CHAPTER - II

REVIEW OF LITERATURE AND CONCEPTS

2.1 Introduction
2.2 Studies Related to the Milk Production
2.3 Studied Related to the Marketing
2.4 Studied Related to the Milk Co-Operative
2.5 Studied Related to the Productivity
2.6 Studied Related to the Dairy
2.7 Studied Related to the Problems
2.8 Research Gap
2.9 Production and Marketing of Theoretical Observations
2.10 Summary
2.1 Introduction

Review of literature has vital relevance to any research work. By undertaking literature review the possibility of repetition of study can be eliminated and another dimension can be selected for the study. Further, it also helps the researcher to find the limitations of the existing research work and to move towards a better study. This chapter records the findings of the research studies conducted previously on the dairy production and marketing in various parts of India and other countries.

2.2 Studies Related to the Milk Production

Parameswara Gupta and Satheesh (2013)\(^1\) observe that at present 40 per cent of the world population consume milk daily. Consumption of milk and milk products will increase in the developing countries, while in the developed countries mainly cheese consumption shows significant growth. One of the biggest challenges of dairy sector is the growing population with a continually growing demand for milk and milk products. In the developed countries the aging society, while in the developing countries the growing number of children and young ones will cause this demand. Further, the fast growing urbanization scenario is the cause for the increase in demand for milk and milk products.

Rangappa and Rangaswamy (2012)\(^2\) find that dairy at present provides jobs to many rural households, utilizes the idle agricultural farmers and
provides supplementary income. The annual employment provides income to the landless, marginal and rural poor farmers. It provides annual employment ranging from 95 to 155 man days through involvement in milking, collection, collection of fodder, bathing and taking care of milch animals, grazing, taking care etc. At present Nandini milk is only meeting 50 per cent of the milk demand. There is a greater chance to improve the milk production and thereby further employment is generated.

Palaniappan and Sengottaiyan (2010) discuss that dairy is a sub-sector of the Indian agriculture accounting for nearly 17 per cent of the value of output from agriculture and allied activities. India is the largest producer of milk in the world with an estimated production of 82 million tones, followed by USA, although in terms of milk yield, the performance of Indian dairy sector is dismal. One of the major factors contributing to increase in milk production is the adoption of crossbreeding programs by the farmers. The dairy development in India has a long history. Dairying is considered an important source of additional employment and income to small and marginal farmers as well as the landless in rural areas. The government of India and the state government have initiated various schemes to provide livestock health services and disease control, to enhance the dairy development through milk production in our country.
Dhanasekaran and Srinivasan (2010)\textsuperscript{4} reveal that the demand of milk has been increasing annually. Milk production increased from 44.7 million tones in 1991-1992 to 108.5 million tones in the year 2008-2009, per capita availability increased from 178gm/per day 1991-1992 to 258 gm/each day in the year 2006-2007, but the GDP agriculture percentage decreased 22.93 in 1999-2000 to 16.74 percent of 2006-2007. They suggest that to increase our dairy production, we must scientifically control the population of animals and upgrade them for better quality and more quantity of milk and meat per animal. A scientific approach to breeding, feeding and animal healthcare programme is required to increase production of milk. Accordingly, the National Dairy Development Board has proposed to increase the country’s milk production to meet the projected demand of 180 million tones by 2012-2022. With an estimated outlay of Rs.173 billion, NDDP focuses on productivity measures to enhance milk production as the average annual production will have to increase from 2.5 million tones to 5 million tones over the next 15 years.

Dhanabalan. M (2009)\textsuperscript{5} has found that miscellaneous expenditure has been the most important input affecting milk production. All the regression coefficients have been found positive and statistically significant in all the equations, indicating that they can increase their milk production by increasing their inputs. Besides, the returns to scale parameter have been greater than unity. The dairy farming in the study area operates under increasing returns to scale. The indicates that there is scope for increasing milk production by
increasing the input factors. The marginal value productivity analysis revealed that there is a significant scope for raising milk production in the study area by reallocation of these inputs for both cows and buffaloes.

Joseph Xavier and Josephin Stella (2009)\(^6\) observe that the largest producer of dairy products and milk today is India, followed by the United States and China. In India, Amul, a cooperative owned jointly by 2.6 million small farmers was the engine behind the success of dairy farming. In large countries like India, dairy farming tends to be geographically clustered in regions with abundant supply of natural water and relatively inexpensive land.

Haese et al. (2009)\(^7\) explain the efficiency of the dairy farms in Reunion Island, a French overseas district, located in the Indian Ocean. On this island, dairy farming is promoted with financial and technical support from the European Union, with the French and local governments aiming at reducing dependency on imports of milk powder and dairy products and creating employment. A critical factor for increasing the local milk production is the limited availability of arable land because of the small size and the volcanic nature of the island. In this paper, we study the efficiency levels of dairy production of 34 farms by using a data envelopment analysis approach. The average technical efficiency score of farms, assuming constant returns to scale, was 0.927, with 19 out of 34 farms not being efficient. The technical efficiency with variable returns to scale specification was 0.951. The efficiency with
which farmers used their land (subvector efficiencies) was estimated in the second model. The average sub vector efficiencies calculated with constant returns to scale and variable returns to scale models were lower than the technical efficiencies. The farmers on the efficiency frontier had a relatively higher milk production, milk production per cow, and land surface more than those who were less efficient. A policy promoting better use of the land on inefficient farms should increase the milk production-to-land ratio. Possible on-farm strategies improved feeding systems, farms having their own heifer breeding, and improved genetics.

Mandeep Singh and Joshi (2008) reported the economic analysis of dairy farming for the marginal and small farmers in Punjab for the year 2003-04. It has been found that a majority of the farm households are not able to meet their requirements from their income from crops. Further dairy farming has emerged as a major allied enterprise for supplementing the income of marginal and small farmers in Punjab. Income from off-farm sources has been identified as another important factor contributing significantly to the disposable income of these farm households. The study has suggested to further exploit the potential of off-farm sources towards meeting the domestic expenditure. Also, the technical efficiency of crops and dairy farming should be improved to provide more income to farmers.
Waghmare and Hedgire (2007)\(^9\) opined that milk production in India during 1950-51 was 17 million tones which reached 78 million tons in 1997-98. Presently, India ranks first in the world in milk production. The Operation Flood Programme was instrumental in dairy development activities. These programmes are useful in upgrading the standard of living of the farmers.

Hasan Cicek, et al, (2007)\(^{10}\) examine the technical and socio-economic factors that may affect the cost in dairy enterprises. In this context, the annual production records (2005-2006) of 77 dairy enterprises running in Western Turkey, were examined. Data were analyzed by using multiple regression models. Results showed that the parameters such as education of the producers, scale of the enterprise, feed consumption, feed procuring and litter size had significant effect (P < 0.05) on the average milk costs. On the other hand, marketing, main occupation and age of the producer were found to be statistically insignificant (P > 0.05). In conclusion controlling the technical and socio-economic factors was found to have important effect on decreasing the cost of the production as well as increasing the profitability of the enterprise.

Rishikanta Singh et al, (2007)\(^{11}\) conducted a study in Impala West District in Manipur state. Linear and Cobb Douglas forms of production functions were used to access the resource use efficiency. The study concluded that green fodder and concentrates for crossbred cows contributed significantly indicating that milk productivity could be increased through feedings of green
fodder and concentrates economically. Green fodder was underutilized while concentrate feed was used efficiently. The marketed surplus was the highest (32.44 litres) for large and lowest (4.16 litres) for small herd size category. About 96 percent of the total milk produced was found as marketed surplus. Nearly 53.30 percent of the total marketed surplus was disposed off to the milk vendors and the remaining 46.70 percent to consumers directly.

Oghaiki Asaah Ndambi (2007) has found that The Ugandan dairy sector is developing rapidly over recent years and is dominated by small-scale farmers owning more than 90 percent of the national cattle population. Due to market forces and higher competition for production factors, milk production systems are intensifying, necessitating proper understanding of the new production tendencies. Three intensive and four extensive production systems were identified and analyzed, using TIPI-CAL (Technology Impact Policy Impact Calculations model). The results show that the production systems are very different in many respects but share similar development trends. Whereas intensive systems use graded animals and invest heavily on feeding, buildings and machinery, extensive systems use local breeds and invest minimally. Total cost of milk production falls with increasing herd size, while dairy returns vary among farms from 18 to 35 USD/100 Kg of milk. All systems make an economic profit, except the intensive one-cow farm, which heavily employs family resources in dairying. Due to better management of resources and access to inputs and markets, dairy farming closer to urban areas and using improved
breeds is highly profitable, especially with larger herd sizes. Stakeholders should favor such practices as well as others which can improve productivity, especially in African countries where traditional systems dominate dairying.

Srikanth Reddy and Vasudev (2006) have made an attempt to quantify the level of consumption, production, and marketed surplus of milk in Karimnagar district of Andhra Pradesh. Better feeding followed by congenial weather conditions during the winter had positive effect on milk production. It was also interesting to note that in relative terms marketed surplus was more in summer (ranging from 58.5 percent to 60 percent) compared to that in rainy season (50 percent to 56 percent). On an average, marketed surplus during the year ranged between 55 percent in the case of small farmers and 57.2 percent in the case of medium farmers. But in all the categories of farmers the consumption of milk was above the recommended level, i.e., 250 gm/day/person. With the disposal of marketed surplus of milk through different agencies, it was evident that the co-operatives and milk vendors emerged as major procurement agencies (more than 70 percent) in all categories of farmers. Majority of the small and medium farmers preferred milk vendors while large farmers preferred milk co-operatives to sell their surplus milk. The large family size and education level of family influenced the consumption pattern of milk. These led to consume more, resulting in shrinkage of marketed surplus.
Dayakar Rao and Hyma Jyothi (2006)\(^{14}\) conducted a study was conducted in selected districts of Andra Pradesh. The study concluded that for realization of high net returns from buffalo milk production the milk productivity levels of animals should be enhanced through sustained breed improvement programs. The milk production could be appreciably enhanced by increased use of concentrates and green fodder in the selected districts. But the production of green fodder in dry areas like Anantapur, Medak, Nalgonda districts is fraught with uncertainty, it being contingent on rains, the major thrust under existing situation should be directed towards increasing the use of concentrates.

