which decrease the transportation cost for the farmers and supports with more profit margin. Therefore, it is expected that the outcome of this study particularly useful to the smallholder rural milk producers of Tanahun district, which add some insights for the production of more milk at farm level and to have solidarity among the members. It is also expected that the finding of this study might be useful to other peoples where the physical, socio-economic, cultural and environmental conditions are similar to replicate the experience. Finding could also be the helpful for those institutions which are working with milk production activities. More importantly, this report can assist policy makers to provide opportunities for effective development of cooperative sector as well as to consider this sector as a driving force of development. Further it helps them to find way forward to provide more benefits to general public through the cooperatives.

1.6 Limitation of study

The research work was mainly based on the information available from the interview of respondent and key informant. It was mainly focused on the impact of cooperative to the rural milk producers. So the majority of the informants were rural milk producers who did not have good record keeping system thus their responses were not based in general and uniformed practice. This has decreased the quality of responses received from the respondents during the study which ultimately limited the scope of generalization of this study. The study focused on limited geographical coverage only in Tanahun district. Additionally, limited number of literature available relevant to this sector was another limitation of this study. Having these limitations, it was difficult to generalize the findings of this study. However this study can be a reference material for future researcher for the similar study.

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1.7 Research objective

The general objective of the study was to assess the impact of milk cooperative on smallholder milk producers and to find out the changes brought to their livelihood by the support of the cooperative. The specific objectives of the study were

To analyse the impact of milk cooperative to the smallholders milk producers and recommend for further development.

1.8 Main research questions

- What are the economic influences created by milk cooperative on smallholder milk producers?
 - o What is the level of milk production of smallholders before and after cooperative establishment?
 - o What additional benefits can impact the producers besides the price of milk?
 - o What economic differences exist between the members and non-members of cooperatives in terms of milk production and sale?
 - o What future potentials do the cooperative have in terms of expanding its procurement, processing and marketing capacities and increasing member producers?
- What concrete changes on smallholders are brought by the cooperative?
 - o What social impacts are created by the establishment of cooperative?
 - o What technological changes can be seen at producers' level as an impact of cooperative?
- What other supports are provided by the cooperative to the members?
 - o What support provided by cooperative has benefited the milk producers most?
 - o What improvement in supports by milk cooperative enhances greater impacts among the milk producers?
 - o What mechanism developed by the cooperatives ensures equal distribution of supports among the members?

1.9 Research frame work

The whole research work was conducted nine steps as Fig. 1.3. The problems related to the issue were assessed. Then, the objective of the study was set. Further, the methodology of the study was finalized to collect the relevant field data, information and to analyze them. As a part of the methodology, questionnaire was developed to for milk cooperative stakeholders (milk producers both members and non-members, cooperative staffs and the staff of the district livestock service office). After completion of the primary data collection from the field, data analysis was done. Based on the findings, a conclusion was drawn which was followed by the recommendation and suggestion as way forward to strengthen and sustain the efforts of milk cooperatives.

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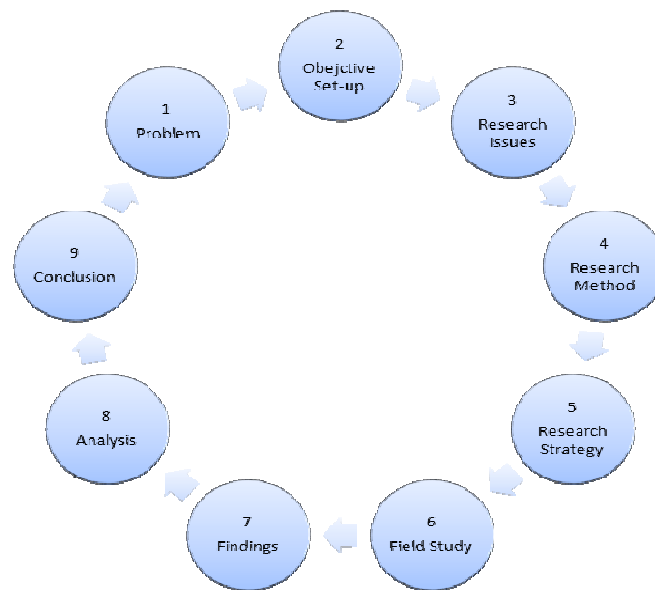


Figure 1.3 The research frame work

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CHAPTER TWO: METHODOLOGY

This report especially tends to assess the overall impact of milk cooperative on smallholder rural milk producer, which was conducted using the methods and tools as mentioned below.

2.1 Materials

The materials used in the research were structured and semi structured questionnaires, check list to conduct interview with the respondents. The computer and software for the analysis of the data available from the field. Different publications like Book, reports, Journals and internet sites relevant to the subject were used and reviewed.

2.2 Selection of the study area

As this study was focused on the impact of milk cooperative on the rural milk producers, hence Tanahun District Milk Producer's Cooperative Union Limited and its activities were the major focus of this research. Damauli of Tanahun district of Nepal where the milk producer cooperative is based has been considered as a study area for this research. Geographically, this study area is located in between the Terai (plain area) and mountainous region of Nepal, which is almost situated in the Western hill region of central part of the country, that could represents the situation of the country as a whole. This is one of the pioneer cooperative among the cooperatives in this district and has worked in close collaboration with different actors involved in dairy sector. Almost equal number of male and female with different ethnic groups and different level of milk producers are involved in this cooperative. The cooperative consists of about 2500 numbers of milk producers and 14 number of different milk collection centers as a milk producer cooperative societies in the remote area of the district. So, this cooperative union is purposively selected for the study.

In order to be focused on specific geographical areas and to explore the link between the cooperative societies and the member producers, the study was focused on Dumsi milk producer cooperative society based in Dumsi village of the Vyas municipality. Milk producer members and cooperative staff of this cooperative society were interviewed during the time of primary data collection.

2.3 Data collection and analysis

Primary data were collected through interview and case study process, whereas the secondary data were collected through the internal record keeping of the cooperative regarding the collection and distribution of milk. All the data taken from respondents were analysed through, cross tabulation, bar chart, pie chart, value sharing, chain mapping, and SWOT analysis for the final report. Excel package was used while preparing the report.

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2.2.1 Literature review and secondary data collection

Literatures review was done with the help of relevant book, journal, PhD thesis, official report available in library and internet. It provided insight into the research topic and guided to get sufficient information during the time of research. It also provided the support and proof for the objective of the research questions with arguments. The review was done before performing the actual field research.

2.2.2 Interview

Primary data were collected through the interview of 35 different respondents and key informant (KI). The interview was performed using semi structured and structured questionnaires and check list. The questionnaire was focussed on the influence of support provided by the cooperative to the producers. Different semi-structured questions and check list were used for different actors in the chain which included; (a) milk producers (member of the cooperative) (b) Milk producer but not supplying milk in the cooperative (non-member of the cooperative) (c) Staff of the cooperative and (d) staff of the District Livestock Service Office (DLSO) Tanahun, were interviewed. Respondents were selected on a random basis. Among the total 35 respondents, 25 milk producers and cooperative members, 6 from milk producers but not the cooperative member, 3 cooperative staffs and 1 staff from the DLSO.

Individual interview with the above respondents was conducted. Time and location of the interview was fixed in consultation with respondents and according to their availability. During the time of interview a little interaction and open questions were also made in order to get profound insight over the research topic. Only the concerned issues with the impact of dairy cooperative were taken place within the time limitation of one hour for a single member. The respondents were asked the similar type of short answer-questions, which leads to promote discussion and explored the real issue concern to the impact of milk cooperative.

2.2.3 Case study

During the time of field work 3 different case studies were taken in the selected area. The actual cases of different respondents were compiled and analysed on the basis of changes observed. This method of data collection provided profound information required for the purpose of research activities. (Strategy=survey and case study, method=interview, tools= semi-structured and structured questionnaires).

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CHAPTER THREE: LITERATURE REVIEW

3.1 Cooperative

Cooperative is a form of community organization where its entire member works together in order to fulfill their common needs. All the members of this organization are obliged to maintain their democratic, participatory and transparent decision-making procedure because it is jointly owned, and commonly operated on the value of self help, mutual help and self-responsibility (National Cooperative Federation Nepal, 2010). The members of cooperative's have a common goal in order to meet their economic, social and cultural needs under the control of joint approach by its own members so that their members are directly responsible for benefiting themselves and ultimately to the society in general.

3.2 Importance of Cooperative

Cooperatives are organized by the group of people which are democratically controlled, managed and owned to serve the members and produce benefits for them. Therefore cooperative corporate governance is concerned with ensuring cooperative relevance and performance by connecting member, their elected representative, management and employees to the policy, strategy and decision making process. Cooperatives are being considered as the most reliable and effective organization in creating and maximizing the wealth and contributing to poverty alleviation. It has been said that cooperative are the income group (Acharya, 2008).

3.3 Principles of cooperatives

International cooperative alliance (ICA) has suggested seven guiding principles of cooperatives, which serves as a guideline for practical implementation of values and norms to operate the cooperative smoothly as mention below.

Table 3.1 Seven guiding principles of cooperative

S.N.	Principles	Values
1	Voluntary and open member ship	Openness
2	Democratic control by members	democracy, equality
3	Economic participation of members	Justice
4	Autonomy and independent	Self-help, self responsibility
5	Education, training and communication	Honesty
6	Cooperation among cooperatives	Solidarity
7	Concern about community	social responsibility

Cooperative organizations are aware of the importance of member involvement and through training programmes try to increase participation in relation to the society. The fact that each member has only one vote is particularly important; in the case of public companies, individual shareholders find it difficult to effectively control the management of a company unless they have a controlling interest through ownership of a large number of shares (Thakuri, 2010).

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3.4 Activities of Cooperative

The word cooperative indicates to be united and work together for the welfare of a group of people involve in a community. Co stands for together and operative for working. Hence, we can say that the actual meaning of cooperative is living together, thinking together and working together for the mutual benefits of the members. (Thakuri, 2010). He also has said that the cooperative do not have any relation with the property of a member holding a lot of land and all these things but only have the relation or concern with the capacity, knowledge and skills of doing some business for the benefits to the group or community where s/he is involved. So it can also be said that cooperative is a method of doing common business with the help of knowledge and skill of the member of the cooperatives, which made a grand support to the group of farmer, producer, social workers, unemployed manpower and all the members concerned to the cooperatives. The cooperative in Japan also involved in both of the agriculture and non agricultural commodities as well as other major business, such as selling of vehicle, running of petrol pump collecting saving, insurance, cultural programme and also the forest management aspect are handled by the cooperative in Japan (Thakuri, 2010).

