CHAPTER - II
LITERATURE SURVEY

“Let Food be thy Medicine and Medicine be thy Food” espoused approximately 400 B.C. by Hipocrates, the father of Modern medicine, who knew well the role of food in good health. The development and growth of Dairy sector has been fascinating. Presently no nation can treat Dairy industry as ‘Sui Generis, a part apart’: because it has occupied centre stage of agricultural development. In this chapter an attempt has been made to present a comprehensive review of the existing literature on the subject,

2.1. Introduction

Review of Literature presents available literature on the topic under Study. Though the literature is rich in the field of Dairy Industry in general, it is not so in the case of Working and Performance of Milk Co-operatives which is the topic under Study. The chronological order is maintained in the Review of Literature to throw light in the organized manner and also to link the past to present.

2.2. Significance of Milk

Our ancient scriptures like Charaka Sanhita, Dhanvantri, Atharva veda, Rig veda, and others scripters described cow milk as ‘Amrutha’, Charaka Sanhita (Charaka sutradhan 27-214) identifies ten attributes of milk and it runs “Swadu, shitam, mridu, snigdham, shalakshanpichhlam, Guru, mand, prasanna cha gavgyam dashaguna paya”. This means milk is tasteful, sweet, mild flavored, slightly sticky, healthy fat, easily digestible and not easily spoiled, increases vitality, gives tranquility and cheerfulness.
Another ancient Indian physician Dhanvantri views that milk has medicinal value for all ailments and its regular use protects the body from vata, pitta and other doshas. “Yuyam gavo medyatham krishm chiskhyream, chit krinutha supratikam, Bhadra Griham Krinuth, bhadravapo beihad vovya uchachate, sabhasu”. The cow through its milk transforms a weak and sick person into an energetic person, provides vitality to those without it and by doing so makes the family prosperous and respectable in the civilized society. 10th Mantra of 187th Sukta of the 1st chapter of Rigveda (1-187-10-Rig) describes “Karambh”-a combination of Dhai, ghee and sattu (malt) as having medicinal, prophylactic and nutritional properties.

Atharvaveda (3-12-8) emphasizes the importance of ghee by referring to the stream of ghee-gull of elixir- “Ghristasya dharamariten sambhritam”. Rigveda (10-18-2) and Atharva Veda (3-12-1 and 3-12-4) one prays that our houses be always full of this most nutritious food-ghee. Similarly ghee has been described as a harmless (Nirdosh food) which increases body vigor vitality(Rigveda – 10-19-7). The use of ghee strengthens the body and helps enhance the life span (Atharva Veda 2 -13-1). Several medicated ghee preperations are used in treatment of all ailments in Ayurveda even today.

Thus, innumerable references in Vedas, Epics, Charaka, Dhanvantri and Shushruta describing cow and milk products are abundant in our ancient scriptures. Even the Aryans prayed for high yielding milk cows (Dagdhri dhenu, Kamadhenu etc). In a sense our ancient rishis were Dairy scientists. They were aware of the impact of feeding cows on useful herbs not only to get medicated milk but also for curing the cow diseases. The present insignia of NDDB the figure of kakudman Bull was picked from the remains of Mohenjo-Daro.
2.3. Milk Products

Kosiokowski F.V. (1958) in his article *Problems in the Italian Soft Cheese Industry* identified the importance of technology in cheese making and processing. N.K. S Gowda and K.T. Sampath in their article *Nutritional Aspects of Improving Health in Dairy Animals* identified micro nutrients like calcium, phosphorus, copper, zinc, iodine, manganese, Vitamin A, Vitamin D, Vitamin E in promoting the health of Dairy animals. Further, author opined that the metabolic disorder in animals and diseases are due to lack of micro nutrients. James N Warner (1976) in his work *Principles of Dairy Farming* identified the stages involved in Dairy processing and suggested sound principles. Ghosh B. C and Singh S(1996) in their article *A Comparison of Cow and Buffalo Milk* revealed the actual fat contents in both and cow and buffalo milk.