Periyasami (2006)\(^{15}\) observes that the cost of production per litre of milk in India has been worked out to be the lowest in the world. Thus, there will be competitive advantage to increase India’s global share of export in the dairy sector. Since Indian dairy sector is one of the least subsidized sectors in the world, it can, therefore, afford to take an aggressive stand in its position in world milk production. India became the world leader in milk production in 2001 with a production of 84 million tones.

Jacques Somda et.al (2005)\(^{16}\) have found that the domestic milk production has been for a long time hindered by many factors including lack of interest from decision makers, distorted economic policy and biotechnical constraints. For the last 20 years, many developing countries have been
attempting to develop the domestic milk production sector. However, research on the basic realities and the viability status of enterprises within this sector, remain largely unproved in many developing countries. This study focuses on the characteristics of smallholder milk producers in Gambia. Data were collected from 90 smallholder farm households to characterize milk producers and evaluate the profitability and viability status of this activity. Based on current typology of farms and gross margin analyses at farm level, the study identified two resource-based types of smallholder farms. The current milk production system is surely viable. Constraints to increased productivity include lack of improved technology at farm level and weak institutional support. Despite the low viability status, it is shown that milk production generates reliable incomes, which could be a departure for most farmers to intensify farming systems, particularly in areas where no loan schemes exist for purchasing agricultural inputs.

Sathya Sundaram (2005)\textsuperscript{17} found that milk production increased from 17 million tones in 1950-51 to 88.1 million tones in 2003 2004. The quantum of additional employment generation in dairy industry depends on various factors like number and type of animals possessed, size of households and feeding practices.

Aitawade et.al, (2005)\textsuperscript{18} conducted a study in Akola district of Maharashtra state. From the main findings, it may be inferred that the total
quantity of feed and fodder fed per crossbred cow per year was 8381.51kg at the overall level. It increased with the increased size of landholding. At the overall level, the total maintenance cost per crossbred cow was Rs.19382-33, of which, the variable cost and fixed cost contributed for 90.35 and 9.65 percent respectively. The gross income from crossbred cow was Rs.29172.41 and it was highest in medium size group (Rs.32118.01). Cost per litre of milk was Rs.5.71 and it was highest in small size group (Rs.5.98) and lowest in medium size group (Rs.5.44. The net profit for per litre of milk was highest in medium size group (Rs. 3.46). They suggested that more and more educated people to rear crossbred cattle.

Dayakar Reo and Hyma Jyothi (2005) carried out a study in Guntur district of Andra Pradesh, which has large bovine population. The study found that crossbred cattle were invariably fed with more amount of concentrates and higher human labour was involved compared to local cow and buffalo. However, with higher milk yield, the potential of crossbred cow has resulted in higher net returns. The study also revealed that low productivity of animals, non-availability of land for fodder cultivation and high cost of feeds and fodders were identified as the major constraints. The study concluded that for realization of high net returns from local cow, crossbred cow and buffalo milk production, the milk productivity levels of animals should be enhanced through sustained breed improvement programmes. The milk production could be appreciably enhanced by increased use of concentrates and green fodder in the Guntur district.
Dayal, Rekha (2004) in her study examines the economics of production and marketing of milk in the state of Uttar Pradesh. Linear and log-linear functions were used to work out the estimates of factors affecting marketed surplus of milk both for the private and cooperative systems. The results of the study indicate that the feed and fodder cost was the most important item of the total maintenance cost, accounting for 55 to 65 per cent of the total cost in Zone I and 51 to 66 per cent in Zone II. The net profit per day of a milch buffalo was very low due to the higher maintenance cost.

Ganesh Kumar and Raj Vir Singh (2004) conducted their study to analyze the input-output relationship, productivity of inputs and resource use efficiency of milk production for local and crossbred cows using production function analysis under rural conditions in Villupuram district of Tamil Nadu. The input data such as green fodder, dry fodder, concentrates, human labour (both family and hired), veterinary expenses and other miscellaneous expenses and inventory comprising milch animals, cattle shed, stores, dairy, watering equipment, and the output data such as milk and dung were collected from selected households. The collected data pertained to the agricultural year 1996-97. The estimated Cobb-Douglas function explained that about 72 and 70 per cent of variation in returns from milk yield of local and crossbred cows respectively. In case of local cows, expenditure on dry fodder, concentrates and labour had positively significant impact on returns from milk production. In case of crossbred cows, expenditure on dry fodder and concentrates had
positive and significant impact on returns from milk production. One thing that appears to be surprising is that green fodder, an important dairy input, turned out to be non-significant in milk production for both local and crossbred cows. In the case of local cows, the Marginal Value Product (MVPs) of dry fodder and concentrates were significantly less than unity, signifying over utilization of these inputs; while that of labour was observed to be significantly more than unity indicating its underutilization. Conversely, for crossbred cows, MVPs of dry fodder and concentrates were significantly greater than unity, indicating thereby their underutilization in the milk production process. However, the MVPs of green fodder and labour turned out to be statistically not different from unity, signifying optimal use of these inputs.

Jeyachandra Reddy et al, (2004) analysed the economics of milk production in three areas, viz., Chittoor district in Andhra Pradesh, Erode District in Tamil Nadu and Kolar district in Karnataka involving aspects related to existing cost structure of milk production, profitability of crossbred dairy cows in the three states under the changed socio economic political scenario and also suggest methods to improve the viability and profitability of these enterprises. The data were collected by survey method during the year 2003. Seventy five farmers were selected at each location giving due importance in the selection of all categories of households. The numbers of dairy cows studied were 108 in Chittoor, 178 in Erode and 84 in Kolar districts. The net cost of maintenance of a cross bred cow per day worked out to Rs.38.99,
Rs.49.36 and Rs.48.88 in Andhra Pradesh, Tamil Nadu and Karnataka respectively. The cost per litre of milk worked out to Rs.5.48, Rs.7.20 and Rs.5.84 in the same order. Feed cost was the major component in gross cost which accounted for 63.88 per cent in Andhra Pradesh, 72.14 per cent in Tamil Nadu and 71.62 per cent in Karnataka. The net profitability varied from 43 per cent in Tamil Nadu, 70 per cent in Andhra Pradesh and 83 per cent in Karnataka. The variations among the three studied locations are due to variation in breed, feeding pattern, maintenance of animals, etc. The study has further brought out the fact that higher fat content provides higher price as milk is priced based on fat and solid-Net-Fat (SNF) content by dairies. Hence, proper scientific breeding procedure is to be followed to improve fat content in the milk as well as milk production per animal. Besides, scientific breeding, feeding, treatment and veterinary care and management would not only increase milk production and fat content in addition to reduction in cost, but also incomes of farmers. Thus, dairy farming is considered an instrument for socio economic change in rural areas.

Rajput and Sandeep Yadav (2004) studied the economics and identified the constraints relating to cross bred cow milk production in Indore district of Madhya Pradesh. Specifically, it examined the cost and returns per year, the net return, cost of milk production per litre and benefit cost ratio on small, medium and large size groups of cross bred cow farms. Multi stage stratified random design was used for the selection of the ultimate unit of the
sample. Indore block of the Indore district was selected for the study and five villages were selected randomly from Indore Block. In all 50 milk producer households were selected for one allocation period covering the agricultural year 2003-2004 and the data were collected by survey method. The results of the study revealed that, on an average, the total cost of maintenance of a cross bred cow per annum was worked out to Rs.21,657.76. After deducting the income received from cross bred cow dung and sale of the young stock, the average net cost of maintenance came to Rs.19,942.15 per cross bed cow. The farmers of large size groups had incurred higher expenditure on the maintenance of a cross-bred cow as they had maintained cross-bred cows of relatively better breed and had made higher investment on fodder and concentrates for maintaining them. However, a large number of cross bred cow dairy entrepreneurs complained that the weak financial status, cost factor and management difficulties were the main constraints in not maintaining good quality of animals on the farms. The respondent’s families strongly expressed the dire need for finance for the purchase of animals and also for feed, fodder and veterinary aid. A large number of commercial cross bred cow dairy entrepreneurs reported insufficient storage facilities on their farms. Milk and milk products fall under highly perishable group of commodities and have to be stored under controlled conditions of temperature and humidity in cold storage and deep freezers.
Ashok Shivagaje et al. (2004)\textsuperscript{24} observe that India’s estimated milk production in the year ending March 1999, 74 million tonnes, was 13 per cent of the world’s milk production. This has been appreciated by the United Nation’s Food and Agriculture Organization (FAO), which has declared India as the world’s largest producer of milk. FAO-estimated milk production of 71 million tonnes by the USA in the same year was placed second in the list. Data on estimates of milk production in the world and India during 1985–2000 reveal that a linear regression \( Y = a + bt \), where \( t \) is the year and \( Y \) the estimate of milk production, is the best fit into the data. For India, the estimates of \( a \) and \( b \) are 41.14 and 2.28 respectively, and for the world they are 501.85 and 3.80 respectively. This implies that an annual increase in the estimate of India’s milk production 2.28 million tons \((P < 0.01)\), whereas it is 3.8 million tonnes \((P < 0.01)\) for the world. Assuming that the rate of increase would remain the same for the year 2010, estimates of India’s milk production would 100.52 million tonnes, whereas the world’s milk production would 600.56 million tonnes. 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 consistent increase in milk production, which will be possible on the successful implementation of ‘Operation Flood’ and evolution of new animal breed.

