CHAPTER – I

DESIGN AND EXECUTION OF THE STUDY
1.1 INTRODUCTION

Indian economy is predominantly an agrarian economy with more than 75% of its people living in villages and depending upon agriculture and allied activities like livestock farming, and dairy farming. The share of livestock product in the total agricultural sector is estimated at 21 per cent. The dairy sub-sector occupies an important position in the economy, as milk is the second largest agricultural commodity contributing to the GNP, next only to rice. While the share of agricultural output to the total GDP has been on the declining trend, the share of livestock output to the agriculture has been increasing and now it accounts for 25 per cent of agricultural output (around 6 per cent of total GDP). Milk alone contributes Rs. 450 billion to the GNP of the country. However, the plan investment in animal husbandry and dairying is only a meagre 5% of agriculture. At present National Dairy Development Board has established a large number of co-operative societies. Maharashtra has the highest number of dairy co-operative societies (16,724) followed by Uttar Pradesh (15,648), Gujarat (10679), Tamil Nadu (8,369), Punjab (6,823), Rajasthan (5,900), Karnataka (8,516), Andhra Pradesh (4,912) and Madhya Pradesh (4,877). The strength of Indian dairy sector lies in the fact that in spite of limited investment it has shown consistent and sustainable growth.
Dairying is one of the expanding branches that came out of the Green Revolution. It is an agro-based industry, expanding very fast throughout the world. A decade ago only 5 per cent of the milk produces came into the dairies, whereas today, it is 10 per cent and it is increasing. Recent report by the Ministry of Agriculture reveals that the Dairy industry has the potential to offer about 4.2 crore jobs per year. The demand for milk products would increase as a result of increase in national GDP. In order to meet the demand, it is essential to have a consistent increase in milk production, which will be possible on successful implementation of “Operation Flood” and evolution or new animal breed.

India has become the largest producer of milk in the world with an annual yield of 74 million tonnes. This is mainly due to successful implementation of operation flood project. Milk and its products constitute about two thirds of the value of total output of the livestock sector. It is also the single largest contributor in the agriculture sector to the national GDP.

The dairy sector generating a revenue of about 68,000 crores, accounts for about 8 per cent of the GDP and 25 per cent of the agricultural GDP. Interestingly, over the years, the share of animal husbandry in GDP is rising, while, that of agricultural is on the decline. This amply endorses the growing importance of dairying in Indian economy.
1.2 IMPORTANCE OF DAIRYING

The importance of dairying lies not only in production of milk, but in its capacity to bring about significant changes in the socio-economic structure of rural economy. Its role in employment-generation is well recognized. It has provided numerous small/marginal farmers and agricultural labourers with supplementary employment and a regular source of income. Dairying and its related activities create jobs equivalent to about 25 million a year. The significant role played by the co-operatives in stimulation of dairying has also proved to be an important source of progress.

1.3 HISTORY OF DAIRY DEVELOPMENT

Earlier, the British Government did not bother very much about the development of animal husbandry and dairy in India. However, in 1923, the imperial institute of Animal Husbandry and dairying was established at Banglore by British Government, subsequently numbers of institutes were established by Government in India. The imperial institute was sniffed to Karnal (Haryana State) and later renamed as the Imperial Dairy Research Institute. Presently it is named as National Dairy Research Institute.

After independence in 1947, great attention was given to the different branches of Agriculture including dairying. Government of India decided to increase the milk production by breeding the non descriptive cattle with bulls procured from breeding tracks of established breeds and distribute in areas where cattle were not good. Indian milk production began to rise after the implementation of the operation flood programme since 1970.
The Indian Dairy Industry has acquired substantial growth from Eight Plan onwards, at present India’s milk output has not only placed the industry first in the world, but also represents sustained growth in the availability of milk and milk products. The government implemented four schemes namely Intensive dairy development programme, Strengthening Infrastructure for Quality and Clean Milk Production, Assistance to cooperatives and Dairy/Poultry Venture Capital Fund for the development of dairy sector.

