Chapter I

INTRODUCTION

1.1. Operation Flood in Kerala

1.2. Statement of the Problem

1.3. Significance of the Study

1.4. Scope of the Study

1.5. Earlier Studies

1.6. Objectives of the Study

1.7. Hypotheses

1.8. Research Design and Methodology

  1.8.1. Sampling Design

  1.8.2. Collection of Data

  1.8.3. Tools of Analysis

1.9. Limitations of the Study

1.10. Chapter-wise Information
Operation Flood Program, a dairy development project of the Government of India implemented throughout India through co-operative form of organization under the headship of National Dairy Development Board (NDDB), is considered the world’s largest dairy development program. It was launched with the aim of creating a virtual flood of naturally produced milk in India. Impressed with the immense success of the dairy co-operatives in the district of Anand in Gujarat, the Government of India formed the National Dairy Development Board (NDDB) to replicate the Anand Pattern Dairy Co-operative Societies (APCOS) throughout the country to increase the pace of dairy development in the country through the co-operative sector. The NDDB launched this project on July 1, 1970 with the aid of the World Bank.

The basic features of Operation Flood Program are organizing milk producers into co-operatives, eliminating middlemen, collecting milk in the village itself by the producers’ co-operatives, making prompt payment for the milk supplied after testing its quality and arranging for transport of the liquid milk after pasteurization to major consuming centers. It also includes converting the surplus milk, if any, to skimmed milk powder which could be recombined into liquid milk when there is excess demand, thus assuring the producers of a good uniform price all the year round. Providing veterinary care to the cattle, helping producers to increase their milk yields by improving the production of fodder and supply of quality feeds as well as providing facilities for crossbreeding through artificial insemination are also the features of OF. In the OF program, all these activities are implemented through the co-operative organization of milk producers.

Through Operation Flood Program a new industrial activity has made its appearance on the rural scene, creating technological consciousness as well as awareness of the benefits of collective organization through the dairy co-operatives. Some 75% of the OF beneficiaries are landless, marginal and small farmers. For them dairy income is often their only regular cash flow and they created miracles in the dairy sector as Dr. Kurien\(^1\) pointed out. According to him, our bottom line is our people. Value for us is the quality of the lakhs of farm
families. They are the ones who created the first miracle of Indian dairying – transforming the stagnant industry into one poised to take on the world. They will also create the second miracle – transforming India into the world’s leading dairy nation.

Thus dairying has been transformed into a core organized economic activity in rural areas, by bringing all dairy farmers together, through the formation of dairy co-operatives all over India under the OF Program. Rightly, OF is lauded as quite possibly India’s largest rural development project as well as the world’s biggest dairy development program.

This massive dairy development program is implemented throughout India in different phases as OF I, OF II and OF III. Realizing that such an integrated program of this magnitude could help in the development of dairy farmers and dairy industry in Kerala, dairy planners in the State took the decision to become a part of this massive program and Kerala was included in the Operation Flood Program Phase II.

1.1. Operation Flood in Kerala

With the aim of implementing OF II in Kerala, the Kerala Co-operative Milk Marketing Federation Limited (KCMMF) was registered in the year 1980 under the Kerala Co-operative Societies Act 1969. The KCMMF aims at setting up milk producers’ co-operative societies at the village level for providing production enhancement inputs, procurement, processing and marketing of milk and milk products. These village societies are known as APCOS (Anand Pattern Co-operative Societies). The APCOS of a few revenue districts come under a regional union and these unions are affiliated to the apex body – the federation. Thus, in Kerala, it is a three-tier system consisting of the APCOS, two unions – the Trivandrum Regional Co-operative Milk Producers’ Union (TRCMPU) to cover the southern parts of the State and the Ernakulam Regional Co-operative Milk Producers’ Union (ERCMPU) to cover the central parts of the State. The
organization and development of dairy farmers and dairy sector of the northern region of the State was taken up with assistance from the Swiss Agency for Development and Co-operation from 1987 onwards. The project named North Kerala Dairy Project (NKDP) was structured on the line of Operation Flood and was implemented by KCMMF. The Malabar Regional Co-operative Milk Producers’ Union comprising primary producers’ co-operatives from the northern region was established in 1989.

The dairy sector in Kerala has reached a laudable position due to the implementation of the OF program. During the last three decades, the sector witnessed uninterrupted growth in animal population, milk production, processing and marketing. This was made possible by the massive organization of milk producers under the co-operative form of business organization. This co-operative structure in the State consisting of 2176 APCOS with a membership of 5,76,267 milk producers, three regional Unions and the Federation, with processing facilities all over the State, procured 4,81,934 liters of milk per day and marketed 5,87,567 liters of milk per day during 1998-99. The structure also produces and markets many milk products like ghee, butter, ice cream etc, and above all, it provides the necessary inputs of dairy farming to the farmers in the villages.

1.2. Statement of the Problem

The Operation Flood Program with the World Bank aid officially closed in March 1996, with the end of its Phase III. However, the program of dairy development through co-operative structure is going on but the dairy co-operatives are today at a crossroads in their development. The major factor affecting the future of the co-operatives is the liberalization policy adopted by the Government. Delicensing of the dairy industry and the consequent entry of private sector into the dairy scene with private plants dramatically changed the competitive environment. At risk is the continued investment in increasing milk production through the provision of quality inputs and the commitment to ensure maximum
returns to producers by providing quality milk and milk products to consumers at affordable price through producers’ co-operatives.

To meet the challenges the dairy co-operative sector faces, whether from competitors or from environment, the need is to consolidate its achievements during the past and to improve the productivity and efficiency of the co-operative dairy sector and its financial and institutional base for its long-term sustainability.

The main focus of the Operation Flood Phase III was on achieving financial viability of the dairy co-operatives. It focused on strengthening the institutional management aspects of dairy co-operatives at its various levels to establish financially strong farmer-owned and managed organizations. In the dairy co-operatives, the primary dairy co-operative societies at the village level are the most important ones. As Dr. Amrita Patel puts it, the growth of the unions and the entire structure depend on the performance of the society. As these become vibrant local businesses, the existing infrastructure will become an overwhelming competitive advantage for the co-operatives.