A cooperative is an autonomous association of the people having similar status of social and economical difficulties, who are associated voluntary on the basis of equal voting rights. Ultimately they are obligated to fulfil their own common needs and moral benefits. Intern, it has an objectives to raise the standard of living of its members involved in the cooperatives and of the whole working people, but it does not mean that to obtain a maximum profit while performing the different activities through the channel conducting by the cooperative. It has a specific method of working procedure which assists to enhance both the social and economic status of the members. The nature of work of the cooperative is more concern with the field of both social and economic sector of the members. The economic aspects affect the business enterprise whereas the social aspects are directly concerned with the association of persons comprising the society, particularly as they affect the membership and personnel relationship between the members and the concern people with the cooperative (Agrawal, et al., 1985)

3.5 Role of Cooperatives

While pricing the milk and milk products cooperatives play an important role. A cooperative is an enterprise owned by and operated for the benefit of those members and users. The dairy cooperatives operated by the farmers often use a complete milk distribution system from the point of procurement to the consumers where it is marketed. Also make a bargaining capacity for the price with the traders. It represents in that level of decision where different rules and regulations are formed. Cooperative also can make the decision to change the marketing system of the product and the nature of product from one to another in order to maintain highest return to the members and users (Shields, 2009). The poor rural people will be able to generate an employment for the better earning through the system adopting with cooperative model. However adopting of new technology is a complex process in the conventional system of dairy farming (Ghosh and Maharjan, 2001).

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Dairy farming activities being a labour-intensive work provides a viable supplementary job to those unemployed peoples living in the remote area of the country which lead to uplift their level of income by increasing the earning capacity (Kulandaiswamy, 1986 cited in Ghosh and Maharjan, 2001). Cooperative can also play a major role to uplift the economic activity of the rural people in better access in farming technology and market price for their farm products. In the case of dairy development activities cooperative can support significantly to the members involved in milk production by providing the facility like medication, artificial insemination, transportation, better marketing price of the products and basic knowledge of dairy farming through training, which lead to improve their household economy (Ghosh and Maharjan, 2001).

3.6 Cooperative for Development

Cooperatives are one of the major means of development. Cooperatives are accepted worldwide as effective institutions to enable and uplift the lower section of the people and ultimately contribute to the economic and social development of the country (Bhandari, 2008).

3.7 Cooperative Development in Nepal

Development of the cooperative was started with the first five year plan in 1956 in Nepal. It was formalized by the passage of Cooperative Societies Act of 1960. In 1964, during the second plan period, land reform was introduced with a compulsory savings plan for farmers. By the time of the Third Plan (1965-1970) a total of 1,109 cooperative societies, had been established, but the financial condition remains poor. In the fifth five year Plan (1975-80), more concrete effort was taken by the Government and initiated a separate agricultural development program to the farmers at the village level for the sustainable development of the cooperative (Bhandari, 2008).

3.8 Types of Cooperative in the Country

There are all together 9720 cooperatives in the country. Among them only 1564 are related with milk production and others are concerned with other purposes. Whereas the cooperatives related with saving and credit shared most part in the cooperative field with a number of 3392 and is followed by multipurpose cooperative 2532 in number. The saving and credit cooperative (35%), multipurpose cooperative (26%) and dairy cooperatives (16%) have covered the first, second and third position respectively. The total member of the cooperatives in the country is 1259747; whereas the female members are 412447 (32.7%) and male members are 847300 (67.3%) respectively (Department of cooperatives, 2008).

3.9 Saving and credit programme in Cooperative.

The cooperative societies in Nepal significantly contribute for the stimulation of socio-economic development in the rural poor in the country. They also help to provide the microfinance in the form of credit to the member producers. Saving is the strong base of cooperative society which makes the people capable to meet their social and economic needs of the members and the community where they are operating.

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In regards to the Nepalese practice, a cooperative society is registered in particular district under the cooperative Act 1992, which, as said above, have the contribution for poverty reduction in the country. The Act has classified various cooperatives under four categories such as (1) single and multi-purpose primary cooperative society (25 individuals can organize these societies) (2) District cooperative union (3) Central cooperative union and (4) National cooperative federation (Bashyal, 2009).

3.10 Women Leadership for Poverty Reduction

The Agricultural Perspective Plan (APP) also has recognized that the poverty is the main obstacle to achieve the required progress for the country. Therefore, the plan has targeted to alleviate the poverty through develop leadership of women by increasing their participation in agricultural development activities and improve the nutritional status of the people by increasing the production of food grains and other nutritious food items (FAO, 2003). In the context of Nepal, the cooperative has strengthened the participation and leadership of women within the institutional level.

3.11 Cooperative for Poverty Reduction

The milk production is an important source of income for the rural poor (Ghosh and Maharjan, 2004). The dairy cooperatives play an important role to reduce the level of poverty in rural area by providing the support in the field of milk production and marketing aspect. Infrastructure facilities for collection, transportation, storage and processing of milk are the main problems which can directly affect the producer in receiving the price of milk marketing. (Rajendran and Mohanty, 2004).

In the rural area of the country Dairy business will be developed gradually for the purpose of poverty reduction. Cooperative group and private entrepreneurs will be mobilized for the increment of production and productivity of the dairy cattle raised by the rural milk producers. Also the service of animal health, disease control, arrangement of the feed and fodder availability, livestock insurance services was developed for the increment of milk production. Particularly the women and disadvantaged group of peoples were encouraged for collateral-free low-interest loan and technical services under the group based approach for the purpose of income generating through livestock keeping in the household (MOAC, 2007). The dairy farming is a potential source of subsidiary employment for those rural poor peoples who are out of a job so as to raise their income earning capacity (Kulandaiswamy, 1986 cited in Ghosh and Maharjan, 2001).

3.12 Milk Pricing System

The pricing policy of the Government play an important role in dairy sector because fixing the rate of a product in both producer and retailer level are also under the influence of politics without any relevance of general market condition existing to the surrounding environment. The policy also has covered effectively the both producer and retailer price limiting with the margin available for dairy processing industry but it does not represent the impact of increasing cost, wages, utilities etc. But the classified pricing system depend upon the demand and market characteristics of the products which provides a large market and better return even both rather than a single pricing system for all use (National Zoonoses and Food Hygiene Research Centre, n. d.).

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Mainly the price formation of milk is depending upon the fat and SNF content in the milk. But the quality of milk is determined on the basis of somatic cells (minimum criteria for fresh cow milk quality 400 000/ml in the EU will be accepted) content in the raw milk, which also help to form the stimulating price with smaller amounts of cells in the milk (FAO,1999).

Some of the factors like quantity (volume /weight) composition (fat, protein, SNF) and hygienic condition of the milk determine the milk pricing. Fat is often considered as a most important parameter which affects the compositional quality that is included in the milk. Payment system can be made through different ways to pay for the fat content of milk.

- Introduce a system of penalty for low fat or a bonus for high fat, than the certain percentage of low or high fat level in the milk. It seems better to use quantity of fat (in kg), rather than a percentage because this will discourage the producer from adding water. If fat percentages are used, this means that a milk producer would receive more money if he or she adds water to the milk. For instance milk price for 3.2% fat is Euro 5/kg/ and 4.0% fat is Euro 5.20/kg. So if a producer having 20 kg milk with 4% fat (total amount of fat is 0.8kg) can receive $20 \times 5.2 = \text{Euro } 104$. If the same producer adds 5 liters of water in the same (20 liter) and make it 25 liters. Then the fat % age of that milk will go down to 3.2% (total amount of fat is 0.8kg) but the price of this milk will become more ($25 \times 5 = \text{€ } 125$) than the before (20litre) (Draaiyer, et al., 2009).

3.13 Milk Marketing

The transportation of the milk from the point of production to the retailing centre is the major task for marketing. There may be several steps to be passed for the purpose of marketing in between the point of production to the final consumer; however the cost of marketing is started from the very beginning of the process where the product is produced. In regards to the storage, any product that has to be made accumulate any where from the point of production to the consumption until it is consumed. It might be the primary activities for certain business, where as the secondary business for the people who are involved in the business of milk marketing. So it is the most important part of the marketing channel of the production without any damage. Likewise, the processing activity is the most technological phase of the marketing aspect. All the essential aspects like chilling, homogenizing, pasteurizing, packaging and also the activities often involve transform commodities into different product are done to be sold. Another most important function in marketing is buying and selling where the irreversible flow of buying and selling of a product is held according to the consumer needs (Rhodes and Dauve, 1988).

3.14 Chain Actors

Any individuals or organizations that produce the products ultimately for the use of consumer's satisfaction are considered as chain actors. The chain actors who will be the owner of the products during the time of processing in the chain, also forward it to the further processing. There will be an increasing trend in the price of products after each and every step of the chain to make it more convenient for the use of consumer's (KIT & IIRR, 2010).

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3.15 Principle of Empowering Smallholders

Empowerment of the consumers (smallholders) is vital for maintaining sustainability of a project (chain). Short duration and limited funding organizations often made some mistake by imposing an interference on the management of the project rather to make them able to do it by themselves, which made the project tends to collapses without any residual impact. Intermediary organizations affiliated to that project should have the principles of empowering smallholders before engaging them in a value chain development process. Thus, the efforts should be made to support their capacity, which ensure the sustainable businesses, equity (fairly distribution of benefit within the actors), gender and social responsibility (KIT and IIRR, 2006).

3.16 Risk in the Dairy Business

The diversified livestock production in the country is a means of providing year round employment and spread of risk in the business. Factors that may reduce or raise outlay in the performance of the economic activities are the sources of risk. High prices of milk to the consumers, high prices of feed and forage production to the milk producers and hired labour to the cooperative are some of the risks which provide the means of spreading risk in the dairy business. Long term influence of these factors are the source of discouragement in technological adoption, awareness, cost benefits and risk associated with the different management practices in the livestock development field (Mburu, et. al, 2007).

3.17 Reserve Capital for the Smallholder

Conventionally, buffalo are considered as the provider of milk, manure, draft power, hides and also the reserve capital for the smallholder farm families. They are well familiar for their ability to thrive under the poor quality management adapted by the smallholder rural farmers under the mixed farming system in Nepal (Rasali, 2006). Buffalo is an important animal species contributing about 53% of the total livestock GDP especially due to the production of milk and meat (Singh and Chapagain, 1999 cited in Rasali, 2000).

3.18 Facilities for the Village Level Milk Producers

The cooperative activities in the society have made an opportunity to make an integrated approach for marketing and processing of the milk produced by the smallholder rural milk producers. All the cooperatives have their own different territory to perform the activities to the village in which it was formed (Halse, 1980 cited in Wambura, 2006). Village milk producers bring their milk to the village level collection centre and village collection centres sale the milk to the village cooperative twice a day. The milk collected from different village cooperatives goes to the relatively large modern dairy plant union dairies where the different activities like cooling and pasteurisation of milk is taken place (Brumby, 1983 cited in Wambura, 2006). All the facilities for the member of village level milk producers and regular payment of the milk according to the fat content are also the beneficial movement for all the actors who are involve in the chain (Wambura, 2006).

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CHAPTER FOUR: RESULTS

4.1 Increase in milk producers

A total of 25 milk producers were interviewed to know the reasons for increase in the number of members before and after joining the cooperative. The table 4.1 shows the number of producers increased after the establishment of the cooperative.

The milk cooperative union, in Tanahun district was started with 150 dairy farmers as members in 1996. The total members have reached 2500 by 2009 end. On an average there was annual increase of about 7-8.6% members.