The history of dairy development movement in India is of recent origin. During the pre-independence period this movement was limited to a few pockets of Calcutta, Madras, Bangalore and Gujarat. The most notable of this venture was Anand Co-operative Milk Producers Union Limited (AMUL) of Kaira District, Gujarat. But after the independence, Indian government took great initiative in setting up new dairy co-operatives in every corner of the country. The National Dairy Development Board (NDDB) was set up in 1965 to make the ambitious project a success. Besides, the operation flood project was taken up in 1970 to balance the demand and supply of milk throughout the country and to help the rural people in making additional income by replicating the “ANAND” pattern.

1.3.1 Anand Milk Union Limited (AMUL)

The Aarey Milk Colony was established in 1945 by Bombay Government under Greater Bombay Milk Scheme. During 1946, the first farmers’ integrated dairy co-operatives were established in Kaira District at Anand which later came to be known as Anand Milk Union Limited (AMUL). Thus after independence, both Amul and Greater Bombay Milk Scheme together set a faster pace of dairy development with emphasis on developing techniques of processing and marketing under Indian conditions.
The growing demand for milk in Bombay provided the stimulus for the milk products in Kaira District to increase production and the Kaira District Co-operative Milk Producer Union, popularly known as ‘AMUL’ came into being. Starting with just two milk producer societies with a daily collection of 250 liters in 1948, Amul now has a membership of 3,60,000 farmers handling about 8,50,000 liters and disbursing about Rs.100 crores annually towards the cost of milk supplied by them.

The Anand pattern is a three-tier structure consisting of the producer societies at the village level, which collect the milk from the producer twice daily and pay them. On behalf of its member unions, the federation undertakes the collective marketing of milk and milk products, besides attending to quality control. The role of the government is to supervise, guide, encourage and wherever necessary discipline the erring co-operatives. The Anand pattern thus establishes a direct link between the producers and the consumers.

1.3.2 National Dairy Development Board (NDDB)

The National Dairy Development Board (NDDB) was constituted under the aegis of the Ministry of Agriculture, Government of India in September 1965 under the Societies Registration Act 1860. It was setup to replicate the Anand Pattern dairy co-operatives in the other parts of India in an effort to improve rural incomes by giving the farmers a price for milk based on price in the metropolitan cities. Its Board of Directors including Chairman is nominated by the President of India. The secretary of NDDB is the Chief Executive of the organization who is supported by professionals to carry out the Board’s activities.
It promotes project of general public utility as well as international liaison with other National Dairy Board and international agencies to facilitate the exchange of information for conducting research in the field dairying and animal husbandry. The package of services which the NDDB offers helps in the creation of viable Co-operative Farmers’ Organizations with facilities for procuring, processing and marketing of milk and milk products. The NDDB’s approach towards the modernization of dairying has been well-accepted under India’s various five year plans and the World Bank-aided projects in India and abroad. The Indian dairy industry is thus on the threshold of a new era of quantum jump in milk production, which would totally transform the dairy scenario to the rural masses in terms of higher income, improved amenities and better living.

The establishment of a co-operative structure, which ensures a guaranteed market for the producer acts as an incentive for higher milk production and eliminates intermediaries in the milk trade. Being well organized, the milk producers are able to bargain for a higher price in line with increasing cost of production. But the State Government in their anxiety to protect consumer interests act as a check against steep increases in price.

1.4 DAIRY COOPERATIVES IN INDIA

It was in 1904 when the seed of cooperation was sown in India with the passage of first Cooperative Act. Since then, the cooperative movement has made rapid strides in all fields of socio-economic activities. In the fields of agriculture credit, fertilizer disbursement, sugar production, handloom, etc, the cooperatives have created a strong niche. However, the contribution of cooperatives to India’s dairy industry is enormous. The cooperatives have ushered in milk revolution in the country.
The dairy industry has made India proud in recent times. India is the leading producer of milk in the world. Dairy cooperatives are the backbone of Indian dairy industry. Dairy cooperatives have excelled in their areas of cooperatives. The figures justify this. During the year 1991-92 per capita availability of milk was 178 (gms/day). Today, it is 261 (gms/day) per year. Milk is the country's number one agricultural commodity. The reason for success of dairy cooperatives is empowerment. These cooperatives are not controlled by the government. The farmers own and manage them based upon the needs and demands of the community. The germs of milk revolution were laid down way back in 1946 in a small town called Anand in Western India.

