CHAPTER I
INTRODUCTION

1.1 General Background of Dairy Industry in Nepal.

Nepal is a country still far behind the rest of the world in development. Nepal ranks in 151st in the United Nations human development. In this context, Nepal challenges are to break the vicious circle of poverty and unemployment and to uplift the social economic status. This requires appropriate development of strategy in respect to every resource. They are available in our hands. 'In 1995/96 Nepal introduced agricultural-led economic growth and rural poverty alleviation by implementing twenty-year Agriculture Perspective Plan which envisages reaching an annual growth rate of 5.5%[1].

When Nepal started five years periodical development plan after the establishment of democracy in 2007 B.S., many corporations and developmental enterprises has been established. 'The Public Enterprise sector has been a major user of public resources; but its performance both in terms of financial results and efficient delivery of goods and services has been poor. Moreover, many of the public enterprises are poorly managed; and are a prime source of leakage and corruption.[2]

Since there was no any dairy corporations or company, need of such company which provides sufficient milk products to the costumer in reasonable price was felt. As population is growing in Kathmandu valley and demand for dairy products is also increasing rapidly. Thus, the establishment of dairy company is need. They also prove the supporting area of nation's development. These corporations have almost covered 8th percent GDP contribution.

[1]Chapagain, D.P. 1995. Livestock in the Agriculture Perspective Plan.pp.12 Proceeding Of the second National Animal Science Convention, Nepal Animal Science Association, Kathmandu.
[2]Poverty reduction and economic management unit, pp.22, Document of the World, Nepal Public Expenditure Review, April 2000.

These corporations and companies are suitable for Nepalese environment as Nepal is agricultural based country and 80 percent of population relies on agriculture. These corporations have provided suitable market for the farmers for their milk produced and fulfilling the growing demand of milk products in market. To practice, promote and with a view to capture the whole issues and focusing even for global market coverage scenario has already issued the national "daily development policy 2061".

In our country almost 52 dairy industries have been established up to now including 2825 people employed in this sector. The data of central bureau of statistics (CBS) in 2001 /2002 has shown that 2706 employees are involved.

The few dairy corporations in Nepal are as follows:

1. Dairy Development Corporations
2. Sitaram Dairy Company Pvt. Ltd.
3. Anmol Dairy Company Pvt. Ltd.
4. Himalayan Dairy Company Pvt. Ltd.
5. Kalika Dairy Company Pvt. Ltd.
6. Kathmandu Dairy Company Pvt. Ltd.
7. Nepal Dairy Company Pvt. Ltd.

1.2 Brief introduction of Dairy Development Corporation

'According to the Agricultural Perspective Plan growth of the dairy sector will accelerate FROM 2.9 percent to 5.5 percent by the end of the plan period[3].First five year plan, stressed upon the need of developing modern dairy industry in public sector. The dairy development commission was formed in 1955 A.D. the dairy development sector was established in the year 2010/2011 BS. As the demand of milk and milk products were gradually increasing it was felt necessary to improve dairy development centre. As a result, dairy development centre was established and started

[3]Chapagain, D.P. 1995. Livestock in the Agriculture Perspective Plan. pp 34, Proceeding Of the second National Animal Science Convention, Nepal Animal Science Association, Kathmandu.

its operation at Bhotahity in the same year 2010/2011 BS. This centre was started to distribute processed milk to the urban people in Kathmandu. The demand of milk and milk products have been increasing day by day so the dairy plant become necessary. Due the inadequacy of space this centre was shifted to Lainchaur. Dairy development commission was constituted to guide the dairy development section. At the time dairy expert by Swiss Association for Technical Assistance. Later, the dairy development commissions have been converted into dairy development board.

The main objectives of the corporation was to provide guaranteed market and fair price to rural milk producers and to supply hygienic pasteurized milk and standard dairy products to the urban consumers. Prior to the establishment of this corporation a separate dairy development board was constitute to carry out the task of dairy development in wider in scale. The dairy development activities in Nepal started on Tusal village of Kavre district 2009 B.S. (1952) in an experimental basis with a small scale milk processing plant under the department of agriculture. In the year 2010 /11 B.S. at the initiation of dairy development board, the central dairy plant was established and started milk collection, processing and marketing activities from the Year B.S. 2014(1957). The third year plan was to provide potential market to the ferment, which are from far distance and remote areas to supply the homogenized and pasteurized milk and other milk area and to ensure the improvement of life style of farmers.

DDC is totally owned by the government. It is also financially supported by the foreign grants and loans. World Food Program (WFP) has been supporting DDC since 2030.031 (1973/74). The New Zealand and Danish Government had contributed towards the establishment of milk processing plants. At present, USAID and Danish government are the major donors.

DDC provides quality milk and milk products to the consumer at National level. The demand of high quality milk is increasing day by day because of health consciousness of the people. DDC buys milk at a reasonable price in a regular basis and supplies

milk. Before the establishment of dairy development corporation, there was no potential market to the farmer to provide reasonable price to the milk producers of rural. The condition of farmers will improve if they get adequate price of milk from the consumers of urban area. The demand of milk is in increasing order because of rapid increase in population. The DDC has expanded its branch offices in indifferent parts of the country such as Kathmandu, Hetauda, Pokhara, Lumbini, Biratnagar and so on.

The objectives of extended branch offices and projects are to provide milk products at reasonable price to the people of rural area and also make them easier to sell their milk. This would improve the economic condition of rural people. The continuous effort of DDC has contributed to increase milk production in rural areas.

1.3 Scope of the Study

Dairy production has been recognized by the government as an important economic activity for development and poverty. DDC an undertaking of HMGIN has made significant contribution in bridging the gap between urban consumers and milk producers. Dairy industry has been very important commercially for the milk producers and nutritionally for consumers from the very beginning of the Nepalese history, the people did not use pasteurized milk and they conceived that the pasteurized milk was fatless. Later, due to the improvement of production and the marketing of milk, its demand increased in various regions of Nepal. DDC has launched a massive program for product diversification in order to serve the urban consumers better with locally produced dairy product. Over the last couple of decades, many milk supply schemes and private sectors are emerged to fulfill milk and milk products in the market. Similarly, several milk producers cooperative have been established to work with these schemes and private sector dairy companies. In this context, the study is relevant to analyze the following:

- Regional demand and supply of the milk and milk products.

- Consumer behavior in the milk and milk products market.
- Prospect for import and export.
- Status of dairy market sector.

1.4 Statement of the Problem

People generally look for the alternatives to the traditional food grains. The improvement in education, media exposure transportation and contact with outsiders have helped towards consciousness and consequently to modernization process. People are increasingly aware of the importance of nutritious food and awareness on the problem of nutrition is equally increasing, so the production of the nutritious food in essential. Milk and milk products are such types of products they have Vitamins and other ingredients which are fundamental to life. The farmers have started to give emphasizes on milk production. Seeing that the milk production are the profitable products due to high demand in the market, the private and public sector have started to participate in the production, processing and marketing a milk products. Though it has a good scope in present and future it has to face many problems. It can't produce and reduce as per our desire in limited for time in storing and supplying. It should depend in its own process; it should be consumed in time. Hence dairy announces milk holiday in certain time interval. In case of excess milk availability, which creates severe problem to preserve raw milk and consequently discourage the milk farmers in their milk production business. The major problem faced by DDC is that the KMSS of DDC had lack of sufficient raw milk. It was because there was no organized dairy farm in Kathmandu. The grazing land for dairy animals was decreasing rapidly due to rapid urbanization. There was wide gap between demand and supply. While talking with the authority of DDC, it has been notice that the milk collection centers and the farmers as well were not reliable in supply of raw milk. The farmers who supply the raw milk to DDC had no obligation to supply milk to DDC. Some of the other problems are highlighted as below:

- Government rules and regulations

- Increasing competition
- Absence of appropriate research and development activities.
- Poor human resources development programs.
- Lack of development of basic industrial infrastructure.
- Lack of technological advancement.

1.5 Objectives of the Study:

The main objective of the study is to analyze the collection and distribution of the dairy products. Agriculture is the main economical sector of the country, where more the 80 percent population is depend on it. To improve the agriculture sector, government has been implementing several programs. Public enterprises are one of the major sectors, where government can play major role. Most of these public enterprises are highly dependent on agricultural production for raw materials. The main objective to establish PES is to mobilize the internal resources and to create economical opportunity in the country. Dairy development corporations are one the main PES in the country which are playing vital role to improve country's economical situation. However it is always valid questions that at what extend they are success and what type of problems are facing by the sector which will help to develop new strategy in the future. Therefore the study is designed to:

- Analyze the current status of milk and milk products markets in Nepal.
- Explore the problems and prospects of DDC in relations to the farmers, collection centers and channel members.
- Examine the relationships between the DDC and the parties (farmers, collection centers and channel members) involved, and
- Conclude appropriate ways of optimizing the relationships.

1.6 Limitation of the Study

Although the study followed a sound methodology by conducting a short sample survey to produce meaningful results, a number of limitations do remains. This study is mainly based on secondary data which have their own limitations. The accuracy and comprehensibility of this study is depended upon the data availed from the management of DDC. Being student, resources constraint is another factor which has limited scope of the study.

- The study focuses only milk products name by yoghurt, ice cream, cream, butter, paneer, yak-cheese, cow-milk cheese, buffalo-cheese, ghee, skim milk powder.
- The study covers the information of only past ten years (1991-2004).
- Lack of accurate data.
- Lack of Co-ordination of staff for providing data.
- Brief information about export and import of dairy products.
- Financial burden.
- Only one company is referred, the findings may not be applicable for other companies.
- The study focuses only on collection and distribution of dairy products and doesn't cover other aspect.

1.7 Organization of the Study

Considering the objectives in mind, the study has been organized into the following five chapters.

Chapter I Introduction

This chapter includes background information on the subject matter, scope of the study, statement of the problems, objective of the study, research methodology, and limitation of the study and organization of the study.

Chapter II Review of Literature

This chapter includes the relevant previous writing and studies to find the existing gap; review of textbook, dissertation thesis has been included in this chapter.

Chapter III Research Methodology

This chapter includes Research design, sources of data/data collection, population and sample, data collection technique, analytical tools.

Chapter IV Presentation and Analysis

This chapter consists of systematic presentation and analysis of region wise milk production and collection, Schemes of DDC, trend of milk collection, chilling centers and capacity in private sectors, quality issues in the processing industry, dairy products produced by DDC and major findings.

Chapter V Summary, Conclusion and Recommendation.

This chapter consists of Summary, Conclusion and Recommendation for dairy products.

Bibliography

Appendix

Chapter 2
Review of literature

Review of literature is an essential part of all studies. It means reviewing the research study or others relevant report in the related area of the study. It discovers what other researcher uncovered. It is not only a way to discover what other researcher in the area of our problem had uncovered, but also helps to avoid investigating problems that have al0ready been definitely answered. The previous study cannot be ignored because they provide the foundation to the present study, it is an integral and mandatory process in research works, it is necessary to show how the problems under investigation related to previous research within theoretical frameworks and in such situation, the underlying theory need to be reviewed well. In this part the researcher incorporates the revise other related research words and the explanation of the difference between them and the proposed study, the research reviews book, thesis, newspaper, magazines, advertisement, journals and other publication, which he has thought the important for the present study, the review is not limited in its above importance. It also provides the valuable information to make the study simple and meaningful. The main objectives of this chapter are to analyze the research works and clarify the need for the study on collection and distribution of dairy products. It reviews literature of dairy, products. It reviews literature on different types of product including different view of expertise and those mater's level students who have done studies of dairy development corporation of different topics.

2.1 Review of Research Paper

2.1.1 Ten Years Dairy Development Plan

"Ten Years Dairy Development Plan"[4] (TYDDP) was prepared in 1991 with the support and assistance of Danida. A Danish company named Carl Bro International

[4] Ten Years Dairy Development Plan 1991. Ministry of Agriculture HMG/Nepal pp 65.

and a Nepalese consultancy from New Era undertook the tasks in cooperation with each other, which was used as an important input for the preparation of TVDDP. In 1991 HMG, ministry of agriculture introduced the TYDDP keeping the overall objective for establishing a cost efficient organizational framework which is helpful to raise the productivity in the dairy sector and to improve the conditions of the dairy farmers. TYDDP has been prepared with certain objectives.

Commercialization of DDC

- Focus on planning, coordinating and financing dairy sector development by dairy development board.
- Concentrating dairy extension services within development of livestock services.
- Increased role and responsibility of milk producer association (MPAS) cooperatives with respect to milk processing and marketing and within services to support milk production development.

In order to achieve the objective of TYDDP, several projects had been proposed. They are listed below:

- Development of the secretariat of the dairy development board.
- Technical assistance for planning him restructuring of DDC.
- Development of cooperative dairy societies.
- Milk processing support program.
- Technical assistance to marketing and export of milk products.
- Milk animal health development project.
- Milk animal breeding development program.
- Folder resources development program.
- Education and training instructions project.
- Study of the animal feed industry.
- Strengthening of the extension service to milk.

- Establishment of mobile extension units.
- Establishment of an extension media production.
- Establishment of training program in extension.

2.1.2 New Era Kathmandu, Nepal

New Era Kathmandu Nepal[5] had submitted a research report on "Consumption of milk and milk products". The main objectives of the study were as follows:

- To estimate the quantity of milk and milk products consumed by major non household consumers.
- To examine the taste and preference of milk and milk products consumers with respect to sources of supply, quality, size of bottle/packet, brands etc.
- To assess the sales characteristics of milk and milk products sold through retail outlets such as supermarkets and cold stores.
- To asses in a general manner the competitiveness of local and imported milk products.

The major findings of this study regarding the milk and milk products are as follows:

- DDC and private dairies are the two major sources of milk, farmers are relatively less important. In the case of hospitals/schools and teashops. DDC is the single dominant sources both in terms of percentage of respondents consuming milk as well as the share in total milk consumption. Private dairies are relatively more important in the case to hotels/restaurant and supermarkets/cold stores etc.
- DDC supplies the large share of Cheese and butter, private dairies meet much of the yoghurt and cream requirement and farmers supply the bulk of ghee consumption. Products, which are wholly or mostly imported such as

[5] New Era Kathmandu.1990. **Consumption of Milk and Milk Product**.(A study of hotels/restaurants, tea shops, school/hospitals and supermarket/cold stores) pp 47.

milk powder, condensed milk and ice-cream, are to a large extent supply by wholesalers and importers.