Table 4.1 Increase in member producers of milk cooperative

S.N.	Year	No. of members	Increase in members	Increase %
1	2005	1887	142	7.5
2	2006	2029	174	8.6
3	2007	2203	132	6.0
4	2008	2335	165	7.1
5	2009	2500	-	-

Source: field survey, 2010

4.2 Increase in average milk production

They had records of low milk production before they were members. Majority (52%) of the present members produced 2-5litres of milk before (Table 4.3). There were hardly any members (4%) who produced more than 10litres.

However, after the establishment of the cooperative, majority of the members (48%) produced more than 10litres. The increase in average milk production per members was about 9litres from 4litre to 12.96litre before and after their membership respectively (Appendix J). It was a massive increase of 224% in fourteen years.

In five years time from 2005-09, there was a bulk increase of 22% (8000litres) milk volume of TDMPCUL (Table 4.2).

Table 4.2 Increase in milk procurement of TDMPCUL

S.N	Year	Milk production (litre)	Annual Increase (litre)	Increase %
1	2005	36,000	-	-
2	2006	37,000	1000	2.7
3	2007	41,000	4000	10.8
4	2008	42,000	1000	2.4
5	2009	44,000	2000	4.8

Source: field survey, 2010

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4.3 Increase in income

The members who sold 3-5litre, 5-10litre and 10-30litres of milk a day had earned NRs. 2880-4800, 4896-9600 and 9696-28800 per month (Table 4.3).

Table 4.3 Range of earning from selling milk per month

S.N.	Number of members	Milk production(litres)	Income/month (NRs)
1	5	3-5	2880-4,800
2	8	5.1-10	4896-9,600
3	12	10.1-30	9,696-28,800

Income/month = NRs 32/litre * volume of milk * 30 days

Source: Field survey, 2010

4.4 Saving and credit activities

Savings

All members deposited a monthly income earned from milk with the cooperative. The amount saved by the members with the cooperative ranged NRs. 100 and 1000/month depending on their earning capacity (Table 4.4). About 44% of the total respondents saved NRs 501-1000/month. Seven members (28%) saved NRs. 201-500 and another seven members saved NRs. 100-200/month. The members were paid eight percent of interest on their savings. The total accumulation of members saving has reached NRs. 22.1 million.

Table 4.4 Members saving with the cooperative

S.N.	Number	Percent	Savings (NRs)
1	7	28	100-200
2	7	28	201-500
3	11	44	501-1000

Source: field survey, 2010

Credit

The credit facility was availed to the members who had opened saving with the cooperative. The loan amount ranged between NRs. 5000-150,000 per members on depending on the purpose for which the loan is requested. The interest rate is 12% per annum. So far 2125 members (85%) had availed the loan from the cooperative amount to NRs. 20.9 million. The liquidation period for the loan is three years. Collateral is not required for the members while availing loan from the cooperative.

4.5 Investment of income earned

All members (25 respondents) had invested or utilized their earnings in different ways. Twelve of the 25 respondents (48%) had invested their earnings in providing education to their children in private and boarding schools and college. Likewise, five members bought dairy animals (2-3 nos), four members (16%) each bought land (0.35 hectare) and increased savings (NRs 3000-5000/month) (Table 4.5).

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Table 4.5 Achievement made by the members from selling milk

S.N	Response	No of Respondent	Percent
1	Increased in number of Dairy animal	5	20
2	Increased in Land	4	16
3	Increased in saving	4	16
4	Provided good education for children	12	48

Source: field survey, 2010

4.6 Effectiveness of the services provided by the cooperative

The members highlighted mainly four areas of supports provided by the cooperative (Table 4.6).

- They mostly appreciated the internal loan support provided by the cooperative. The loan priority is given for the purchase of dairy animals, constructing sheds and pasture development activities. However, the members are given liberty to use loan for any purpose that is urgent and important for them. For example, loan was also found used for their children's education, marriages, buying lands, Television and constructing houses.
- The cooperative frequently organized animal health and infertility camps. They liaise with the District Livestock Service Office to seek their expertise services for the dairy farmers. The cooperative also provided veterinary medicine on subsidy.
- For the genetic improvement of the local cows for enhancing their milk productivity, the cooperative also provide free AI services.
- They also availed dairy animal insurance through Nepal Insurance Company. The dairy farmers insure their dairy cows at three percent value worth of the cow and pay on annual basis to the insurance company. If the insured animal dies within the insured period, the owner is paid 80% of the value insured. Also in cases of any deformation on animal's body or become unproductive, 40% value of the insured animal is paid to the owner.

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Table 4.6 Effectiveness of supports provided by milk cooperative

		Responses					
S.	N.	Degree of Importance					
	Support services	completely satisfactory	very satisfactory	Moderately satisfactory	average	Poor	Total
1	Internal loan support	100	8	9	-	-	117
2	Animal Health and infertility camp / veterinary medicine	90	8	6	6	-	110
3	Dairy animal insurance	50	28	15	2	2	97
4	Free A.I. support for the genetic improvement of local cows	10	8	6	8	15	47

Source: field survey, 2010

Note: 5=completely satisfactory, 4= very satisfactory, 3=moderately satisfactory, 2=average, 1=poor

4.7 Potentials of the cooperative

The milk cooperative is planning to expand its activities in future on the basis of their need and priority (Table 4.7). The following are the future plan of activities:

- Increase number of MCC: The cooperative has a plan to establish three additional MCC with capacity of 150litres per day.
- Encourage large scale(more than 20 dairy animals) dairying: The cooperative is intending to support 40% of the dairy shed construction for the members opting for expanding their dairy herd.
- Increase milk prices: They also have a plan to increase milk prices timely based on price inflation trend for dairy inputs in the market.
- Increase insurance coverage: They intend to introduce animal insurance for all categories of dairy animals.
- Ensure market for the increasing volume of milk: They also have the plan to expand milk procurement, processing and storage capacities of the plant.
- Provide fund support free of interest up to six months: They are introducing fund support up to NRs. 20,000 for the members up till six months free of interest.

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Table 4.7 Future support services by the cooperative

S. N.	Future services of the Dairy cooperative	Priority
1	Increase number of milk collection centre	2
2	Large scale dairy farming with 40% of the shed construction cost support	3
3	Increase milk price	1
4	Increase the volume of milk collection per-day	1
5	Increase insurance coverage for all type of animal	3
6	Ensure market for the milk produced by the member producers	2
7	Provide revolving fund support to members without interest up to six month	3

Source: field survey, 2010

Priority: 1= High priority, 5 = less priority

4.8 Differences between member and non member

Hence, a comparison between the members and non-members on the milk production was made. Forty eight percent of the members produced more than 10litres of milk, whereas only 17 percent of the total (interviewed) non-members produce the same volume of milk. In another category, 32 percent of the members produced 5-10litres of milk where 33 percent of non-members produce 5-10 litres of milk Table 4.8. It was found that most of the non-members (50% of the total interviewed) produced small volume of milk ranging from 2-5 litres.

There is higher motivation among the members to produce more milk. The motivation includes market guarantee for milk, timely veterinary service, frequent training available in dairy husbandry, housing, milk hygiene and improved pasture that are available through the milk cooperative. The non-members received only limited facilities from the government.

Table 4.8 Comparison of members and non-members on milk production

S.N.	Milk production daily(Litres)	Member (25 total)		Non-member (6 total)	
		No	Percent	No	Percent
1	< 2	0	0	0	0
2	2.1 to 5	5	20%	3	50%
3	5.1 to10	8	32%	2	33.30%
4	> 10	12	48%	1	16.70%

Source: field survey, 2010

Internal loan support was only available to the members. There is no such option for the non-members. All the members have been supported to have dairy animal insurance, whereas only 50 percent of the non-member has ensured their animals. The same figure can be observed in other areas of benefit which include the medication / free AI service and dairy husbandry training.

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Table 4.9 Comparison of members and non-members

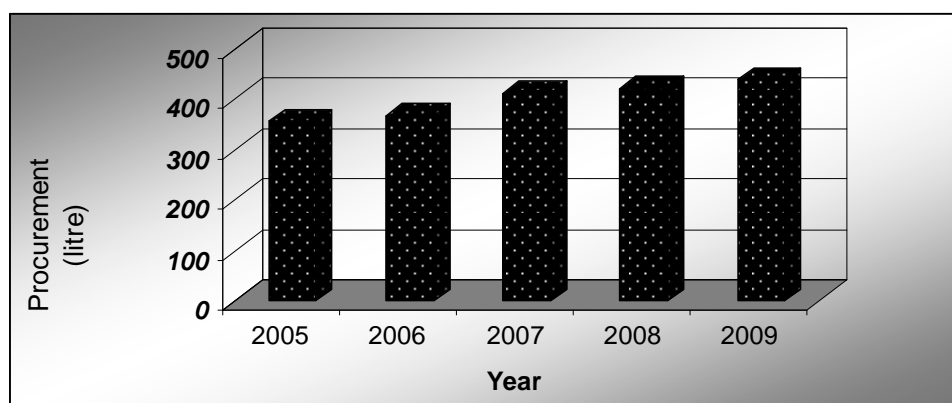
S.N.	Benefits achieved *	Member (25 total)		Non-member (6 total)	
		No	Percent	No	Percent
1	Internal Loan support	21	85	0	0
2	Dairy Animal Insurance	25	100	2	33
3	Animal health camp/Free AI service	25	100	3	50
4	Milk production Training	25	100	1	17

* One person can get more than one benefits at a time

Source: field survey, 2010

4.9 Milk collection by TDMPCUL and MPCS

The findings showed increasing pattern of milk collection by different cooperative societies as well as by the cooperative union. The procurement of milk by Cooperative Union increased by 24% compared to past five years. The milk procurement trend of the Cooperative Union increased by 24% in 2009 compared to past five years. The milk collection increased by 3% and 12% in 2006 and 2007 respectively. The same for 2008 and 2009 was 2.3% and 4% respectively.



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The milk collection by the Milk Collection Societies for 2005-08 showed an increase in milk collection by 20%, 16%, 10%, 13% and 20% for DMPCS, SMPCS, BMPCS, PMPCS and SMPCS respectively. The average increase of five MPCS was 17%. The highest increase was in DMPCS and SMPCS and the minimum for BMPCS.

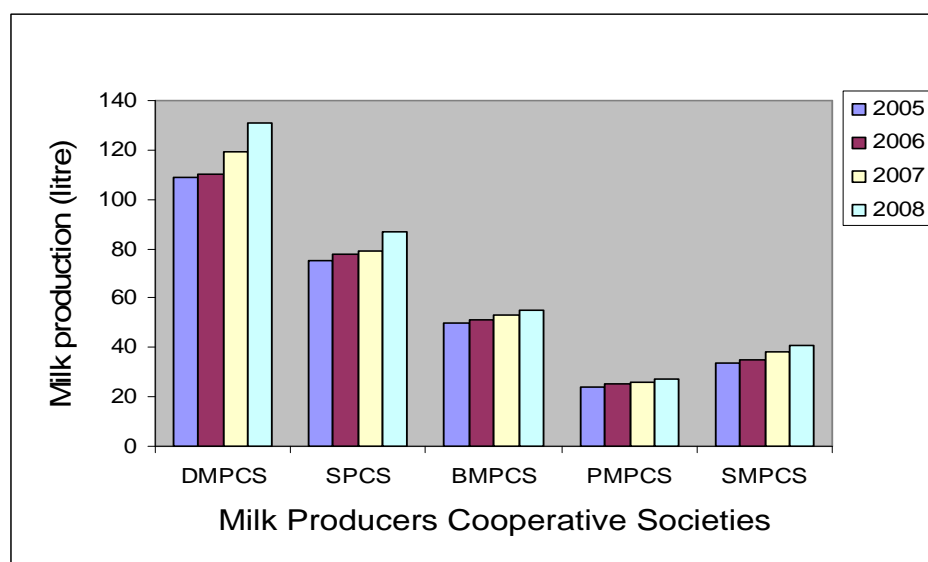


Chart 4.2 Milk collection in cooperative societies

4.10 Case studies

The above findings are complemented by the case studies below. The case studies below are the opinions expressed by the members of the milk cooperative societies.