In this context a study of the performance, both financial and physical, of the primary producers’ dairy co-operatives at the village level - that is the APCOS, the three regional Unions and the State Federation is quite relevant and useful. A study of the dairying practices and problems of dairy farmers will provide the necessary information to optimize the functioning of the dairy co-operatives.

1.3. Significance of the Study

In Indian dairying, three competitive institutional structures are operating at present. They are the co-operatives, the government departments and the private sector. The choice that the society makes about the institutional structure has a profound impact on the way sectoral economies evolve. In India’s dairy economy, which provides enormous employment and livelihood for the poor, the choice of institution is even more critical. The first two institutional structures, that is co-operatives and government departments, when functioning efficiently, lead to
social and economic gains but lose out on global competitiveness. The third one may assure rapid growth and modernization but sacrifice employment and livelihood. Howsoever noble and lofty the co-operative ideal may be, what good are they to society if, in their actual working, they optimize inefficiency, incompetence and lethargy? This is a legitimate question, which is at the very root of the question of institutional choice. This means, if the co-operatives are efficient and competitive, the choice is clearly in favor of co-operatives. This study is important because it analyses the efficiency of management of co-operatives in the dairy sector. It evaluates the financial and managerial viability of co-operatives in the dairy sector to ascertain whether they are competent enough to take up future challenges in this sector especially in the present scenario of economic liberalization and opening up of industries to world competition.

In the area of production enhancement and technical input service in the dairy sector, there is considerable flux and ambiguity. In the 1950s and the 60s, many Anand-pattern co-operatives established efficient and subsidized veterinary health covers as part of their technical input programs as a superior alternative to the Government Animal Husbandry Department. Recently, in many states, over 70-80 per cent of the department budgets were used up for staff salary and jeeps, with very little money available for providing technical input service to the farmers. In recent years, while government veterinary service had gone from bad to worse, co-operatives in many states improved their routine, subsidized veterinary service. In this context, this study is important as it examines the level of technical inputs provided by the co-operatives and the efficiency and effectiveness in the management of technical inputs both by the societies and by farmers. It also examines the viability and capacity of the co-operatives in the sector to take up the distribution of dairy inputs effectively to the farmers. The study will also help the government to take policy decisions on the use of co-operatives for future distribution of subsidies and assistance to the dairy farmers.

Poor productivity of Indian cattle and their excessive population have been the central concern of animal husbandry experts throughout the last century. The
productivity and profitability of this activity challenge the long-term sustainability of dairy farming in the country. This study is significant as it evaluates the profitability of the activity and searches for reasons and suggestions that will increase both productivity and profitability. This may help the co-operatives in the sector to streamline their operation according to the needs of the dairy farmers and the dairy farming activity. It may also help the Government to formulate policies needed for the development of the dairy sector through co-operative form of business organization, which is the best choice of institution from the social and economic point of view, especially to the poor farmers in the villages.

1.4. Scope of the Study

The scope of the study extends to dairy farmers, primary dairy societies, regional unions and the Federation. At the farmers’ level, the study is an attempt to evaluate the profitability of dairy farming activity and to find out the problems faced by dairy farmers in dairy farming. It concentrates on the cost and revenue aspects of dairy farming and emphasis is given to the problem of availability of dairy inputs through co-operative structure.

An attempt is made in the study to evaluate the financial stability and performance of APCOS by looking into its profitability, efficiency, liquidity and solvency. An effort is also made to assess its performance in terms of milk collection and input supply to its farmer members.

The effort to assess the viability of the Unions and Federation is made by an analysis of the financial and physical performance of these institutions. The profitability, turnover, liquidity and solvency of these institutions were taken as the criteria for evaluating their financial performance and the growth of the number of societies, number of members, quantity of milk procured and marketed were taken to evaluate their physical performance.

An attempt is also made to assess the performance of the dairy co-operative structure in the State as a whole, coming under the OF Program, in providing
inputs to dairy farmers at reasonable cost through various dairy development programs.

1.5. Earlier Studies

Different individuals, institutions and agencies have made studies on various aspects of the dairy sector and the impact of Operation Flood Program on dairy sector and on the dairy farmers. A review of some of the literature would be helpful in enlightening the present status of the dairy sector and the effect of Operation Flood Program on the sector and on the dairy farmers. Here, an attempt is made to review the literature on dairy development and Operation Flood.

Dr. V. Kurien\textsuperscript{6} (1977), in a paper, explains the difficulties encountered in the implementation of OF Program and states the importance of shaping the institutional structure according to the farmers’ expressed needs. He stresses the importance of rural modernization for sustained agricultural development because it is necessary to keep the enterprising young people in the rural area.

A study made on the impact of Operation Flood Phase I, by Katar Singh and Mukunda Das\textsuperscript{7} (1984), by comparing co-operative villages (villages having Anand Pattern co-operative dairy societies) and control villages (villages without Anand Pattern co-operative dairy societies), revealed that Operation Flood Phase I had a positive impact on all the variables selected for the study. The average milk yield per milch animal, the average milk production per household, the average price received by the producers, the average employment in dairying, the average per capita protein intake and receptivity to various innovations introduced under the Program were all marked higher in the co-operative villages than in the control villages. The landless households in the co-operative villages were better off than their counterparts in the control villages in terms of most of the parameters. The expectant and nursing mothers and the children aged 2-6 years in the co-operative villages got a greater share of milk and milk products than their counterparts in the control villages.
A study on the growth of milk producers’ co-operatives in the State of Rajasthan and its impact on the milk producers was made by M.M. Jain (1986). This study examined various policies and programs of milk co-operatives with respect to enhancement of milk production and adoption of dairy farming by the weaker section of the rural community. The study finds that the milk co-operatives in Rajasthan made remarkable achievement in Rajasthan during the seventies in creating processing and chilling facilities in the co-operative sector and the milk co-operatives were fully adapted to provide all technical inputs to the farmers at their doors on a no-profit-no-loss basis.