2.1.3 Surya Bahadur Singh

Mr. Singh[6] had significantly reviewed the "Ten Years Dairy Development Plan. According to his report, even before the perspective plan the basic needs program targeted to increase milk production by 4 percent per annum during 1985-2000 from a mere growth rate of 1.3 % per annum during the period of 1975-1985. To fulfill this target the TYDDP (1990-2000)n was prepared by HMG/N in 1991 with the financial assistance from the Royal Danish government. The most important TYDDO identified areas among others were the strategies for the organizational of dairy sector.

Mr. Singh pointed out some major strategies of TYDDP which are as follows:

- Restructuring old DDC into a commercial and development subsidiary.
- Development of DDB to become local point for planning coordination and financial assistance of the dairy sector development.
- Amalgamation of all dairy extension services in the development of livestock services of DLS.
- Involvement of MPAS and cooperatives in the ownerships and operation of milk collection and processing facilities and increasing their role with respect to delivery of support services to their member farmers. The plan also identified fourteen projects covering dairy production processing and marketing.

2.1.4 Tek B. Thapa "Dairy man", Kiran Pant, Raj Govinda Rajkarnikar

Tek B. Thapa "Dairy man", Kiran Pant, Raj Govinda Rajkarnikar have prepared a convention report on "Dairy Industry in Nepal". The purpose of the convention was to

[6] Review of the Ten Years of Dairy Development Plan (1990-2000) final report pp 19.

analyze the present status of dairy industry development and present recommendation to the government for formulating proper policies and programs in the dairy sector.

The objectives of their report are as follows:

- Create a national forum for discussion and review the present scenario and evolve out a future strategy.
- Orient eh decision makers on the real status of dairy development in the country.
- Disseminate information to the beneficiary through various communication media.

The major finding of their convention report is stated below:

- Like other sector, dairy sector is also grossly affected by political interference, favoritism and nepotism. At the present dairy development in the directionless state. This state of affairs remains for long, the dairy industry will suffer very badly.
- Expect establishment of a skinned milk powder plant in Biratnagar other program of TYDDP have been halted. The decision in dairy industry development in the country and current milk holidays is the result of it.
- It is concluded that dairy is an important but a neglected sector under the present circumstances.

In their report, we can find the more important issue of milk holiday. They have argued that situation in the dairy industry is quite controversial. Dairy farmers are not able to well all their milk but require quantity of dairy products are imported into the country. This shows there is problem somewhere in the management and policy of the government. Government should regulate and monitor the quantity and quality of dairy products imported into the country. Government should encourage the establishment of more dairy processing and conservation facilities in the potential areas. Private sector should be encourages to establish large or medium scale milk

conservation plants in the potential areas of the western regions, desirably as a joint venture with some multinational dairy companies. Dairy plants should be established in mid and far western region of Nepal to increase the income of dairy farmers.

2.1.5 Dr. Durga Dutta Joshi, Bishny D. Aswasthi and Minu Sharma

Dr. Durga Dutta Joshi, Mr. Bishny D. Aswasthi and Ms. Minu Sharma[7] had prepared another relevant research work on dairy products. The research had covered only the Kathmandu Valley, The objectives of the study were:

- To study the marketing system of milk products in Kathmandu Valley.
- To gather information on total consumers demand for milk and milk products.
- To collect information on the types and quantities of dairy products imported also its origin, quality, and their local demand.
- To collect information on the quality of dairy products consumed by non-household consumer.
- To formulate a trade policy of dairy products.

The pattern of milk and milk products marketing has been stated as follows:

- Milk and milk products marketing patterns involves a number of activities ranging from collection to distribution points.
- Bothe formal and informal sectors are involved milk and milk products marketing.
- The milk vendors usually collect milk from number of local farmers at their doors.
- Milk contractors collect milk the farmers in small quantities on a contracted basis and sell in hotels, restaurants, schools, nursing homes and others on contract.
- Marketing function like processing, value adding, advertisement, sales promotion activities and risk bearing are not at all rendered but the contractors.

[7] National Zooneses and Food Hygiene Research Center.1999. Marketing status of milk and milk products in Kathmandu, Lalitpur and Bhaktapur pp 31.

- Retailers buy milk from milk vendors, contractors and the local farmers and use it for making various types of products for the ultimate consumers.

They have pointed out some major finding and recommendations of their research work:

- National dairy development bank has to play major role for the preservation and promotion of markets. Different training program should be launched for wholesalers, retailers, private processors, dairy producers and consumers as well.
- DDC has not adequately explored the possibility of export of traditional dairy products e.g. ghee, khuwa, chhurpi etc. and western styled dairy products e.g. Cheese, butter, skinned milk powder etc to neighboring countries.
- Less attention has been paid by DDC for the marketing and distribution of dairy products. Thus, studies have to be done to assess the potential markets in neighboring countries and also various Nepalese dairy products.
- DDC has to change form a rationing type distribution to full-fledged sales and marketing system. Sale should be monitored monthly and immediate action should be taken to rectify the deficiency.
- According to the survey reports, branding and grading procedure of milk and milk products is very poor in comparison to other products. They should be improved for marketing promotion.
- To improve the market promotion strategy of milk and milk products on effective promotion tools such as coupons, cash discounts, home delivery etc need to be tried.
- Milk and milk products market survey and research should be an ongoing activity.

2.1.6 B.D. Bhatta

Mr. Bhatta[8] had prepared a report on "Kathmandu milk supply scheme", this paper present the administrative problems of milk industry. His findings and recommendations are as follows:

- In the normal procedure of the supply scheme to collect milk and distribute to the local consumers, Kathmandu milk supply scheme used to provide in extra assistant to the milk collectors who collect more than 12.5 liters form a plant. However in practice due to the scarcity of staff they have not yet been able to depute the extra assistant in such centers.
  - Another difficulty of the milk supply scheme is that the office of the DDC as well as the milk supply scheme is situated in the same compound. The milk supply scheme is severely handicapped for wants of the suitable, adequate place and better facilities.
  - Private milk sector should be discouraged to sell milk to the consumer directly. If possible the milk of buffaloes and cows directly brought to the DDC should be checked by experts and see whether it is free from any disease.

2.1.7 T.R. Chapagain

Mr. Chapagain[9] has submitted the research report on "Preference Evaluation of DDC". His major findings and recommendations are as follows:

- DDC has not been able to meet the supply, its profit is nil because of the poor management.
- DDC can identify the needs of its organization and not the pts. The pts is engaged in many tasks that it is possible for it's to look after the special interest of individual enterprises.

[8] Bhatta,B.D.,1997. Kathmandu Milk Supply Scheme pp 21.
[9] Chapagain, T.R. 1998 Preference Evaluation of DDC pp 57.

- Cost reduction is permanent saving for the enterprises. Because if there is cost reductions, amount can be invested in other profitable area. If a component is all together eliminated for the production of given product it is a positive saving.
- If eliminate the higher paid worker and appoint lower paid worker may result in reduction of the volume of output similarly it is not good to eliminate one stage of production if there arises next stage on operation.

2.1.8 D.P. Rasali and G.H. Crow

D.P. Rasali and G.H. Crown[10] have prepared one research report on "Production of buffaloes in the mountains and hills of Nepal: Constraints and opportunities".

There are a number of constraints to buffalo production in the hills and mountains of Nepal. Some of the more important ones are listed below:

- Rapid mongrelisation of the indigenous breeds due to indiscriminate breeding and crossbreeding.
- Seasonality of breeding in buffaloes doesn't not allow farmers to wear their calves when feed is abundant.
- Calves are disposed off early in their life by farmers to save the milk for human consumption, which reduces the opportunity to select and to improve milk and meat production.
- There is a lack of resource farms in the country that could supply suitable breeding animals to highland farmers.
- Feeding systems are traditional and feeds are inadequate for optimal levels for production.
- Lack of research to improve breeding and reproduction, feeding, health and product processing.

[10] Rasali,D.P. and G.H. Crow, 1999. Production of buffaloes in the mountains and hills of Nepal: Constraints and opportunities, Dept. of Animal Science, University of Manitoba, pp 33.

Some of the opportunities for improvement are listed below:

- Formatting an implementing a simple integrated program for small holder farmers which provide milk recording, maintenance of pedigree records, breeding policies, adequate veterinary care, milk collection and quality control and feeding animal husbandry recommendations can alleviate most of the constraints to buffalo production in the hills and mountains.
- Farmers' participation in the planning of such a strategy will be crucial for its success and future sustainability.
- The opportunities for improvement include increased milk production and higher off take for slaughter to replace current imports, diversified milk and meat products from buffalo to enhance export potential, conversation of natural resources, maintenance old genetic diversity in buffalo population and consequently overall well being of the small holder farmers.

2.2 Review of articles

In this section, effort has been done to review some related articles in different magazine, newspaper and web site.

2.2.1 Rameshwor Yadav

"Milk production up but cattle population down" in "The Rising Nepal"[11].

- Although the total number of cow and buffalo in the country is put at 7 million on 3.6 million respectively, but only a small percent of them are milking at any given time. "Only about 12 percent of the cows and 26 percent of the buffaloes are giving milk at any time, according the statistics of the livestock situation published by the department of livestock services. The total number of cattle has decreased by about 40,000 but that of the buffaloes has increased by 98,000 from the fiscal year 1999/2000 to 2000/2001.

[11] The Rising Nepal, 15th mangsir 2059 pp 4.

- The number of milking cows and milking buffaloes has however increased by 12,000 and 26,000 respectively during the same period.
- Livestock contributes 18 percent of the country's gross domestic product and dairy products contribute 6 percent to the gross agriculture domestic products.
- The total production of milk in the fiscal year 2000/001 was 1.12 million metric tons and 2, 00,000 litres milk consumers' everyday in the country.
- The milking capacity of Nepalese cows is very less. They give only two liters of milk a day. After the improvement of breeding through artificial insemination they can give more than eight liters per day.
- The number of high-yielding dairy cow has increased by about 4 percent every year. Similarly, the traditional variety of buffaloes give about 3-4 liters per day but the improved breeds can give milk up to 8 liters.
- According to the data, the country's milk production increased by 2.48 in the fiscal years 2000/001 than in the previous year. The total production of milk was 1.12 million tons. The cow milk was 3, 42,000 tons and that of the buffalo was 781,000 tons.
- The quality of milk production depends on breeding, management of the cattle, nutrition and animal health and extension. Adding on it the amount of milk produces depends on the livestock extension program.
- The consumption per person per year is 8 percent less than the prescribed for normal nutrition. A person needs 57 liters of milk annually.
- The buffalo milk contains 7 percent where as the cow milk contains only 4.5 percent fat. But during pasteurization milk are extracted and dairy milk containing only about 3 percent of fat.

2.2.2 Food and Agriculture Organization of the United Nations (FAO)

The FAO has prepared an article on "The technology of traditional milk products in developing countries". It concluded that traditional milk products are of and regions

surveyed." Not only when the products are prepared and sold b empirical methods in rural, semi urban of urban location but also where the scale and technology of production has moved on to the industrial dairy sector and associated marketing and distribution practices apply.

The characteristics and the technology which are described suggest that in developing countries traditional milk products are made in general under primitive conditions which result in low yields and also in poor quality products. Suggestions for the development of traditional milk products start with the need for improved veterinary control of cattle to ensure a safe milk supply. Programmers for improved hygiene practices for milk production, establishment of village based milk processing units, improvements in processing equipment to achieve better efficiency and product quality, training of milk producers and milk processors to develop their knowledge and skills, technical support for this sector of livestock farming.

Many contributions stress the need for national and international policies which take account of the value and importance of the traditional milk product sector of the dairy industry and recommend that their sector should be taken account of future policies as appropriate.

2.3 Review of Previous Studies.

Some of the MBA and MBS students have carried out different studies related to dairy development corporation. Only some major and relevant theses are reviewed to distinguish between previous research and this research.

2.3.1 Suresh Kumar Wagley

Mr. Wagley[12] has written a thesis entitled "Financial resources if dairy farmers in Kathmandu". The primary objective of this study is to analyze the sources of finance

[12] Wagely, Suresh Kumar, 1995.Astudy of the Financial resources of dairy farmers in Kathmandu, a thesis submitted for MBA to the faculty of Management Tribhuvan University, Kathmandu pp 12.

of the dairy farmers in the dairy business. Besides there are some other specific objectives:

1. To study the animal hard composition in the household.
2. To study and analyze the different sources of financing involved by the dairy farmers.
3. To study the responses of farmers towards debt financing.
4. To analyze the data collected.
5. To suggest the dairy farmers for better dairy farming.

Mr. Wagley concluded that the process of continuous important on quality and standard of products or aggressive selling and promotion efforts were not found. This study also revealed that household resources and bank loan are major sources of fund of dairy farmers in Kathmandu. The mobilization of bank loan and other debt instruments was found for less in comparison to own fund, in animal hard or shed construction.

2.3.2 Khageswor Aryal and Poshan Bahadu K.C.

Khageswor Aryal and Poshan Bahadu K.C[13] have submitted a thesis based on "The market analysis of dairy products in kathmandu valley". The scopes of this study have been confined in the following areas:

1. Present market situation of dairy in Kathmandu valley.
2. Competitive situation of different dairy producing companies.
3. Distribution situation of different dairy products.

The suggestion and recommendations retailers a consumes or distributions system have been similar. They complain that DDC milk is delivered to them irregularly and late morning hours. Hence, this had led many consumers to go in for milk sold by

[13] Aryal, Khageswor and Poshan Bahadur K.C.,1996. A market study Kathmandu Dairy Development Corporation, Kathmandu University, School of Management pp 10.

local vendors or even skimmed milk. If DDC can make its deliver core prompt and regular it would be earning the good will of all sectors concerned. In addition to that, DDC should see to it that the distributions themselves do not resort to black marketing creating artificial shortages and later selling it at an inflated price.

2.3.3 Sanjay Kumar Jha

Mr. Jha[14] has conducted the research work on the topic of "Profitability Analysis of public enterprises – a case study of DDC". The main objectives focused by him were:

1) To analyze the functional budgets on sales and production sector of the concern.
2) To analyze the profitability and efficiency of the concern.
3) To analyze target and its achievement along with their reason of deviation.
4) To find out material used by DDC.
5) To point our valuable recommendations and suggestions based on analysis.

He has pointed out some major finding based on his analysis.

1) DDC is suffering from the loss and loose is in increasing tends with sales.
2) Due to high amount of accumulated loss, shareholders fund of DDC showed very less value in most of the study period.
3) The fluctuating trend of financial structure shows that DDC has been facing problems of financial structure.
4) The corporation prepared its financial statement on the traditional basis.

Mr. Jha has drawn the following conclusion based on his research report:

1) DDC has no vague objective but it is not strictly followed.
2) DDC has concentrated its whole e3fforts on the survival of the corporation and has no depth analysis of tits strength and weakness

[14] Jha, Sanjay Kumar, 2006. Profitability Analysis of Public Enterprises(a case study of DDC) pp 10&73.