Box 4.1 Case study 1. Views expressed by Tulsi R Kandel, Dumsi

"I migrated from Baglung district and had only little property which was not sufficient for my living. Initially, I started buffalo farming producing 2-3litre/day. I sold the milk in the local village, which did not have market guarantee and the earning of that time, was insufficient to support the family. It was hard for me even to send my children to the school. My confidence to participate in the social event was very low. However, the establishment of the milk cooperative and my involvement on this has changed my life considerably. I started to sell milk in dairy cooperative from 1995. Due to various support services and motivation, I was able to buy more buffaloes. I have a total of 4 improved-breed cattle and buffalo (2 milking and 2 pregnant). I could increase the volume of milk production and sell. Now, I am selling 30litre of milk per day. I started to earn more money and was able to buy some agricultural land also. From the earnings, I also managed to support my son to get married and offer a party. Besides, the daily expenses and some saving, I am now able to send my three children in good schools/campus. I am very happy with the facility provided by the cooperative. This milk cooperative has changed my life".

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Box 4.2 Case Study 2 Views expressed by Dharma R Paudel, Dumsi

In the beginning, I started with two local buffalos and selling 3litres of milk per day. I used to earn NRs. 675 per month. The earning was not sufficient for daily livelihood, thus it was required for me to get some loan from local peoples and organization. Later when the milk cooperative was established, they suggested me to buy improved-breed (Murrah) buffalos which are able to give more milk. With this suggestion and service and benefits offered by the milk cooperative, I was inspired to buy more high milk producing buffalos. After some time I started to keep five buffaloes and one cow. I started to earn more money from which I am making my living easy. I can support my family. In 1997, the earning from the milk supported my daughter's marriage. I was able to present steel furniture as gift on her marriage. The cooperative further provided me an opportunity to get training on basic veterinary treatment as a village animal health worker. The knowledge gained through this training has supported me to engage in providing treatment to the animals within the territory of the milk cooperative. It has increased my daily income. As well as I came to know the importance of the improved grasses during the training. Hence, I grow grasses in about 5 Ropanis (1 ropani = 0.05 hectare) of land instead of agriculture farming, which provided me more financial benefits. I was able to offer education to my son who have recently completed community medical assistant (CMA) course and now he is working at the district hospital. From the previous saving, I also bought some land and now I am selling 20litres of milk per day. Thanks to the milk cooperative that I achieved significant gain in past few years.

Boz 4.3 Case Study 3 Views expressed by Daya R Sharma, Dumsi

"I started selling milk from 1975 with two local buffaloes. I sold 2-3litres of milk everyday. There was no institutionalization of this activity at that time. We had to go local tea shop, private hotel and door to door to sell the milk. If one day, the person did not want to buy milk, then we had to search for another house where we could sell milk from the next day. It was very difficult to ensure smooth marketing. The buyers used to give money whenever they want. There was no regular routine to get the money. Now, the situation has been completely changed positively and it is very easy to do this business. The market is now guaranteed because of the milk cooperative. Price of the milk is fixed so I don't have to bargain with several individuals. We used to do this business in credit but now we are doing this on cash to cash basis. At present, I have 3 cows and 2 buffalos (3 are pregnant and 2 are milking) with 30 litres milk production per day. Out of the total milk production, I sell 26litre of milk every day. The earning from the milk selling in the cooperative has helped me to support my family. Before 6 years, I got severe back pain and needed to get treatment in the hospital. The treatment was costly. However, I managed to get the treatment done from the earning of milk. Besides, I was also able to buy seven Ropani of agricultural land. The earning is also supporting educational cost of my two children in the collage. Additionally, I have received dairy husbandry and entrepreneurial development on cooperative training through the milk cooperative. These trainings have enabled me to manage the dairy animal husbandry which led to produce more milk.

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4.11 Value chain mapping of TDMPCUL

The existing chain showed market guarantee for the milk produced by the members as the volume of milk produced is procured by the cooperative union in totality. The TDMPCUL has improved the coordination between the producers and the MPCS, which facilitated to produce and collect more milk for the TDMPCUL. The strong chain coordination by TDMPCUL has enhanced the profit share for the producers due to lesser transaction costs and negotiating points. The input supplier was seen as the weakest link in the chain because the demand of the inputs has increased due to increase of members over the years. Also the other reason was due to the lesser number of suppliers that surpassed the demand and supply gap created.

The production cost of milk at producers' level was NRs. 25.41 as found out by NDDB. The MPCS provided NRs. 32/litre of milk to the producers and sold for NRs. 38/litre to the TDMPCUL keeping a profit margin of NRs. 6. Similarly, TDMPCUL sold unpacked (open) milk to the consumers at NRs 44/litre with a profit margin of NRs. 6. Thus, the profit share of NRs. 0.59 was higher for the producer than the MPCS and TDMPCUL based on the cost of production and price received from the MPCS. Therefore, slightly higher profit share for the producers stated above is derived from their cost of production.

Besides, the chain is also well supported by the DLSO. In general, the chain is coordinated by TDMPCUL. The existing milk chain is as shown in Fig. 4.1.

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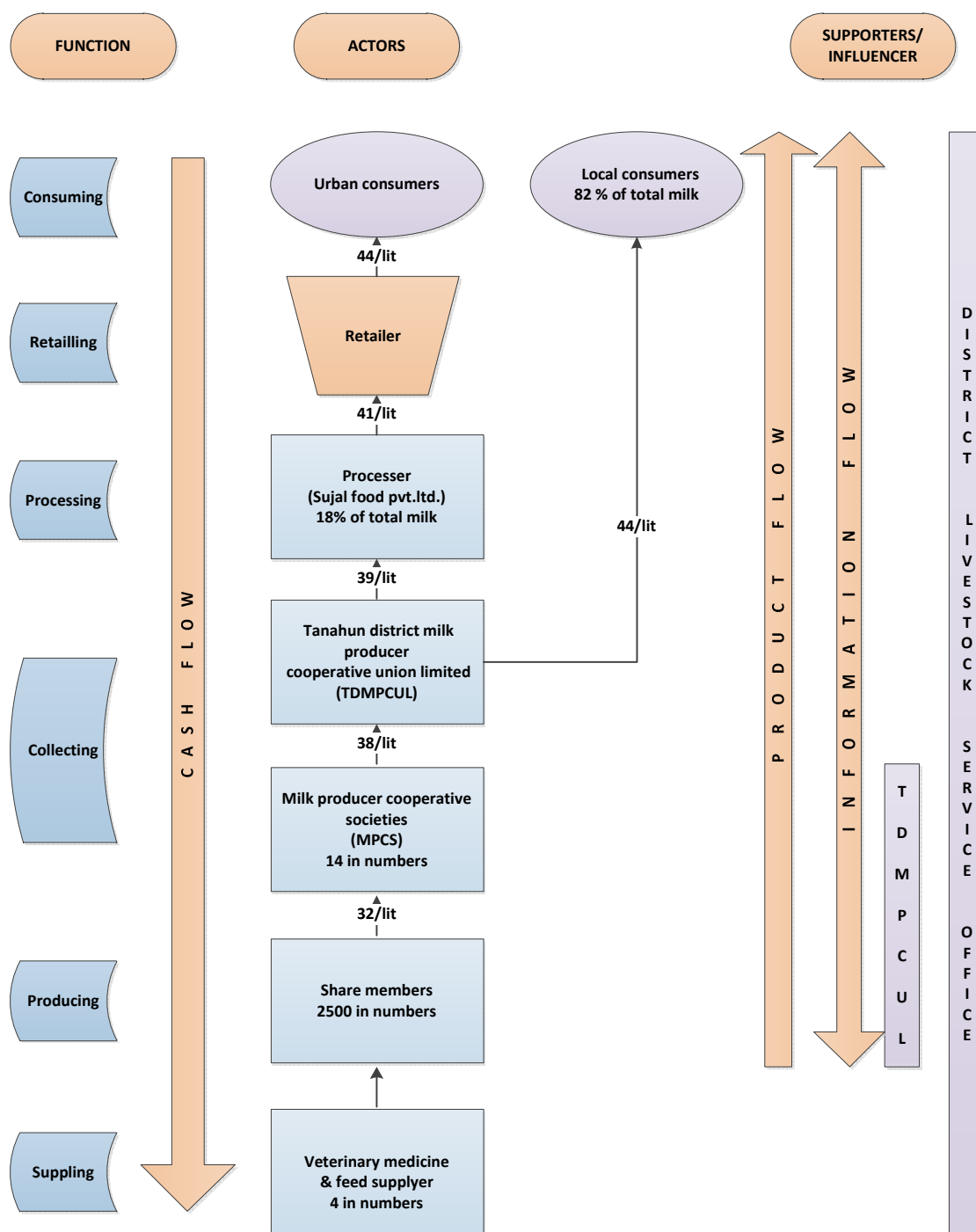


Figure 4.1 Value chain mapping of TDMPUL

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4.12 Added value

The value addition to milk took place at processing and packaging. The additional value of milk was due to addition of quality. It is calculated as revenue – previous actor's revenue (KIT and IIRR, 2008). As per the information available from NDDDB the cost of production per litre of milk in Tanahun district is NRs 25.41, so added value was calculated as follows.

	Revenue	Previous actor revenue	Added value
Added value of producer	= 32		= 32
Added value of MPCS	= 38	32	= 6
Added value of TDMPCUL	= 39	38	= 1
Added value of processor	= 41	39	= 2
Added value of retailer	= 44	41	= 3

Whereas production cost is 25.41 and consumer (final retail) cost is 44.00

4.13 Value share in percentage

It refers to sharing of benefit of final retail price of a commodity that the actor earns, which is calculated as Value share = Added value/final retail price *100 (KIT and IIRR, 2008) as below.