2.4. Dairy Development

Dr. V. Kurien (1978) in his article *Approach to India’s Dairy Development* touched upon 19 aspects for better Dairy management. The topics like selection, breeding, feed, fodder, labour management, Quality management, Transport management, extension, co-operation and such other prominent components of Dairy management. John W. Mellor (1994) in his article *Agricultural Growth and Poverty Reduction* opines that Dairying is the solution for the reduction of poverty and also to bring distributive justice. Author adopted statistical approach and proved the reallocation of funds towards and marginal farmers alone will help the rapid livestock growth in the economy. Deepak Tikku (1999) in his book *Indian Dairy Sector and NDDB* - an overview opines that low internal input is the

Aparana Kolte and P.P. Desai, (2000) in their article *Investment opportunities in Dairy Industries* have identified the lucrative areas in Dairy industry like commercial Dairy units, cattle breeding, female calf rearing, milk processing plants, electronic weighing scales, bulk milk coolers, cattle feed mixing units, bio gas plants etc in Dairy industry. Sharma Vijay pal (2000) in their article *Effects of WTO on Indian Dairy Sector* brought to light the lessons India must learn to make the voice strong in the WTO rounds of agreement. Sen Amartya (2001) in his work *Commodities and Capabilities* discussed at length the role of Dairy in bringing real freedom for the rural poor. Ravishankar (2002), has studied in his paper *Structural and Policy Changes on Dairy Market Developments in India* and their implications on International Trade and Investment. World trade in Dairy products continues to be severely distorted by entry barriers such as arbitrarily higher standard for animal health requirements, microbiological quality and environmental contaminants. He mentioned difficulty for any developing country to acquire a major share in the international market for Dairy products. India has advantage of low cost milk production and could gain a small but significant foothold in the international Dairy market in the next few years.

Reddy (2006) has highlighted in his paper *Indian Dairy Scenario: An analysis* that the Dairy Industry is on the path of rapid growth through modernization. He further states that the miracle was rural farmers joining hands with professional managers to make the country self sufficient in milk. He states that it is ready for the second miracle, the emergence of
India as the world’s leading Dairy nation not merely becoming the biggest but also the best. Periyasami (2006), has pointed out in his article Global Milk Production and Overview, the Dairy scenario in the global level. The world-wise milk production and the share of different countries in the total milk production show an encouraging trend. The per capita consumption of milk in India is less, the milk procurement is more. The main reason for the increase in milk production in India is the implementation of ‘Operation Flood Programme’ in the year 1970 by the National Diary Development Board. But this programme was implemented in three phases and ended on the year 1996. B.M Vaas (2008) in his article Issues of Dairy Industry opined milk is Rs.2.25 lakh crore business and a largest crop which should be nurtured with care. The author suggested for the reduction of income tax on co-operatives. Patil (2008), has pointed out in his paper Co-operative Dairy Movement and Operation Flood in Maharashtra: an overview, the operation flood have increased employment, income and consumption of milk of rural people in Maharashtra state. Thus the operation flood has very deep and strong positive impact on Indian Dairying. Also studied about the operation flood programmes, the operation floods have increased employment, income and consumption of milk of rural people in Maharashtra state. Thus the operation flood has very deep and strong positive impact on Indian Dairying in particular and on Indian agriculture sector in general.

Jeykumari (2008), in her paper Dairy Co-operatives – Crafting India’s Economic Development, has pointed out the achievement of the Dairy co-operatives in India. The Dairy development activities have the twin objectives of encouraging milk production for gainful employment, improvement of socio economic conditions of the rural people by procuring
milk at a remunerative price and simultaneously supplying good quality milk and milk products at reasonable price to consumers. The hygienic quality of raw milk needs to be improved to ensure milk products of higher standards. Payment for milk in India is generally based on its FAT and SNF content. Payments for milk on the basis on microbial loads need to be initiated to enhance quality of milk and make India’s milk globally acceptable. Ramanijam and Periaswamy (2008), in their paper Development of Dairy Co-operatives focus on achievements of operation flood I, II and III. The Dairy co-operatives, which are unique, have changed the social economic conditions of the farmers in rural areas of India. They have linkages in development of agricultural employment, income, health and nutrition and education level in rural areas. But government and Dairy co-operatives are essential for the development of rural people and their participation in development processes. So Dairying co-operatives are more suitable for rural development of developing countries like India. R. S. Khanna and Sharada Gupta (2009) in their article Market Efficiency key to Indian Dairy Sector opined that the population in urban India will cross 400 million marks by 2011 with 2000 cities with aggregate demand of 140 million liters per day which will touch 280 million liters per day by 2020. Atanu Jana in his article Science and Technology of Mozzarella Cheese has identified the prospects of cheese making leading to fortune of Dairy industry.