3) DDC has no fair system of rewards and punishment to employees on the basis of their performance is maintained.
4) There is not well developed system of performance evaluation for employees.
5) Lack of budgeting expert and skilled planner, plans are formulated on traditional basis.
6) DDC had no any effective program to achieve desired and formulated goals and objectives and to overcome the existing problems and challenges.
7) No proper management to supply the sufficient milk in the urban areas because of the difficulty in collecting surplus mil in rural area.
8) DDC has developed two channel of marketing system.
    a) Producer – agent – customer
    b) Producer – customer
9) Main problem of DDC is materials and markets which are not available in right time in right quantity and right place so as to supply for production.
10) The advertisement activity is reasonable. It has been using proper media and magazines.

2.3.4 Jay Raj Pant

Mr. Pant[15] has conducted the research work on "A study on leverage analysis of Dairy Development Corporation". The main objectives focused by him were:

1) To provide a guaranteed market to the rural farmer at a fair price.
2) Supply pasteurized milk and milk products to urban consumers.
3) Develop and organize milk collection system to meet increasing demand for pasteurized milk and milk products.
4) Develop and organize marketing system for milk products in urban area.
5) Bring improvement in production, collection, processing, preserving sales and distributions of milk and milk products in modern and scientific way,

[15] Pant, Jay Raj, 2006. A study on leverage analysis of Dairy Development Corporation pp 14&87.

while keeping in view the goals of promoting national welfare maintaining productions incentive to farmers and preserving consumer's health.

He has pointed some major findings based on his studies:

1) The study shows that like in other public enterprises DDC is also not having any special and specific objectives for the comprehensive financial statements. So capital structure is not based on realistic expectations. Either it is unrealistic or over ambiguous.

The conclusions of his studies are:

1) DDC's down falling trend of the financial position is indicative of the fact that DDC should immediately seek for drastic change in its financial structure.
2) The overall performance of the firm counts for other managerial aspects such as human resource management organizational structure, marketing management etc.

2.3.5 Bishwa Raj Subedi

Mr. Subedi[16] has written a thesis entitled "Milk collection and distribution by DDC" with an objective to research dairy marketing promotion.

In his conclusion, Mr. Subedi has stated that milk holiday is an obliging decision of DDC. This cause anxiety and financial losses to the milk producer and their milk producers association (MPA). The quantity of milk not collected due to the MH cannot be accurately determined. In order to establish a true base for future projection and to understand the magnitude of the problems caused by the MH the data relating to actual loss to the farmers should be collected and maintained. The main cause of MH is the import of powdered milk and butter oil by DDC. To do away with the MH market promotion in necessary. Moreover, for the promotion of market, it is

[16] Subedi, Bishwa Raj, 1998. A study on milk collection and distribution by the DDC in Kathmandu, a thesis submitted for MBA to Faculty of Management pp 93.

suggested that importance of milk should be circulated at school level. Milk and milk products should be supplied to children instead of powdered milk. The promotion of milk must be done simultaneously with that of green vegetable. Skimmed mild powered factory should be established wherever necessary. In order to expand the marketing of milk a "drink milk campaign" should be organized at the local level and national level. Radio and Television should broadcast promotional program for milk and milk products.

He suggests that there is a need to develop more appropriate and economical chilling center technology for future expansion. There is considerable scope to increase their utilization, selling and distribution cost is also high which can be reduced through privatization to distribution system and sales centers. At least one MPA member should be trained about maintenance of milk quality and provision of veterinary services. Farmers do not totally depend on DDC for marketing their milk but establish their own processing and marketing systems. The price of milk should be set in consideration of the actual cost of milk production.

2.3.6 Bhoj Raj Bhatt

Mr. Bhatt[17] has written a thesis on "Distribution channels of DDC", with the basic objective to study the channels of distribution followed by KMSS' Kathmandu milk supply scheme of DDC to transfer its product from its factory to ultimate consumer. To meet the basic objective, following additional objectives have been proposed:

1) To investigate the attitudes and behaviors of the users towards the products availability, quality etc.
2) To find out the market share of milk of KMSS.
3) To investigate the attitudes and behavior of channel member towards its distribution system.

[17] Bhatt, Bhoj Raj, 1998.Distribution Channel of DDC. A case study of KMSS with special reference to milk, a thesis submitted to MBA to Faculty of Management pp 20.

Mr. Bhatta had used primary and secondary data and concluded that there are nearly 681 unauthorized milk sellers (retailers) who are selling milk purchased from authorized milk sellers who are generally grocery shops equipped with freezer. The product of milk of DDC and demand of the milk by milk seller is nearly same. The commission received by the dealers is very less so that the proper care of milk to be sold to consumers can not be maintained by them.

Consumers have preferred DDC milk because they are well pasteurized and refrigerated and habituated with it from many years. Although DDC's main objectives is to serve the consumer by providing them its production in proper time and proper place. Costumers have to face many difficulties to get milk.

2.3.7 Soniya Dahal

Ms. Dahal[18] has written a thesis on demand and supply situation of dairy products in Kathmandu. Some of the findings based on her analysis are:

1) There is high competition among DDC and other dairy farms.
2) It is found that DDC was successful in fulfilling demand as well as supply. Different private dairy industries in last two three years, it has not been operating effectively and efficiently in terms of supply and sales.
3) It is also found that most of the farmers are being attracted towards private sector as they receive higher prices and higher commission than DDC.
4) Production, collection and distribution of milk have increased to a great extent in comparison to past years. DDC is about 90% successful in attaining its objectives.
5) Demand is increased due to increased in population and people are also conscious about their health.

[18] Dahal, Soniya, 1999.A study on demand and supply situation of dairy products in Kathmandu with reference to DDC, submitted to MBA to Faculty of Management.

2.3.8 R.K. Shrestha

Mr. Shrestha[19] has written a thesis pm "Milk market in Katmandu Valley", with the objective of forecasting the demand for milk in Katmandu. Other objectives are:

1) To know the market share of DDC and other milkmen in Kathmandu valley.
2) To find out the price effect on the demand for milk.
3) To explore the tourist inflow, raising trend of population and income of people.

He has point out some major findings based on his analysis:

1) Though the quantum of milk handled by DDC has shown in increasing trend, the supply as compared to the requirement of the valley is not significant in 1976 A.D.
2) Average milk handling by DDC has started around 20,000 litres a day. Whereas the requirement is 41,440 litres of milk a day. This shows the DDC has able to meet only 48.26 % of the total requirement.
3) The import component of the powder milk is almost 50% of the total milk supplied by DDC. Thus the milk supplied by DDC is hardly 25% of the total milk requirement in Kathmandu.
4) There is relationship between the income of people and demand of milk. More income means the rise in living standards of the people and increase the demand for milk.

Besides these findings he has found many reasons for deficit supply of the milk such as lack of milk best species of livestock, inadequate loan to the dairy farmer, lack of veterinary facilities, lack of feed arrangement and lack of grass breeding facilities.

[19] Shrestha, R.K, A Study on Milk Market in Kathmandu Valley, a thesis submitted for MBA to Faculty of Management, T.U., 2000.

2.3.9 Hota Raj Poudel

Mr. Poudel's[20] thesis entitled "Distribution channel management of dairy products", main objectives is to analyze the present channel network system. Besides that here are some other specific objectives as follows:

1) To evaluate channel strategy.
2) To analyzer the existing distribution system.
3) To ascertain and analyze the attitudes and behaviors of channel members.
4) To suggest for effectiveness of distribution channel management.

Here are some suggestions to improve the distribution performance of the DDC in particular and management performance in general.

1) With regard to the distribution channel, DDC should increase the distribution center in different parts of Kathmandu valley on the basis of concentration of household and business houses.
2) DDC should formalize and authorize the informal distribution channels and unauthorized milk sellers (dealers) since they constitute majority sellers of dairy product.
3) If DDC plans to increase quality milk chare and to make sure that its consumers consume quality milk, it should follow the marketing strategy of soft drink companies.
4) Most of the consumers are unaware about DDC'S products (expect milk). So DDC should pay attention on advertising and distribution network.

2.3.10 Mani Raj Bhatt

Mr. Bhatt[21] has submitted a thesis entitles 'A case study on Cash management of DDC'. The main objectives of his studies are:

[20] Poudel, Hota Raj, 2002.A study of distribution channel management of dairy production in Kathmandu Valley, a thesis submitted to MBA: faculty of Management pp 15&92.

1) To study the overall scenario of DDC.
2) To examine the liquidity position of DDC.
3) To examine the existing cash management practices in DDC.
4) To recommend viable suggestion on the basis of above analysis To improve the existing cash management for coming future.

Some of the major findings are:

1) DDC doesn't have any definite policy rearing how much of cash balance have to hold in each fiscal year.
2) It doesn't prepare cash flow statement and cash budget.
3) Advanced payment fluctuates highly and there exist significant positive correlative with sales.
4) DDC couldn't make the best use of available cash balance properly.
5) Cash management is an effective mechanism for every organization to achieve goals and objectives but in DDC the management committee has not paid attention towards proper cash management.

Conclusively, Mr. Bhatt stated that DDC's cash management practices is deprived from standard practices and not so effective due to the lack of mobilizing of excess cash in the profitable sector and lack of awareness of the employees for practicing better cash management inside DDC. However, above all disappointing down falling trend of the financial position of indicative of the fact that DDC should immediately seek for drastic change it its managerial structure.

2.4 Profile of DDC

Reviewing the historical development of the Dairy Development Corporation popularly known as DDC now, it started as the dairy development activities Tusal Village of Kavre district B.S. 2009 (1952) on experimental basis with a small-scale

[21] Bhatt, Mani Raj, 1998. A case study on cash management of DDC pp 9.

milk processing plant under the Department of Agriculture. In the year B.S. 2010/11, at the initiative of Dairy of Development Board, the Central Dairy Plant was established and it started milk collection, processing and marketing activities from the year B.S. 2014 (1957). Finally, dairy activities named as the Diary Development Corporation (DDC) in Nepal in B.S. 2026 (1969) under the Corporation Act, B.S. 2021 (1964). The Board of Directors formed by his Majesty's Government of Nepal governs the Corporation.

It was formed to guide the dairy development activities. With the growing prospect of expanding the dairy sector, the First Five Year Plan stressed the need for developing modern dairy industry to expand itself. For the development of DDC and supply of dairy products in Nepal in wide scale it has brought the Kathmandu, Biratnagar, Hetauda, Pokhara, Lumbini supply schemes. DDC established more Milk Supply Schemes gradually to meet the growing demand for processed milk and milk and milk products. Milk schemes were enforced in both milk and processing of milk and milk products.

A Board of Directors appointed by HMG/N governs DDC. General Manager is also appointed by HMG/N. DDC currently has seven schemes out of which five schemes are full-fledged processing plants; one is mini plant and one is currently running as a chilling center with the prospect of converting to processing plant in future. DDC also has ten cheese production centers (six for yak cheese and four cow cheese), and one buffalo milk paneer production center. DDC also owns the only skim milk powder plant in the country. DDC has been supported by World Food Programme, USAID and the governments of New Zealand and Denmark in different times.

DDC has a larger share milk collection and marketing compared to the private sector, which is described in the subsequent chapters. At present it has a milk collection to milk and milk products are marketed to urban areas. In the fiscal year 1998/99, DDC had a turnover of Rs. 1,400 million, out of which Rs. 989 million (71%) was spent as

payment to milk producer farmers. The organization structure of DDC is given in Annex.

Structure of DDC

To fulfill the purpose of DDC is divided into following departments namely:

- Production management department
- Account management department
- Central quality control and technical development department
- Management department
- Planning and monitoring department
- Marketing management department

2.4.1 Mission and Objectives:

Mission Statement:

"Endless way to eat milk deliciously."

The main objectives of the Corporation are to provide guaranteed market and fair price to the rural milk producers and to supply hygienic pasteurized milk and other standard dairy products to the urban consumers. Prior to the establishment of the Corporation a separate Dairy Development Board was constituted to carry out the task of dairy development in Nepal in wide scale. Presently, the National Dairy Development Corporation (DDC) sets the milk price. It has the largest processing facilities with milk collection and chilling centers and is the farmers' major customer.

- Provide a guaranteed market for milk to the rural farmers with fair price.
- Supply pasteurized milk and milk products to urban consumers.
- Develop organized milk collection system to meet increasing demand for pasteurized milk and milk products.
- Develop an organized marketing system for milk and milk products in urban areas.

2.4.2 Milk Collection Network

DDC have been collecting cow, buffalo and yak/chauri milk from 30 districts. Milk is collected through the Milk producers Cooperatives Societies (MPCs). It present milk collection network has spread from Panchthar in the east to Surket in the West. A total of 51 Chilling Center (CC) established under the Milk Supply Schemes (MSSs) are in operation across the country for chilling the milk collected from the MPCSs. The present six scheme of DDC are Kathamandu Milk Supply Scheme (KMSS). Biratnagar Milk supply Scheme (BMSS), Hetauda Milk Supply Scheme (HMSS), Lumbini Milk Supply Scheme (LMSS), Mid Western Milk Supply Scheme (MWMSS) and Milk Product Production and Supply Scheme

2.4.2.1 Biratnagar Milk Supply Scheme (BMSS)

With the increase of population, demand for milk and milk products also increased. To maintain the increasing demand of milk products, Biratnagar Milk Supply Scheme(BMSS) was established in 1973. Government of Nepal and Netherlands government provided funds to establish this scheme BMSS.

This project collected 14,05,727 liters including milk from HMSS and produces 519 mt powder milk, 3,29,860 kg. Butter 1,26,991 liters Yogurt 2,71,007 kg. Ghee and 1,779 liters ice cream. Within this project there are 9 chilling centers and 199 milk collection centers.

2.4.2.2 Hetauda Milk Supply Scheme (HMSS)

With the increase of demand for milk and milk products in Central Terai region, HMSS was developed in the year 1974 at Hetauda in Makwanpur district. Government of Denmark provided loan to establish this scheme. This is the second largest milk collection scheme of Nepal. Scheme has milk refining capacity of 3000 liters per hour and holding capacity of 60,000 liters.

2.4.2.3 Kathmandu Milk Supply Scheme (KMSS)

To capture the increasing demand of the kathmandu valley, a Central Dairy Plant was established in 1956 at Lainchour . To meet the increasing demand of milk and milk products it has developed process in 1978 as KMSS. A new milk supply scheme was established in Balaju Industry District under the aid of Newzerland Government. His Majesty's Government also provided fund for building constructions. In the beginning of its operation, it has a capacity of processing 30,000 liters per day.