Surendar Singh (1986) highlights some of the important implications of the Operation Flood strategy. The study concentrated mainly on the issues of material balances and the choice of area of operation. The study estimates the requirement and availability of feed and fodder for milch animals in India and came to the conclusion that there is a severe shortage of livestock feeds and fodder in the country.

M.S. Bedi (1987) made a study to evaluate the following two aspects of dairy development program in Punjab:

1. Whether the target groups have been able to improve their economic condition through dairying; and
2. Whether a favorable environment has been created to ensure proper incentives for milk production resulting in the satisfaction of primary milk producers.

The stress in the study was on the evaluation of institutional structure to know whether it creates an environment favorable for fostering a marketing oriented dairy development program.

Dr. P. Govindankutty (1988) explains the various developmental programs implemented in the dairy sector by the Animal Husbandry Department of Kerala. He claims that, under the Special Livestock Breeding Program, the
weaker section of farmers are provided with cattle feed on subsidized rates to raise the crossbred calves. Popularization of improved varieties of fodder is achieved through educating the farmers and providing inputs through the network of institutions working in the dairy sector.

Dr. P.P. Krishna Iyer\(^{12}\) (1988) narrates the necessity of giving assistance to the weaker section of the farmers in providing balanced feed and service inputs to make their crossbred female calves attain early maturity and high yield. According to him a good number of crossbreed female calves born do not reach maturity at an early age, resulting in wastage of the genetic potential put in at a considerable cost. A sizeable number of such calves is with the weaker section, small farmers, marginal farmers and agricultural laborers. It has been the experience that unless these crossbred female calves are reared under high plane of nutrition and managed scientifically the desired production could not be obtained. Thus, it has become necessary to assist the weaker section of farmers to rear their crossbred female calves to the production stage, so that the calves attain maturity at an earlier stage.

Dr. T.K. Jose\(^{13}\) (1988), in his paper, examines the various reasons of low productivity in animals and suggests various measures to solve the problem. According to his study, some of the major areas where attention is required to make the cattle farming activity a viable one are:

1. Continued monitoring of the breed improvement program using the latest technologies like progeny testing, embryo transfer, etc.
2. Continued education of the dairy farmers, motivating them for scientific dairy practices adapted to the local situation. Such practices can reduce the feed cost, increase in lifetime production of the animals and bring in more profit.
3. Along with the improvement in the production of the animals, it is also necessary to eliminate uneconomic stock. Animals which are low yielder
and which are having serious problems in fertility have to be regularly eliminated from the population.

4. The system of record keeping should be encouraged for taking selection decision even at the farmers’ level.

5. The number of AI centers has to be increased to give better coverage in artificial insemination.

K.P.P. Kurup\(^{14}\) (1988) evaluates the problem of fodder shortage and its effect on milk production cost. The major reasons pointed out for the poor development of fodder resources are lack of awareness of the economic advantages of fodder cultivation, shortage of land and expensive labor. He states that at certain situations, cultivation of fodder is more remunerative than paddy or tapioca cultivation. More than 80% of the total cost involved in fodder production is labor, which can very well be contributed by the farmer and his family. Of the total cost of production of milk, the cost of feed is about 70% and, therefore, the fodder produced by the farmer can give better economic stability to the whole activity.

Dr. P. Ramachandran\(^{15}\) (1988), in his study, makes mention of the various scientifically proved agricultural byproducts that can be given to animals, which will not only reduce the cost of feeding but also increase the milk yield. He presents two low cost mixtures of cattle feed with agricultural byproducts, which provide all the proteins and vitamins required by the animals.

According to a study conducted by the National Council of Applied Economic Research\(^{16}\) (1990) throughout India, including Kerala, under the directorship of Dr. S. Bhinde and the leadership of Mr. S.K. Chaudhari, critical dairy farming inputs like veterinary health care, AI and milk collection are the areas where large proportion of milch animal owning households reported improvement. Notwithstanding the general appreciation of the overall improvement in veterinary services, a significant section of the members would expect further improvement in the availability of critical inputs such as veterinary
health care, cattle feed concentrates, other feeds, fodder and finance through their Dairy Co-operative Societies.

The assessment report on the project investment proposal of the Trivandrum Regional Co-operative Milk Producers’ Union (1990) identifies specific areas where management attention is required in the operation of the Union. The study team of the National Dairy Development Board suggests that proper costing, budgeting and management of the information system should be introduced. The budget, as per the report, should be performance oriented. It should be used for monitoring the actuals and the variances. The accounting system should be in such a way that it allows for quick extraction of management information. Regular management information reporting, in both the physical aspect and financial aspect, is needed for efficient performance of the Union.

Dr. Suresh Balakrishnan (1990) estimated the milk flow in the Malabar region and found that there is both demand and marketable surplus in that area. His study reveals that the animal productivity varies significantly across districts in the northern region. The demand and supply estimate of the region indicates that during the flush season there will be an excess supply of about seventeen thousand liters of milk per day against the demand and during the lean season there is a shortage of supply to the tune of about fourteen thousand liters per day. The projected milk flow for the future indicates that milk surpluses may become available for product manufacture in the northern region.

A study conducted by P.S. George, K.N. Nair, B. Trebel, N.R. Unnithan and S. Walty (1990) reveals major constraints on the potential of the dairy sector in Kerala. They identified some of the important areas where specific policy initiatives are felt to be necessary. The major evaluation in the study was in the input side of the dairy farming like AI, knowledge and awareness of farmers on reproductive management, breed and type of cattle, animal health care, feeding the animal, fodder cultivation, supply and quality of compounded cattle feed. In all the suggestions given in the study, to solve the problems on the input side of the
farming activity, they recommend the active participation of APCOS, for its effective implementation and success. They state that to every extent possible, milk procurement should be linked with input supply and extension services. However, when such linkages have been established, care should be taken to ensure that services are also available to milk producers not selling their milk through the organized sector.

J.J. Baxi\(^{20}\) (1991) narrates the importance of marketing in growth and viability of organizations in the dairy industry. According to him “the organizations in the dairy sector are at the fag end of the ‘Production Era’ with one unsteady foot in the ‘Marketing Era’. However, the process of transition is not yet visible except in a few cases. Most organizations who call themselves marketing organizations still give far greater attention to ‘selling’ than ‘marketing’.”