Tired of exploitation by traders and local private dairy, the milk producers organized themselves into village dairy cooperatives. These cooperatives federated into the Kaira Milk Producers Union. Soon it had its first dairy plant. It started producing and marketing milk products under the brand name Amul. Under the charismatic leadership of V. Kurien, the father of milk revolution, the Amul model of cooperatives soon became an example for others to emulate. The government wanted the Amul model to be replicated in other parts of the country. Its own controlled dairy cooperatives had failed. Amul is today the most popular brand of milk.
Operation Flood the world’s dairy development programmes inspired by the Amul model and implemented by National Dairy Development Board- was implemented in three phases in the country between 1970 and 1996. Milk was collected daily by village dairy cooperatives and sent to milk producers' unions who sold it as liquid milk and processed products through their federal marketing cooperatives. The Operation Flood Program has had a tremendous impact. There has been rapid growth in India’s milk production, around 4 to 5 percent annually.

The Operation Flood Programmes has also contributed to the socio-economic development of rural milk producers. It has made the poor less poor. It has also established an effective partnership between farmers and professionals in the dairy industry. The professionals use the latest technologies in the dairy industry, based upon clear-cut assessment of the situation. No doubt dairy cooperatives are the most professionally managed sector of the Indian cooperatives.

The de-licensing of the dairy industry has not threatened dairy cooperatives. They seem to march ahead despite the entry of the private sector and multinationals. Amul has overtaken others in the ice-cream market. Britannia has been forced to withdraw from the liquid milk market in many parts of India. The biggest strength of dairy cooperatives is their labour intensiveness. Cost effectiveness is another important factor. Dairy cooperatives have effectively used the toil of farmers to develop self-reliance. It is unique. The future is indeed bright for dairy cooperatives.
The presence of milk cooperatives all over the country helps to organize the industry and give this sector a distinct advantage. Cooperatives allow for much easier marketing of the end product as compared to other businesses. Cooperatives assure the farmer not only a market for their product but also take care of logistical issues like transportation and containers. The farmer is spared of these costs as well as the cost of putting up a retail outlet. Cooperatives allow for stable selling rate which does not change even when the yield is surplus. Payments are guaranteed to milk producers and ensured within a maximum of 30 days. Cooperatives play an important role by eliminating middlemen and the associated costs.

1.5 SIGNIFICANCE OF THE DAIRY INDUSTRY IN THE INDIAN ECONOMY

Agriculture has always been the backbone of the Indian economy. It provides employment to around 60 per cent of the total work force. Agricultural growth has a direct impact on poverty eradication. The change in the agricultural sector, whether positive or negative, will have a multiplier effect on the entire economy. Besides, the allied sectors like horticulture, animal husbandry, dairy and fisheries have an important role in improving the overall economic conditions of rural India. To maintain the ecological balance, there is need for sustainable and balanced development of agriculture and allied sectors. From the India’s first five year plan onwards, planners have been giving priority to the allied sector for the economic development of the rural sector. Dairy farming is described as a small industry which provides gainful employment opportunities to the rural folk. It comprises about six per cent of the national income.
Dairy industry provides not only full time but also regular income to the rural people. The contribution of livestock in income generation in the rural areas is quite substantial. Livestock contributes about 4.22 per cent to the GDP and agriculture contributes about 16.49 per cent in 2005-06. Dairying is a centuries-old traditional profession for millions of Indian rural households; domesticated animals have been an integral part of the farming systems from time immemorial. Milk contributes more to the national economy than any other farm commodity.