The demand for milk and milk products is increasing tremendously due to the increase in level of education, income inflow of tourists, diplomats and other visitors from outside. In this project, there are 10 chilling centers and 345 collection centers.

2.4.2.4 Lumbini Milk Supply Scheme

This scheme was established in the year 1990 to collect the milk supply from the farmers of the area. HMSS was responsible for the collection of the milk supply of the area before establishment of the LMSS from a limited area of the scheme. As a result the LMSS came into existence which has helped the KMSS by supplying its milk collection. It has 7 chilling centers and 87 collection centers.

Table 2.1: Scheme of DDC

Scheme/sales centre	MPCSs	CCs	District covered
KMSS	457	16	7
BMSS	120	10	6
HMSS	107	7	4
LMSS	68	5	3
MWMSS	42	3	3
MPPSS	-	10	7
Total:	**794**	**51**	**30**

Source: DDC Annual Progress Reports, 2004-2006

The work of DDC is found Kathmandu valley out of 16 chilling centers, the district itself harbors 7. All together a network of 457 milk producers co-operation societies facilities collection of huge amount of milk from 7 districts. Thus the efficiency of DDC for milk collection is highly depended upon KMSS.

Biratnagar Milk Supply Scheme stands comparatively second with its coverage of 6 districts, 10 chilling centers and the extended network of 120 MPCSs. All together the DDC scheme covers 30 districts with a broad web of 794 MPCSs and 51 chilling centers.

2.4.3 DDC Plants

DDC has a cumulative processing capacity of 2, 09,200 litres of milk per day. The processing plants are located in 4 different districts in three development regions.

Table 2.2: DDC Plants and Fluid milk Handling

Name	Region	District	Running Capacity (litre/day)	Present Handling (litre/day)
BMSS	Eastern	Morang	33,000	28,200
KMSS	Central	Kathmandu	1,01,000	88,000
HMSS	Central	Makwanpur	30,200	13,894
LMSS	Western	Rupandehi	37,000	12,500
MWMSS	Mid-Western	Kohalpure	8,000	1,070
MPPSS	Western	Kathmandu	-	-
Total	**Central**		**2,09,200**	**1,43,664**

Source: DDC, Annual Progress Reports, 2006-2007

Owing to the huge networks of MPCSs in Kathmandu and Biratnagar, the pressure of fluid milk processing in these two centers is really high. About 64% of the processing capacity of DDC is mainly in Kathmandu and Biratnagar. These two Milk Supply Scheme process fluid milk prior to their capacity i.e. 1,01,000 lit/day over the per day capacity of 88,000 in Kathmandu and 33,000 lit/day instead of running capacity of

28,200 lit/day in Biratnagar under BMSS. In an aggregate from the 6 scheme of DDC (excluding MP & DS) 2, 09,200 liters of milk is processed though the threshold of all schemes is just 1, 43,664 lit/day.

2.5 Profile of NDDB

National Dairy Development Board (NDDB) was established in 1992 under a separate Act. It is to formulate and recommend policies and plans for the dairy development in Nepal and strengthen the dairy sector by bringing co-ordination between the private and public sector.

NDDB has an Executive Committee (EC) composed of 15 members and chaired by the Minister of Agriculture. The Secretariat is headed by the Executive Directors. The secretary of agriculture is the vice-chairman and the ED is the member secretary in the EC. The members include representatives of farmers, public and private sector milk processors, Federation of Nepal chamber of commerce and industries (FNCCI), Ministry of finance and department of livestock services. The secretariat of the NDDB also has a co-ordination committee formed with the representatives from related the agencies and principal donors to the dairy development program. The organization structure of NDDB is given in Annex.

2.5.1 Objectives

The objectives of the NDDB are as follows:

- To assist His Majesty's Government of Nepal (HMG/N) in formulating policies and plans of dairy development at the national level.
- To or cause to develop dairy industries.
- To find remedies to problems n the field of livestock development and animal health sector for dairy development.
- To or cause to maintain co-ordination between all the private and public sector dairies within the country.

- To or cause to carry out high level studies and research works for dairy development.
- To or cause to make arrangements for fodder and pasture resources.

2.5.2 Function

The functions of the NDDB are as follows:

- To formulate and recommend policies on import and export of goods necessary for production and promotion of milk and milk products as well as animal feeds, and to or cause to implement the approved policies.
- To formulate and recommend price fixing policies of milk to HMG.
- To make recommendations to HMG/N on the well being of dairy processors and consumer.
- To or cause to encourage development of dairies through the medium of co-operatives.
- To or cause to register dairy industries.
- To or cause to manage and mobilize necessary national and foreign grant and loan assistance necessary for dairy industries.
- To or cause to provide technical assistance needed for setting up, improving, promoting and safeguarding dairy industries.
- To or cause to monitor, evaluate and review dairy development programs.
- To or cause to carry out other necessary activities for dairy industries.

2.5.3 NDDB's current activities

a. Development of National Dairy Information System

NDDB has started a database system of maintaining information on milk producer co-operatives, chilling center and private and government dairy processing facilities. The system also maintains a database on dairy related equipment manufacturers. NDDB plans to system also maintain a database on dairy related equipment manufactures. NDDB plans to continually update the database and disseminate the information to its stakeholders.

b. Conducting studies as a prerequisite of policy advising

NDDB has carried out various studies as Benchmark survey on quality of milk and milk products, Cost of production survey, rapid milk market appraisal, study for establishment of cheese storage facility etc. The recommendations from the studies are used for policy advising.

c. Strengthening milk producer Co-operatives (MPC's)

The support to MPCs integrates three components namely, database, development, Dairy Extension Mobile Units (DEMU) and Member Education. The co-operative development activities are aimed at strengthening the co-operatives at all levels including Central Milk Producer's Co-operative Union (CMPCU), district level Milk Producer's Co-operative Unions (MPCUs) and MPCs, DSP facilitates data collection by NDDB through the co-operatives. DEMU provides training to co-operative members on milk handling and quality testing. Co-operative department of DSP provides member education.

d. Activities for milk quality improvement

Studies are carried out on issues related to milk quality improvement. Training programs are organized on various aspects of dairy industry.

e. Training Programs

NDDB conducts regular training programmes on hygienic milk handling milk quality testing and low cost feeding at farmers' level (in MPCs). It also conducts training programmes for staff members of chilling centers and dairy plants on quality issues. Before installation of chilling vats under DDF, training is provided to vat operators on operation and maintenance of the equipment. Similarly, on the spot training is provided to dairy entrepreneurs at the respective dairy plants on issues related to the dairy industry.

Chapter 3
RESEARCH METHODOLOGY

3.1 Research Methodology

Research is a systematic method of finding right solution for the problem where research methodology refers to the various steps undertaken by a researcher to find the optimum solution. For this study the information about DDC had been taken both through the primary as well as secondary sources. In the proceeding chapter, we had overviewed briefly on collection and distributions of dairy products in Nepal. The basic purpose of this chapter was to enlighten the research designing nature and sources of data collection procedures and methods of analysis of data in brief.

The human beings cannot remain satisfied with the same things for a long time, they are always curious to learn more and do something new and special by raising questions like Why, How, When, where, what etc. To answer these questions they should gather information and analyze them to achieve their goals or satisfaction. Every study needs a systematic methodology to show the better result of the research. In this chapter, detail methodology as the ears and eyes of the study to examine the impact of collection and distribution has been discussed.

The main objectives of the study were to analyze collection and distribution of dairy products of DDC as well as to recommend suggestions for its improvement. Case studies, which were studied, can combine a wide range of methods, including quantitative techniques whatever procedure for collecting data is selected it should always be examine critically to assess to what extent it is likely to be reliable and valid. It refers to the various sequential steps to be adopted by the researcher while studying the problem with certain objectives in view.

3.1.1 Research Design

In order to make any type of research as well set research is necessary to fulfill the objective of the study. Generally, research design means definite procedures and

technique with guides to study and profound ways for validity. In view of J.B. Johnson and R.A. “Research design is a plan that shown how researchers intends to fulfill the goal of purpose study.” The research design of this study is descriptive as well as exploratory. The study is an examination and evaluation of dairy products. It helps the investor to obtain answer to the questions of research and also helps to control the experimental extraneous and error variance of particular research problem under study” according to Wolf and Panta.

The main objectives of this study were to analyze the relationship between collection and distribution of DDC and provide suggestion on the basis of findings. To fulfill this purpose the study follows the descriptive and exploratory design. Descriptive design provides descriptions of a special situation in such a way as to help the researcher identify cause and effects of relationship. The case method and the statistical method are two descriptive designs. It is more formal design than the exploratory design. Exploratory research design is undertaken to answer the research questions. The objective of exploratory study is to find new idea.

3.1.2 Sources of Data / Data Collection

Information is the life blood of any research work. To gather the information data collection is a major task to fulfill the objectives of this study, primary as well as secondary data had been used. Primary data were collected through interview with the officials and as well developed supplementary questionnaire.

On the other hand the data from published or unpublished sources are secondary data. Quite often it is necessary to make use of both the source in a particular research. The following source of secondary data and information were studied for this project.

Financial statement, collection and distribution record of DDC. Data and information from the center library of national planning commission, new era, central library of Kirtipur and library of Shanker Dev Campus and Nepal Commerce Campus.

- Knowledge and idea from the related thesis.
- Article and reports from newspapers.

- Some other reports from Web site.

3.1.3 Population and Sample

There are total of 38 public manufacturing in Nepal. Dairy development Corporation is one of them. So the existing number of public manufacturing enterprises in Nepal refers to the population and dairy development corporation is the sample. DDC is the oldest public dairy manufacturing corporation. It is the most likely to represent all other public manufacturing enterprises. However, this is a case study and thus the finding could not extensively generalize to all other public manufacturing enterprise.

3.1.4 Data Collection Techniques

The study was mainly conducted on the basis of secondary data. The main method for primary data collection used was interview method with used of questions, field visit and survey. Besides, the observation of the working of the sample diaries, detailed studies form registers, files and so on were also proved important in course of understanding the cooperative milk collection center, chilling center and were involved in the course.

Useful primary information and secondary data were used according to their requirements. Data were described and explained in the light theoretical basis. The necessary data for the study, collected from various sources were recorded systematically for analyses, all the information are their identified and grouped as per the need of study in other to met the research objective.

Collected data are again presented in the form of tables one by one for easy to understand and analyze.

3.1.5 Analytical Tools

Data collected from various sources were managed, analyzed and presented in proper tables and formats. Interpretations and explanations were made wherever necessary, to achieve the objectives of this study, appropriate statistical tools had been used. The analyses of data were done according to the pattern of data available.

Chapter 4
PRESENTATION AND ANALYSIS

4.1 Raw Milk Collection

The formal market for collecting raw milk produced by farmers are dairy – the DDC, the private dairies and the farmers' co-operatives, either the MPCs or MPCUs. Informal market for selling milk to the urban consumers by the producer farmers directly or through tea shops is also significant. The total milk collection about 76% comes from the central region. Proportion of the collection in total production varies from 0.5% in Far Western to 76% in central region.

Table 4.1: Region Wise Milk Production and Collection

Region	Production at Present ('000 MT)	Collection (%)
		DDC
Eastern	241.7	9.2
Central	294.1	39.7
Western	285.4	7.3
Mid Western	124.8	1.5
Far Western	126.9	0.0
Nepal (Total)	1,072.9	57.8

Source: DDC, Annual Progress Reports, 2006-2007

In accordance with per day the milk production capacity, the central region lies of the top with and average of 294.1 ('000mt) production which occupies 76% of the national collection. Western and Eastern occupy the second and third place with production of 285.4 and 241.7 ('000 mt) which occupy 10.6 and 10.5 respectively.

Role of DDC and private milk collection is parallel in the collection of raw milk produced by dairy central region. The former value of 39.7 and later 36.3. However in

other development regions. DDC holds the pioneer place for raw milk collection with comparatively less private participation. Surprisingly, in Far Western region, the private dairies are slowly responsible for the collection of raw milk.

4.1.1 DDC

The DDC Milk Supply Schemes collect milk from 30 districts in the country. The milk shed area of each MSS covers five to seven districts. There are more than 92,000 farm families supplying milk to DDC through milk Producers Co-operative Societies (MPC). Figure 4.1 shows the channel for milk collection by DDC.

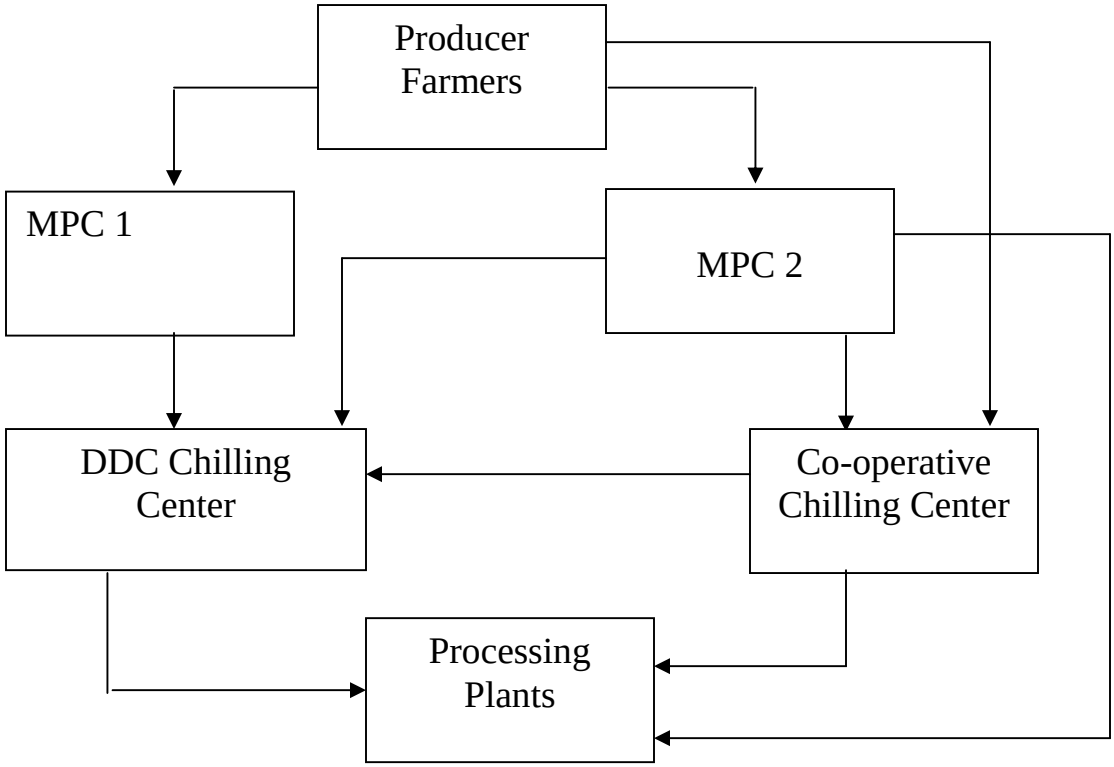

Fig: 4.1: Channel of Milk Collection

At the grassroots level, DDC collects milk from the milk producer farmers who are united as MPC for supplying milk to DDC. MPCs are registered legal bodies as per the Co-operatives Act. Up to the early eighties, DDC was collecting milk through its own milk collection centers located at milk pockets in different villages. DDC is now

collecting milk from about 794 MPCs from different schemes. The detail is given below.