R.P. Aneja\(^{21}\) (1991) draws attention to the opportunities and challenges in the dairy sector. One of the disturbing features of Indian dairying has been the low realization for liquid milk. As a result, the efforts under the Government programs and of the co-operatives, which have been generally directed to meet the liquid milk requirements, have not been a paying proposition. Naturally, the private sector has concentrated on high margin products to ensure better returns on their investment. It is hoped that the delicensing policy announced by the Government will free the public sector and co-operative dairies from their commitment to supply liquid milk at low prices. This will then help in revising the present position wherein the price realizations are much higher for milk products than liquid milk.

Amrita Patel\(^{22}\) (1991) emphasizes the importance of institutional management aspect of the dairy co-operatives in the paper published in Dairying in India. According to the paper, Operation Flood Phase III places particular emphasis on promoting measures to consolidate the achievements gained during the earlier phases by improving the productivity and efficiency of the co-operative dairy sector and its institutional base for its long term sustainability. The investment in the Operation Flood III project would specially focus on
strengthening the institutional management aspect of the dairy co-operatives at its various levels in order to establish financially strong farmer owned and managed organizations.

While examining the viability of milk production, Prabhat Sinh Chauhan\textsuperscript{23} (1991) states that, if the animal-production unit available with the farmer has to be fully exploited for his benefit through an efficient economic operation, a support system befitting the environment will need to be made available. He points out that the input-output ratio is going to be favorable to the farmer only when his efforts are backed by a package of services made available to him almost at no cost.

The Kerala Co-operative Milk Marketing Federation\textsuperscript{24} (1991), in a study, evaluated the trend in milk procurement in KCMMF and suggested incentive schemes for increasing milk supply to the societies. As per the scheme, a fixed amount per extra liter of milk supplied compared to a base of the same period of the previous year could be paid to the society by the Union. This amount should feature under a separate head in the accounts of the society and, in turn, should be paid to all the producers at regular intervals as price incentives. The study finds that the inputs offered by the Unions, namely the veterinary care and cattle feed, are well appreciated for their quality. However, there is a demand for greater coverage.

A study made in the Trivandrum Regional Co-operative Milk Producers' Union Ltd by Prof. Sharad Sarin\textsuperscript{25} (1991) evaluates the issues related to milk markets and marketing, primary societies and milk procurement, financial issues and performance and the issues related to human resources and their management in the Union. The study makes an analysis of the past performance as well as a situation analysis and a SWOPT analysis for formulating a long-term corporate plan for the Union. The assessment of financial management in the Union during the period of study shows that even though there is sufficient working fund, the management of financial resources is poor. In the management of societies by the
Procurement and Input Department, the study states that the management of input, except veterinary service, is inadequate or poor.

The assessment report on investment proposals of Ernakulam Regional Co-operative Milk Producers’ Union Ltd\textsuperscript{26}, (1992) points out that about 94\% of the Dairy Co-operative Societies (DCS) were functional as on March 1991 and about 72\% of the DCS procured more than 100 liters of milk per day on average. However, the Union, during this period, procured only 37\% of the marketable surplus milk from the DCS villages and so there is good scope to increase milk procurement. It also points out that there is high deficit on technical input programs of the Union. The milk procurement price in Kerala is very high and, therefore, the milk union finds it difficult to compete with other agencies for marketing its products.

Prof. S.N. Mishra and Dr. R.K. Sharma\textsuperscript{27} (1992) explain the need for a much larger investment in the dairy sector. They give a rough estimate of both demand and supply of milk by 2002 AD. According to them, by 2002 AD, the economic demand, based on purchasing power, of milk for the country will be 98 million tonnes, and the nutritional requirement of the population at 250 gm per capita per day will be 91 million tonnes. Neither is likely to be realized, given the expected growth rate of four per cent in total milk production. They also state that the livestock sector has not received adequate attention in respect of information and research.

Prof. A. Vaidyanathan\textsuperscript{28} (1992), in his paper, identified the major issues that are hampering the growth of dairying in the country as inadequacies of feed, technical inputs and basic data. He states that critics have rightly stressed that there have been hardly any surveys to assess the impact of ‘Operation Flood’ on total milk output, milch animal productivity, feed-yield relation, marketing practices, and distribution of animals and output by size class of producers in project areas.
Dr. R.P. Aneja\textsuperscript{29} (1992), in another paper, explains the positive role of pricing mechanism and marketing strategy in the development of dairy farming. According to the paper, the two-axis price system now adopted, that is pricing system giving importance to solids-not-fat (SNF) and fat, overcomes the ill effect of all other pricing systems. In the marketing strategy, the paper states that the National Milk Grid, linking various milk surplus areas to deficit areas in the country through bulk and economic mode of conservation and transportation, has been instrumental in achieving a phenomenal progress on the marketing front. One reason for the boosted supply of milk is the capacity to utilize surplus milk in flush season by conversion to products like milk powder and the higher priced milk byproducts. In fact, the traditional milk products have a much stronger command over the product market than the western dairy products like table butter and cheese.

The world scenario in dairying is explained by Dr. H. Schelhaas\textsuperscript{30} (1992) by giving ten mega trends in the world dairying. The paper predicts a boost in the dairy market in the third world countries due to the structural change in food market such as a decline in the number of multiple person households, a marked rise in single and two-person households, major change in age distribution, growing automation in the home, rising incomes, acceptance of quality above price, disappearance of traditional eating habits, growing extramural consumption, a stronger position of the international brand names and more attention to themes of health, naturalness and freshness.

S.V. Mony\textsuperscript{31} (1992) gives a brief explanation of the insurance facilities available in the dairy sector. According to him, livestock insurance, apart from providing direct financial indemnity to the insured farmer, also serves a larger function. It provides the financial support to the credit mobilizing and disbursing agencies and thereby enables the smooth functioning of the credit support mechanism, which is so essential for all development efforts.
The Price Spread Study conducted by the Agricultural Division of the Kerala State Planning Board\textsuperscript{32} (1995) on the dairy co-operative sector selected the following as study objectives:

1. Economic base of the dairy farmer
2. Organization of production and cost
3. Marketing channels and methods
4. Price spread and
5. Milk Co-operatives and their role.