Babita Bohra et al, (2003)\textsuperscript{25} in their study have revealed that peri-urban dairy farmers in the mountains are distinguishable from the ones in the areas far-flung from market place. It is essentially a market oriented dairy. Ready
market availability prompts small holders to produce more milk primarily for sale and earn cash income, so crucial for their petty needs. This trend, however, leads to the reduction in the milk to be retained at home for consumption by the household members. An increase in milk production will not only contribute to more cash income, but also ensure more amount of milk available for family consumption.

Rakesh Saxena (2002)\textsuperscript{26} has found that Milk production in India is characterized by a large number of milch animals, a large number of milk producers, mixed farming and low productivity of milk per animal. Much of the total milk production in the country comes from indigenous cows (27 per cent), crossbred cows (15 per cent) and buffaloes (54 per cent). Goats and other animals contribute only a minor share (4 per cent) to the total milk production. The population of crossbred cows and buffaloes is kept largely for milk production while the population of indigenous cows is maintained for producing both milk and drought animals. About 58 per cent of the total population of the cattle and buffaloes in India are studied using LCA approach to estimate the environmental impact of milk production in terms of methane emissions. The study focuses only on bovine milk production as it accounts for about 96 per cent of the total milk production in India. The methane emissions in the study are estimated at the level of indigenous cows, crossbred cows and buffaloes instead of the usual two categories of cows and buffaloes. The analysis of methane emissions in terms of per kg of milk production has been
extended to methane emissions per rupee worth of milk production, as the prices of cow and buffalo milk are very different due to different fat content. The environmental impact has been assessed in two steps: (1) inventory analysis and (2) impact assessment. Under the first step, an inventory has been taken of raw materials and associated emissions. The impact of these raw materials and emissions has been assessed under the second step. The raw materials used by cattle and buffaloes are divided into two categories, namely (1) concentrates and (2) roughages. The roughages are sub-divided further into green fodder and dry fodder. The emissions of methane associated with bovine milk production take place mainly at three stages, namely (1) enteric fermentation, (2) manure management, and (3) use of dung as domestic fuel. The study has used IPCC guidelines and is based largely on the secondary data available from various sources.

Leslie. J. Butler (2002)\(^\text{27}\) points out that this study measures the cost of organic milk production, and in particular, the differences in cost of production between organic and conventional milk in California. Results show that the total cost of production on per cow and per hundredweight basis is about 10 per cent higher for organic producers than for conventional producers in the surveyed regions, and about 20 per cent higher when compared on a statewide basis. The higher costs appear to be due to reduced milk production, higher feed costs, higher average labor costs, significantly higher herd replacement costs and significant transition costs. The higher costs associated with organic
milk production are exacerbated to some extent by lower milk yields, and at the same time, are mitigated by the substitution of lower cost pasture for higher priced roughage and concentrate feeds. The higher prices paid for organic milk may more than offset these higher costs compared to their regional, same-sized neighbors.

White et al, (2002)²⁸ examined the total lactation performance of dairy cows in two feeding systems: pasture based and confinement. Spring and fall calving herds were used and each seasonal herd had 36 cows on pasture and 36 cows in confinement with 282 Holstein and 222 Jersey cows included over seven seasonal replicates. Pasture-fed cows received variable amounts of grain and baled haulage depending upon pasture availability. Confinement cows received a total mixed ration with corn silage as the primary forage. Data were collected on milk production, feed costs, and other costs. Pasture-fed cows produced 11.1 per cent less milk than confinement cows. Across treatments, Jerseys produced 23.3 per cent less milk than Holsteins, but calving season and various interactions were not significant. Feed costs averaged $0.95/cow per day lower for pastured cows than confinement cows. Feed costs were lower for Jerseys than Holsteins and for cows calving in spring. Income over feed costs averaged $7.05 ± 0.34 for confinement Holsteins, $6.89 ± 0.34 for pastured Holsteins, $5.68 ± 0.34 for confinement Jerseys, and $5.36 ± 0.34 for pastured Jerseys; effects of breed were significant but treatment, season, and interactions were not. Economic factors such as labor for animal care, manure handling,
forage management, and cow culling rates favored pastured cows. Higher fertility and lower mastitis among Jerseys partially offset lower income over feed cost compared with Holsteins. Milk production was lower in this study for pasture-based systems but lower feed costs, lower culling costs, and other economic factors indicate that pasture-based systems can be competitive with confinement systems.

Kiresur (2002)\textsuperscript{29} in his study analysed the composition of dairy animals, input-output relationship and cost and return profiles in milk production in Sameerwadi sugar factory operational area of northern Karnataka during the year 1999-2000. The study found that net returns and benefit cost ratio were maximum in the case of crossbred cows compared to indigenous cows and buffalos, particularly on small and medium farms compared to large farms. Cost of feed and labour accounted for the major share not only in the variable cost but also in the total cost. Concentrate was the major cost component in the variable cost followed by labour and dry fodder. Farmer category-wise analysis revealed the milk yield obtained by small farmers was higher than that obtained by the medium and large farmers.

Sivasubramaniyam (2001)\textsuperscript{30} studied the nature of milk production, which adopted field survey method. The primary data were collected from 100 households from different herd size. Owners from two villages in Cuddalord district were selected by using disproportionate random sampling. The study
concluded that the overall level in the cow milk production among the study household was 4.86 litres per day per animal in the lean season, increased to 5.67 litres per day in the flush season, showing 16.67 percent increase. Like that the buffalo milk production was 3.33 litres and 4.17 litres during the lean and flush season respectively, indicating an increase of 26.26 per cent; the productivity was more among the small herd size than that of other categories.

Jagdish Kumar (2001)\textsuperscript{31} observed that the dairy enterprise was an important contributor for increasing income and employment in rural areas especially for small, marginal and landless families. The farmers had started maintaining cross bred cows resulting in higher milk yield because of improvement in breeding. The average maintenance cost of cow for a year was calculated at Rs.9462. Average milk production per cow and sample producing units was found about four litres per day. The average maintenance cost of a cow increased with the size of herd. The feed and fodder cost represented 56 percent of the total cost. The milk production per cow also increased with the size of herd in all seasons because of concentration of feed and fodder requirements, healthy covers and proper housing facilities. The net returns per cow and per litre were higher on large herd size because of greater number of cross bred cows. The study suggested that the small households should be encouraged to adopt better animal husbandry practices like housing, feeding, breeding, milking and disease prevention. The government should initiate steps regarding availability of healthy facilities, improved breed, credit facilities, proper milk marketing.
The study was assigned to one state from each of the four zones north, west, east and south for an all-India representation. The objectives of the study were to estimate milk production, retention, conversion of milk into ghee, white butter, khoa and curd. across seasons (lean and flush), relative returns from milk conversion and to study the existing marketing channels adopted by the producers for disposal of milk products. The study found that the major milk producing states in the country are Uttar Pradesh followed by Punjab, Rajasthan, Madhya Pradesh, Maharashtra, Gujarat, Andhra Pradesh, Haryana, Tamil Nadu, Karnataka, Bihar and west Bengal. The study reveals that the milk passed through several agencies before reaching the ultimate consumers. Lack of good condition of road, faulty system of weight and measurement and testing of milk, exploitation by middleman, functioning of DCS merely as a milk collection centre and delay in payment, were the most prominent problems faced by the sample households across the states. The study suggested that arrangements should be made to provide green and dry fodder in adequate quality and at a reasonable price to the milk producers during off seasons. There is need to link all the villages through roads so as to make transportation of milk round the year possible.

Jacques Somda, et al, (2001) have pointed out that the domestic milk production has been for a long time hindered by many factors including lack of interest from decision makers, distorted economic policy and biotechnical
constraints. For the last 20 years, many developing countries have been attempting to develop the domestic milk production sector. However, research on the basic realities and the viability status of enterprises within this sector remain largely unproved in many developing countries. This study focuses on the characteristics of smallholder milk producers in The Gambia. Data were collected from 90 smallholder farm households to characterize milk producers and evaluate the profitability and viability status of this activity. Based on current typology of farms and gross margin analyses at farm level, the study identified two resource-based types of smallholder farms. The current milk production system is surely viable. Constraints to increased productivity include lack of improved technology at farm level and weak institutional support. Despite the low viability status, it is shown that milk production generates reliable incomes, which could be a departure for most farmers to intensify farming systems, particularly in areas where no loan schemes exist for purchasing agricultural inputs.

Datta and Khanna (1999) have examined the changes in growth and density of milch bovines, milk production density ratio of milch cattle to buffalo and lactating efficiency of the breedable cattle and buffaloes in Rajasthan. It was revealed that farmers prefer to keep more buffaloes as they yield higher returns. As a result, the density of milch cattle dropped from 14.2 to 13.2 per square kilometer, while that of milch buffaloes increased from 8 to 12 between 1977 to 1992. The proportion of locating buffaloes increased by 10
percent as compared to four percent in cattle. The study also revealed that increase in buffalo density positively influenced increase in milk production density while increase in cattle density had only little effect on influencing milk production density. The study further reported that a perpetual reduction in the number of ‘in milk’ cows depressed the cow milk production.