Table4.2: MPCs Supplying Milk to DDC Schemes

DDC Schemes	**No. of MPCs**
Kathmandu Milk Supply Scheme	457
Biratnagar Milk Supply Scheme	120
Hetauda Milk Supply Scheme	107
Lumbini Milk Supply Scheme	68
Mid Western Milk Supply Scheme	42
Milk Product Production and Supply Scheme*	-
Total	**794**

Source: DDC, Annual Progress Reports, 2006-2007

** Milk collected is used only for cheese and paneer production.*

All together 794 different MPCs, are supplying milk to DDC schemes nationwide. KMSS holds a significant place in this supply system with its 457 channels of MPC. Like other facilities and services, even milk production is also capital based. Similarly the MWMSS range with just 42 MPC. However, we should also consider population density in this regard. The Mid Western region has the lowest population density among other development regions of the nation. Thus 42 operating MPCs are sufficient to fulfill the need of that region.

The co-operative societies collect milk from member (in some cases even from non-members) farmers and supply milk to chilling center owned by DDC. DDC has 51 chilling centers.

Table 4.3: Chilling Centers of DDC in different regions

Region	No. of Chilling Centers	Operating MSS
Eastern	10	BMSS
Central	23	KMSS & HMSS
Western	5	LMSS
Mid Western	3	MWMSS
Total	**51**	

Source: DDC, Annual Progress Reports, 2006-2007

There is significant deviation in the distribution of the chilling centers in the country. As per localized economy, the central region alone includes 23 chilling center for the operation of KMSS and HMSS. In other regions, irrespective of large network of milk supply scheme, the no. of chilling center is quite low. The Far Western development region even has no contribution to the network of DDC.

In addition to collecting milk from its own chilling centers, DDC collects milk also from chilling centers operated by MPCs. In addition to the price of milk, DDC pays an additional chilling cost of these MPCs. Some milk from MPCs nearer to the factories is also received directly without chilling. The trend of milk collection is given below.

Table 4.4: Trend of Milk Collection by DDC (In 000 Ltr.)

Year	Kathmandu	Biratnagar	Hetauda	Lumbini	Total
1997/98	21,156	8,031	14,756	6,571	50,514
1998/99	25,413	8,612	15,213	5,836	55,074
1999/00	28,872	9,525	13,335	5,884	57,616
2000/01	32,905	9,238	6,837	5,460	54,440
2001/02	36,938	9,328	10,125	5,832	62,223
2002/03	33017	9499	7368	3690	53,574
2003/04	31325	9127	7246	3127	50825
2004/05	32885	8430	6407	3617	51339
2005/06	31189	8417	6728	4102	50436
2006/07	31693	8478	5652	4098	49921

Source: DDC, Annual Progress Reports, 2006-2007

There is an increasing trend of milk collection by DDC in Nepal. Kathmandu always has been the highest milk collection among last 10 years. The collection 21,156 liters at 1997/98 has jumped up to 31,693 liters in 2006/07 with net increase 10,537 liters in 10 years. We can also see the collection of milk by DDC in graph which is given below.

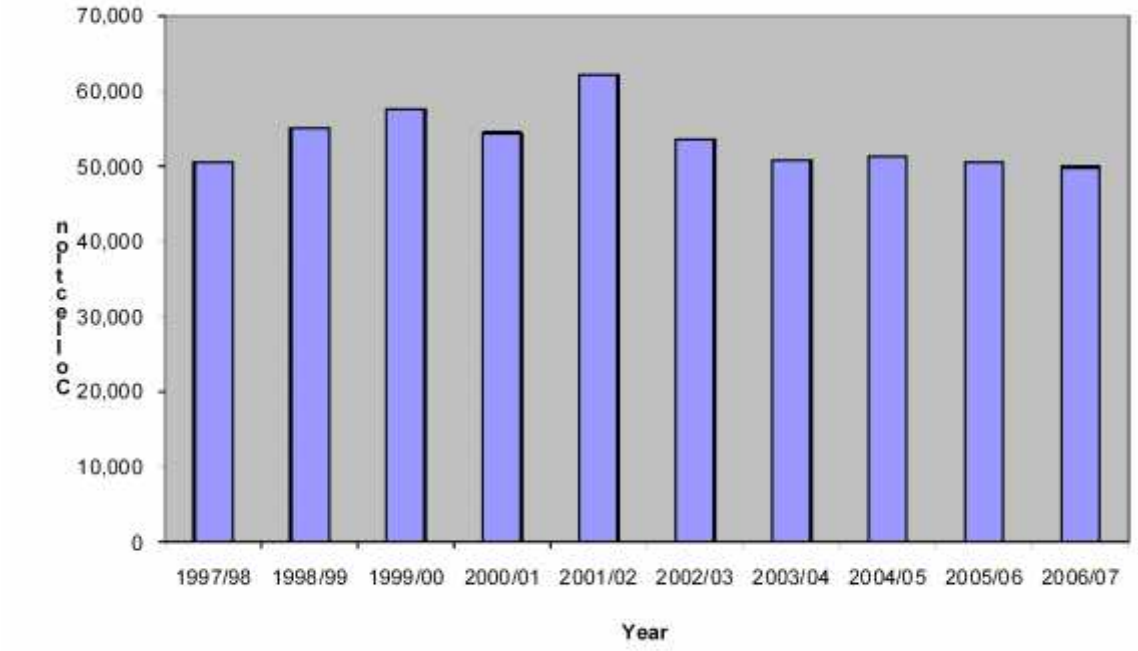

Fig 4.2: Trend of Milk collection by DDC

4.1.2 Private Sector Dairies

The milk collection channel for private sector dairies is more or less similar to that of DDC. But, it is less formal than for DDC because MPCs are less involved and other parties – farmers, milk traders and contractors are involved in delivering milk to the chilling center or the processing plants. Milk traders and contractors (who could be farmers as well) collect and transport un-chilled milk in bulk. Small private dairies collect milk from close by areas. In most of the places, the private sector competes with DDC to collect milk from the same milk produced pockets. For larger private dairies having chilling centers, the distance of milk collection could be higher than 200 km. Figure 4.3 shows the channel for milk collection by Private Dairies.

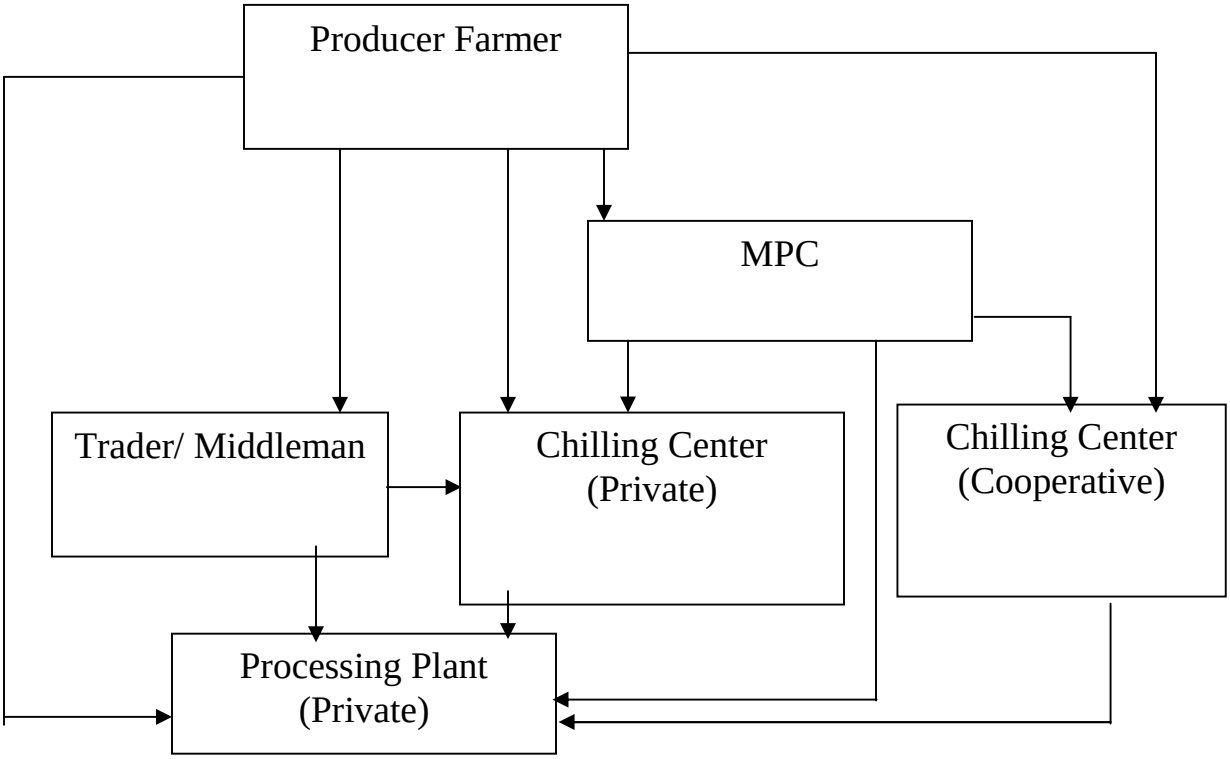

Fig 4.3: Channel of Milk Collection for Private Dairies

Even if some MPCs supply milk to private dairies, they simultaneously supply also to DDC as they usually receive better commission. There is hardly any MPC supplying milk only to the private sector. There are a few MPC managers who function also as contractors for delivering milk to be private dairies. There are only a few private sector dairies which own chilling centers or receive milk through chilling centers.

Table 4.5: Chilling Centers and Capacity in the Private Sector

Region	District	No. of Chilling vat	Capacity (litres)
Himalaya Dairy Pvt. Ltd.	4	8	1,00,000
Sitaram Gokul Milks Pvt. Ltd.	5	9	45,400
Kathmandu Dairy	1	1	5,000
Kailesh Dairy	1	1	1,000
Byas Dairy	1	1	1,000
Ram Janaki Dairy	2	2	2,000
Total	**14**	**22**	**1,54,400**

Source: DDC, Private Dairies, NDDB, 2001

The role of private sectors in milk storage, chilling and distribution is emerging. At present, 6 private dairies have extended their network in 14 different districts of the country. Each of these has their own chilling centers. The Sitaram Gokul Milk Pvt. Ltd. alone hold 9 chilling center located in 5 districts where as Himalayas Dairy Pvt. Ltd. has 7 chilling centers in 4 districts. With varying chilling capacities, these all dairies in an average have the ability to chill 1,54,400 liters per day. These private chilling centers are located in Eastern, Central & Western region.

4.1.3 Raw Milk Transportation

The milk sale by individual household is very small; farmers usually carry milk by themselves to co-operatives in small containers, mostly small aluminum cans, buckets or jerry cans. From the co-operative to chilling centers, milk is carried in 30 or 40 liter (usually 40 liter) aluminum cans. Depending upon the distance and road condition, milk from co-operatives to chilling centers is transported by porters, tractors, vans or other type of transporting vehicles or even mules and horses in the hilly areas. The traders collect milk in small containers from individual farmers and transport further in aluminum cans of varying sizes (usually 40 liters) depending upon volume of handling. The traders carry milk by themselves if the volume is small and use porters or vehicles for bigger amount. DDC and large private dairies transport milk from chilling centers to processing plants in insulated stainless steel road milk tankers. The co-operatives selling chilled milk or some dairies obtaining milk through chilling centers, transport chilled milk in 40 liters aluminum cans.

4.2 Marketing of Processed Milk

The processed milk is mainly pasteurized and converted to standard milk containing 3% fat and 8% SNF. Some dairies also market pasteurized whole milk and some jave started diversification in pasteurized milk category by marketing skim milk, pure cow milk, and milk containing no SMP etc.

4.2.1 Packing

Most of the processed milk is marketed in plastic pouches. In the beginning, DDC started milk marketing in reusable glass bottles, which are not totally replaced by plastic pouches. The mechanized dairies have automatic pouch filling machines. Some have semi-automatic and a few have manual ones.

Most of the dairies have similar looking package design with similar colours. Information provided on the milk in the packet varies by processor. Many mention only composition of the packaged milk. Some provide also information such as date of packaging and temperature to be stored and some packages have only processors name.

4.2.2 Distribution

Pasteurized milk is usually distributed to booths once a day, early in the morning. Thus, the processed milk is available to consumers mostly only once a day. In selected areas, some retail stores buy bulk of the packets from the booths and store in refrigerator for sale throughout the day. Usually, the retail store charge one rupee extra for refrigeration and their service, on the top of the price set by the processing plants.

The cold chain for pasteurized milk breaks during distribution, as the milk is transported in un-refrigerated ordinary vehicles. Thus, if the milk is held un-refrigerated at home for longer hours before consumption or boiling the bacterial count gets higher and milk may spoil, sooner.

The large and medium dairies have a fixed route for distribution of milk to their booths and authorized outside. The delivery vehicles drop milk crates one way on their way back collect unsold milk to the factory. The pouches are kept in stackable crates during transportation to the booths. Usually the processing plants accept the unsold returned milk, which are brought back by the delivering vehicles. The returned

milk is usually reprocessed. The observation has been that the milk from private dairies are held in the booths for longer hours compared to DDC milk.

Depending on the volume of milk handled, the milk transportation is given either in contract or managed by the plant itself. In the Kathmandu Valley, most of the DDC's contracted delivery vehicles are trucks which are not allowed in the city areas after certain hours in the morning, restricting DDC to have sufficient time in milk delivery and crate collection. The delivery by private dairies is usually more efficient because smaller vans are used. Some plants provide door delivery for institutional buyers like hotels, restaurants, school and hospitals. Some bulk buyers buy directly from the plants.