Even though the scope of the study was much wider, they limited the depth of the study by covering only 30 dairy farmers and 5 dairy societies in the Trivandrum region. The study reveals that dairying is being stabilized as a subsidiary occupation in the rural households where agriculture is the main occupation and the average income generated per animal is the highest in the agricultural households. The study also points out that the dairy activity is on the path of commercialization.

The Centre for Management Development\textsuperscript{33} (1996) conducted a study on Kerala Co-operative Milk Marketing Federation covering operational aspects of marketing, procurement and inputs, organizational and financial aspects. The consumer survey conducted in the study shows that consumers are not very sensitive to price. That is, the total demand is less price elastic. Price is not the reason for most consumers preferring a source of supply. In addition, a section of consumers are willing to pay higher price for value added products.

A Strategic Plan Document prepared by KCMMF\textsuperscript{34} (1997) covers in depth the problems and gaps in the management of the Federation and Unions in all functional areas. The document identified the following key gaps in the function of procurement and input.

1. Unscientific planning and under capacity utilization of cattle feed plants.
2. Inadequate working capital for purchase of raw material during harvest season.
3. Opening of large number of private outlets to sell cattle feeds forgoing the basic principles of OF program.
4. No system to determine the cost of milk production.
5. Not taking lead to coordinate the working of different agencies in the field of dairying.
6. Liaison work with the Government so as to involve in the process of planning and formulation of schemes for AHD/DDD/KLDB aiming for a sustained growth in the field of dairying, considering the need of producers and the gap to achieve set targets.
7. Liaison work with Government for adoption of policy decision favorable to KCMMF and Regional Unions.
8. Arranging to import feedstuffs to make up the energy deficit of cattle.
10. Deficit management of milk and milk products.
11. Inadequate facility in the training center to impart training to trainers.
12. Total quality improvement of milk - Formulation of strategies.
13. Inadequate trained manpower to handle the area specified above.

The overall dairy scenario, cattle productivity, role of organized sector in dairying, India's prospects and agribusiness opportunities in the dairy sector are briefly enlightened by Dr. R.P. Aneja and B.P.S. Puri\textsuperscript{35} (1997). According to them, the first extensive and systematic crossbreeding program, based on frozen semen, was initiated in 1963 in northern Kerala under the bilateral Indo-Swiss Project. This project, coupled with the efforts of the State Animal Husbandry Department and the co-operative network, has resulted in the population of crossbred cows exceeding that of country type cows. The only other state with this distinction is Punjab, the heartland of the buffalo. The success of this program has led to similar projects in other parts of the country.
Dr. V. Kurien\textsuperscript{36} (1997), in his paper, looks into the role of Government and the domestic market in transforming India into the world’s leading dairy Nation. He opines that before we turn to the lucrative export market, we must ensure that we have met, and can continue to meet our own population’s expanding need for quality milk and milk products. There is still much room for innovation in producing our own Indian Sweets as well as in manufacturing curds, paneer and other products of a quality, and at a price that meets the needs of our own consumer.

The need for structural change in dairy industry, the need of modern technology and managerial innovation due to the delicensing of industry and economic liberalization process are narrated in the paper presented by Babu Jacob\textsuperscript{37} (1997). Dr. Amrita Patel\textsuperscript{38} (1997), in her paper, explains the basic strategies to be adopted, in the present scenario of liberalization at the Union level for strengthening the dairy co-operative movement. According to her, the growth of the Unions and of the entire structure depends on the performance of the society at the village level. She envisages a fourth phase of OF Program with the objective of strengthening the co-operatives so that they can thrive in the new competitive environment, while at the same time strengthen its democratic values.

Prof. Tushaar Shah, Vishwa Ballabh, B. Pratima and Jayesh Talati\textsuperscript{39} (1997) examine the comparative management performance of co-operative and private commercial dairies. According to them, an important reason why the Kaira Union acquired greater significance than traditional dairy co-operatives and private dairies was that it not only organized milk producers but also tuned in with the process of modernization and commercialization. It also dealt with the issues of development and change. The basic premise underlying OF was that if farmers of Gujarat could, in their own way, replicate a successful structure, it should be possible for other states to carry out such replication with even greater success.

Ms. Ela R. Bhat\textsuperscript{40} (1997), in her paper, highlights the need of giving women their due place in dairy development. This is so because the OF Program based on
Anand Pattern of co-operative dairying recognizes that dairying at the household level is largely the domain of women, the production and income from dairying can be controlled by women and dairying can be practiced on a small scale. T.R. Varadarajan\(^1\) (1997) makes a study of SWOP analysis of dairy industry. He identifies the strength, weaknesses, opportunities and threats in the industry and points out the need to understand the four P's: Procurement, Production, Processing and Promotion to become successful in the dairy industry.

Dr. Rakesh Saxena\(^2\) (1997) makes an analysis of the demand for milk and milk products. The study reveals that the share of consumer expenditure on milk is increasing in both urban and rural areas, while that on cereals is decreasing. Among higher income groups, it exceeds that on cereals. He concludes that all this reflects on the increasing consumption of milk, which would gain further momentum in years to come. Dr. A.P. Mahadevan\(^3\) (1997) also makes a study on the opportunities of marketing milk and milk products. He analyses the factors that will assist the organized sector, especially the co-operatives, in its enhanced marketing efforts.

The Hindu\(^4\) (1998) reported that Dr. V. Kurian stressed the need to overhaul the structure of Kerala Co-operative Milk Marketing Federation. He said that the National Dairy Development Board would not be able to provide any assistance to the State till the KCMMF overhauled its structure. According to him, the procedure adopted in the appointment of chief executive in the Federation is highly questionable.