Value share by producer (32/44*100)	= 72.73%
Value share by MPCS (6/44*100)	= 13.64%
Value share by TDMPCUL (1/44*100)	= 2.26%
Value share by processor (2/44*100)	= 4.55%
Value share by retailer (3/44*100)	= 6.82%
Total sharing of value	=100.00%

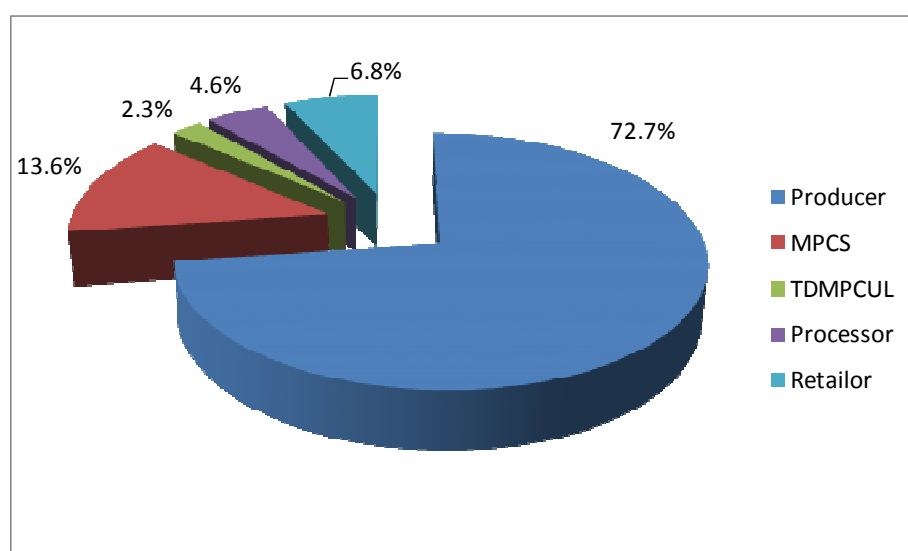


Chart 4.3 Value shared by the different actors

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The chart 4.3 showed that the functions of actors involved in milk value chain production, collection from different milk shed areas and the procurement of milk from the cooperative societies and selling it to the consumers residing mainly in the urban area. Therefore, the selling price per litre of milk varied from actors to actors as shown in Chart 4.2. The milk producers were benefited by 72.7 percent whereas the cooperative society and union shared 13.6% and 2.3%.

4.14 Financial analysis of TDMPCUL

The expenditure of TDMPCUL for 2008/09 was NRs. 32.6 million and the income was 33.9 million. The gross margin was NRs. 1.29 million with a net income was NRs. 0.97 million (Euro 10,068). The findings showed that the TDMPCUL was economically viable during 2008/09 (Table 4.10).

Table 4.10 Financial analysis

Tanahun District Milk Producer Co-Operative Union Limited		
Income statement for the year 2008/09		
Particulars	Schedule (see below appendix)	Current year Amount (NRs) *
A. Incomes		
Sales	1	33,900,762.00
Other income		
Total Income		33,900,762.00
B. Expenditures		
Cost of Sales		29,127,000.00
House Rent Expenses		420,000.00
Fuel Expenses		540,000.00
Electricity Expenses		105,000.00
Printing and Stationary		37,800.00
Advertising & Publicity		155,645.00
Packaging Expenses		354,876.00
Water Expenses		54,750.00
Salary & Allowances	2	882,000.00
Depreciation	3	711,152.20
Refreshment		65,876.00
Interest Expenses		44,000.00
Telephone and fax		38,765.00
Audit Fee		40,000.00
Other Expenses		32,453.00
Total Expenditures		3,26,09,317.20
Profit before tax (Gross Margin)		12,91,444.80
Tax provision (25%)		3,22,861.20
Profit after tax for the year (Net income)		9,68,583.60

* Euro 1 = NRs 96.20 as at 13 August, 2010 (Nepal Rastra Bank).

Source: TDMPCUL, 2010

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4.15 SWOT analysis of the TDMPCUL

The SWOT analysis of TDMPCUL on the basis of secondary data and information available from the respondents had identified the following facts. Based on the information collected the cooperative was favoured with more strengths and opportunities than that of Threats and weaknesses as shown below.

Strength

- Significant improvement achieved by the members (Chart 5.2)
- Members were happy with the services of the cooperative (Box 1, Case study 1)
- Production of high value commodity
- Increased income level of member producers
- Saving and credit facility
- Providing support services
- Producers have high value share in value chain.
- Gradual increase in the number of the members and volume of milk collection (Chart 4.1, 4.2)
- Considerable number of dairy equipment, instrument and fixed assets including land and vehicles (Chapter 5, Sub-heading 5.9)
- Organization has institutionalized the technical capacity and knowledge
- Proper coordination and cooperation among the actors and supporters (Chapter 5, Sub-heading 5.9)

Weakness

- Limited market coverage (chapter 5, Sub-heading 5.2)
- Insufficient computer facility
- Inadequate number of dairy technician with specialized knowledge

Opportunity

- Potentials to produce more storable dairy products
- More producers willing to join the cooperative union
- Increased procurement due to increasing milk production
- Growing numbers of supporting organizations (e.g. DLSO, CLDP)
- Required dairy equipment available in-country at cheaper price
- Increasing demand for fluid milk and milk products

Threat

- Frequent outbreak of animal disease
- Remote area and long distance for milk collection
- Smallholder milk producers unaware of quality milk production
- Informal marketing channel still strong.
- Long hours of electricity load-shedding rendering ineffective milk chilling and storage
- Informal milk marketing channel is still strong.

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CHAPTER FIVE: DISCUSSION

This section discusses various findings highlighted in chapter four.

5.1 Increase in producers

The number of producers has increase drastically over the years. Within 14 years, the total numbers of milk producers has reached 2500 by 2009. The reasons for increase in members as cited by the respondents were due to market guarantee provided by the cooperative union at the districts. The cooperative union served as market for any volume of milk produced by the dairy farmers at local level. Easy access to market for the milk helped producers to reduce transaction costs and number of negotiating points and fetched them regular income to mitigate household needs. The other reasons could also have been due to supports and services (as stated under findings 4.6) provided that attracted dairy farmers and motivated to be members.

5.2 Increase in milk production

The cooperative has greater stake in increasing milk production among the members. A reason for an increase in milk production was definitely due to the increase in members resulting to increase in milk volume. Other reasons could be due to change in dairy animal breeds from local low to high producing improved breeds, development of improved pasture through free pasture seeds supplied, skill and knowledge up-gradation through regular training and availability veterinary service.

A previous research conducted in Chitwan district of Nepal also has concluded that the milk production by the farmers increased considerably. The milk production has increased by 6.8litres from 13.7-20.5litre/day/household (Shrestha, 2009). The average increased in milk production in Tanahun district has increased by 8.88litre/day/household (4.08-12.96litre) (Chart 5.1). This increase in milk production in the research area was greater than in Chitwan district. The difference could be due to the climatic factors. Chitwan district lies in tropical climate where as Tanahun has temperate climate, more suitable for dairying with better availability of nutritious and palatable fodder and the variation of the dairy animal breeds.

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Chart 5.1 Milk production by the producers before and after being the member

5.3 Increase in income

The dairy cooperative plays an important role to reduce the level of poverty among the members of the cooperative. This study has collected several facts and figures pertaining to the improvement of the members through the involvement in the cooperative, which is also highlighted by the Chart 5.2. Finding obtained from the study also supported with the version expressed by the Bashyal, 2009 in literature review. The members were able to save money in the Bank, buy land and dairy animals, meet children's schooling expenses and children marriages. They are able to get the support services from the milk cooperative. All these services and benefits have changed the living conditions of the members. Dairy farming has created opportunities of subsidiary employment for the rural people by raising their income earning capacity. Members of cooperative were produces more milk than non-members (Table 4.8). It helped to invest small part of their income to social services (approach road construction, drinking water supply) which was useful and beneficial for the general public. This has enhanced credibility of the cooperative within the members and general public in order to support the sustainability of the cooperative. The above facts are also supported by the findings of Acharya (2008).

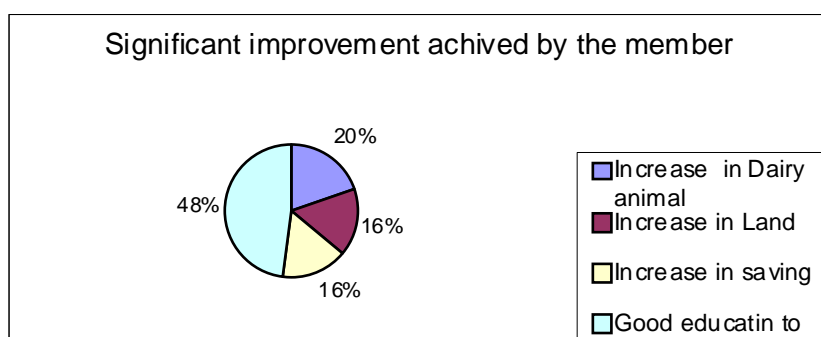


Chart 5.2. Improvement achieved by the member

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5.4 Saving and credit activities under the Cooperatives

Version expressed by the Bashyal (2009) on saving is the strong base of cooperative to make member able to meet their social and economic need supported this finding. MPCs has created a vital role to play in the society to change the livelihood of the members involved with it. It contributes in many ways to its member as it gives micro credit facility which makes the member easy on performing their economic activity, ultimately which has contributed directly on poverty reduction of the society. It encourages the saving habit of the members are shown along with their saving range (table 4.4). About 85% of the member were facilitated by the internal loan service. The internal loan support was provided to the members under the group base approach of income generating mostly through milk production in the household. The above facts are also supported by the version MoAC, 2007.

Investment of Income, according to the version expressed by the members, saving is an investment for the future and which was possible due to the milk cooperative. Also stated by Shrestha (2009) the social status of the members has increased considerably due to proper utilization of saved money. She found about 5.33% of the people has utilized their money in business, 1.33% used money to buy the land and 9% deposited in the Bank. The study findings also found that people from this research area have used 20% of their money in business, 16% in land and 16% deposited their money in the Bank. Higher percentage of the members from this research area was involved more in purchasing dairy animal, land and increase saving in the Bank. The reason for those options was to increase land holding for expanding dairy activities, food self-sufficiency as well.

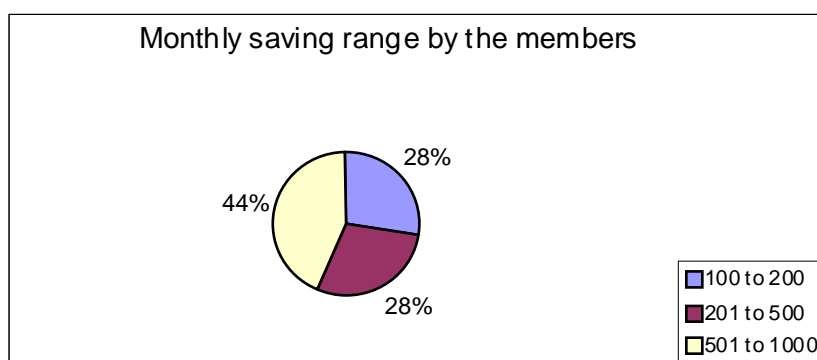


Chart 5.3 Saving range by the members

5.5 Milk pricing system

The present milk pricing system of TDMPCUL was based on quantity (volume/weight), fat and SNF test of the milk. Fat was the important component that influenced the price (FAO, 1999; Draaiyer, et al., 2009, Wambura, 2006). Most members felt that the current milk price paid by the cooperative was low. So the system of pricing milk on fat and SNF is inadequate. The price could be strengthened and revised based on quality (bacterial load, somatic cell count, clot-on-boiling test) in addition to fat and SNF test. Such pricing system benefits the producers, processors and consumers by providing real price for the real product.