4.2.3 Promotion

DDC programs is promoting its products is very weak. It occasionally published some advertisements in local newspaper. Limited advertisements through wall painting, hoarding boards (by KMSS) and milk transport tankers are also done. Some of the sales promotion activities practiced is discount pricing for factory delivery of milk credit sales to institutional consumers and awards for milk booth men for selling more milk etc.

Private sector is more proactive promotional campaigns for their products. Some dairy plants in Kathmandu have substantial advertisement programs through radio, television, newspaper, poster, gift lottery, signboard and hoarding boards. Some of them sponsor radio program.

4.2.4 Marketing Channel of Processed Milk

The marketing channel for fluid milk is fairly short for DDC. It mainly pasteurized milk through the booths appointed by the individual schemes and some through its sales centers. The figure of marketing channel of fluid milk is as below:

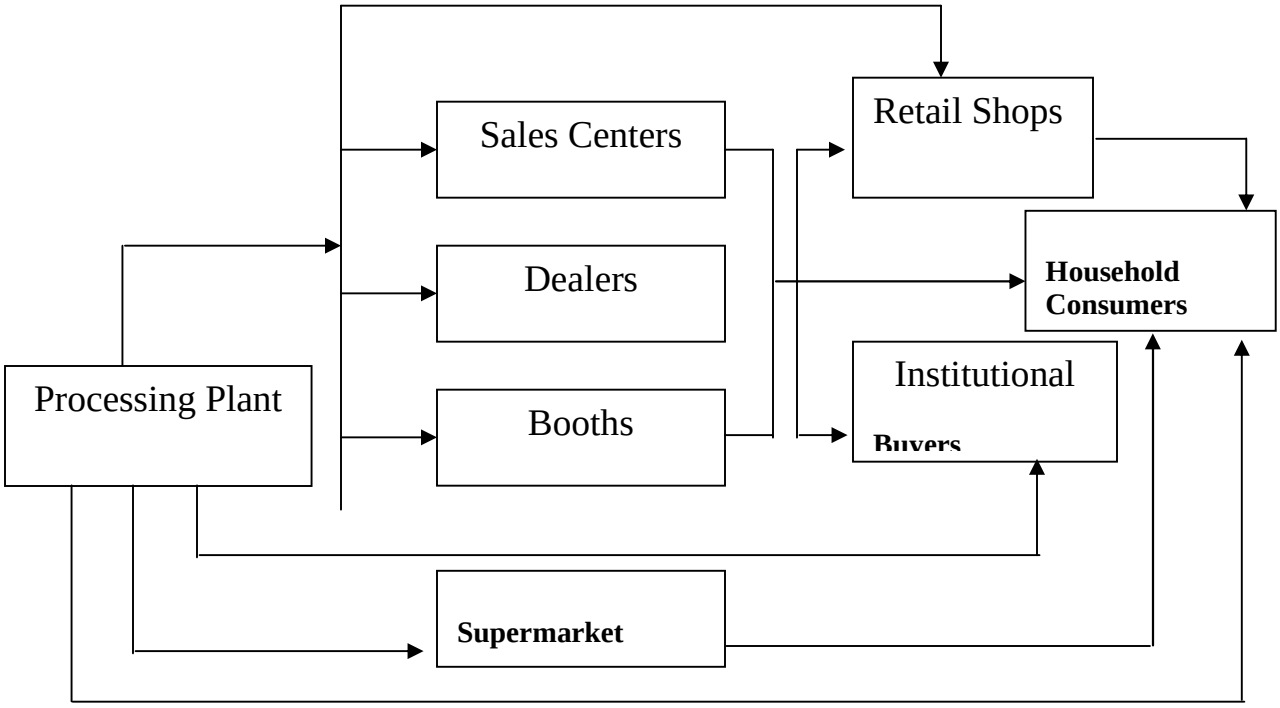

Fig 4.4: Channel for Fluid Milk Sale by DDC

DDC has an extensive network of 1511 sales booths, 7 Sales Centers and 55 dealers. Most of the sales centers are located in close proximity to the schemes. Milk reaches consumers also through dealers appointed by DDC. Additional, an informal channel also exists between DDC sales centers/booths and retail shops. Retail shop buy milk packets in bulk from booths or sales centers and supply to ultimate consumers. The larger institutional buyers buy loose milk or packaged milk in bulk directly from the processing plant.

Large and medium private dairies market milk mainly through sales booths appointed by them, own sales centers and dealers. The channel of milk sale is similar to that of DDC, but is more extensive. The sales centers of private dairies are also showrooms and the dealers are authorized outlets. The total number of booths for the private sector dairies is not available. Himalaya Dairy and Sitaram Gokul each have about 700 booths. Some of the private dairies market milk also through supermarkets, departmental stores and directly through retail stores. Some private dairies, mostly small and mini, supply milk directly from the factory and through retail stores. The

private dairies also supply to institutional consumer directly from the factory. Generally, these big consumers get direct delivery by the plants. The Structure of formal and informal marketing channels is given in annex 5.1.

The district and cities covered by private sector are mostly same as those covered by DDC Schemes. However, there are some districts or cities where small private dairies exist and DDC does not supply milk.

4.2.5 Pricing

Government policy established a formula for payment of milk. Instead of a pricing system that values milk based on demand by product, season, quality and market location. Nepal has an established price system adjusted by milk shed, distance from factory and seasonality. Pricing system is based on fat, solids-not fat (SNF) and total solids (TS) in the milk

At the farmer's level, milk is bought mostly either by co-operative or by the contractors in the case of private dairies. The direct sale of milk by farmer to private dairy in negligible. In case of DDC chilling centers, milk is bought only through farmers.

Milk price paid by private dairies to farmers is based mainly on the price paid to farmers by DDC with small additional payment of 20 to 30 paisa per liter. However, the pricing mechanism adopted is mixed.

Table 4.6:Trend of Price Paid to Farmers of Milk by Scheme (Rs./litre)

	Flush	Lean	Flush	Lean	Flush	Lean	Flush	Lean	Flush	Lean	Flush	Lean
Scheme	**1997/98**	**1997/98**	**1998/99**	**1998/99**	**1999/00**	**1999/00**	**2000/01**	**2000/01**	**2001/02**	**2001/02**	**2002/03**	**2002/03**
KMSS	15.96	16.42	15.64	16.67	15.98	16.70	17.2	18.16	17.4	18.24	17.84	18.40
BMSS	14.6	15.01	15.15	16.00	15.10	16.00	15.84	16.25	14.8	16.40	15.1	16.60
HMSS	14.38	14.79	14.89	15.30	15.00	15.30	15.87	16.03	16.1	16.5	16.2	16.60
LMSS	14.23	14.69	15.12	14.89	15.12	14.89	15.47	15.88	15.61	15.92	15.72	15.96

Source: Basic Data, DDC, 2005

There has been significant increase in the paid off pattern to the farmers within the last decade. From 1997/98 to 2002/03, the paid off price has almost been double in an average. The payment scheme is relatively well in central regions under KMSS. LMSS paid tariff to the farmers is the lowest. However the payment per liter in flush and lean seasons is different.

4.3 Quality Issues in the Processing

Milk Produced from a healthy animal would contain very little bacterial population. It gets contaminated during subsequent handling processes. The contamination is very high in the Nepalese context. One reason for the high bacterial load in raw milk is unhygienic practices in milk handling and lack of knowledge on clean milk. The other reason in many areas, especially in the hills is that milk travels fairly long hours before it reaches for processing, either chilling or pasteurizing that checks bacterial growth. In the Terai areas, when the contamination in milk is high, the higher ambient temperature triggers the multiplication of bacterial population.

In addition, raw milk quality also deteriorates due to some malpractice that take place along the milk chain, which include addition of water for increasing volume, sodium bicarbonate for reducing acidity, starch, sugar and urea for increasing solid content the preservatives for longer shelf life. The law prohibits using these chemicals in milk. Accepting milk of any standard due to competition among buyer led milk quality to lower side. In some areas, commercial orientation of farmers has improved milk quality for establishing better cliental relationship with the collectors.

Since the quality of raw milk is not up to the mark, the resulting processed products are also of not high quality,. There is no mandatory code of conduct at the factory level. The problem of poor quality is intensified when the products are not processed using optimum parameters and post processing handling is bad. The result is that not only the shelf life of finished products are harmful for consumption. The pasteurized milk, which should be safe to drink directly from the packet, in reality, may not be safe. Almost non-of the dairies besides DDC have a laboratory manual and company standards of milk and milk products.

4.4 Technology and Manpower

Technology

Milk is a very versatile and nutritious product that can be converted into delicious products like ice cream, special cheese, and milk shakes with various fruit and other flavours. Also by products from some of the products have in recent years undergone a tremendous research and development e.g. when from cheese production was earlier sent back to the farmers for animal feed. Today why is collected from chesses dairies and sent to a drying plant for converting it into various types of when powder which are valuable ingredients for the pharmaceutical industry, ice cream production, the bakery industry etc. Along with the technical of milk processing, advanced technology has been developed for packing and filling of dairy products to suit customers demand for high quality products.

The technology used in the dairy sector in Nepal range from “low” in very small dairies to “medium technology” in big dairy plants. “High technology” has just been introduced into the Nepalese dairy industry by Himlaya Dairy, which has started the production of UHT milk products in aseptically filled cartons. It is expected that UHT technology will be introduced in other dairies in Nepal. However, the low quality of raw milk in Nepal combined with the high cost of equipment and cartons for UHT milk might result in a slow development of the UHT milk. UHT milk was introduced in the neighboring country India in the 80s, but failed primarily due to lack of marketing efforts in branding and product differentiation.

Manpower

Development of human resources and training is an important factor for the development of the dairy sector. A comprehensive study of “Manpower and Training Needs Assessment for the Dairy Industry in Nepal” has recently been made by NDDB. The main findings of the study of manpower and training needs for the initial 2-3 years are as follows:

- Post graduation in Dairy Science- Dairy technologists
- Diploma in Dairy Science
- Dairyman certificate in Dairy Science
- Dairy Laboratory Technicians
- Short Training Courses
- Tailor Made Courses

4.5 Milk Holidays

Though not good for farmers, the days during which farmers are asked not to bring milk to chilling centers are referred as milk holidays. Farmers have been facing this problem in Nepal since 1991/1992 and has occurred since then. Milk not collected in recent years has been around 1 to 2.5% for collection by DDC and 0.5 to 1% for private processors. Milk not collected in percentage of national milk production is less than 0.2% and in percentage of total offer is about 2%. This figure does not look alarming and the whole issue seems to be exaggerated even though it can harm the individual farmer's income during a period with milk holiday. However, it steps are not taken to address the problem timely, the situation could be serious in future as the milk offer is increasing at a fast rate.

So far the dairy sector in Nepal has done very little to eliminate the milk holidays. In 1992 a small milk powder plant was installed in Biratnagar, which solved the problem for that area for some years. In recent years, DDC has not expanded its capacity when reaching full utilization and by keeping an inflexible pricing policy it has discourage the private sector in their expansion. This situation has contribution to the problem.

Cow and buffaloes are raised mostly for multiple purpose of milk, manure and draft animal. Commercialization of dairy has started only in few places. As a large portion of milk is unmarked and farmers have tradition of using milk in producing ghee, chhurpi, etc through traditional technology, milk holiday has not created any serious havoc, so far. Milk holiday has had temporal, seasonal and spatial pattern. But in future, problem dimension will increase due to fast increase in milk offer caused by rapid development of transportation network.

It is envisaged that without additional marketing efforts milk holiday will not disappear in the future, but the problem is likely to worsen, because more milk will be offered due to more roads being constructed, improvement in technology in milk production etc. However, the extent of the milk holiday problem will highly depend on the measures introduced and investments made to eliminate or reduce the problem.

Milk holiday had first occurred in LMSS and expanded to other schemes; Hetuada, Biratnagar and Kathmandu. Pokhara has not faced that problem yet. Milk Holiday by Supply Schemes is given in Table 5.7. The spatial pattern has to do basically with the imbalance of production, processing and distribution of collection center, part of which is also related to political pressures.

Table 4.7: Milk Holiday by Supply Schemes (1999/2000)

Scheme	Month of Holidays	No. of Holiday/Year
KMSS	September – March	20
HMSS	November – March	28
LMSS	September – March	44
BMSS	September – March	21

Source: NDDB

As mentioned above the spatial difference in the pattern and no. of milk only holidays is greatly due to spatial difference in milk production, processing, distribution and political interest. As per the report, LMSS has the trend of giving 44 days off from September to March. Similarly the days allotted off days for milk collection in KMSS are the lowest i.e. 20 days only the same period of time. There is no provision of milk holiday in PMSS.

The provision of milk holiday has created chaos among the producers and distribution. The impact of milk holiday over the activities and economy of farmers will be discussed later.

Cause of Milk Holidays

- Maximum production of milk by farmers & limited capacity of DDC for collection, processing and marketing.
- Farmers dependency on DDC for collection, processing and marketing of milk.
- Price Intervention by HMG/N
- Erratic milk production
- Flow of India milk during flush season
- Import of milk powder etc.

Effects of Milk Holiday

Milk Holiday refers to the days where the dairies refuse to buy milk from the farmers due to increased collection of milk and less production of milk varieties. These holidays have directly affected the farmers in many ways.

Milk being a perishable product, cannot be stored for long time. In absence of chilling centers, its storage even a day is impossible. As such, huge amount of milk products by farmers need to be marketed and collected by dairies in regular basis. Refusal to accept produced milk in certain days, cause damage of thousands of liters of milk. This is one hand cause severe economic lost to the farmers whereas in other hand outcast their labour and degrade the living standard. Several incidences where producers have spelled the raw milk on road after being reflected from dairies have been highlighted by newspaper.

4.6 Dairy Products Production By DDC

The DDC is the prominent supplier of various quality dairy products to the consumers of major urban areas of Nepal such as Kathmandu, Biratnagar, Birgunj, Dharan, Hetauda, Narayan, Pokhara and Butwal. A brief introduction of dairy products by DDC, trends, import/ export and their quality specification presently as follows:

4.6.1 Cheese

Though forty types of cheese are marketed, mainly two types of cheese are produced in Nepal. Yak cheese (Buffalo) and Kanchan (Cow) cheese. Estimated production of total cheese in 1998 was 401 mt. with about 206 mt. of Yak cheese and 195 mt. of Kanchan cheese. About three fourth of Yak cheese and a third of Kanchan cheese (69 mt) is produced by private sector. Rest is produced by DDC. While the cheese production by private sector is increasing, production from DDC is declining trend. There are few private sector cheese plants producing Buff cheese.