Pratap. S. Birthal (2009) in his article Contract farming in Efficiency and Equity in Contract Farming opined that the Indian scenario is not right for contract farming live stock which is prevalent in Western Countries. Author suggested win-win situation both for farmer and the buying firms through a synergy approach and scale leading to generation of surplus. Sobale (2010) in his book Food Regulations and Dairy industry covered the
multiple aspects of Dairy industry from the point of view of regulations. Author listed out the present food safety rules, new food safety regulations, label declarations, the future of non branded food etc and by there thrown light on the forthcoming issues for all concerned in the Dairy industry. V.P. Gandhi in his article “Problems and Prospects of Dairy Industry in India (2010) revealed very interesting facts like milk producers son never want to become a farmer/milk producer. Another finding of the author is that in UP and Haryana the Dairy farmer with three buffaloes one in lactation, second is pregnant and the third is dry which is not calving since the last one to two years. The author even criticized the artificial procurement prices of the Government are more populous than realistic.

2.5. Milk Co-operatives

V.K. Gupta and K.R.S. Murthy (1984) developed an article How can Milk Co-operatives Serve their Members Better? based on empirical study of three selected Gujarat Milk unions as a pilot study and suggested policy measures like specialization, integration, Economic size etc for the better functioning of co-operatives. P. B. Gopi (1999), in his paper Special Feature of Danish Dairy Co-operatives emphasized the importance of the Dairy sector in employment generation. At the same time, he also calls for aggressive efforts towards productivity enhancement. A brief on the Danish co-operative movement has been given in the article which is worth emulating by the Indian co-operative movement as well. Srinivasan .N.S. (1999) in his article Milk Safety Evaluation in Co-operatives has identified the multiple pesticides normally present in milk and suggested the ways and means for the extrication of pesticides in milk. C.P. Anantha Krishnan and Padmanabha (1999) in their work Dairy Farming and Milk
Production- Role of Co-operatives discussed all the phases of Dairy farming and listed measures for the better management of Dairy units. Lalwani and Kostha (2000), in their paper Decomposition Analysis of Milk Yield in Members and Non-Members of Milk Producers Co-operative Societies make out the significant differences of milk production function between members and non members of the milk society. He suggested to the Dairy owners that buffaloes should be replaced by crossbred cows. In place of natural vegetation provided as green fodder to their animals, there is a need to replace the natural green fodder by improved fodder crops. Shankar (2001), in his paper Role and Vision of Dairy Co-operatives in New Millennium covered high quality standard is critical in a market with intense domestic and international competition. Every stage where quality can be compromised from milking the animal to procurement, processing, and delivery to the consumer must be identified. Corrective steps must be taken at each stage to minimize quality. He mentioned liberalization poses a major challenge to India’s Dairy industry trade both imports and exports is closely linked to quality issues which have legal and commercial operational dimensions.

Venkataramu M.N. (2002) in his article Co-operative Dairying in Karnataka discussed at length the multiple dimensions of Dairy in Karnataka. Battu R.S. and Chahal K.K. (2002) in their article Milk Contamination- A Myth or Reality revealed the fact that the major factors for the contamination of milk are intrinsic than extrinsic. B.K. Wadhwa, S. Arora and Vivek Sharma (2004) in their article How Dairy Co-operatives can Check Milk Contamination reduce in milk opined Dairy animal is like a factory that converts nutrients derived from a variety of dietary constituents into a complex and marketable product like milk.
Authors directly hinted the role of dairy co-operatives in checking dairy contaminants.

Ramachandran (2005), in his book Dairy Co-operatives in Asia, pointed out that over the last thirty years, the Indian Dairy industry has progressed rapidly, making India the largest producer of milk in the world. The author throws light on the major highlights of Dairy co-operatives in the other countries of Asia. Khanna (2005), in his article, in the book Dairy Co-operatives in Asia, pointed out the over the last thirty years, the Indian Dairy industry has progressed rapidly, making India the largest producer of milk in the world. The author throws light on the major highlights of Dairy co-operatives in other countries of Asia. Banerjee (2006), in his paper Dairy in Post-WTO Era observed that there is a wide variation in the share of milk delivered to Dairies in various countries. India is yet to commercially realize the full potential of its enormous milk wealth. There is scope for introducing newer plants adopting newer processes by the Dairy industry in the country.