Manas Dasgupta\(^5\) (1998), in The Hindu, reports the success of Operation Flood and its effect on diversification of activities by NDDB. The report states that the success of Operation Flood not only encouraged the Government to involve the NDDB in diversifying its activities to several other co-operative sector operations like oil seeds and fruits and vegetables, but it has also impressed the Governments of some other countries so much that they have requested the NDDB to replicate its program in their countries to achieve self sufficiency in milk and milk products.
The paper reports that the NDDB has taken up a project in Sri Lanka and the request from Kenya, Ethiopia, and Uganda on similar lines are under active consideration. Pakistan has also sounded the NDDB and Dr. Kurien is favorably disposed towards the request.

K. Charles Ling and Carolyn Liebrand (1998), in a study, give a new approach to measuring dairy co-operative performance. The paper describes a relatively new approach called “extra value” for measuring business performance. The approach accounts for the total cost of operation, including cost on equity, and measures performance in terms of earnings generated, net of this total operating cost. The cost on equity is the opportunity cost of equity capital. It is an interest charge on the equity used in the operation at a rate equivalent to the amount the money could earn elsewhere.

Extra value can be measured using the information commonly found on any firm’s financial statements (except for interest rate on equity which has to be imputed):

Extra value = Net operating margin (before tax) - interest on equity, where
Net operating (margin before tax) = Operating margin – Interest income – Interest expenses – Other income – Other expenses, and
Interest on equity = (Member or stock holding equity – Investment in other firms) x Interest rate

Any patronage or investment income is excluded from the net operating margin because it does not result from the co-operative’s own operation and should not be used to measure the co-operatives’ operating performance. Likewise, investment is removed from the co-operative’s assets and the corresponding amount is subtracted from members’ or stockholders’ equity. This way, extra value captures the co-operatives’ operating performance and not the performance of other firms in which the co-operatives invest.
A positive extra value indicating a co-operative generated value for its members, attests to the co-operatives’ comparative advantage in the market place. The co-operative may have a comparative advantage in one of the several ways. Its operation may be more efficient than the competition, it may be technologically more advanced or it may have developed brand names or niche markets that allow it to extract premiums from the marketplace.

A negative extra value indicates that a co-operative is not fully recovering its total costs and is losing value as a business. The erosion of a co-operative’s value may be caused by its comparative disadvantage in the market place due to inefficient operation, technological deficiency or overpaying for the cost of goods sold.

The extra value measure may be of special interest to members because co-operatives do not have valuation through stock markets. To make the extra value scale-neutral, an “extra-value index is developed in the study by expressing extra value as a percentage of operating capital.

Thomas W. Gray and Charles A. Kraenzle (1998) analyze member participation in co-operatives. Their paper focuses on four levels of member involvement in co-operatives - attending meetings, serving on committees, serving as elected officer, and recruiting other farmers to become members. The paper analyzes the characteristics of farmers that are associated with these forms of participation. The research goal is to provide information that will encourage and increase member participation in the co-operative.

The characteristics examined in the study include beliefs of members concerning:
1. Co-operative principles,
2. Collective action,
3. Individual member identities associated with co-operative membership,
4. Life satisfaction with farming,
5. Members’ satisfaction with the co-operative operations and representation,
6. Members’ influence on co-operative decision making, and
7. Equitable treatment among members.

The study describes various characteristics of members including their participation behavior, identifies member characteristics statistically related to differences in observed participation behavior and draws implications from the results for co-operatives.

Christopher A. Wolf and Larry G. Hamm\textsuperscript{48} (1998), in their study, examine the role of co-operatives to determine whether co-operative market power can substitute for public policy power. The paper considers the important influence of co-operatives in dairy marketing and addresses considerations relating to their ability to operate without government intervention. The ability of co-operatives to maintain membership and balancing services depends critically on the dairy policies of the government.

Impetus Management Services\textsuperscript{49} (1999) in their study address the various issues related to the pricing of milk in the State. The study points out that, under the prevailing circumstances, if milk production is to be sustained in Kerala, along with a reasonable increase in retail price, the Government needs to step in and subsidize the cost of production.

According to the study “the Government can step in and provide these farmers with a level playing field by subsidizing some of the production costs. Dairy production is extensively subsidized the world over. In the United States, the Government comes forward every year with a minimum support price for milk. In Kerala too, agricultural production is extensively subsidized by the Government. If milk production is to be sustained at the current level, it will be necessary to offer specific subsidies aimed at reducing the cost of production. In fact, this is the only option the Government has.
A paper presented to the IXth Congress of the European Association of Agricultural Economists stresses the need for market-oriented strategies for agricultural co-operatives in the present scenario of liberalization. The paper questions the assumption of production orientation in co-operatives by suggesting that the current economic shift is associated with growing emphasis on evolving and differentiated consumer preferences.

The paper states that market orientation means that organizations are able to process market information: acquire information from the market, disseminate it across the organization, and interpret it in a meaningful way. Being informed about the market is important; being able to respond to the market information is however, another thing. Market responsiveness pertains to the interfunctional coordination of the organization’s resources to plan and implement organizational activities i.e. strategies. The forte of the market oriented company is manifested in new product development activities: market intelligence is utilized to select the target market, develop and test new product concept, choose suitable distribution channels, and communicate the value of product so as to achieve superior customer satisfaction. The co-operatives should move in this direction.

Another study made by Impetus Management Service (1999) in the dairy sector in Kerala presents the overview of the sector as a whole and analyzes the motive forces that shape its course. The study made to outline the likely scenario in 2006 is mainly done with the available secondary data and with the interaction with a large number of professionals from the sector, officials of the concerned State Departments, and group of milk producers and consumers. The study projects the threats and opportunities in the field of milk production, procurement, marketing and processing.

Onno-Frnak van Bekkum and Jerker Nilsson (2000) in a paper argue that it may be rational for co-operatives to respond differently to identical changes in their (policy) environment. They present some co-operative models in the context of ongoing liberalization of international agricultural trade in Europe, possible
quota abolition, and the enlargement of the EU. Their analysis of a number of cases demonstrates how European dairy co-operatives are affected differently by policy environmental changes, in terms of both business strategy and internal structure; how this influences the distribution of price and financial benefits to the membership; and, consequently, how farmers’ income is affected by dairy policy reform.