The market for mozzarella cheese in growing in the urban areas, especially in Kathmandu with increasing number of pizzerias. The estimate consumption of mozzarella cheese by pizzerias and restaurants in Kathamandu is more than 200 kg per day. The major dairies that manufacture Mozzarella cheese are Nepal Dairy, Pushpa Dairy, Adhunik Dairy and Baneshwor Milk Bar.

Table 4.8: Trend of Cheese Production by DDC

Year	Yak (mt)	Cow(mt)	Total(mt)
1997/98	44.1	120.9	165.0
1998/99	20.5	125.5	176.3
1999/00	57.9	104.1	162.0
2000/01	48.1	112.3	160.4
2001/02	50.2	114.5	164.7
2002/03	43	130	173
2003/04	46	123	169
2004/05	41	123	164
2005/06	44	114	158
2006/07	46	100	146

Source: DDC/ NDDB, Final Report 2001

The trend of producing yak cheese has declined over year. The production seen during 1997/98 by of 44.1 mt. Yak cheese has increased to 46 mt in 2006/07. However the

production of cow cheese has been decreasing ever with 120.9 mt production in 1997/8 to 100 mt production in 2006/07. Due to drop down in cow cheese production, the overall annual production of cheese decreased significantly in last few years.

Export/ Import

There is no export of cheese through the formal channel. But informally, significant amount of Yak cheese is exported to India especially for star class hotels in New Delhi.

Import of cheese is mainly done from India, Holland, USA, Switzerland, France, Germany and Australia. The imported cheese travels to final consumers through a more organized channel of national and regional distributors, wholesalers and retailer. The import may also be done by an importer and distributor.

Quality Specification

Yak Cheese (when sold)

Moisture	Maximum 43%, Recommended 38%
Fat in dry matter	Minimum 45%
Water in fat free cheese	Recommended 51% – 52%
Edible salt	Maximum 2.5% (Recommended 1.5% -1.75%)

Cow Cheese (when sold)

Moisture	Maximum 43%, Recommended 41%
Fat in dry matter	Minimum 45%
Water in fat free cheese	Recommended 55 – 56%
Edible salt	Maximum 2.5% (Recommended 1.5% - 1.7%)

4.6.2 Ice- Cream

Ice cream is an emerging dairy product in Nepal. Ice cream parlors are becoming common in major cities. There is an intense competition in the market among the selected domestic brands and the imported brands. Kathmandu is the biggest market

for ice cream, followed by Pokhara. Ice cream manufacturers in Nepal are mostly concentrated in city area.

DDC owns a continuous ice cream manufacturing unit with the capacity of 300 lph in Kathmandu. DDC manufactures only plain vanilla flavored ice cream and markets it through its sales center and appointed dealers.

The ice cream market has started getting competitive for the last six years in private sector. Prior to that, the only major ice cream manufacturer in the private sector was Kwality Ice Cream; currently there are four major players. In addition, there are many other smaller ice cream manufacturers. The small manufactures supply ice cream in the market in insulated wooden carts. Many of such producers are not even registered. The highest amount of ice cream producer is Kwality Ice Cream, followed by Nepal Dairy, both of which are involved in brand promotion. Production of the ice cream in Kathmandu in given below:

Table 4.9: The production of the Ice Cream by Private Sector in Kathmandu

Manufacturer	Production/day (litre)		Annual Production (mt)	Brand	Areas of Marketing
	Summer	Winter			
Kwality Ice Creams	1,400	800	396	Kwality	Kathmandu, Pokhara, Chitwan, Biratnagar
Nepal Dairy	1,200	700	342	Nd's	Narayanghat, Hetauda
Food Court P. Ltd.	600	300	162	Neerala's	Kathmandu, Pokhara, Chitwan
Kathmandu Dairy	150	80	41	Snowfun	Kathmandu
Others	600	200	144	-	Kathmandu
Total	**3,950**	**2,080**	**1,085**		

Source: NDDB, Final Report 2001

Note: 55% of the sale of estimated to occur in summer (6 months) and 45% in winter (6 months)

The large scale and small scale Ice-cream producers manufacturing around 1,085 mt. Ice-cream annually. As per demand the production is high in summer than winter but the gap in production is closing year after year. The highest amount of Ice-cream producer in Kwality Ice Cream with the annual production of 396 mt. under the brand name Kwality. The following brand is ND's of Nepal dairy with annual production of 342 mt. The major market of their manufactures are urban areas like Pokhara, Kathmandu, Chitwan etc. The trend of Ice-cream production is given below:

Table 4.10: Trend of Ice Cream Production by DDC

Year	Total(Litre)
1997/98	25,477
1998/99	32,423
1999/00	36,293
2000/01	42,196
2001/02	43,000
2002/03	25,000
2003/04	35,000
2004/05	34,000
2005/06	47,000
2006/7	40,000

Source: DDC/NDDB, Final Report 2006/7

The effect of modernization and urbanization has been positive and significant in ice-cream industries. With the outburst of branded services, the demand of ice-cream is constantly in Nepal resulting increasing trend of ice-cream production.

Export/ Import

Major two brands namely Baskin & Robbins (American Brand) and Vadilal (Indian Brand) are imported in Kathmandu and Pokhara. About eight percent of these imports are marketed in Pokhara. The supply of imported ice cream in Kathmandu is about 108 mt per year.

Quality Specification

Milk fat	Minimum 10%
Total solids	Minimum 36%
Titrable acidity	Maximum 0.25%
Phosphates test	Negative
Overrun	Maximum 90% (Recommended 70% – 80%)
Sucrose	Maximum 15%
Emulsifier	Maximum 0.5%
Coliform plate count per ml	Less than 100
Total plate count per gram	Less than 250

4.6.3 Butter

DDC's butter production has increased almost three-fold in a decade. The informal report indicates that the butter market has not expanded to the extent. As a result, almost every year DDC has to face the glut of butter. The problem is not very serious with the private dairies because they do not handle individually as much fat as DDC does and are flexible to change the price structure as per the market situation.

Table 4.11: Trend of Butter Production by DDC

Year	Total(mt)
1997/98	1285.0
1998/99	1466.1
1999/00	1323.6
2000/01	1456.0
2001/02	1360.0
2002/03	1077.0
2003/04	1106.0
2004/05	1163.0
2005/06	1232.0
2006/07	1125.0

Source: DDC/ NDDB, Final Report 2006/07

Trend of butter production has decreased significantly over the period of 10 years i.e. from 1997/98–2006/07. There has been 160 mt less production in 2006/07 as compared to 1997/98.

Quality Specification

Moisture	Maximum 16%
Butter fat	Minimum 80%
Salt content recommended	1% - 2%
Curd	Maximum 2%
Annatto colour	Up to 250g/ 100 kg of fat
Yeast & mould per ml	Less than 10
Coliform plate count per ml	Less than 10

4.6.4 Ghee

As with cream and butter, ghee production varies drastically by season. The trend of DDC indicated that ghee production is also in the rise. DDC Ghee has a well-established goodwill in the market. On daily average, DDC sells 800 kg of ghee in Kathmandu. There is a competition in the market among the ghee from DDC, private dairies, local producers and the import from India and Belgium. The ghee production in flush season has been estimated to be about 600 kg per day for the large and medium private dairies and about 150 kg per day for small and mini dairies in Kathmandu.

Ghee market is very seasonal with sharp increase during festivals and religious ceremonies. Besides the household consumers, the major buyers of ghee are traditional sweets manufacturer. Some ghee is also exported to India. In the last five years, ghee packing has gone through some changes. Ghee is packaged in plastic container, plastid pouches and laminated aluminum bags. Trend of Ghee production is shown below:

Table 4.12: Trend of Ghee Production by DDC

Year	Total(mt)
1997/98	826.1
1998/99	743.2
1999/00	804.7
2000/01	898.5
2001/02	869.6
2002/03	830.0
2003/04	697.0
2004/05	649.0
2005/06	665.0
2006/07	773.35

Source: DDC/ NDDB, Final Report 2006/07

Like other milk products, the production of Ghee also has milked up significantly in the last 10 years. Taking 1997/98 as base year with production 826.1 mt, the production has decreased in 2006/07 with net decreased production of 52.75 mt.

Quality Specification

Fat	Minium 99.5%
Moisture	Maximum 0.5%
Free fatty acids (as oleic acid)	Maximum 3%
Melting point	$30 – 34^0$C
Polenske value	2.5
Iodine value	27- 38
Saponification value	220 – 240
R.M. Value	28

4.6.5 Cream

The legal standard of fat for milk is lower than the fat content in cow or buffalo milk. So, the surplus fat is removed in the form of cream. Cream production is higher in

flush season and lower in lean season. Cream is converted into butter or ghee or pasteurizes, packed and marketed as such. DDC and some private dairies market pasteurized cream in half-liter plastic containers. The major buyers of cream are hotels, restaurants, bakeries and ice cream manufacturers.

Quality Specification

Fat	Minimum 32% Maximum 35%
Titrable acidity	Maximum 0.13%

4.6.6 Yoghurt

DDC also produces and sells Yoghurt. Of the total production of DDC, the highest production and sale is in Kathmandu. The trend in Yoghurt production by DDC in Kathmandu is in decrease due to competition with private sector. According to the IDF publication, Yoghurt production in Nepal in 1999 was 2000 mt. The production by private sector is estimated to be close to that DDC. Most of the private dairies large, medium and small, all are involved in Yoghurt production. The sale of Yoghurt is seasonal, driven by festival and ceremonies and the dairies manufacture this product as per the order placed by customers.

Table 4.13: Trend of Yoghurt Production by DDC

Year	Total(mt)
1997/98	873.6
1998/99	964.4
1999/00	972.3
2000/01	1027.0
2001/02	1030.0
2002/03	982.3
2003/04	960.4
2004/05	860.5
2005/06	1035.1
2006/07	1100.5

Source: DDC/ NDDB, Final Report 2001

The trend of yoghurt production also shows gradual increment over the last 10 years. Taking 1997/98 production of 873.6 mt as base line, the production has mt in reaches 1100.5 mt in 2006/07 which implies 226.9 net increase production over 10 years.

Quality Specification

Fat	Minimum 3%
SNF	Minimum 8%
Titrable acidity	Minimum 0.9% lactic acid
Ph	3.5 – 4
Phosphates test	Negative
Coliform plate count per ml	Less than 10
Yeast & mould per ml	Less than 10

4.6.7 Paneer

Paneer is not a traditional Nepali food item, but is gaining popularity due to changing food habits of people. It is used as a raw material in sweet making and also sin food preparation. DDC was producing negligible quantity of Paneer until about a decade ago but now is producing about 79 mt. annually. The major consumers of Paneer are hotels, restaurant and sweet manufactured, besides the retail consumer. The demand of Paneer is also seasonal and goes higher in festivals and celebrations. The Paneer is imported from India by restaurant and hotels.

Table 4.14: Trend of Paneer Production by DDC

Year	Total(mt)
1997/98	N/A
1998/99	N/A
1999/00	N/A
2000/01	N/A
2001/02	N/A
2002/03	64
2003/04	100
2004/05	51
2005/06	58.49
2006/07	79

Source: DDC/ NDDB, Final Report 2006/07

Due to lack of date, the trend of Paneer production from 1997/98 to 2001/02 couldn't be analyzed. However there has been continuously increased production of Paneer from 2002/03 to 2006/07 .

Khuwa

Khuwa is another indigenous milk product used as a raw material in traditional sweets making. Khuwa is mostly produced by the informal sector. Khuwa market is highly seasonal, totally dependent on festival season. The major market for Khuwa is sweets manufacturers.

4.6.8 Chhurpi

Chhurpi, a coagulated dry milk product, is commonly produced in the Eastern hills and chauri rearing areas of the country. It is mainly produced at the farm level and by entrepreneurs operating in smaller scales.

4.7 Livestock Market for Dairy Cattle and Buffalo

Livestock rearing has always been an integral part of the crop agriculture. Cows and buffaloes are raised for producing draft animal, manure and the supply of animal protein (cow for milk and buffalo for both milk and meat).

Livestock markets in the milk shed are important to the industry. There are periodic livestock markets (Hat Bazzars) in the Terai Region where trade of animals for slaughter (buffalo, goats, sheep), ploughing and transport (oxen and male buffaloes) and dairy (milch cow and buffaloes) occurs. The markets in the Terai also serve as outlets for buffaloes, cows and bulls that are trekked to markets in India.

The marketing system for dairy cattle and buffalo is fragmented and no orderly system exists in the distribution of improved dairy livestock. The volume of trade is not known but seems to be growing. Most of the trade is confined to areas within the milk shed accessible to outside markets. In some areas, DLS official the sale of dairy animals to the producers of other districts.

The trade in milch buffalo and cattle is seasonal beginning in June and ending is September corresponding to the rainy season when most of the dairy animals are in milk production. The weather is also cooler for trekking dairy animals to the market during that time. In a few markets such as Damak in Jhapa district, shelters have been constructed to house the milch animals. Trend of livestock population and product are shown in table 5.16 and 5.17 respectively.

Table 4.15: Trend of Livestock Population (ltr)

Year	Milking Cow	Milking Buffalo	Total
1997/98	695,130	751,920	1,447,050
1998/99	698,931	755,996	1,454,927
1999/00	738,709	786,001	1,524,710
2000/01	766,451	811,182	1,577,633
2001/02	784,940	820,920	1,605,860
2002/03	816,270	857,420	1,673,690
2003/04	826,320	882,140	1,708,460
2004/05	828,214	896,415	1,724,629
2005/06	840,673	910,753	1,751,426
2006/07	852,583	936,811	1,789,394

Source: DDC/ NDDB, Final Report 2007

There has been a gradual increase in the population of livestock from 1997/98 to 2006/07. The increase in the population remained fairly construct shown significant drift toward increment in the year 2006/07. Taking 1997/98 as the base year, there has been net increase of 342344 cattle in 2006/07 i.e. from 695,130 milking cows in 1997/98 to 852,583 in 2006/07 with an increase of population by 157,453, from 751,920 buffaloes in 1997/98 in 2006/07 with an increase of 184,891. We can also see the trend of livestock population in figure 4.5.