In the context of poverty and malnutrition, milk has a special role to play for its many nutritional advantages as well as providing supplementary income to some 70 million farmers in over 500,000 remote villages. More importantly, the farmers earn an average of 27.3 per cent of their income from dairying, with as high as 53 per cent in the case of landless and as low as 19 per cent in the case of large farmers.

The national income is contributed by many sectors and among them dairy industry occupies an important place. In the agriculture sector, the dairy sector plays a vital role. The dairy sector of India has witnessed some major changes over the last two decades. As a result of concerted efforts towards total dairy development, India’s milk production has nearly trebled. Milk has now become the largest single agricultural commodity with dairy industries estimated at more than Rs. 52,000 crores, a figure which is expected to reach Rs. 88,000 crores per annum by the next century. The milk production of India which has stagnated at around twenty million tonnes for the past twenty years (1980 - 2000), began rising from 2000 onwards and crossed over 50 million tonnes mark in 2002.
In 1996, India attained the status of world leader in milk production. The Indian milk production increased from 21.2 million tonnes in 1968 to 97.01 million tonnes in 2005-06 and 100 million tones in 2007-08 and per capita availability of milk is 241 gm/day in 2005-06. The growth rate of milk production is 6.2 per cent which is higher than that of other countries. The dairy co-operatives market milk in all metro and major cities covering more than 800 towns and cities.

The annual value of milk production in India amounted to about Rs.1,050 billion in 2006-07, and livestock contributed about 27 per cent to the GDP from agriculture. Nearly 70 per cent of livestock is in the hands of small, marginal and landless farmers. Day by day, the share of livestock in the GDP and the export is increasing. The credit for this improvement goes to the farmers, more particularly to the small, marginal farmers and landless labourers.

1.6 CONSTRAINTS IN MILK MARKETING

The dairy sector is characterized by small-scale, scattered, and unorganized milk-animal holders; low productivity; inadequate and inappropriate animal feeding and health care; lack of an assured year-round remunerative producer price for milk; an inadequate basic infrastructure for provision of production inputs and services; an inadequate basic infrastructure for procurement, transportation, processing and marketing of milk; and lack of professional management.

Other important characteristics of the dairy sector are the predominance of mixed crop-livestock farms and the fact that most of the milk animals are fed on crop by-products and residues, which have very low opportunity costs. Additionally, the dairy-development policies and programmes that are followed, including those relating to foreign trade, are not congenial to the promotion of sustainable and equitable dairy development.
Low productivity of milk animals is a serious constraint to dairy development. The productivity of dairy animals could be increased by crossbreeding low-yielding nondescript cows with high-yielding selected indigenous purebreds or suitable exotic breeds in a phased manner. The cattle-breeding policy should not only focus on milk yield but should also provide for the production of good-quality bullocks to meet the draft-power requirements of agriculture. Upgrading nondescript buffalo through selective breeding with high-yielding purebreds such as Murrah, Mehsani or Nili Ravi should be given high priority in all areas where buffalo are well-adapted to the agro-climatic conditions.

India remains grossly primitive compared to its western counterparts. It begins with the largely unregulated sector, which handles the majority of the milk production, providing ample opportunity for malpractice. Some of the common forms of malpractice include false measurements in the selling of milk and adulteration of milk. Another major impediment to an efficient marketing system is the presence of numerous intermediaries, which take advantage of producers’ weakness. In many cases, intermediaries dictate the price by advancing a loan to the milk producers. Producers’ bargaining power is also limited because of perishability and bulkiness of milk. In addition, the lack of proper infrastructure for transportation, distribution, and storage also makes milk procurement difficult.

On the other hand, it will be impossible for most producers to market their milk without the presence of these market intermediaries. The Cooperative Societies Act continues to be restrictive rather than enabling, even though the Anand Pattern milk producers’ co-operatives have emerged as the most stunningly effective institutional model for milk marketing.
Political and bureaucratic interference, delayed payments to the primary producers, and the decision-making power of the administrators over marketing of milk and milk products by the district-level union and the state-level federation also adversely affect the growth of dairy co-operatives. The cooperative laws in general have inhibited the emergence of true leadership, professional management, and democratic functioning of the co-operatives.