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Though the average price per litre of milk is NRs. 32 in Tanahun District Milk Producer's Cooperative Union Limited, however, it might differ case to case on the basis of fat and SNF content. The price paid by the Union per unit of fat is NRs. 2.70 and NRs. 1.58 for the SNF, so the individual producers who has milk with more fat and SNF will get more money whereas someone who has less fat and SNF in the milk will get less money. So the major factor of pricing of the milk is fat and SNF contained in the milk. The price of fat and SNF content of the milk is used to pay the farmers and certain amount of the price of total solid goes to cooperative society as a commission to manage the cooperative society. The payment of the milk is made twice a month to the farmers.

5.6 Support services to the members

Acharya (2008) had mentioned that the cooperative are the income source for the members. It provided several services for the members to uplift the socio-economic condition of the members. Due to the services provided by the cooperative, the milk producers are encouraged to produce more milk and engage in the cooperative activities.

Services provided by the cooperative, internal loan support providing the microfinance in the form of credit, Bashyal, (2009) has supported this statement. It was the most the beneficial and praised much by the members. Similarly, the animal health camp, dairy animal insurance, treatment and free AI support for the genetic improvement of local cattle was appreciated (Chart 5.4). These supports were not only encouraging the members but also to the community as a whole. The supports had motivated people to actively involve in the cooperative activities in fulfilling their responsibility as members. The existing services provided by the cooperative has been benefiting the members but aligning their services of quality more towards the changing needs of the clients would enhance both productivity and income, KIT and IIRR, 2006 also has supports this statement. The possibilities of incorporating incentive packages for the cooperative also motivate greater sense of responsibility among members in responding to their obligation; improve member-cooperative relationship and coordination for greater success of the growing milk cooperative. Also the services provided by the cooperative, members get able to produce more milk than the non member, which makes encouraged community member to be involved in cooperative.

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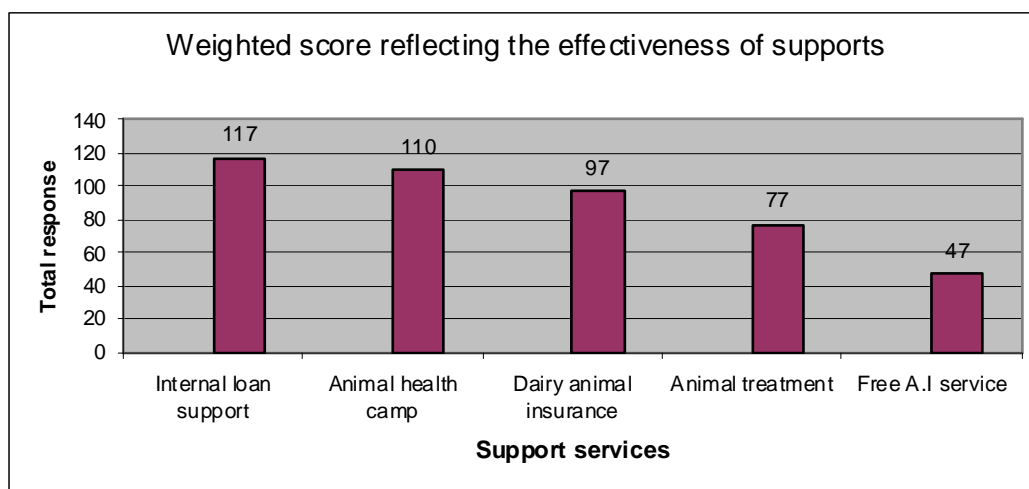


Chart 5. 4 Effectiveness of supports provided by the milk cooperative

5.7 Impact of milk cooperative evident from the case studies

The case studies with three different smallholder dairy farmers revealed that they could enhance their earning capacity through regular sale of milk (2-3litre before and up to 30litre after becoming member) to the co-operative after being members. They could buy dairy animals, land and develop pastures, arrange their children's marriages, and save with the bank. Further, they were also able to receive trainings on improved dairy husbandry and veterinary health practices (village animal health worker). There was no market for the regular sale of milk produced earlier. However, after the establishment of the milk cooperative in their community, they were able to sell whatever amount of milk they could produce easily. Even from the case studies, it was evident that the milk cooperative has created positive impact in the lives of smallholder dairy farmers in Dumsi (Box 1. case studies 1-3).

5.8 Values share of profit and financial analysis of the TDMPCUL

Among the different actors involved in the value chain mapping of the TDMPCUL, the highest profit margin (72.7%) went to the producers, whereas the other actors involved in this activities MPCS and TDMPCUL has shared 13.6% and 2.3%. So the indication of such level of profit margin showed that the activities performed by the TDMPCUL were in favour of the member producers (Chart 4.3).

5.9 Financial analysis of TDMPCUL

The financial analysis of the TDMPCS (Table 4.10) revealed that the recurrent costs involved at processing, packaging and including other miscellaneous costs was relatively high, which was responsible for the low net return. The highest cost was incurred for the purchase of milk (8.9% of the total costs) followed by salary and allowances (2.7%), depreciation (2.2%), fuel (1.65%) and house rent (1.3%).

To minimise the costs, advertising and publicity could have been done away since the cooperative is not new now. Other areas to save cost could be building their own

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structure (building) to house the cooperative plant and office instead of renting. The expenditure incurred on refreshment was high due to the fact the hard earned income at the cost of paying lower prices for the producers was wasted. But regarding the calculation of data available from TDMPCUL, the financial indicators like gross margin and net profit of the year 2008/09 were positive.

5.10 SWOT analysis

The SWOT analysis of the TDMPCUL was strongly supported by its strength and opportunities. TDMPCUL has provided the opportunity to the members to create more income by improving their entrepreneurial skill. It also has improved income generating activities by producing high value product like butter, yoghurt, paneer and ice-cream to make more profit to the members, so more producers were willing to join to the cooperative, although it has some constraints which could minimise the affect of the threats. Version expressed by the Mburu, et.al (2007), on regarding Risk/Threat, the long term influences of the constraints are the source of risk in the dairy business.

5.11 Sustainability of the cooperative

In order to make sustainable for its efforts, different activities were performed by the TDMPCUL. It has bought one ropani (0.05 hectare) of land, where they are planning to build a building for the milk processing factory in this year. It has managed the chilling vat with the capacity of 200-300 litres along with milk testing (fat testing) equipment for each 14 different MPCs. TDMPCUL was equipped with different dairy equipments like 2 big chilling vat (2000 litres capacity of each), batch pasteuriser machine (500lit/hrs capacity), cream separator machine, deep freeze, Ice-cream machine, milk cans and a vehicle for transportation.

In order to build up the entrepreneurial skill for the member producers, it has expanded its support services (dairy animal insurance, internal loan supports, providing the seed of improve grasses, training and counselling about the milk production) to the member producers all over the district through its different MPCs (table 4.9). The training activities conducted by the TDMPCUL were managed in coordination with relevant line agencies like District livestock service office, District women development office and Small cottage industries development committee. Among the training provided by the cooperative all most all the members has got the training related to the milk production, by which the establishment of milk cooperative has institutionalized the milk producing and selling process providing more and sustainable benefits to the member

According to the data available in the field study the TDMPCUL has collected the total deposit of NRs 22.1million and out of the total saving deposited NRs 20.9million was invested within the members, whereas rest of the saving was deposited in the bank. About 85% of the members were supported by the internal loan support program, by which the average loan size was NRs 9,800.

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5.12 Major constraints of milk production

As per the observation and experience during the data collection, producer members who supply the milk have limited knowledge about the milk production at farmers' level. There is lack of sufficient technical support in dairy animal husbandry. The minimum price rate is determined by the active initiation of the government involvement in the joint meeting with DDC, MOAC, NDDB and dairy producer association but the influence of government in the setting of milk price is high. There is still existing large number of unproductive cattle population in the area where milk is produced. Other constraints observed include the following.

- Scientific milk pricing policy is lacking.
- Weak research and extension service in livestock development.

The main constraints for the non-member milk producers are to overcome the lacking collective marketing system of their products, which needs to be assured with a secured market. It was evident from the following facts:

- Traditional marketing channels are still strong
- Around 50% of the milk produced by these farmers is assumed to be consumed at household level due to lack of formal marketing system.
- High cost of production

Nepalese Dairy farming is still dominated by the non-commercial (subsistence type) small farmers. Milk producer farmers are producing a very small amount of milk, which are scattered in different part of the country. It makes difficult to collect the milk together and also the seasonal availability of grass to supply the dairy animal makes the cost of price high. The cost of milk is comparatively higher in Pakistan and Bangladesh (Singh and Pundir, 2002).

- Poor genetic potential of indigenous dairy animals.
- Seasonal breeding pattern of buffaloes: There is a specific calving season patterns in buffaloes. Most of the buffaloes calve during the month of August-October, whereas the availability of fodder is occurs.
- Poor quality of raw milk: Most of the member producers kept their animals under poor management conditions, so the milk they stock and store raw milk within the farm site is in unhygienic condition.
- Shortage of trained personnel: Inadequate trained manpower in the field of dairy technology is a major problem, especially in the private sector, so entrepreneurs are unable to produce appropriate volume of milk from their animals both qualitatively and quantitatively.

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CHAPTER SIX: CONCLUSIONS AND RECOMENDATIONS

This section concludes and makes recommendations on the basis of the outcomes of the findings from the field study on the impacts of the Tanahun District Milk Producer Cooperative Union on the smallholders in Dumsi.

6.1 Conclusions

There was a drastic increase found in both milk production and number of member producers in Dumsi. The members of the cooperative have increased milk production after the establishment of the cooperative union and societies in the Tanahun district. The increase in milk production was solely due to the supports and services availed by the cooperative union and societies. The cooperative has served as milk market for the milk producers in their communities providing easy access to sell milk and earn decent income. Around half (48%) of the members have up to NRs 28,800 of income (Table 4.3) range per month from the milk selling.

Members of cooperatives have increased their income (table 4.3) per month due to the market opportunity provided by the cooperative at local level. The cooperative as milk market has helped the members in reducing transaction costs and number of negotiating points as it used to before the existence of the cooperative. The members were made secured for milk market and guaranteed for regular flow of income.

The loan scheme introduced by the cooperative was inspired by the members. It helped them in purchasing more dairy animals to increase milk production and income. They bought additional land for the development of improved pasture and increasing agricultural production for achieving self-sufficiency in food crops as well. The income from the milk and loan availed also had helped the members in educating their children, arranging marriages, constructing houses, meeting household needs including small nitty-gritty like buying furniture, television and jewelleryes. About 85% of the 2,500 members had availed loan from the cooperative so far. All the members have the right to avail loan on the basis of group responsibility, no collateral is required.

The cooperative union has arranged and rendered trainings to their members on improved dairy husbandry, animal health, AI, pasture development and entrepreneurship development. The members appreciated best the trainings they received through the cooperative's initiatives. Such timely trainings have helped to upgrade their knowledge, which contributed to increase milk productivity directly.