Prasad (1999)\textsuperscript{35} observed that the concentrates contributed as an important input in the milk production having significant and positive regression coefficient for all the breeds of buffaloes. The dummy variables for the both the winter and rainy seasons had negative regression coefficients for the local and graded buffaloes but for murrah buffaloes the same were positive and significant for both the seasons. This shows that more yields are realized in the summer season for local and graded buffaloes while higher yields are realized in the winter and rainy seasons for murrah buffaloes. This clearly demonstrated that the summer season contributed significantly to the milk yield in the case of local and graded buffaloes, while the winter and rainy seasons significantly facilitated the murrah buffaloes in increasing the milk yield as compared to the other seasons. The higher milk yield among the local and graded buffaloes during the summer season might be due to the reason that a majority of these buffaloes might have calved during the summer season itself on the sample farms. Inter-seasonal fluctuations in milk production can be minimized by adjusting the calving dates to buffaloes. The milk yield of the animals can be stabilized through advance planning of calving dates to ensure
continuous milk production on the farms through adjustment of the mating
dates of the buffaloes. This means that at a given time all the buffaloes would
not go dry and at least one or two animals would be giving milk to the dairy
farmers.

Rajendran and Prabakaran (1998)\textsuperscript{36} examined the present scenario of
milk production in India. India’s agriculture has been dominated by the belief
that its base is in crop production. Also, the focus should be shifted from
quantity to quality in the daily diet by enhancing the intake of animal proteins,
the major sources of which are milk, eggs and meat. In recent years, one
unfortunate trend has seen the decreasing per capita availability of pulses, the
only major source of protein for the large majority of the population. The
nutritional demand has to be bridged rapidly and the milk, egg and meat
provide affordable alternative sources of protein. Recently, the annual rate of
the growth in milk production has been encouraging which has gone up from
4.5 percent in the seventies to 5.7 percent in the eighties. Today, India ranks as
the World’s largest milk producer followed by the USA. India’s milk output is
expected to range between 84 million tonnes at the minimum and 88 million
tonnes at the maximum. India’s per capita consumption of milk does not
commensurate with its ranking as world largest milk producer. However, the
present per capita availability of 214 grms / day (78 kgs / year) is much higher
than the average of 26.27 kg / year for the developing countries in Asia / Pacific
region. Today milk is India’s second most important agricultural
commodity in terms of value of its output, ranking after paddy, but much above wheat.

2.3 Studied Related to the Marketing

Nahid Mohammed TawfikFawi et.al (2013)\textsuperscript{37} aimed at studying the preferences of consumption pattern of milk and factors affecting consumers’ purchase decision of dairy products in Khartoum, state capital of Sudan. Quality was found to be the main factor affecting the purchase decision, followed by price of the products. Fresh milk was the highly preferred milk type among the citizens. The study concluded with a number of recommendations, some of which are processors and producers of dairy products should implement modern marketing concepts that focus on the consumers’ needs and wants. Also, producers and processors should use marketing mix in ways that increase their sales and create satisfied consumers.

Deepa Ingavale and Thakar (2012)\textsuperscript{38} conducted a study which revealed that a majority of the respondents purchased milk and milk products from grocery shops, bakeries and sweet marts. Some respondents preferred to purchase from company retail outlets and milk shops. So, the dairy units should strengthen their existing distribution channels and should also add new channel members to their excising distribution channels. The dairy units can start the retail outlets in the urban areas where all the products of the company offering different varieties can be sold. This will help to improve the brand image of the
company as well as the products. Because of the attractiveness of the dairy industry, competition is hotting up in the market. There is a need to think about brand positioning and hence, it is required that companies position all their product variants with blanket family names so as to differentiate them from the competitors’ brands. Brand positioning should be done by keeping in mind the target customers, their requirements, lifestyles, behavioural aspects and other influencing factors.

Ellis (2009) administered interview questionnaires were administered to the general public in central Scotland and northern England during summer 2007 to investigate consumer awareness of UK dairy production methods, welfare issues and recognition of ‘quality assurance’ product logos. Fifty percent of the respondents gave UK dairy animal welfare a positive rating. Recognition of individual quality assurance logos was poor and 75 per cent of respondents stated that they did not intentionally seek to buy products with any of the logos. Respondents' perceptions of good dairy welfare included: appropriate feeding, good stockmanship, plenty of space, freedom to roam/free range and environmental cleanliness. Half of the respondents felt they were poorly informed about food production and the majority of the respondents (68 per cent) would like more information on food production. The respondents believed that information on animal welfare provided by veterinarians and farmers would be reliable. Most respondents (93 per cent) said they would pay more for good dairy welfare. The findings show that the general public are
interested in animal welfare but could be better informed on dairy animal production and welfare. Veterinarians and farmers may have a potentially important role in providing this information with increasing demand for higher welfare provenance products, potentially helping to improve animal welfare.

Sekar Murugan (2009)\(^{40}\) said that the objectives of his study are to review the structure and functions of the Co-operative milk supply society, to find out the existing marketing practices and to identify the problems which it has to face in the marketing of milk, to analyze the cost structure involved in the pricing of milk, to assess the functioning of the society from the consumers point of view and to offer suitable solutions to overcome the problems identified.

Ayenew et al, (2009)\(^{41}\) describe the ways of handling, processing and marketing of milk in urban and peri-urban production systems of the North western Ethiopian highlands. 256 and 54 dairy farms were selected for survey and monitoring data collection, respectively. Due to poor market access and high transaction costs and the perishable nature of raw milk, the amount of sold milk (products) and prices were significantly lower for peri-urban producers. Prices were also low during fasting periods and during the wet season; when milk production was reactively high. Traditional ways of milk processing at household level include practices which might contain risks for product quality affecting consumers’ health. Providing basic handling and health education for
producers therefore was likely to result in improved milk (product) quality on the markets. Direct delivery to the nearby consumers was the largest primary milk outlet for producers of both systems while retailers and milk cooperatives were the second most common outlets for the urban and the peri-urban system, respectively. Therefore, to enhance dairy production and marketing, milk cooperatives that could be able to market larger volumes and sufficiently reduce transaction costs should be supported by governmental and non-governmental organizations through providing technical and infrastructural support.

Selvarani (2008)\textsuperscript{42} in her the study has observed that 40 per cent of the consumers of TDCMPU have opined that the milk made available by the union is adjudged very good while 25 per cent of consumers felt it as good. The average sales per day during the year 1991-92 as 41,068 liters and the same increased to 88,948 liters on an average per day during 2004-2005 registering a phenomenal increase of 91 per cent. Thus it is evident that TDCMPU has taken serious measures for the marketing of its products. TDCMPU stands top in the maintenance of its quality ultimately earning the goodwill of its consumers.

Rangasamy and Dhaka (2008)\textsuperscript{43} analysed and compared the marketing of milk and milk products by dairy plants of co-operative and private sectors in Tamil Nadu. The study is based on the data collected for toned milk, standardized milk, full cream milk, flavored milk, butter and ghee from the selected co-operative and private dairy plants of the Coimbatore district for the
financial year 2001-2002. It has been found that the marketing cost for toned milk was the same in both the dairy plants, whereas it was higher for standardized milk, full cream milk and flavored milk in the co-operative dairy plant. The marketing cost was found less in the cooperative plant for products like butter and ghee. All the dairy products earned more marketing margins in the private sector than in co-operative dairy plant, except for toned milk. The marketing efficiency of cooperative dairy plant for all dairy products was observed relatively less than that of private dairy plant, except for toned milk. The study has suggested the development of co-operative dairy industry in a sustainable manner, and the co-operative dairy plants should formulate long-term vision and strategy. The study has observed that value addition in dairy products should be done without compromising the quality and consumer-oriented market research and development should be accorded greater attention.

Kamat (2008)\textsuperscript{44} analysed the market oriented dairy development. In his opinion it can alone ensure success of dairy units whether they are in public, private or co-operative sector. There is a great need to institutionalise milk trade from the stage of production to marketing.

Rajkumar Yogi et al, (2007)\textsuperscript{45} conducted a study which showed that except the medium herd size category, the marketed surplus increased with increase in herd size category. The unorganized sector was dominating in
procurement of milk with the share of about 80 per cent whereas the organized sector procured only 20 per cent of total marketed surplus. The vendor exploited producers by paying them low rate of milk and passing on the deteriorated milk to the consumers at high price. The study focused on the four methods of marketing channels. The producers share in consumer’s rupee was highest and price-spread was the observed lowest in channel II (Producer-Halwai – Consumers). Therefore, channel II was considered the best and this was also supported by the high index of marketing efficiency in this channel. The study further showed that the efficiency of that channel was low in which the number of intermediaries was more. There is a need to strengthen the structure of organized milk marketing system to save the producers from the clutches of intermediaries in order to stimulate the growth of dairy industry in India.

Denford Chimboza and Edward Mutandwa (2007)\textsuperscript{46} has remarked that branding is increasingly being used as a strategy for managing markets in developed countries while developing countries still lag behind. The objective of this study was to assess the level of brand awareness and factors underlying brand preference of the dairy brands in Chitungwiza and Harare urban markets in Zimbabwe. A total of 90 respondents, who included individual and institutional consumers, were selected using judgmental and simple random sampling respectively. Primary data were collected using structured interview schedules developed for each category of consumers. Consumer product
awareness indices, cluster analysis and factor analysis were the main tools used in the analysis. The findings of the study showed that 52 per cent of the respondent consumers were aware of ARDA dairy brands despite having come across few ARDA advertisements. Four factors were identified as key determinants of dairy product choice namely promotion, price and availability of product, attractive packaging and product quality. There was need for agricultural marketers to incorporate these findings in the formulation of responsive marketing strategies.