1.7 FUTURE CHALLENGES

The Indian dairy industry needs to focus simultaneously on the four-fold challenge of quality, product development, infrastructure-support development, and global marketing. Equally urgent is the need for strategic alliances with some of the leading dairy companies in the world for technical collaboration and marketing tie-ups. Raw-milk handling needs to be upgraded in terms of physico-chemical and microbiological attributes of the milk collected. Better operational efficiencies are needed to improve yield, reduce waste, minimize fat and protein losses during processing, control production costs, save energy, and extend shelf life. The adoption of Good Manufacturing Practices (GMP) would help manufacture milk products that conform to international standards and thus make exports competitive. Restructuring Departments of Animal Husbandry in states, reorienting their mandate from curative to preventive veterinary care, moving delivery of livestock services away from government, progressive privatization of the services, a nation-wide programme for prevention and control of animal epidemics, and creation of disease-free zones will all reduce avoidable production losses, investment risks, and the yield gap; improve output; and will facilitate India’s entry into global product markets, improving the quality and viability of the entire Indian dairy industry.
Restructuring the governments’ legal and regulatory framework, thus liberating the cooperative movement, will enable milk producers to extensively adopt the proven Anand Pattern producers’ cooperative model to manage their assets and business interests. This will help them vertically integrate production, processing, value additions, and marketing of milk and milk products in domestic as well as global markets, converting India’s comparative advantages in dairy production into globally competitive advantages.

1.8 STATEMENT OF THE PROBLEM

In view of the importance of agricultural sector in the national economy and especially of the role of the animal husbandry in the rural economy of India, the need for increasing the production of milk has received quite a lot of attention through operation Flood I, II, and III. India depends more on cows than on buffaloes for its milk production. Though India has achieved a lot in milk production, its per capita consumption is not upto the world average. The milk yield per animal is also not up to the world standard because about 67 per cent of the animals are owned only by the small and marginal farmers. Besides there is lack of sufficient fodder, insufficient high breeding animals and no proper care and management of milch animals.

India has a unique pattern of production, processing and marketing/consumption of milk. Approximately 70 million rural households (primarily, small and marginal farmers and landless labourers) in the country are engaged in milk production. Over 11 million farmers are organized into about 0.1 million village Dairy Co-operative Societies (about 110 farmers per Dairy Co-operative Societies) The cumulative milk production handled by the Dairy Co-operative Societies across the country is about 18 million kg of milk per day.
These co-operatives form part of a national milk grid which links the milk producers throughout India with consumers in more than 700 towns and cities bridging the gaps on account of seasonal and regional variations in the availability of milk. In the organized sector, there are 676 dairy plants in the Co-operative, Private and Government sector registered with the Government of India and the state Governments. The Organized sector (both corporative and private dairy plants) handle about 20 per cent of the marketed milk and the balance is handled by the unorganized sectors.

Of late, a very significant development in rural areas has been the growth of the modern dairy. It is playing an important role in promoting improvement in the quality of rural life by generating additional income for a very large number of farmers, most of whom are small or marginal, as well as by supplying a nutritious item of food to the people, both in rural and urban areas. By now, modern dairy development covers about 22 States and the Union Territories in India and is poised to extend to the remaining few of these in the country.

The dairy industry in India provides regular employment to 9.9 million people in the principal status and 8.8 million people in subsidiary status, which together comprises 5.5 per cent of the total workforce. It now accounts for 25 per cent of the Agriculture output. India possesses over 16 per cent of world cattle population. Among the milch animals some 57 per cent of buffalo population accounts for only 14.20 per cent of world milk production. The profit from dairy farming is very important from the employment and national income point of view. The profit from it is based on the cost and returns of milk production.
Milk production is based on the type of the milch animal. Buffaloes yield more milk than the cows and the returns on investment are very high because of their high yield and lactation period. The returns from the buffaloes are greater than the returns from the cows.