The gross margin analysis of the TDMPCUL showed a profit margin NRs. 0.97 million during 2008/09 with a gross margin of NRs. 1.3 million and total costs of 32.6 million. The value chain analysis of the TDMPCUL 2008/09 showed that the producer has made the maximum profit (72.73%) compared to TDMPCUL and MPCS with 2.3 and 13.6% each.

The current milk pricing was based on Fat content and SNF and paid to the producers. The milk price were fixed jointly by the representatives from the cooperative board (TDMPCUL and MPCS), producers (members), NDDB and MoAC.

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6.2 Recommendations

On the basis of the findings, the following recommendations are made to impact the cooperative and the members.

- **Milk pricing:** The pricing of milk is based on Fat and SNF. The premium price should be paid on the basis of milk quality (bacterial load) in addition to the fat and SNF test. The premium price on the basis of temperature ($<5^{\circ}\text{C}$) of milk when arrive in the MPCs, which make sure to maintain the milk quality. The price should be inversely related to the bacterial load and somatic cell count (SCC). Higher the bacterial load and SCC, lower the milk price. The best price should be paid for the milk with bacterial load $<100\text{cfu/ml}$ and somatic cell count $<200,000$. Introduction of such a quality based payment should benefit both the producers and consumers (FAO,2009) (sub heading 1.2.4).
- **Improve Milk Transportation system:** The present transportation system of milk from MPCs to the TDMPCUL do not have the provision of cooling facility adjusted with the vehicle used for transportation (Chapter 1, Sub-heading 1.2.3). This has resulted into spoilage of milk during the transportation rendering losses to the milk suppliers. To curb this problem, transportation used for milk should have added cooling facility to save milk from spoilage and income losses of the members. This can be done simply by using the ice pack easily available if buying electric cooler is unaffordable or expensive.
- **Expand Market coverage:** The numbers of farmer producing more milk are in increasing pattern by which the collection of milk from the MPCs also is in increasing trend. (Chapter 4.1). So the existing market coverage is not sufficient for the product (milk, butter, yoghurt, ice cream, paneer) produced by the TDMPCUL. So that it should expand the market coverage by establishing more milk selling booth in new and strategic locations with higher density of human population and where sale of these products are favoured by climatic and income factors. The sale of those products should be promoted through promotional programs like TV, Radio and other locally available media advertisements.
- **Establish formal market:** About 85% of the total national milk production is marketed through informal channel so collection and marketing system of the formal milk marketing channel should connect remote areas by establishing the primary cooperative society in those areas as well. This helps to collect the milk produced by those farmers which do not have access to marketing channel yet. This will further strengthen formal market by reducing the flow of raw materials into the informal market thereby increasing members, milk volume and income.
- **Profit maximisation:** The cooperative should make an effort to produce more high value commodity like butter, Paneer, Yoghurt and ice-cream. The milk products were relatively higher in price than that of the liquid milk by which cooperative can make more income. This can be possible either by hiring the technician or training their own staffs through trainings in contact with Small Cottage Industry Development Committee located at the district head quarter.

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- Breed improvement program: Still local breed is predominant among the cattle breeds in Nepal. Similarly, most of the dairy breeds among dairy farmers are local breed. The cooperative should increase wider AI coverage not only for the members but also for non-members within the reach of the cooperative services. Such incentive will help to improve and upgrade local breed genetically. Improvement of breed will enhance productivity of the farmers. Therefore, increase in milk production will motivate farmers to become members of the cooperative indirectly. It thus benefits both the cooperative and the farmers eventually.
- Infrastructure development: The present chilling facility available in the milk producer cooperative (MPCS) is not adequate to handle the flush season milk. So there is a need to increase the existing chilling facility to enhance the shelf life and quality of the raw milk. Different NGOs and DLSO in the district are willing to provide support to the community on the basis of effort put in by the cooperative. Availing the support of NGO and DLSO will benefit the MPCS.

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APPENDIX

Appendix A. List of respondents

S.N	Name of the respondent	Address
1	Krishna pd Poudel	Dumsi Milk Producer Cooperative Society
2	Tulsi Ram kandel	'' '' '' ''
3	Tul Bahadur Thapa	'' '' '' ''
4	Hem Nath sharma	'' '' '' ''
5	Hari Lal Kandel	'' '' '' ''
6	Tulsi Ram Subedi	'' '' '' ''
7	Maina Thapa	'' '' '' ''
8	Bishnu maya Darai	'' '' '' ''
9	Daya ram Sharma	'' '' '' ''
10	Dharma Raj Poudel	'' '' '' ''
11	Prajapati sapkota	'' '' '' ''
12	Krishna Prasad Sapkota	'' '' '' ''
13	Kamala Shrestha	'' '' '' ''
14	Bishnu Maya Dhungana	'' '' '' ''
15	Tulsi Ram Sapkota	'' '' '' ''
16	Krishina Bilash Adhikari	'' '' '' ''
17	Padam Puri	'' '' '' ''
18	Nil Kumari Bhusal	'' '' '' ''
19	Hari Lal Poudel	'' '' '' ''
20	Achari Lamichhane	'' '' '' ''
21	Hari Datta Sharma	'' '' '' ''
22	Durga Prasad Rijal	'' '' '' ''
23	Dilli Ram Sapkota	'' '' '' ''
24	B.Kala Nepali	'' '' '' ''
25	Lari Maya Darai	'' '' '' ''
26	Ganga devi Ojha	'' '' '' ''
27	Rabi Lal Kandel	'' '' '' ''
28	Basandhara shrestha	'' '' '' ''
29	Min Bahadur Bhujal	'' '' '' ''
30	Jas Bahadur Darai	'' '' '' ''
31	Jamuna Poudel	'' '' '' ''

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Appendix B. Field questionnaires for smallholder milk producers members

Respondent:.....

Male ☐ Female ☐

Group name.

Date: 2010-07-

A. What are the economic influences created by milk cooperative on smallholder milk producers?

- What is the level of milk production of smallholders before and after cooperative establishment?

1. How long have you been member in this cooperative?

- a) 0-2 year
- b) 2-5 year
- c) 5-10 year
- d) > 10 year

2. How much litres of milk do you produce a day before member of cooperative?

- a) 0-2 litres
- b) 2-5 litres
- c) 5-10 litres
- d) > 10 litres

3. How much litres of milk do you produce per day after member of cooperative?

- a) 0-2 litres
- b) 2-5 liters
- c) 5-10 liters
- d) > 10 liters

4. What is the price per litre of milk you getting from the cooperative?

- a) Rs 20-25/litre
- b) Rs 25-30/litre
- c) Rs 30-35 litre
- d) Rs 35-40/litre

-What additional benefits can impact the producers besides the price of milk?

5. Do you have had any bonus or incentive from the cooperative?

Yes ☐ No ☐

If yes, how much?

- a) Per litres Rs.....
- b) Per weeks Rs.....
- c) Per month Rs

6. Do you have any saving or credit program in the group or individual?

Yes ☐ No ☐

If yes, saving per month how?

Saving per day Rs.....

Saving per month Rs

-What economical differences exist between the members and non-members of cooperatives in terms of dairy products?

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7. How many dairy animals do you have?

Individual	cow	buffalo	Total
Local (no)			
Improved (no)			
Local (no)			
Improved (no)			

8. Do you produce any other dairy products (ghee, yoghurt) for sale?

Yes ☐ No ☐

If yes, what is the price per kilo or litre?

- a) Ghee/kg:
- b) Yoghurt/litre:

9. Do you provide concentrate feed to the dairy animals?

Yes ☐ No ☐

If yes, how much kg. Per/day/animal?

- a).....kg
- b).....kg

B. What concrete changes on smallholders are brought by the cooperative?

10. What socio-economic impacts are created by the establishment of cooperative?

- a) Increase in number of dairy animals from 1-3 buffalo.
- b) Increase in the cultivated land from Ropani to Ropani (1 ropani=0.05 hector), total area of cultivated land
- c) Increase in the forage production
- d) Leadership development in decision making procedure
- e) Increased in the physical properties (Jewelleries, T.V., Telephone, Mobile, Vehicle, modern houses)

11 What technical and technological changes can be seen at producers' level as an impact of cooperative?

- a) They start to grow the improve dairy animal
- b) They start to grow improve grass in their field
- c) Aware about the milk production and its hygiene through training conducted by the cooperative.
- d) Increase in milk production

C. What other supports are provided by the cooperative to the farmers?

12. What support provided by cooperative has benefited the milk producers most?

- a) Internal loan support to the producers to buy the dairy animal.
- b) Subsidy provided to the producers for buying the dairy animal
- c) Animal health camp
- d) Milk transportation facility from the point of production to the cooperative.
- e) Dairy animal insurance programme
- f) Other.....

13. What improvement in supports by milk cooperative enhances greater impacts among the milk producers?

- a) Increase in dairy animal

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- b) Increase in milk production
 - c) Increase in income (in cash)
 - d) Increase socio-economic status
14. What are the determinants of milk pricing?
- a) Fat percentage of the milk
 - b) SNF of the milk
 - c) Hygiene of the milk
 - d) Volume of the milk
15. What is the system of payment?
- a) daily
 - b) weekly
 - c) bi-monthly
 - d) monthly
 - e) Others
- Is this system of payment ideal for you?
Yes ☐ No ☐ If no, why?
- For those people who say no, which is an ideal system for you?
16. Are you satisfied with the price of milk per litre provided by the cooperative?
- a) totally satisfied
 - b) moderately satisfied
 - c) totally unsatisfied
- If not satisfied, how much should be the price per litre of milk?
- a) Rs 40-45/litre
 - b) Rs45-50/litre
 - c) Rs50-55/litre
 - d) Rs > 55/litre
17. What was the daily house holds consumption of milk before the member of cooperative?
- a) 0-2 litre /day
 - b) 2-4 litre/day
 - c) 4-6 litre/day
 - d) 6-8 litre/day
18. What is the daily house holds consumption of milk after the member of cooperative?
- a) 2-4 litre /day
 - b) 4-6 litre/day
 - c) 6-8 liter/day
 - d) 8-10 litre/day
19. How do you rate the level of facilities provided by the cooperative?
- a) Very bad
 - b) bad
 - c) Neutral
 - d) good
 - e) Excellent

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Appendix C. Questionnaires: SH milk producers and non-members

Respondent:.....

Male ☐ Female ☐

Date: 2010-07-

1. Why you are not supplying the milk to the cooperative?

- a) No assurance of market
- b) No guarantee of payment
- c) Low price of milk
- d) Difficult to (far from house) to supply.

2. How many dairy animals do you have?

Individual	cow	buffalo	Total
Local (no)			
Improved (no)			
Local (no)			
Improved (no)			

2. Are you providing the cattle feed to the dairy animals?

Yes ☐ No ☐ if yes, how much kg of feed per day per animal?