Fengxia Dong (2006) presented a 10 year outlook for major Asian dairy markets (China, India, Indonesia, Japan, South Korea, Malaysia, the Philippines, Thailand, and Vietnam) based on a world dairy model. Then, using Heien and Wessells’ technique, dairy product consumption growth is decomposed into contributions generated by income growth, population growth, price change, and urbanization and these contributions are quantified. Using the world dairy model, the paper also analyzes the impact of alternative assumptions of higher income levels and technology development in Asia on Asian dairy consumptions and world dairy prices. The outlook projects that Asian dairy consumption will continue to grow strongly in the next decade. The consumption decomposition suggests that the growth would be mostly driven by income and population growth and as a result would raise world dairy prices. The simulation results show that technology improvement in Asian countries would dampen world dairy prices and meanwhile boost domestic dairy consumption.
Stuckenborg et al. (2006) have found that the Federal dairy programs have been instituted to assist dairy farmers in marketing their milk. Milk marketing licenses were issued for city markets in 1933 during the depression. Federal Milk Orders replaced licenses in 1937 with enactment of the Agricultural Marketing Agreement Act. Low prices returned in the late 1940s and the Congress passed the Agricultural Act of 1949 creating the support program for milk. Congressional involvement in milk marketing was minimal until passage of the 1977 Farm Bill. A support price adjustment to seek favorable political responses from farmers resulted in higher prices and ultimately higher production. Large expenditures and burdensome supplies caused the Congress to make major changes in both the programs. Other milk marketing programs have evolved from Congressional actions, including export and promotion programs. The existing and consolidation of the dairy processors and producers has led to a reduction in the number of marketing orders.

Rajendran (2005) reviews the existing status of milk marketing and dairy co-operatives in India and provides recommendations to meet future challenges. The results of the study indicate that 80 percent of the milk produced by the rural producer is handled by an unorganized sector and the remaining 20 percent is handled by an organized sector. It is found that the dairy co-operatives play a vital role in alleviating rural poverty by augmenting rural milk production and marketing. Involvement of intermediaries, lack of
bargaining power by the producers and lack of infrastructure facilities for collection, storage, transportation, and processing are the major constraints which affect the prices received by producers in milk marketing. Milk quality, product development, infrastructure support development and global marketing are found to be future challenges of India's milk marketing.

Venkateswarulu et al, (2004)\textsuperscript{50} in their study concluded that there is increased awareness of consumers about the marketed milk and stiff competition among the different brands sold in the market. The private dairies are maintaining the minimum standards meeting the PFA requirements and some of the brands have also kept high standard to gain advantage over the rival brands. It is also observed that some of the milk sachets are under weighed. Majority of the dairies are practicing distribution of homogenized milk. It is recommended either government agencies or municipal authorities should prevail upon the quality standard for the safe and hygienic quality of the milk to the consumers.

Sukhpal Singh (2004)\textsuperscript{51} has pointed out that Indian dairy industry witnessed many policy and market changes in the last decade both in the domestic as well as the international markets. In this context, this paper examines the profile of organized private sector in liquid milk business, its growth, performance, business and marketing strategies and prospects, with special reference to Gujarat state and the Ahmedabad milk market, besides assessing the impact of policy changes in recent years. It is primarily based on
the secondary data and the interviews with the cooperative and private dairy unit owners and managers in Ahmedabad city mainly and it is focused on liquid milk as Ahmedabad is one of the most competitive milk markets in the country with more than 25 brands of liquid milk being marketed in the city. The nature and dynamics of the Ahmedabad milk market are analysed and marketing strategies of various types of players are examined. The policy of delicensing and its impact on milk marketing in India is also addressed. The paper concludes by discussing important steps for achieving competitiveness in the domestic and international markets.

Rajendran and Samarendra Mohanty (2004) explained that with the Operation Flood, dairy co-operatives have emerged in India as the largest rural employment scheme, enabling the modernization of the dairy sector to a level from where it can take off to meet not only the country’s,Â’s demand for milk and milk products but can also exploit global market opportunities. This study reviews the existing status of milk marketing and dairy co-operatives in India and provides recommendations to meet future challenges. The results of the study indicate that 80 percent of the milk produced by the rural producers is handled by an unorganized sector and the remaining 20 percent is handled by an organized sector. It is found that the dairy co-operatives play a vital role in alleviating rural poverty by augmenting rural milk production and marketing. Involvement of intermediaries, lack of bargaining power by the producers and lack of infrastructure facilities for collection, storage, transportation, and
processing are the major constraints which affect the prices received by producers in milk marketing. Milk quality, product development, infrastructure support development, and global marketing are found to be future challenges of India's milk marketing.

Jeremy Franks (2003)53 have pointed out that the recent background to the UK market for organic milk is reviewed to establish the background to the Organic Dairy Production: A Sustainable Future for Organic Dairying Conference held in March 2002. The presentations given at that conference were critically reviewed. Several of them arguably the most important determinants of the sustainable future of organic dairying did not find their full expression at that conference. Issues largely or wholly excluded included a priori evidence for expecting a higher level of co-operation among organic than conventional farmers; the distinction between “competitive pricing” and “sustainable pricing”; import penetration and substitution, and post-conversion subsidies; utilizing innovative information technologies to “tell the organic story”; policing organic standards and traceability; and the ownership of the “organic label” and the number of organic standard bodies. The importance of these issues was shown by reference to the current market situation for organic milk in the UK. There was a need for considerable developments in the marketing of organic milk. More distance must be placed between associations that campaigned for market growth and an organization that would need to be appointed to take responsibility for providing reliable and impartial market-based information.
Manjushree Banerjee and Yadav (2003)\textsuperscript{54} categorized milk producers into urban and rural. Further, the producers were classified into small (Owning up to two milch animals), medium owning three to five milch animals) and large (owning more than five milch animals) producers. The study concluded that mostly small producers are members of the co-operative society and most of the large and medium producers dispose of their surplus milk through direct sale. Cost of production per litre of milk decreases with the increase in the size of the enterprise; keeping crossbreds is more profitable than keeping she buffaloes and with the increase in the length of the marketing channel, the producer’s share in consumer rupee goes on decreasing. Findings pointed out that milk production is sufficiently high in the study area but what is lacking is an organized marketing system. Consumers processing milk from vendors face problems of adulteration. The problem can be overcome by marketing through organized channels, which can ensure quality control system in their dairy plants.

Ashutosh Shrivastava (2003)\textsuperscript{55} conducted a study to find out the impact of milk processing on the income and employment on the small farms of Damoh district, Madhya Pradesh and to examine the problems faced by the small milk processing farms and suggest measures thereon. Twenty small milk processing farms, mainly producing deshi ghee and 20 non-milk processing farms were selected. The study concludes that the processing of milk definitely increased the income and employment of the small milk processing units.
compared to non-milk processing units which sold directly to other vendors. The major problems faced by the processing farms are nonavailability of good quality of milch animals, inefficient management of feeding and breeding of animals, lack of proper organized market system (farmers did not receive remunerative prices every time), lack of storage facilities, technical and infrastructure support system and packaging facilities. To overcome these problems, the study suggests that since the processing units are looked after by household workers, good training programmes for managing these units be developed for manufacturing low cost packaging material and dairy feed formulations at the village level. The collection centres must be established on co-operative basis. Sufficient financial assistance by the government credit agencies at cheaper rates of interest must be provided to encourage the small producers and infrastructure facilities and extension activities must be developed.

Ashoke Kumar Ghosh and Keshav Lall Maharjan (2002) explain that the study has been undertaken to understand the general features of milk marketing in Bangladesh and explore some of the issues on milk production among dairy households and their conditions under various milk marketing channels. This study highlights share of milk marketed in urban and rural region, quality of milk and price variations under different stages of marketing and selling spots. This study also identifies the problems faced by farmers in milk marketing and their probable solutions. It is observed that most of the
dairy farmers were small in size, their milk production low and they marketed the surplus milk after consumption. However, the cooperative farmers had more cows and were producing more milk per cow compared to non-cooperative farmers. Farmers were following dominant marketing channels for selling major portion of their milk according to the locations. Price fluctuation in marketing was one of the important constraints for the small dairy farmer. The seasonal price fluctuation was higher for both the villages of Labutalla and Tarabunia at local as well as at urban markets. However, the cooperative price was fixed and it varied according to the fat content of the milk. The average price of milk received by the dairy farmers was higher for the Potajia, with cooperative marketing system compared to other places. It means marketing channels of cooperative were more efficient than the other channels. The higher and fixed price of milk would help farmers to better dairy farm planning. The milk price was not fixed under the traditional marketing system and milk producers frequently suffered from low price, seasonal price fluctuation and irregular payments. Middlemen on the other hand, appropriated larger margins from milk market often mixing fresh milk with water and powder milk. The milk quality supplied to urban markets through middlemen was not of good standard and price of milk varied according to different types of consumers even at the same market. Generally, the infrastructures for milk marketing were not available in the markets. Lack of infrastructure also damaged the quality of milk. But the cooperatives provided all modern marketing facilities to their
members for marketing their milk. The milk supplied under cooperative system was hygienic and guaranteed with price and quality. Therefore, further development of dairy farming depends upon the organized marketing channel in which farmer could get fair price. Collective marketing like cooperative system could also reduce the transportation cost. Majority of the dairy farmers were satisfied with cooperative marketing system. So, keeping in mind for mass of the small producer, cooperative milk marketing system can be developed for betterment of the rural dairy farmers.