Dairy farming and agriculture have been inseparable parts of man’s life in rural Tamil Nadu. Dairying therefore, generates additional income to the rural people. The cow or buffalo is fed with the low grade surplus by-products of the farm and about 50% of the income of the village is from milk. In Tamil Nadu, the per capita availability of milk has increased from 164 gm/day during the year 1997-98 to 232 gm/day during 2007-08 which constitutes nearly 140 per cent. Tamil Nadu stands at 4th position in India in the milk procurement through cooperatives. There is ample scope for increasing production of milk in Tamil Nadu. Efforts are also being made to improve infrastructure facilities in the state to handle more milk to be procured through Cooperative societies.

With the increasing pressure on land, agriculture alone cannot provide gainful employment to all in the rural areas in Tamil Nadu. Therefore allied activities like animal husbandry and dairying have to be viewed as effective instruments of social change for supplementing the income and providing employment to weaker sections of people in rural areas.

As the state of Tamil Nadu is characterized by considerable heterogeneity in agro climate, resource endowments and economic performance, the production function is here carried out at the district level. Of all the districts in Tamil Nadu, Madurai district is one of the frontline districts in the production of milk. Therefore, Madurai district has been selected for the study.
Madurai district is basically agro based and agriculture is the main occupation of the people. It is situated on the banks of the River Vagai. It offers vast scope for dairy farming, which is spearheaded by the Madurai District Co-operative Milk Producers’ Union Ltd, which is popularly known as Madurai Aavin one of the largest dairies in the southern part of Tamilnadu.

There are several studies relating to production and marketing of milk. But no single study has made a comparative analysis of cows and buffaloes in terms of cost and returns of milk production. It is necessary to study the comparative economics of milk production of cows and buffaloes so as to increase milk production.

Hence, the present study is undertaken to analyze and compare the cost and returns of milk production and the constraints faced by the producer and the marketer of milk in Madurai district.

1.9 OBJECTIVES OF THE STUDY

The specific objectives of the study are;

1. To examine the growth and development of Indian dairy industry.

2. To review the structure and functions of the Madurai District Co-operative Milk Producers’ Union Ltd,

3. To estimate the cost and returns structure of milk production between the cows and buffaloes.

4. To analyze the existing distribution and marketing system of Madurai District Co-operative Milk Producers’ Union Ltd,

5. To study the constraints faced by the milk producers and the Madurai District Co-operative Milk Producers’ Union Ltd,

6. To offer suitable solutions to overcome the identified problems.
1.10 PERIOD OF THE STUDY

The secondary data were collected from the union for a period of five years from 2004-05 to 2008-09. The primary data from the sample members of the sample societies were collected in the year 2008 – 09.

1.11 HYPOTHESES

There is no significant association between average milk yield of cow and buffalo and component of variable costs.

There is no significant difference between opinion of the respondents about the reasons for selecting milk societies and their individual demographic variables, such as age, marital status, family size, educational status, income, herd strength and landholding pattern of the respondents.

There is no significant difference between perception of the respondents about the constraints in production and the marketing of milk and individual demographic variables.

1.12 METHODOLOGY

1.12.1 COLLECTION OF DATA

The data were collected from both primary and secondary sources. The primary data were collected from the farmer members, the milk societies and the milk union with the help of a structured Interview Schedule.

The objectives of the study were clearly explained to the respondents in order to solicit their responses and co-operation. The data relating to number of animals, the lactation period, details of yield, value of yield, cost structure of milk production, procurement price, constraints in production, and channels of distribution were collected from the sample respondents.
The data relating to the milk societies and union were collected directly from the officials of Madurai Milk Producers’ Union. A comprehensive, pre-tested schedule was used to collect primary data through the personal interview method.

The secondary data were collected from the Madurai District Co-operative Milk Producers’ Union Ltd. The source of data from the union includes records from different sections and audited annual reports. Apart from these, necessary information has been collected from various books, journals, published articles and the World Wide Web.