Mulani (2006), his article Vasudhara Co-operative Dairy – Success story (Women empowerment Through Dairy Co-operatives) covered special features evolved during managing milk co-operatives since last 60 years and gathering experience from members producers, technocrats devoted leaders and others that has made Amul pattern co-operative vibrant and successful. Also he mentioned about the improvement in their living and has gained benefits which has made improvement in their living and brought prosperity to them. That is why we called it ‘White Revolution’ this has also fulfilled the main objective of working together through co-operatives of producers and achieving the goal of better farming –
Dairying, better business marketing and better living home life improvement prosperity. Rangaswamy and Dhaka (2007), in their paper Milk Procurement Cost for Co-operatives and Private Dairy Plants in Tamilnadu- A comparison. They have highlighted the cost of procurement for co-operative and private diary plants in Tamilnadu. They have highlighted cost of procurement, transportation, reception, collection of milk and cost of chilling of milk. According to this study, the procurement cost of milk was higher in co-operative dairy plant than the private diary plant and the same increased between flush, transitory and lean season. It could be attributed to increase in the reception cost of milk and marginal increase in transportation cost of milk in the co-operative diary plant.

Anan (2007), in his paper Dairy Co-operative Viable Tool For Rural Development, highlighted the specific advantages to the producers and consumers through the co-operative form of organization. He includes eliminating the middleman, payment made to producers on the basis of quality of milk ensuring the supply of unadulterated good quality milk, co-operatives provide scope for leadership development among milk producers and are less susceptible for government interference. Thus Dairy co-operatives have multiple linkages in development of agriculture, employment, income, health and sanitation conditions, nutrition and education level in the rural India. Ramanjunam and Elangovan (2007), in their paper Co-operative Milky Scene in Tamilnadu, have studied three phases of Operation Flood Programmes. The milk federation is a sole agency for organizing the whole range of Dairy development activities in the operation flood in the districts of Chennai.

Ghanekar (2008), in his paper Strengthen Dairy Co-operatives to Tackle agrarian Crisis stated Dairying in India is an integral part of the total farming system. Symbolic relationship exists between Agriculture and
Dairy farming. The agricultural by products provide feed and fodder for the cattle, whereas cattle provide necessary drought power for various agricultural operations. Hence, promoting co-operative Dairy sector by providing policy support will definitely be a right strategy to tackle the agrarian crisis. Soundarapandian and Gayathri (2008), according to their paper *Karukkampalayam Milk Producers Co-operative Society – A Case Study*, studies purchase and sales of milk, income and expenses and financial position of the milk society. Also their study highlighted milk producers’ society is strengthened by increasing the sale time. This will also increase the sales to improve the performance of the milk society. Reducing expenses will also increase the profit and reducing the liabilities will improve the financial position of the society. Veerakumaran (2009), in his paper focused on co-operative milk production and marketing network in the state of Kerala, like escalating cost of production, occupational mobility and structural setbacks of the milk co-operatives. Urs (2009) in his study reveals that the contribution of Co-operatives in the Dairy Development plays a very significant role. He suggested that the Government needs to further strengthen it. Ratan Sagar Khanna (2009) in his book *Indian Co-operatives* discussed multiple issues relating to Indian Dairy Co-operatives in eleven chapters and author attempted to examine the impact of the Indian Dairy Co-operatives on Asian countries.

2.6. Dairy Technology

Sukumaran. D. C.(1980) in his work *Outline of Dairy Technology* discussed the necessity of technology in the phased manner for the industry like Dairy in India where poor and illiterate participate and transact more in the industry. The article of Jose Abraham why not an ATM for milk-some thoughts (2009) suggested the days are not far to see
vending machines and smart cards in Dairy business. The perfect solution for the Dairy industry, an article by Sandeep Sharma (2009), has identified cost minima and profit maxima techniques for Dairy industry. J.P. Gopal (2010) in his article Some Technology Initiatives in Processing emphasized the use of appropriate technology for the milk champion country like India to establish and remain in the same position. Author contributed technology initiatives including UHT milk, aseptic pouch installation.