The same authors in another paper, presented to the IVth International Conference on Chain Development in Agribusiness, and the Food Industry (2000), examine the issue of dairy farmer members’ supply response and the strategic choice of dairy co-operatives in the context of trade liberalization in European Union. The paper states that dairy co-operatives in many countries have developed in market environment heavily influenced by governmental intervention. Hence, dairy policy has influenced investment decisions of co-operatives to a significant extent. Obviously, this has been of major consequence to farmers. As agricultural policy has instituted prices that are relatively stable and largely unaffected by the volumes put on the market, the farm production has boosted. This has caused an increase in the processing capacity of co-operatives, led to government sponsored building up of export market promotions.

The paper warns that the ongoing liberalization of international trade will make a significant shake up in the prevailing market equilibrium within less than ten years. As a result, according to the paper, the co-operatives will reorient themselves in different directions. This is especially true of co-operatives, which have members with not so good production conditions, implying high unit costs for the primary production. In regions with high production costs, dairy farming will face hard times, resulting in a downsizing or even a cessation of the production. The paper suggests that, whatever may be the production conditions; dairy farming will have to go through a process of considerable structural change with the purpose of reducing the unit costs. The solution is increasing the scale and intensity of operation.
Even though various individuals, institutions and agencies have conducted a number of studies in the co-operative dairy sector, only very few studies have been made on the financial and organizational performance of the co-operatives in the dairy sector. In Kerala, no studies were found analyzing the financial viability of the dairy co-operative institutions and their management performance in providing the input required by the dairy farmers. It is in this background that the present study is conducted.

1.6. Objectives of the Study

The overall objective of the study is to evaluate the effect of the implementation of Operation Flood Program on dairy farmers’ production, productivity, input availability and output management and the profitability of the dairy farming activity in Kerala. More specifically, the objectives of the study may be stated as:

1. Appraise the performance of the Federation and the State as a whole in the creation of necessary infrastructure for dairy development and evaluate the financial viability of the Federation.

2. Analyze the financial performance of the Unions to assess their long-term viability and evaluate their performance with respect to organizing dairy farmers, provision of dairy farming inputs, and management of dairy farming output.

3. Study the operative efficiency of primary dairy co-operatives (APCOS) in both input and output management and its financial and organizational performance to assess its long-term sustainability.

4. Evaluate the profitability of dairy farming activity, find out the level of satisfaction of dairy farmers with the functions of dairy societies, and identify the problems of dairy farmers.

5. Make meaningful suggestions based on the findings of the study.
1.7. Hypotheses

The following hypotheses have been formulated based on the objectives of the study.

1. The financial and physical performances of three Regional Unions in Kerala during 1990s have not been satisfactory.

   The above hypothesis is divided into:
   a. The financial and physical performance of MRCMPU during the 1990s has not been satisfactory.
   b. The financial and physical performance of ERCMPU during the 1990s has not been satisfactory.
   c. The financial and physical performance of TRCMPU during the 1990s has not been satisfactory.

2. There is no significant variation in the profitability, efficiency, solvency and liquidity position of the three Regional Unions during the 1990s.

3. The financial status and physical performance of dairy co-operative societies in Kerala are not satisfactory.

4. There is no significant variation in the financial status of societies under the OF program and non-OF program.

5. There is no significant variation in the physical performance of societies under the OF program and non-OF program.

6. There is no significant difference in the cost of maintenance, yield, revenue and profitability of crossbreed animals and country type animals.

1.8. Research Design and Methodology

The research design and methodology adopted for the study is given below:

1.8.1 Sampling Design

This is a sample study. A two-stage random sampling technique is used to select the samples.
1.8.1a Population

There are four populations in the study - the Federation, the three Unions, the primary dairy societies (APCOS) and the farmers. Samples are selected from two populations: 1) dairy farmers and 2) co-operative dairy societies. In the case of both the populations, the whole State of Kerala is divided into 3 regions for the implementation of all dairy development programs in the State. The southern region is under the management of TRCMPU covering the southern districts of Alleppy, Pathanamthitta, Quilon and Trivandrum. The ERCMPU manages the operations in the central region of the state comprising Ernakulam, Trichur, Idukki and Kottayam districts. All other districts, which are in the northern part of Kerala, are managed by MRCMPU. Both the TRCMPU and ERCMPU implemented the OF projects while the MRCMPU implemented the NKDP (North Kerala Dairy Project).

1.8.1b. Sampling Stages

A two-stage random sampling is adopted for the selection of samples.

1.8.1c. First Stage- Selection of Regions

In the first stage, the two populations in the State, the farmers and dairy co-operatives, are divided into two regions as 1) OF regions where OF program were implemented (that is, areas coming under TRCMPU and ERCMPU) and 2) Non-OF regions where NKDP were implemented (that is, areas coming under MRCMPU). Under the farmer population there were 1,39,967 farmers under the co-operative sector as on 1998-99. The society population was 1444 in the OF area and 566 in the non-OF area during the above period.

1.8.1d. Second Stage – Sample Selection

In the second stage, final samples were selected from both the populations on random sampling basis. In the case of society population, lists of societies from
the three Unions under the OF area and non-OF area were collected and 72 societies in the OF area and 30 societies from the non-OF area were picked under lottery method.

The same random sampling lottery method is used to select 500 sample farmers from the two areas. The sample farmers so selected are then divided into two groups based on the type of cattle ownership as 1) farmers possessing crossbred animals and 2) farmers with country type animals.

There are only three Unions and one Federation in the state and so all the Unions and the Federation were included in the study.

The various populations involved in the study, the number of population, number of sample and nature of sample are as given in the table below.