Sharma (2000) held an opinion survey in Andhra Pradesh regarding the consumer perception and attitude towards the different sources of milk purchase. It revealed that a majority of the families purchased milk from private vendors due to non-availability of dairy milk within the reasonable distance from the consumer’s residence. Several households reported that the housewives were unable to collect milk in person from the milk booths as it involved time and energy and they were forced to employ servants for collection of milk from the booths, which involved additional cost and delay. Further, they also expressed dissatisfaction with the present arrangement of milk supply from the booths and suggested home delivery. Nearly, 60 percent of the families felt that the home delivery of milk in polythene sachets was advantageous and indicated willingness to pay additional costs/service charges for the same. So, the co-operatives may have to seriously think about the system of home delivery of milk in order to bring more consumer families
under its fold. The three reasons for household preference for private vendor was the non-availability of milk in small packing of less than half litre with the dairy milk as several small families and those belonging to lower income groups strongly felt that such facility was essential to enable them to purchase the dairy milk. It was also true of small size families irrespective of their economic status. Similarly, it was also noticed that in Orissa, a majority of higher income group (85.6%) were not purchasing OMFED milk due to absence of home delivery, poor taste, less cream, bad smell and non-availability of credit structure in co-operatives. There was also strong correlation between income and proportion of home delivered milk. For example, in Orissa, the percent of milk that was home delivered increased from 40 percent for those with income less than Rs.4,000 to 63 percent for those with income more than Rs.10,000.

2.4 Studied Related to the Milk Co-Operative Society

Ramananda and Babu (2011)\textsuperscript{58} have found that dairy co-operatives have got better supervision and regulatory framework which facilitate the proper implementation of organic farming and its certification. Dairy cooperative federation can initiate the organic farming certification process and can involve in the carbon trading activities which will bring an additional income to the farmers and farms. India has to face the problem of GHG emissions and may be fined for the excess emissions. Conscious efforts are required to assess the carbon footprints at each point of dairy industry.
Kalaiselvi and Somasundaram (2010) explain that analysis of a financial statement is the process of evaluating relationships between component parts of financial statements to obtain a better understanding of the firm’s position and performance. The liquidity position of a firm has the ability to meet its claims over a very short period of time. For that an analysis of the firm’s profitability over time and its ability to generate cash to be able to pay interest and principal is required. Hence, the analysis of financial statements is very important aid.

Jeyakumari (2008) has remarked that 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 of microbial loads need to be initiated to enhance the quality of milk and make India’s milk globally acceptable.

Selvakumar and ManicaMahesh (2008) study reveals that procurement of milk in Madurai Aavin in 1991 was 76140 LPD (litre per day), which increased to 240875 LPD in 2008. It shows fourfold increase over the period. The growth rate of milk procurement shows ups and downs, which ranged between 11.94 per cent in 1997 and 24.77 per cent in 2001. Madurai Aavin made sales of 4812409 LPD in 1992 and increased year by year and then reached 179982 LPD in 2008. The operation of Madurai Aavin is good but comparing to the growth of population it is not enough. The Government has taken steps to improve the operation of the Aavin by providing additional capital and new technology.
Ramanujam (2003)\textsuperscript{62} has found that the Indian middle class consumers have a craze for milk and its products. As they have good purchasing power, there exists high demand for milk and milk products. As a result, India is emerging as one of the largest and fastest growing consumer markets for milk and value-added milk products in the world and the ever increasing demand for milk products is a testimony for this. Therefore, only by having an effective and sound system of distribution of milk and milk products will emerge India as the world’s leading dairy nation.

Shah (2000)\textsuperscript{63} observes that the predominance of middlemen in this area was mainly due to the non-existence of co-operative infrastructure. Generally, the middlemen advanced money to needy milk producers and procured milk at a low price round the year. It was reported that 75 percent of marketed surplus of small producer’s production was cornered by them. Similar situations were reported in a study conducted in Jalgaon and Kolhapur districts of Maharashtra.

Owango et al, (1998)\textsuperscript{64} show that liberalisation in the dairy industry in Kenya is currently under way in several farms. The urban milk market monopoly of the Kenya Co-operative Creameries has been lifted. Clinical Veterinary and Artificial Insemination (AI) services are no longer publicly supported in many areas. Private sector response to these reforms is expected to be the greatest in the high-potential market-oriented dairy zones of Central Province, where the dairy farmers’ co-operative societies play a central role in
meeting the needs of dairy producers. A survey conducted by the authors measured the changes between 1990 and 1995 in milk marketing and service provision by the dairy co-operatives. Tabular and GIS analyses were used to evaluate the survey data. Dramatic changes in milk market patterns are apparent, in ways unintended by the policy reforms. Most notable has been a large increase in the role of the unregulated raw milk market. This helped increase real milk prices paid to producers by up to 50 per cent, but also led to a steepening of the price gradient with distance from urban consumption centres. Large increases were observed in the provision of veterinary and AI services by the dairy farmers' co-operatives societies, whose producer-client base and credit facilities may enable them to compete effectively with the independent private sector. Market liberalization, therefore, has expanded the role of the raw milk market and the participation of the dairy farmers' co-operative societies in milk marketing and the provision of input services.

Deepak Shah (1997) is of the opinion that though milk production in Maharashtra over last decade has increased by leaps and bounds, only 25 percent of the milk co-operatives are economically viable in the state. Differential price structure and mismanagement of co-operatives have led to poor procurement of milk, resulting in vast regional imbalances in terms of milk production. For the smooth functioning of the milk co-operatives, it is not enough to give remunerative prices to the producers, but the co-operatives themselves should take over the onerous task of ensuring necessary inputs so as to improve productivity and overall genetic stock of milch animals.
2.5 Studied Related to the Milk productivity

Saravanakumar and Jain (2009) observe that “The two-axes pricing policy is followed normally in the dairy business centres of Tamil Nadu. Though it is scientifically rational, it ignores the input prices, technology and government policies. For sustaining the growth momentum and achieving an annual average growth of 7-8 per cent in the next five years and considering that dairying is practiced as a component of mixed farming systems, it becomes imperative to take into account the interrelationship among the enterprises and general economic factors while fixing the milk price. In this study, development of a price determination model has been reported. It is based on the cost of production and takes into account price and non-price factors, technology, and projected different price scenarios of milk for the coming years. The study undertaken in Tamil Nadu state is based on the primary data collected for the year 2002-03 and has used normalized restricted quadratic profit function analysis and price determination models. It has been found that to maintain constant returns to the production cost of milk, the milk price would need an upward adjustment of 9.97 per cent, but to provide constant net monetary income, the milk price would need an upward adjustment by 10.30 per cent for buffalo milk. Considering 2002-03 as the base year, the estimated price for milk per litre was expected to be Rs.23.64 at constant monetary income and Rs.23.15 at constant return to production cost in the year 2009-10. The results of the paper are illustrative of the utility approach in generating consistent price sets for milk in response to alternative policy interventions.
Rhone et al, (2008)\textsuperscript{67} analysed and investigated determinates of and how milk pricing system, farm location, farm size, and month and year affected farm milk price (FMP), farm milk revenue (FMR) and loss in FMR of dairy farms in the Central region of Thailand. A total of 58,575 milk price and 813,636 milk yield records from 1034 farms were collected from November of 2004 to June of 2006. Farms were located in the districts of Muaklek, Pak Chong, Wang Muang, and KaengKhoi. A fixed linear model was used to analyze the milk price of farms. Two pricing systems were defined as 1 = base price plus additions / deductions for milk fat percentage, solids-non-fat, and bacterial score, and 2 = same as 1 plus bulk tank somatic cell count (BTSCC). Farm size (small, medium and large) was based on the number of cows milked per day. The results showed that FMP were lower (P < 0.05) in pricing system 1 than in pricing system 2. Most small farms had higher (P < 0.05) milk prices than medium and large farms across in both pricing systems. Large farms lost more milk revenue due to deductions from bacterial score and BTSCC than small and medium farms.

2.6 Studies Related to the Dairy

Dhandapani and Revathi (2012)\textsuperscript{68} in their study highlight the gender differentials involvement, food pattern and health hazards by men and women farmers in agriculture and dairy farming systems in Padavedu. Biologically women have a closer affinity with the natural environment than men.
Chennakrishnan (2011)\textsuperscript{69} in his study concludes that the dairy industry not only has an important role to play in increasing the milk production, but also in bringing about social and economic changes at the village level. To increase the scope of milk production, proper investments are to be done and there will be more employment opportunities in their sector.

Jeyakumar and Subbiah (2010)\textsuperscript{70} observe that the government needs to support dairy cooperatives survive in the new economic order by coming up with policy prescriptions aimed at generating enough surpluses at low cost, and also maintaining due quality standards. Instead of introducing policies that dismantle cooperative dairying, the government can maximize the welfare of millions of farmers by strengthening the cooperatives. After all, aim of the Indian dairy movement is to develop the dairy farmer not the dairy animal.

Kalaiselvi and Somasundaram (2010)\textsuperscript{71} remark that at present pricing of milk is purely based on the floor price fixed by the government worth for procurement and sales. It is not flexible. For a change, in a free market system, the price level of co-operative milk can be fixed either on “Floating Basis” or on “Active Basis” as followed by banking and consumer co-operative institution respectively, to the best advantage of the consumers. The competitors make use of the absence of the above in co-operative sector and ensure the success of the respective brands. So, on monthly basis the co-operatives can revise their pricing reasonably lower than the floor price, following the model price of active price mechanism or floating mechanism.
Velu Suresh Kumar (2010)\textsuperscript{72} has found that the dairy sector in India has shown remarkable development in the past decade and India has now become one of the largest producers of milk and value-added milk products in the world. Dairying has proved beyond doubt that it acts as one of the tools aimed at alleviating the poverty and unemployment especially in the rural areas in the rain-fed and drought prone regions. If India has to emerge as an exporting country, it is imperative that we should develop proper production, processing and marketing infrastructure, which are capable of meeting international quality requirements. A comprehensive strategy for producing quality and safe dairy products should be formulated with suitable legal backup.