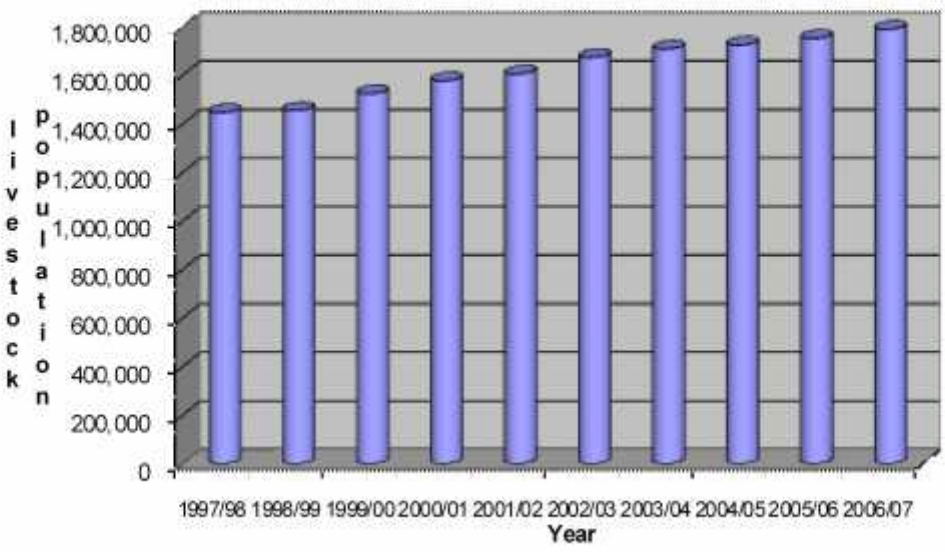

Fig 4.5: Trend of Livestock Population

Table 4.16: Trend of Livestock Production (ltr.)

Year	Cow Milk	Buffalo Milk	Total
1997/98	259,230	612,004	871,234
1998/99	260,786	615,808	876,594
1999/00	278,065	640,544	918,609
2000/01	288,822	652,551	941,373
2001/02	296,620	664,940	691,560
2002/03	310,183	701,980	1,012,163
2003/04	318,680	729,360	1,048,040
2004/05	328,920	744,025	1,072,945
2005/06	337,455	759,568	1,097,023
2006/07	342,738	781,394	1,124,132

Source: DDC/ NDDB, Final Report 2007

Owing to high demand of milk and milk products, the trend of increased livestock production has been obvious. However the production spontaneously falls down to 691560 ltr in the year 2001/02. Since then, there has been increased production of livestock. The livestock production has reached upto 1124132 ltr (near about) in the year 2006/07 and the trend is increasing. The figure is given below.

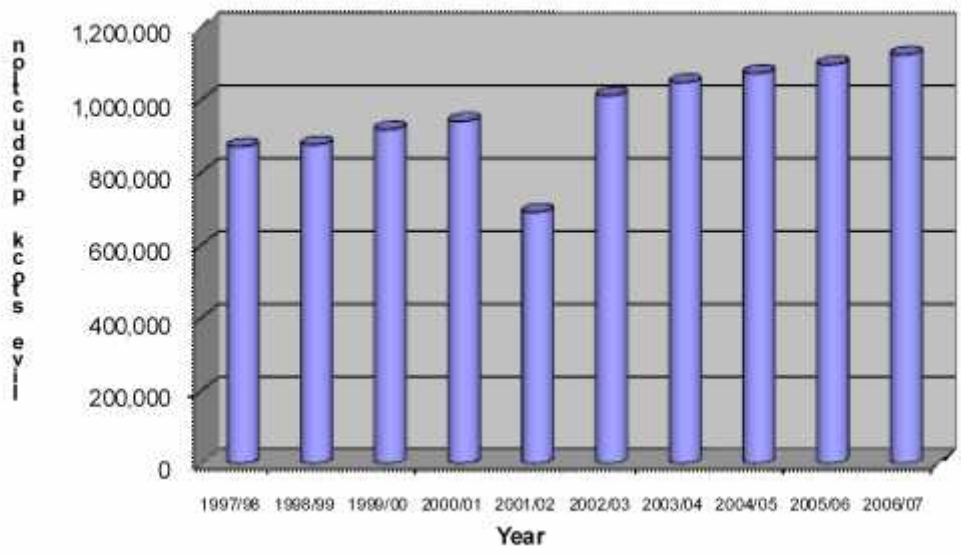

Fig 4.6: Trend of Livestock Production

4.8 Tariff and Duties

Tax in the dairy sector is small both in export and import which is shown in Table.

Table 4.17: Export/Import Tariff and Value added Tax (VAT) in Dairy Sector

Milk and Milk products Import	Rate
Milk/Cream (non concentrate/no sugar added)	None
Milk/Cream (concentrate/no sugar added)	10%
Yoghurt	10%
SMP	10%
Other powder milk	10%
Butter/other milk fats	10%
Ice Cream	10%
Cheese/ Curd	10%
Machinery Import	-
To be used by importing dairy industry	1%
To be used by animal feed plant	1%
Inputs for Preparing Animal Feed	1%
Animal Import	1%
Export Duty (on all)	0.50%
Excise:	None
Value Added Tax:	
Milk	None
Yoghurt	13%
Other milk products	13%

Source: Customs Tariff, MOF 2007

The export import tariff in dairy products varies from product to product. 1% import tax is levied in all the machinery imported for dairy, industry, animal feed plant, and inputs for the later. Similarly 1% import tax is levied on animal import. Except milk/cream (non-concentrated/no sugar added) all other imported milk items are charged 10% import tax.

0.50% export duty need to be paid by all form of milk products and dairy machinery. Except for milk other milk products are subjected to 10% VAT.

Thus, dairy farms and milk product are a good source of revenue collection for the government.

4.9 Overall World Dairy Situation and Outlook

A world milk production is projected to increase from 533 mmt. in 1995 to 615 mmt. by 2005 with an annual increase of 1 percent per year. However, world trade in dairy products will still be under 10 percent of total production implying that individual countries will continue to be main source of production to meet their local demands.

The world dairy sector is highly protected by a complex array of export subsidies, domestic support programs, and restricted market access. Producer support estimates for OECD countries for milk can be as high as USD 50 billon, annually. The aggregate volume of subsidized exports in 2000 for butter and butter oil, SMP and cheese will be 1.2 million mt. The EU and the USA are two largest protective markets with huge amounts of subsidies paid to producers and exporters.

The world dairy outlook projects the exports of dairy products from Europe and North America to decline in favour of producing countries in Oceania, the Southern Cone of South America and other countries like India. These countries represent low cost producers of bulk dairy commodities of butter and SMP. International sea fright rate have remained competitive allowing low cost production countries to extend their penetration of world markets. The markets in developed countries are becoming more

mature and the growths of markets are in developing countries where population and income growth are higher.

Table 4.18: Estimate World Dairy Production, Import and Export by 2005

(MT)

	World	**Asia**	**Europe**	**South Asia**
Year: 1993/95				
Production	533.7	115.8	130.4	84.5
Imports	34.3	9.6	2.2	0.6
Exports	34.4	.9	13.0	0.1
Total Use	533.7	124.6	119.6	85.0
Year: 2000				
Production	576.6	137.6	128.5	101.5
Imports	39.0	11.2	2.7	0.5
Exports	39.0	1.0	11.9	0.1
Total Use	576.6	147.7	119.3	101.9
Year: 2005				
Production	615.0	158.9	126.9	118.3
Imports	43.7	12.9	3.4	0.6
Exports	43.7	1.2	11.1	0.4
Total Use	615.0	170.6	119.1	118.6

Source: FAO, Bulletin IDF 2000

Import of Milk and Milk Product in 1998/99 (MT)

a. Butter

Singapore	20,207
UK	157,009
Total	**177,216**

b. Fats and oils derived from milk

New Zealand	220,850
Total	**220,850**

c. Fresh cheese including why cheese and curd

UAE	60,005,703
Austria	24,456
Denmark	1,000
Netherlands	37,780
Total	**60,068,939**

d. Cheese

Pakistan	7,000
Singapore	1,319,470
UAE	810,376
Austria	379,397
Switzerland	1,741,449
Total	**4,257,692**

Grand Total Import from overseas: 157,865,444

Source: Nepal Overseas trade statistics/ Department of Custom

Being an important daily study, the production of dairy products are increasing globally. The production and use in 1993/95 was 533.7 mmt, in 2000 was 576.6 and is projected to by 615 in 2005.

The large production and export region in 1993/95 was Europe with 24.43 % of total production, 6.41 % of global import and 37.7% of global export. The production modality in Europe is export based modality. Asia is the 2nd largest dairy market with 21.69% global production, 27.99% of import and 2.62% of export in 1993/95, however here production is of subsistence level.

Asia remained the top producer, important and consumer of dairy products in the year 2000 as well. It covered 23.86% of global production and 25.61% of global consumption. In 2000, South Asia also showed significant improvement in dairy production with net increase 1.8% from 1993/95.

It is projected that the dominance of Asia over production, import and consumption of dairy products will remain in the year 2005 as well as with 25.83% of global production and 27.73% of global usage.

4.10 Major Findings of the Study

a. The quality of milk and milk product is very low. Norm to fix raw milk price has not been developed by the concerned parties. Appropriate monitor system has not been placed to check milk and its product at all level.

b. Nepalese milk and milk products are not able to compete with other country's products in terms of price and quality.

c. Cost of milk production to the farmers in Nepal is high due to number of factors such as low productivity per animal, poor feed and fodder supply. Average cost of production per litre of milk in Nepal is Rs. 10.5 to 13.5 depending on type of farm location etc.

d. Another challenge in milk business in Nepal is milk holidays, which are not appropriate collection centers and channel members. The root causes of this problem are as follows:

   - Maximum production of milk by farmers & limited capacity of DDC for collection, processing and marketing.
   - Farmers dependency on DDC for collection, processing and marketing of milk. Limited number of private parties have been entered in the business but their focus is only around the Kathmandu valley.
   - Government intervention to determine price of milk and its products
   - Erratic milk production
   - Indian farmers can produce milk comparatively higher than Nepalese farmers therefore there is flow of India milk during flush season, this makes difficult Nepalese milk producers.
   - Import of milk powder and lack of powder milk producing plant has not been established in the country.

e. The financial position of DDC is poor and performance of last couple of years is not sound and is making continues financial loss.

f. There is lack of sound management information system in DDC and private sector how much they collected milks and their productions to project and analyze future demand and supply in the country.

g. An appropriate laboratory does not exit in the country for testing whether the plastic packaging material have been drinkable as per international specification. Only physical parameters are possible for testing purpose in the country. The lack of an appropriate channel, qualities and stringent laws of Indian authorities, the milk product cheese is not able to send India by small scale producers.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

Dairy Development Corporation (DDC) is manufacturing public enterprise. It is producing verities of milk products in different quality and different sizes with varying prices. The main objective of this enterprise is to make available quality dairy products at low price in every places of the country. It is the main dairy corporation of Nepal. It leads the dairy market in the country. That is the reason it has maximum sales revenue in compare with other private dairy company.

The main products of DDC are milk, cord, sweets, cheese e.t.c. DDC has been taken as representative enterprises. This study has tried to answer certain questions stated in the statement of problem. It has also tried to analyze and examine the effect of profitability of DDC. Data has been collected from both sources primary and secondary. It has been analyzed with the help of the various statistical and financial tools. Related literatures has been reviewed which consists both forty four books, eight reports and periodical and were dissertations. General concepts have been given. This study have been organized in five chapters consists of introduction, review of literature, research methodology, presentation and analysis of data and summery, conclusion and recommendation.

DDC is manufacturing enterprises but its main objective is to provide service to urban people by supplying hygienic and pasteurize milk and dairy products rather than earning profit. DDC is producing eleven types of milk and products. There are six projects and forty four chilling centers under DDC.

In different plan many public enterprises have been established within the country. But these public enterprises have been reflecting poor financial performances causing financial burden to the government. They are not able to generate profit and also not able to operate independently. Mean while it is found that private enterprises are successful to earn profit in the area where the public enterprises are facing problems under the same situation. Attempts are made in this study to find whether the public enterprises are better or not from the view point of profit. In this study one public enterprise DDC is chosen as sample.

Finally the study reflected that DDC had failed to perform effectively and efficiently as its financial health is found unsatisfactory during the study period.

5.2 CONCLUSION

The following conclusions have been drawn on the basis of this study:

1) DDC Has to vague objectives but it is not strictly followed.
2) DDC had concentrated its whole efforts on the survival of the corporation and has no depth analysis of its strength and weakness.
3) DDC has no fair system of rewards and punishment to employees on the basis of their performance.
4) Lack of budgeting expert and skilled planner, plans are formulated on traditional basis.
5) The top level management/ executive are only involved in planning and decision making and lower level participation is not encouraged.
6) No proper management to supply the sufficient milk in the urban areas because of the difficulty in collecting surplus milk in rural area.
7) DDC had no any effective programs to achieve desired and formulated goals and objectives and to overcome the existing problems and challenges.

8) DDC has not satisfactory achievement of specific goals. Following are the main cause of low achievement:
   a) Over-Staffing
   b) Under-Capitalization
   c) Not- Fully Autonomy(intervention)
9) DDC has developed two channel of marketing systems:
   i) Producer-agent –customer
   ii) Producer-customer
10) Main problems of DDC are materials and markets which are not available in right time in right quantity and right place so as to supply for production.
11) The advertisement activity is reasonable.

5.3 Recommendations

a. It is recommended to establish chilling centers in the potential areas where milk producers can store their milk longer period.
b. The standards for dairy products should be revised to a realistic achievable level with the goal of reaching a satisfactory level for the local market. Legal action should be taken against those not meeting the standards.
c. It is necessary to improve breeds, and encourage to establish business alliances between commercial producers and private processors by following win-win approach.
d. Develop skilled technical manpower by supporting the implementation of the education and training recommended in the manpower needs.
e. Work to remove ‘milk holiday’ by developing alternative way like establishing power milk processing plants in the country. .
f. One option is enhancing the production capacity of dairies could be a strategic solution to reduce/ stop milk holidays.

g. Expanding market network construction of agricultural roads (the priority project of Agricultural Perspective Plan) are some of the sustainable solution to eliminate milk holidays and make capable to produce milk by farmers living in remote area as well.

h. Encouraging dairies to diversify their product, like to produce lower milk and other imperishable products can largely reduce the provision of milk holidays. Public and private sectors should shift their priority in this sector. Similarly government intervention through effective policies and subsidizes would be a praiseworthy effort for this.

i. Milk is primarily used in tea and not used significantly as a beverage and traditional food does not include many milk products. Therefore, It is required to encourage and promote to use other milk products in day-to-day life.

j. HMG declared privatization is a national policy to achieve substantial economical growth . In case of DDC, the institution has not able to make profits, so why don't go for privatization process and make fair environment in the market. The Process also help to reduce financial burden in government annual budget as well.

k. Should run occasional promotional advertisement for milk and milk products.

l. Public Private Partnership Programme should extend to open milk chilling centers in potential regions. Such chilling centers not only promote milk business but also generate employment in local levels thereby alleviating poverty.

m. Attractive packages should be launched to promote production of internationally recognized milk product like Yak Cheese etc.

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