<table>
<thead>
<tr>
<th>Type of Population</th>
<th>Nature of population</th>
<th>Population</th>
<th>Sample</th>
<th>Nature of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers</td>
<td>Throughout the State</td>
<td>1,36,967</td>
<td>500</td>
<td>Large</td>
</tr>
<tr>
<td>APCOS</td>
<td>Regional (OF region)</td>
<td>1444</td>
<td>72</td>
<td>Large</td>
</tr>
<tr>
<td>Union</td>
<td>Regional (Non OF region)</td>
<td>566</td>
<td>30</td>
<td>Large</td>
</tr>
<tr>
<td>Federation</td>
<td>Throughout the State</td>
<td>1</td>
<td>1</td>
<td>Population</td>
</tr>
</tbody>
</table>

In the populations given above, the farmers’ population means the milk pouring farmers and similarly the society population means the functional societies in the State.

1.8.2. Collection of Data

The study has been made using both primary and secondary data. Primary data has been used for studying the problems of dairy farming and dairy farmers
and both primary and secondary data were used for studying the problems of APCOS. In the case of Unions and Federation the major source of information was secondary data.

1.8.2a. Primary Data

The primary data used in the study was collected through properly designed interview schedules. Two interview schedules were prepared: one for the farmers and another for the primary societies (both are given as appendix at the end). A pilot study was initially carried out in Trivandrum region by selecting 20 sample farmers and five sample APCOS. Necessary changes and modifications were effected in both the interview schedules in the light of the pilot study.

The interview schedule for the farmers was prepared with the main objective of collecting information on productivity and profitability of the dairy activity. Questions were also provided to assess the availability of dairy inputs through dairy co-operatives. An opinion survey has been included to evaluate the problems faced by the farmers in this sector and to know their suggestions to solve the problems.

The interview schedule for the society was mainly for collecting information on the management of dairy inputs and outputs. Questions were provided to assess the level of performance in milk collection from farmers and the supply of it to the Union and the reason for the present level of performance. Similarly, questions were asked to assess the level of performance of societies in providing necessary technical input services to the farmers. An opinion survey has also been included to ascertain the problems in the management of societies and the steps to be taken by the authorities to better the performance of the societies and thus the dairy sector.

The primary data from the APCOS and farmers were collected simultaneously. The primary data collection took a period of six months from June 2000 to December 2000.
1.8.2b. Secondary Data

Secondary data were collected from APCOS, Unions and Federations. These institutions’ audited financial statements were the main source of secondary data. The audited financial statements from 1991-92 to 1998-99 were used for the purpose. Secondary data were also taken from various publications of State Planning Board, Dept. of Animal Husbandry and Dairying, NDDB, KCMMF, the three Unions etc. Books, reports, studies, articles and working papers etc. were also used for collecting secondary data.

1.8.3. Tools of Analysis

The primary and secondary data collected were tabulated and analyzed with the help of a computer using different statistical and mathematical tools. The tools of analysis used are the following.

1. Most of the Measures of Central Tendency and measures of dispersion were used to evaluate the position of representative farmer and society.
2. Percentages were used to represent the relative positions of variables measured or studied.
3. Compounded Growth Rate was used to measure the growth of both physical and financial variables like co-operative formation, membership growth, milk collection, milk marketing, sales, profit etc. of the societies, Unions and Federation.
4. Frequency distribution was used to evaluate the concentration of variables used in the study.
5. Index numbers were also used to measure the annual change in variables used in the study.
6. Ratio Analysis was the main tool used to evaluate the financial performance of the co-operative institutions.
7. Z-test was used to know whether the differences in results of different groups are significant and are applicable to the population.
8. Correlation and regression analysis were the methods used to evaluate and find out the relationship between variables and the effect of one variable on another.

1.9. Limitations of the Study

The study suffers from the following limitations.

1. As the great majority of dairy farmers do not have the habit of keeping any records on expenses and income of their dairy activity, the data collected are an approximation. However, the accuracy of the data provided has been verified and counterchecked wherever necessary.

2. The delay in auditing the financial statements of the societies by government auditing department obliged the researcher to take the audited financial statements of 97-98 of APCOS, as this is the latest year for which audited statements were available for all societies in the sample, at the time of data collection. The same was the situation in the case of Unions and Federation and, therefore, the financial statement taken for evaluation is not the current one but the latest audited one.

3. The grouping of items of expenditures and incomes under various heads by the co-operative institutions are according to the instructions of the co-operative department and is different from the conventional methods or practices adopted by other forms of business organizations. This necessitated some adjustment of items both in expenditure and in incomes and therefore, the results are also affected to that extent.

4. The difficulty in finding out variable and fixed expenditure because of the special accounting practice used by these institutions limited the scope of analysis.

However a sincere and dedicated effort is made to present and analyze the data in a simple and systematic style, keeping in view the objectives of the study.
1.9. Chapter-wise Information

The study is presented in eight chapters as detailed below.

The first chapter gives the statement of the problem, significance of the study, earlier studies, objectives and hypotheses of the study. The research design and methodology, scope and limitation of the study are also described in this chapter.

Chapter 2 gives a short historical review of the dairy industry from pre-independence period to the present. It also gives the various objectives, targets and achievements of the different phases of the Operation Flood Program implemented in India.

The third chapter explains the features of dairy economy in Kerala. It also gives a brief description of the various institutes and agencies working in this sector and a concise account of dairy development before OF and during OF.

The fourth chapter gives the detailed co-operative institutional structure of the Operation Flood Program. It gives the objectives, organizational structure and activities of the various institutes from the very bottom - village milk producers’ co-operative societies, to the top - Indian Dairy Corporation. It also presents the institutional framework of OF in Kerala.

The fifth chapter analyzes the performance and financial viability of three regional Unions and the Federation in Kerala. It also makes a short analysis of interstate performance of OF program implementation in respect of certain physical target achievements and technical input provision.

The sixth chapter examines the performance and financial viability of dairy co-operatives at the village level (i.e., the APCOS). It also looks into the various problems faced by the societies in providing technical inputs to dairy farmers.
The seventh chapter evaluates the profitability of dairy activity and the problems of the dairy farmers. It also gives the suggestions of farmers to solve the various problems connected with profitability of dairy activity and availability of and access to various inputs for dairy activity through co-operatives.

The eighth and final chapter summarizes the main findings of the study and makes certain recommendations for the improvement of the situation in co-operative dairy sector and of the dairy farmers.
References