Saravanan and Parvathi (2010)\textsuperscript{73} observe that self-help groups could get loans easily and at a lower interest rate than those of non-members. Most of the loans were contracted for a period of less than 12 months. In turn respondents did not remain under stress of loan payment for longer period. There was a wide gap between the average net income of non-members and members. The increment net income was also higher for members over the non-members. The feeling of members in terms of their self-worth such as confidence building, meeting financial crises of the family and treatment of neighbors improved better in the member’s category. The quality of treatment meted out to the SHG members by their family members in comparison to non-members was improved considerably. Various SHG activities resulted in improving the decision making capacity of SHG members on day today social matters. Communication skills are also found better due their exposure to external world. A lot of behavioral change is also observed in the member’s family.
Kalaiselvi and Somasundaram (2009)\textsuperscript{74} have found that the dairy development department of Tamil Nadu has undertaken a number of activities which are essential for the up-gradation of the milch animals and improving their productivity in long run. Provision of necessary infrastructure facilities for marketing of milk and milk products and supply of quality milk to the consumer have been made by way of establishing new chilling centres, pasteurization plants and adoption of modern processing systems. The procurement price is increased for the welfare of the milk producers. Though the procurement price is increased, the government is selling the milk only at the lower rate than the private sector.

Subbiah and Gurusamy (2009)\textsuperscript{75} observe that the main functions of the Dairy Development Department (DDD) include organization of societies, registration of societies, supervision and control of primary milk cooperatives, District Cooperative Milk Producer Unions and Tamilnadu Cooperative Milk Producers Federation. Dairy Development Department of Tamilnadu helps rural people especially the rural women to increase their livelihood by rearing milk animals and by supplying milk for the rural and economic development of our country.

Peter Enderwick (2009)\textsuperscript{76} analyses the problem of “quality failure” in China using as an illustration the recent case of melamine contaminated dairy products. This conceptual paper examines whether it is possible to anticipate
the incidence of quality fade and, if so, what can be done to minimize the likelihood of such problems occurring. Drawing on theoretical frameworks of alternative transactions governance modes, the discussion highlights the interaction between environmental operating conditions and effective governance modes. The discussion suggests that it is possible to anticipate quality and safety problems and identifies the key environmental conditions in China that contribute to the problem of quality deterioration. Analysis of three primary transaction governance modes contracts, hierarchy, trust and operating conditions reveal a dairy industry which, in contrast to many of the developed economies, is highly fragmented, politicised, ineffectively regulated and characterized by corrupt and opportunistic behaviour. The dairy industry case provides a concrete application of recent conceptual analysis of quality and safety concerns in emerging markets. This case allows the derivation of recommendations on appropriate management practices for maintaining quality in the challenging business environment of China.

Saravanakumar and Jain (2008) in their study ‘Technical Efficiency of Dairy Farms in Tamil Nadu’ evaluated dairy farm households in terms of efficiency of milk production using stochastic frontier production methods. The data for the study comprised fixed investments on dairy farms, quantity and price of feeds and fodders fed to individual animals, labour utilization pattern, veterinary and miscellaneous expenses, quantity of milk produced price realized, collected from 160 sample households across flush and lean season
for the year 2002-03. The coefficients for the value of green fodder and concentrate were found to be statistically significant with a relatively higher magnitude implying their greater and significant role in crossbred cow milk production. The technical efficiency of crossbred cow farms ranged from 72.30 to 97.90 percent with an average of 82.10 percent. The study indicated that there existed a scope to increase milk production of an average farm to 16.32 percent for crossbred cows and 14.04 percent for buffaloes without incurring any extra expenditure on these farms.

Shamsuddin et al, (2007)\(^7\) assessed the resources, challenges and prospects of the dairy industries in four districts of Bangladesh (Mymensingh, Satkhira, Chittagong and Sirajganj) with the participation of 8 to 12 dairy farm families in each district. They used ten participatory rural appraisal (PRA) tools, namely social mapping, semi structured interview, activity profiles, seasonal calendar, pie charts, mobility diagram, matrix ranking, preference ranking and scoring, system analysis diagram and focus group discussion in 57 PRA sessions from September through October 2002. Dairying contributed more to family income (63 to 74 per cent) and utilized a smaller portion of land than the crops. Twenty seven to 49 per cent of cattle feed was rice straw. Only Sirajganj and Chittagong had limited, periodic grazing facilities. Fodder (Napier, Pennisetumpurpureum) cultivation was practised in Sirajganj and Satkhira. Fodder availability increased milk production and decreased disease occurrence. Friesian crossbred cows were ranked best as dairy cattle. The
present utilization of veterinary and AI services were ranked highly. Farmers outside the milk union desired milk purchasing centres as the most required service in the future. They identified veterinary and AI services as inadequate and desired significant improvements. The PRA tools effectively identified resources, constraints, opportunities and farmers’ perspectives related to the dairy industries in Bangladesh.

Kathiravan et al, (2007)\textsuperscript{79} has opined that the livestock has been an integral part of the Indian rural economy and an indispensable tool of income and employment generation to millions of poor households in India. A study was undertaken in Tamil Nadu (India) to ascertain the cost of livestock services availed by farmers. The districts of Tamil Nadu state were classified into two categories, ‘livestock-developed’ (LD) and ‘livestock underdeveloped’ (LUD), based on initial baseline. The cost of treatment of cattle was more compared to other species of animals with the similar disease condition. The mean cost of treatment of a chronic medical case in cattle at a public veterinary centre was INR 20.83, in which the labour cost alone accounted for INR 17.35, with the maining amount for the drugs purchased outside. However, the mean costs of treating a chronic medical condition in buffalo and small ruminant at public veterinary centres were only INR 13.34 and INR 10.80, respectively. Cost of treating an acute surgical case in cattle at a public veterinary centre was INR 43.08 and treating a chronic surgical case was INR 41.85, while an acute medical care cost INR 35.69 and gynecological case INR 31.68. The major
component of cost in all the cases was the abour cost incurred to bring the sick animal to the centre. The charge collected at public veterinary centres per insemination was uniform at INR 15.00. However, the average total cost, including labour cost for transport accrued to the farmers varied from INR 27.58 for cows to INR 29.17 for buffaloes. The overall average cost of insemination by engaging a veterinarian at farm gate was INR 57.83 for cows and INR 45.00 for buffaloes. Although no charges were made for animal health care services rendered at public veterinary centres, the charges in terms of imputed labour cost for bringing the animal to the centre was incurred. Service fee accounted for more than 60 per cent of cost of treatment for home service by a veterinarian or a para-veterinarian.

Sharma et al, (2007) observe that India is the leading milk producer in the world and the dairy cooperatives are the backbone of the Indian dairy industry. This study has analyzed the inefficiencies existing in milk production, procurement pattern, marketing channels, and price spread of a dairy cooperative, Uttaranchal Cooperative Dairy Federation Ltd (UCDFL), also known as the Kumaun region of Uttarakhand and has proposed a model for eliminating these inefficiencies. It has been found that UCDFL is focused mainly on liquid milk marketing and has not adopted product diversification, which is the need of the day. Nainital and Almora districts of Kumaon region have been selected for the study; these cover almost 40 per cent of the cattle population in the division, except Udham Singh Nagar. It has been found that
due to insufficient margins, the number of agents working for other private dairies has increased. Different marketing channels for milk have been identified and price spread has been calculated for all the channels. Lack of business development services related to dairy industry has been found leading the farmers to disassociate from Anchal. The study has suggested that Anchal should evolve a definite policy with regard to procurement of milk in both lean and regular periods and to sustain its members, incentive package should be provided. Anchal should find ways to establish fodder banks at strategic locations for providing fodder during emergencies and periods of fodder scarcity. Local sale of milk at the society level should be encouraged to increase the popularity of Anchal brand.

Osotimehin et al, (2001) observe that the Nigerian dairy industry represent an important component of the agribusiness sector of the economy with great economic, nutritional, and social implications. This study examined the profitability as well as operational efficiency of milk processing enterprise in Kogi state, Nigeria. Data used to achieve this objective were obtained from 100 nomadic households, which were randomly selected using a multi-stage sampling procedure. Data were generated using a questionnaire as well as direct observation (cost-route method). Descriptive statistics, budgetary analysis as well as operational efficiency index were used to analyze the data. Results showed that milk processing enterprise was profitable and flexible-A net farm income of N18, 011.20 per month was realized by an average
processor, while the fixed costs accounted for about 1 per cent of the total costs of processing milk into different products. It was also shown that operational efficiency was not generally high among the processors. Based on these results, the study advised less efficient processors to adopt the practices of the efficient ones in order to make the enterprise more profitable.

Rajarajan (2006)\textsuperscript{82} remarks that the combined effects of both domestic reforms and WTO commitments in the last decade have changed the environment in which the Indian dairy industry will operate in future. A term of trade is a significant indicator of gains from trade and efficiency of domestic industry. In average terms, the terms of trade of Indian dairy products have declined in the post-liberalization period compared to pre-liberalization years. The year-wise trend is unstable with wide fluctuations in post-liberalization years. The real effects of trade liberalization will unfold only when the WTO provisions are properly implemented.