- a) 1 kg
- b) 2 kg
- c) 3 kg
- d) .. Kg

3. How much price per litre of Milk are you getting from the market?

- a) 20-25/litre
- b) 25-30/litre
- c) 30-35 liter
- d) 35-40/litre

4. How much litres of milk are you producing a day?

- a) 0-2 litres
- b) 2-5 litres
- c) 5-10 liters
- d) 10-15 liters

5. What is the daily house holds consumption of milk?

- a) 0-2 litres /day
- b) 2-4 litres/day
- c) 4-6 litres/day
- d) 6-8 litres/day

6. Do you produce any other dairy products (ghee, yoghurt) for sale?

Yes ☐ No ☐

If yes, what is the price per kilo or litre?

- a) Ghee/kg
- b) Yoghurt/litre

7. What do you think about the milk price provided by the cooperatives to the producers?

- a) very low

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- b) low
 - c) moderate
 - d) high
 - e) Very high
8. How much should be the price of milk per litre do you thing?
- a) 20-25
 - b) 25-30
 - c) 30-35
 - d) 35-40
 - e) 40 -50
9. Do you have any training about milk production?
- a) Yes ☐
 - b) No ☐ if yes How much times?

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Appendix D. Field questioners' for cooperative staffs

Informant:.....

Designation

Date: 2010-07-

What future potentials do the cooperative have in terms of expanding its procurement, processing and marketing capacities and increasing member producers for greater impacts?

a. Procurement:

1. How the plane is going on to increase the procurement of the milk?
 - a) Does the cooperative have plans to expand milk procurement in future?
 - b) How cooperative is going to expand that?
 - c) Do you have the requisite equipment/facility in place?
 - d) Is there increasing market demand for more milk?
 - e) Is the production of milk going to increase at the same time? Have you any supportive efforts or strategies in the producer level?
 - f) Is the cooperative adding new members?

Note: Go to questions below, if only the cooperative is expanding procurement of milk.

2. What are the future activities to increase the volume of milk collection?
 - a) by increasing the number of collection centre
 - b) by increasing the facilities providing to the producer
 - c) by increasing means of transportation (using refrigerator/ice pack)
 - d) by increasing (any other specify)

If it is possible by increasing the number collection centre,

- a) How many collection centres will be establish?
 - b) What will be the capacity of each collection centre?
 - c) How much milk collection will be increase per day?
3. What is your coop's procurement capacity based on your facilities available?
 - a) What is your current procurement?
 - b) How much can you increase further?

b. Processing

To increase the future potential by increasing the processing capacity of the cooperative.

Is it possible, if possible? How?

4. What is the strategy to increase the processing capacity of the cooperative?
 - a) by adding of chilling vat
 - b) by adding of homogenizer
 - c) by adding of cream separator
 - d) by adding of milk packaging machine
 - e) by adding of generator for power

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c. Marketing

5. What is the strategy to increase the marketing of the liquid milk?
- a) by increasing the area coverage
 - a) by increasing the quality of milk
 - b) by increasing milk selling booth
 - c) by increasing the extension activities (broadcasting by the local radio/FM).
 - d) by increasing the extension worker (work force).
 - e) market segment

d. Increasing member producers

6. What is the strategy to increase the number of milk producers?
- a) by increasing area coverage
 - b) by providing extra facility to the producers.
 - c) by providing loan to the producers
 - d) by providing some subsidy to the farmers for purchasing of dairy animal/purchasing of medicine.
 - e)
7. What are the determinants of milk pricing?
- a) Fat percentage of the milk
 - b) SNF of the milk
 - c) Hygiene of the milk
 - d) Volume of the milk
 - e)

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Appendix E. Field questioners' for the staffs of the DLSO, Tanahun.

Informant:.....

Designation

Date: 2010-07-

1. What is the total milk production of this district?
2. What percentage of demand of milk is covered by the district production?
3. From where the remaining percentage (what are the other sources of milk supplying in this district) of milk is supplying in this district?
4. What is the situation of disease outbreak condition of this district?
5. What are the supports providing to the milk producers of Dumsi village area?
 - a) Animal treatment
 - b) Vaccination programme.
 - c) A.I. service
 - d) Animal husbandry training.
6. What is the total population of dairy animal in Dumsi area?

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Appendix F. Check list for case study, member producers

Informant:.....

Date: 2010-07-

1. How many dairy animals do you have?
2. When you started to sell the milk to the cooperative?
3. Are you a member of cooperative?
4. Why do you like to be a member of cooperative?
5. How much milk do you sale a day?
6. Why do you supply milk to the cooperative?
7. Do you have any training about the milk production?
8. Are support services effective provided by the cooperative?
9. How much price do you get per litre of milk?
10. Are you satisfied with this price?
11. What types of support do you need from the cooperative?

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Appendix G. Sales per year of TDMPCUL (Schedule 1 of Table 4.10)

Particulars	unit in litre (Per day)	Rate in Rs	Total revenue *
Liquid milk	1197	44	19,223,820.00
Yoghurt	210	60	4,599,000.00
Butter (6 litre :1 kg)	8.82	480	1,545,264.00
Paneer (6 litre :1 kg)	5.04	380	699,048.00
Ice-cream	84	80	2,452,800.00
Supply to the processor	378	39	5,380,830.00
Total			33,900,762.00
* Total Revenue = Unit per day X Rate X 365			

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Appendix H. Salary and allowances per years (Schedule 2 of Table 4.10)

Designation	No of staff	Per month salary	Annual salary & allowances
Manager	1	9,000.00	108,000.00
Ass. Manager	1	7,500.00	90,000.00
Section Head	3	6,000.00	216,000.00
Asst. Section Head	3	4,500.00	162,000.00
Sales Man	4	4,000.00	192,000.00
Driver	1	3,500.00	42,000.00
Cooker	1	3,000.00	36,000.00
Helper	1	3,000.00	36,000.00
Total			882,000.00

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Appendix I. Depreciation per year (Schedule 3 of table 4.10)

Assets	Dep. rate	Cost as at 1 st Shrawan- 2008	Cost as at 32 Ashadh, 2009	Dep. for the year	Net Block As at end of the year, 2067
Furniture and Fixtures	25%	254,675.00	254,675.00	63,668.75	1,91,006.25
Office Equipments	25%	165,873.00	165,873.00	41,468.25	1,24,404.75
Vehicle	20%	1,454,326.00	1,454,326.00	2,90,865.2	11,63,460.80
Other Assets	15%	2,101,000.00	2,101,000.00	3,15,150.0	1,785,850.00
Total (Rs)		3,975,874.00	3,975,874.00	7,11,152.2	32,64,721.80

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Appendix J. Increase in milk production after cooperative estd.

Milk production (litres)	Before being a member		After being a member	
	Number of Milk Producers	Average Milk Production (litres)	Number of Milk Producers	Average Milk Production (litres)
0-2	6	6	0	0
3-5	13	52	5	20
6-10	5	40	8	64
10-30	1	10	12	240
Total	25	102	25	324

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Appendix K. Milk production before and after the member

Milk production(litre)	Member	
	before	after
< 2	6	0
3-5	13	5
5-10	5	8
>10	1	12
	25	25

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Appendix L. Photos



Photo 1: Milking cow



Photo 2: Members transporting milk



Photo 3: Milk collection in MPCS



Photo 4: Office board of MPCS

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Photo 5: Office of TDMPUL



Photo 6: Transporting milk to TDMPUL



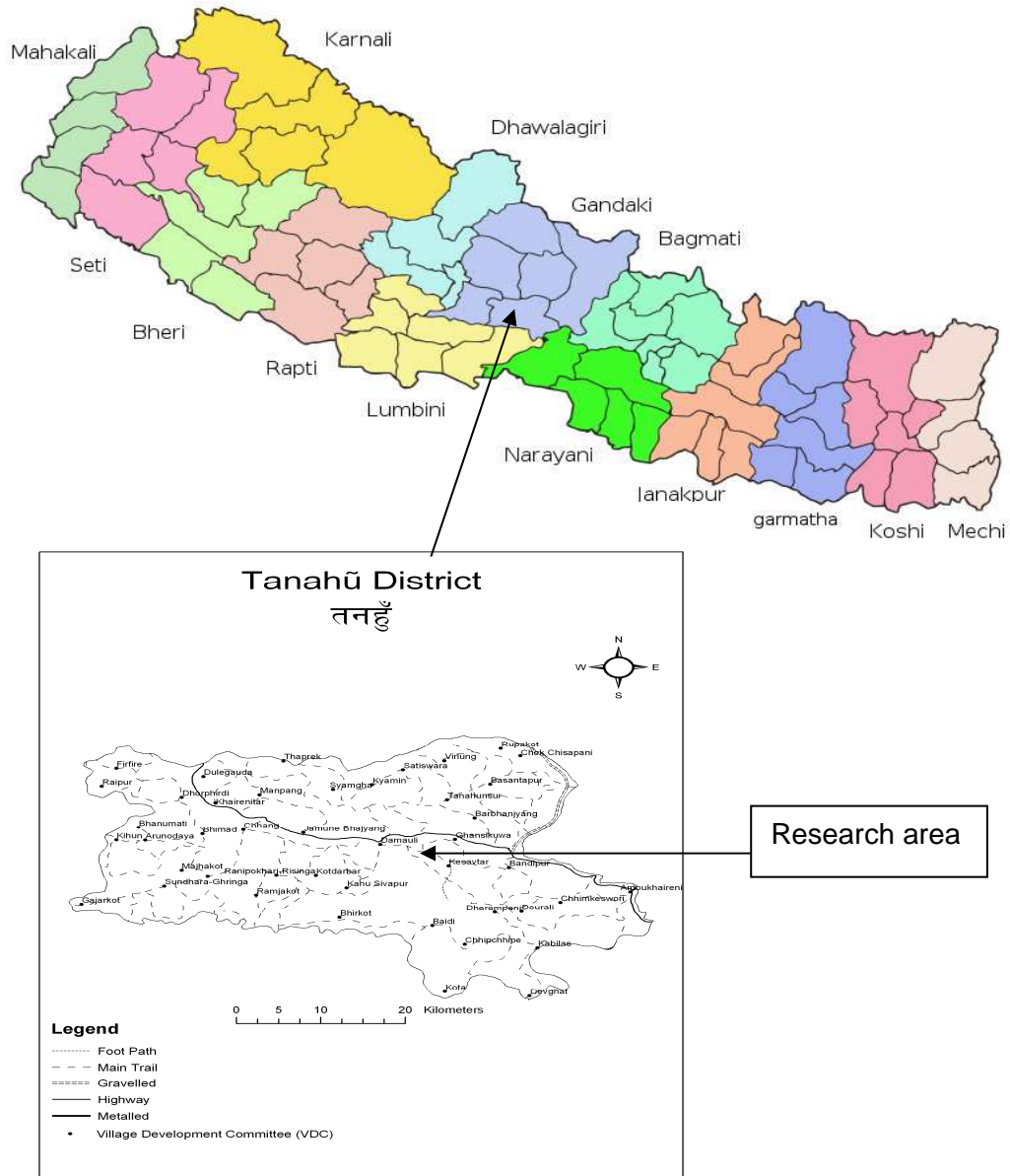
Photo 7: Cross breed milking cow



Photo 8: Researcher interviewing with
Chairperson of TDMPUL

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Appendix M. Map of Nepal and study area



Source: <http://www.mapsofworld.com/nepal/nepal-district-map.html>