1.12.2 SAMPLING DESIGN

The multi-stage random sampling technique was adopted. The operational areas covered by the Madurai District Co-operative Milk Producers’ Union Ltd, are Madurai and Theni district. The total number of the Milk Producer Co-operative Societies functioning in Madurai district are 484 and in Theni district 369. Of which, five societies of Madurai district namely Melur, Alanganallur, Palamedu, Usilampatti and Sedapatti and five societies of Theni district namely Andipatti, Bodi, Versanadu, Periyakulum, and Thandamanur were selected for the sample study on the basis of the highest volume of milk procurement.

The next stage was the selection of the members from the sample dairy cooperative societies. For the sampling purpose, only those who supplied milk to the society at the time of the study were alone considered.

The number of members registered with the sample societies in Madurai district are 54 in Melur, 72 in Alanganallur, 92 in Palameu, 112 in Usilampatti, 84 in Sedapatti and the number of members in the sample societies in Theni district are 51 in Andipatti, 57 in Bodi, 64 in Versanadu, 83 in Periyakulum, and 48 in Thandamanur.
Out of the 717 registered members of the societies, 30 per cent of the respondents were selected from each society with the total members being 215. The universe and sample size is given below:

**TABLE**

**SAMPLE SIZE**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of the MPCS</th>
<th>No. of members</th>
<th>Sample (30%)</th>
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</thead>
<tbody>
<tr>
<td>Madurai District</td>
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</tr>
<tr>
<td>01</td>
<td>Melur</td>
<td>54</td>
<td>16</td>
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<tr>
<td>02</td>
<td>Alanganallur</td>
<td>72</td>
<td>22</td>
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<tr>
<td>03</td>
<td>Palamedu</td>
<td>92</td>
<td>28</td>
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<tr>
<td>04</td>
<td>Usilampatti</td>
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<td>34</td>
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<td>05</td>
<td>Sedapatti</td>
<td>84</td>
<td>25</td>
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<tr>
<td>Theni District</td>
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<td>Andipatti</td>
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<tr>
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<td>03</td>
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<td>19</td>
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<td>04</td>
<td>Periyakulam</td>
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<td>25</td>
</tr>
<tr>
<td>05</td>
<td>Thandamanur</td>
<td>48</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>717</strong></td>
<td><strong>215</strong></td>
</tr>
</tbody>
</table>

1.12.3 **TOOLS USED IN THIS STUDY:**

The simple average, Trend value, compound annual growth rate, Chi-Square test, t-test, and the Garrett Ranking Technique were the statistical techniques used in the study to analyze the data.

1.13 **LIMITATIONS OF THE STUDY**

1. There was a great hardship and difficulty faced by the researcher in collecting the required data from the union as the various completed account statements were not made available in time. The collection of data consumed more time than stipulated. Therefore the year 2009-10 data were not included in this study.

2. The study covers only the registered members of the milk cooperative societies and not the non-members.
3. The by-products of the milk which are marketed by the Union are not considered in this study.

4. This study is confined to the composite Madurai and Thenai Districts and is applicable only to areas with similar agro-climatic conditions.

5. The study is carried out only on the Madurai District Co-operative Milk Producers' Union Ltd., of Tamil Nadu. Thus, its findings cannot be generalized.

1.14 CHAPTER ARRANGEMENT

This report is arranged and presented logically in seven chapters as follows:

1. Chapter I describes the empirical aspects of the study, including the objectives, the methodology used to collect data, the sample parameters and limitations.

2. Chapter II gives the review of the earlier studies relating to production and marketing of milk.

3. Chapter III presents a brief profile of the Indian Dairy Scenario and the growth and development of the Indian dairy industry.

4. Chapter IV analyzes the cost and returns structure of the cows and buffaloes of the dairy farming and the break-even output of dairy farming for cow and buffaloes.

5. Chapter V discusses the existing channels of distribution and marketing system of the study unit.

6. Chapter VI analyzes the constraints faced by the milk producers and the milk co-operative societies and the Union.

7. Chapter VII presents the summary of the findings along with the conclusion and suggestions.