2.7. Women Centered Dairy System

Todd. H. (1996) in his article Women Centered Dairy System viewed the that the role of rural women can bring change in the income levels of the rural families. Natchimuthu. K. Ramkumar. S and Rao S.V.N. (2003) in their article Sustainability of Women SHGs-a critical review on its implication on Dairying expressed SHGs were typically feminine showing low investment, low risk and low return which can match very well to Dairy industry. Authors established the fact that micro finance will go a long way in promoting both SHGs and Dairy sectors. Raj (2004), in his paper The Success Story of A Dairy Unit of Tribal Women highlighted positive impact on the lives of poor tribal women and made them self-reliant. The members of Ushus (name of the SHG) understand the dignity of labour and enjoy the satisfaction of starting a self-employment venture. Jayanti (2006), has carried out a studied on Dairy as an Instrument of Women Empowerment: A Study highlighted maintaining good quality and hygienic standard of milk supplied by it. It has been implementing various socio-economic programme for the up-liftment of backward communities. Usha Rani. R. (2007) in her work Women Empowerment to Dairy arrived at the
conclusion that women empowerment will become realistic and possible only through the implementation not mere through theory.

2.8. Indian White Revolution

Elizabeth Hoddy (1986) in her article Indian White Revolution described white revolution as a major step in nation building and also it has succeeded in bringing happier outlook among the farming community. NCAER (1999) in its report Impact Evaluation of Operational Flood brought to light the prominent role of marginal farmers in heralding white revolution.

2.9. Live Stock & Livelihoods


2.10. Milk Marketing

C. Mascarenhas (1988) in his work A Strategy for Rural Development, Dairy co-operatives in India, discussed at length on the role played by Dairy co-operatives in strengthening rural farmers which in turn becomes the strategy for rural development. Thirunavukkarasu. D and Sudeep Kumar (2005) in their article Milk Marketing options for the Dairy farmers in open economy and their choice in Tamilnadu have discussed at length
the marketing options before the farmers are not plenty but restricted. Authors opined that transportation revolution will yield marketing options and better prices for the milk. Bhowmik et al (2006), in their paper **Gains from Crossbreeding of Dairy Cattle in the North East**: Micro Evidence from Tripura identified the factors of milk yield of crossbred over local cows, milk production function and returns to development expenditure of Dairy sector in India. The distinct economic superiority over the local animals in the region as far milk production is concerned. He suggested breeding policy in the region should not be excessively biased towards crossbreeding. Siddaram, et.al (2007), carried out a study on **Processing and Marketing Management of Milk and Milk products in North Karnataka**. The study undertaken in Dharwad and Belgaum districts of Karnataka revealed both the co-operatives and private sector units marketed their finished products through only one channel member. Some dealers sell the products of co-operative and private unit. The installed capacity of private sector unit is higher than co-operative sector unit but the percentage capacity utilization is less in the private sector unit. The private sector unit should accelerate their capacity utilization by increasing procurement of raw milk, adequate planning and increased market sales. The number of by products in the private sector unit is comparatively less than co-operative sector unit. Therefore, the private unit should increase product mix to increase their sales realization.

Sukpal (2007), in his article **Marketing of Liquid Milk**: A case Study of Ahmedabad Milk Market, analyzed the Dairy industry and milk market in Ahmedabad. It shows that it is only the small scale and traditionally well entrenched unorganized sector players who have been able to move to the organized and branded market in milk due to various factors like
understanding of the local market, lower overheads, innovations in marketing, selling and small size. Another important issue is that of export orientation v/s domestic market orientation and most of the private sector units are already focused well on the domestic market and it suits their localized operations and small size. K.L Gajendran (2009) in his article **Production and Marketing of UHT milk for better returns and productivity** suggested the revolution in packaging will bring lasting results in Dairy industry. Author specifically suggested aseptic packing and tetra pack for KOMUL which is being supplied to the soldiers of the Indian Army in the areas of Gowhati and Siachin.

The discussion carried out so far reveals the following.

1) Literature is ample in the area of Dairying Industry in general and specific state level federations have not been adequately researched.

2) Studies have concentrated on certain aspects on the milk unions living many facts and aspects which are affecting KOMUL.

3) Lot of literature is available on the technological aspects on the Dairy Industry.

4) There is absence of evaluative studies on the working and performance of milk producer’s co-operative societies union.

The present study has attempted to bridge this research gap.