Karmakar and Banerjee (2006)\textsuperscript{83} have found that growth in milk production is likely to continue at the present rate of 4.4 per cent in the near future. Who is going to handle this incremental milk? What we must bear in mind is both income and price. We must bear in mind both income and price elasticity account for approximately 15 per cent of the total expenditure of food. Demand for milk, at current rate of income growth is estimated to grow at 7 per cent per annum. Interestingly, demand for milk is expected to grow
steadily over the next two decades as the low income rural and urban families who have higher expenditure elasticity would also increase their income due to new economic environment.

Dash et al, (2006)\textsuperscript{84} investigated the Women dairy which was sponsored by Ministry of Women and Child Development, Government of India in the year 2005. The Women dairy funded under STEP envisaged formation of women dairy co-operative societies and supporting the societies and members by way of creating marketing infrastructure, supplying physical inputs for dairy development and arranging training for office bearers and members. The project created a good impact on the dairy sector as a whole and on the cross section of beneficiaries. It provided an assured market to milk producers, released them from the clutches of unscrupulous middlemen by offering them a fair and transparent deal. The project, thus, created a favorable environment for higher production of milk. During two year period the milk production increased by 81 percent with the average daily production per pourer increasing from 2.6 litres to 4.7 litres. However, the impact was differential on different categories of farmers with big farmers gaining up to the maximum.

Ramakrishnappa and Jagannatha Rao (2006)\textsuperscript{85} observe that the dairy enterprise is an established sector in rural India and is playing a vital role in generating additional income and employment. In Karnataka, dairy development is positive and significant as state contributes towards milk
production, marketing, and processing of various dairy products in India. The microfinance programmes extended in dairy sector are helpful to take up dairy as main occupation among the economically backward communities in the state. In this paper, an attempt was made to analyze the different aspects of microfinance scheme (New Swarnima) implemented by KBCDC. The implementation of New Swarnima Scheme, one of the most popular microfinance schemes in the state, to promote dairy among backward communities, was assessed at micro level by selecting 18 beneficiaries belonging to landless labourers, marginal and small farmers in Kolar district in Karnataka state. The study found that the microfinance scheme has positive impact on income and employment generation, and has improved the natural resource management options.

Sunil Kulkarni (2004)\(^8\) explains that milk unit felt the need for strong logistic system which would primarily maintain the equilibrium of milk collection, processing and distribution. It will increase the productivity of the dairies and maintain an optimum supply for the consumers.

Hegde (2001)\(^8\) finds there is very little breathing time for the Indian farmers to face the challenge of importing milk and milk products under WTO. Our farmers are not prepared to solve them well on time. It is necessary to reduce the cost of milk production by increasing the productivity of our animals. We also need to reduce the cost of handling of milk and processing by
reducing intermediary agencies and by adding value to the produce. The quality of the milk should be of international standard which can be improved through screening of the livestock against important diseases and maintaining clean surroundings in the dairy farm. Finally, the policy of producing low fat milk for general consumption while the high fat buffalo milk can be supplied to a selected category of customers interested in high butter fat. We need to discuss with the farmers and understand their problems and solve them at the earliest. Surely, we also need to strengthen our farmers associations to acquire new technologies understand the milk marketing scenario at the international level and find suitable solutions.

Rawal and Vikas (2001)\textsuperscript{88} analysed the caste, education and land holding of MS farmers with those of the NMS farmers points to a larger proportion of households belonging to the backward caste, who being less educated and holding lower size of land are not able to participate in dairying. A recent study of two dairy co-operatives in Gujarat found that inequality in land ownership, caste, illiteracy and undemocratic functioning of co-operatives are the barriers to entry. Illiteracy might not be a factor in Kerala but land ownership could be one, as among the lower size class of land owner’s smaller proportion seem to be keeping cattle.

Gautam Kakaty and Moromi Gogoi (2001)\textsuperscript{89} argue that animal husbandry plays a pivotal role in the agrarian economy of India. It is closely
interlinked with the socioeconomic matrix of rural society. The development of livestock sector has been receiving significant priority in India in the last two to three decades. Dairy sector contributes significantly to generating employment opportunities and supplementing the income of small and marginal farmers providing by them food security.

Narayana (2001)\(^9^0\) opined that the work status of the adult population has no significant difference between MS farmers and NMS farmers. Women, however, devoted considerable amount of time to dairying, irrespective of whether they reported as working or not working. Obviously, the categories of work status and employment are not very useful in capturing the work input of women in dairying. Time disposal studies do help to bring this aspect of work and show that women’s role in cattle keeping is great. The initiatives undertaken such as Malabar Rural Development Foundation for improving the quality of dairy farmers are welcome as they go beyond the landless as their participation in dairying is low. This needs to be kept in mind while planning welfare interventions.

2.7 Studies Related to the Problems

Govindan Kutty (2005)\(^9^1\) identifies the major constrains that have a direct on milk production and analyses the problems of mill producers and prospects of milk. Milk producers of different geographical regions differ with regard to their level of income from subsidiary occupation.
Suriyamurthi and Ramachandran (2003)\textsuperscript{92} observe that the rural farmers joined together with production managers to make the country self-sufficient in milk. The aim of co-operative society is not to maximize the return on capital employed but to render service to its members effectively and efficiently.

Ray and Sunil (2000)\textsuperscript{93} conducted a study in Jaipur city and reported that local milkmen supply fresh raw milk at the doorsteps or to the vendor who in turn supplies it to households. The prices varied from Rs.13-20 per litre for cow’s milk depending on adulteration of milk with water and the category of customer. The price generally realized by a small farmer from the local vendor was about Rs.10-12 per litre, whereas they got only about Rs.9-10 from the cooperatives. Some middlemen also deployed daily wage workers to collect milk by using bicycles, jeep or camel cart to collect milk from the doorstep and take it to different selling points in nearby major cities.

2.8 Research Gap

The present study covers the production and marketing problem of milk in Kanyakumari district. So far no research has been conducted in the taluks, particularly in milk production. Studies were undertaken to analyse the function of co-operative societies but the unorganized sectors were not taken for any other study. Therefore, the milk produced by the people in the district is not accounted for. So the milk that is produced by the producers in that area is being marketed to the household and the milk vendors are not accounted for.
2.9 Production and Marketing of Theoretical Observations

Definition is the most preliminary aspect for a systematic study of any subject. It brings to the forefront its aims, objectives, scope and nature. Definition is therefore, an essential part of any systematic discipline.

The purpose of a definition is to take a concept and indicate exactly what it means. The most fundamental aspect of any discipline is a definition of what does and what does not constitute the appropriate subject matter of that discipline.

2.9.1 Production Concept

This concept emphasizes an essentially passive marketing contribution (Oliver, 1986) the production concept holds that things are available and highly affordable and therefore management should concentrate on improving production and distribution efficiency. According to Kohlas and Damey, Production can be defined as the creation of utility in the process of making useful goods and services.

2.9.2 Marketing Concept

Felton (1959) described marketing concept as a corporate state of mind that insists on a with other corporate functions for the basic objective of producing maximum long-range corporate profits. Kotler (1989) points out that the marketing concept holds the key to achieving organizational goals and consists in determining the needs and wants of target markets and delivering the desired satisfaction more effectively and efficiently than competitors.
2.9.3 Production Function

In the words of Jhingan, M.L., production function expresses a functional relationship between qualities of input and output. It shows how and to what extent output changes with variation in inputs during a specified period of time\textsuperscript{97}. Ferguson, C.E., defined production function as a schedule showing the maximum amount of output that could be produced from any specified set of inputs, given the existing technology or stages of art\textsuperscript{98}.

2.9.4 Product Concept

Product concept seeks to win markets and profits through product excellence quality assurance. It does not bother to study the market and the consumer in depth. Product concept holds that consumer will favour those products that offer the most quality, performance, and features and therefore, the organization should devote its energy to making continuous product improvements (Kotler, 1989)\textsuperscript{99}.

2.9.5 Selling Concept

The selling concept views that products do not sell themselves; advertising, sales promotion and branding increased, and product differentiation become significant. The selling concept holds that consumers will not buy enough of the organization’s products unless the organization’s undertakes a substantial selling and promotion effort (Kotler, 1989)\textsuperscript{100}. 
2.9.6 Agricultural Marketing

Agricultural production and marketing are two sides of the same coin and the latter is critical to better performance in agriculture as production itself. Increased production resulting in increased marketable surplus, accompanied by increase in demand and urban population and calls for a rapid improvement in the existing marketing system\textsuperscript{101}.

2.9.7 Marketing Channel

According to Philip Kotlar, marketing channels are sets of interdependent organizations involved in the process of making a product or service available for use or consumption by the consumer or business user\textsuperscript{102}. Richard Kohls and Damey describe marketing channel as the path over which a commodity passes as it moves from the farmer to the consumer\textsuperscript{103}.

2.9.8 Distribution Channels

Distributions Channels are made up of manufacturers, service producers and the wholesalers and retailers though which products are marketed to consumers and industrial buyers\textsuperscript{104}.

2.9.10 Sales Promotion

According to the American Marketing Association sales promotion includes those sales activities that supplement both personal selling and advertising and coordinate them and help to make them effective, such as
displays, shows and expositions, demonstrations and other nonrecurring selling efforts not in the ordinary routine\textsuperscript{105}.

2.10 Summary

In this chapter the researcher has reviewed various literature related to Milk production, marketing, Milk co-operative, productivity, Dairy, Problem, Production and Marketing of theoretical observations.
REFERENCE


[40] Sekar Murugan (2009),“A Study on the Marketing Practices of the Kovilpatti Co-Operative Milk Supply Society Ltd”.


