A STUDY ON PROCUREMENT AND MARKETING OF MILK AT MOTHER DAIRY IN PRAKASHAM DISTRICT OF ANDHRA PRADESH

BY

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2012

DECLARATION

I**, R. SRIHARI** hereby declare that the thesis entitled "**A STUDY ON PROCUREMENT AND MARKETING OF MILK AT MOTHER DAIRY IN PRAKASHAM DISTRICT OF ANDHRA PRADESH"** Submitted to the **Acharya N.G. Ranga Agricultural University** for the degree of Master of Business Administration in the major field of **Agribusiness Management** is the result of the original research work done by me. I also declare that no material contained in the project report has been published earlier in any manner.

Place: Hyderabad **(R. SRIHARI)**

Date: **I.D.No. RMBA/10-09**

CERTIFICATE

Mr. R. SRIHARI has satisfactorily prosecuted the course of project work and that the project report entitled "**A STUDY ON PROCUREMENT AND MARKETING OF MILK AT MOTHER DAIRY IN PRAKASHAM DISTRICT OF ANDHRA PRADESH"** submitted is the result of original project work and is of sufficiently high standard to warrant it's presentation to the examination. I also certify that neither the project report nor its part thereof has been previously submitted by him for a degree of any university.

Date: **Dr. P. RADHIKA**

Chairperson

CERTIFICATE

This is to certify that the project report entitled "**A STUDY ON PROCUREMENT AND MARKETING OF MILK AT MOTHER DAIRY IN PRAKASHAM DISTRICT OF ANDHRA PRADESH"** submitted in partial fulfilment of the requirements for the degree of **MASTER OF BUSINESS ADMINISTRATION** in the major field of **Agribusiness Management** of the **Acharya N. G. Ranga Agricultural University**, Hyderabad is a record of the bonafide work carried out by **Mr. R. SRIHARI** under our guidance and supervision.

No part of the project report has been submitted by the student for any other degree or diploma. The published part and all the assistance received during the course of investigations have been duly acknowledged by the author of the thesis.

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Symbols and Abbreviations

The following abbreviations shall be used for singular and plural units

%	:	Percent
&	:	and
>	:	Greater than
AMCU	:	Automatic milk collection unit
AP	:	Andhra Pradesh
et al.	:	and other people
etc.	:	for example, for instance
FYM	:	Farm Yard Manure
GDP	:	Gross domestic product
ha	:	Hectares
ha	:	Hectare
i.e	:	that is
ICDP	:	Intensive Cattle Development Program
Ltr	:	Liters
m t	:	Metric Tones
mt	:	million tonnes
NDDP	:	National Dairy Development Board
No	:	Number
^{o}C	:	Degrees Celsius
Rs.	:	Rupees
S. No.	:	Serial number
sq km	:	square kilometer
t	:	Tonne
TMDD	:	Technology Mission On Dairy Development
viz.,	:	Namely

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ABSTRACT

Dairying was basically a backyard enterprise in India with just enough number of animals to cater to the needs of the family. Over the years dairying has become a commercial enterprise in India. A wide range of producers undertake rearing of cattle in both organized and unorganized sectors.

India stands first in milk production in the world with a production of 121.7 million tones of liquid milk 2010-11. However, work should be done not only towards increasing live stock population concentration and productivity but also to focus on better handling of milk in terms of procurement, processing and marketing milk and milk products to meet an ever-increasing demand due to increase in population.

The study with objectives to study the different channels of procurement, marketing channels of milk by organized dairy industry in Prakasham district of Andhra Pradesh with respect to compare the costs and returns of a modernized (mechanized) dairy farm with a traditional dairy farm.

Top twelve milk producing villages include Kunchepally, Dhanavakonda, Thatimeedhapalem, Annangi, Mannuru, Ravanapally, Valetivaaripalem, Nippetlapadu, Aluru, Kondrapadu, Bollaram and Medanuru from Prakasham district were purposively selected and Primary data regarding investment cost and returns from dairy farming and cost incurred per liter of milk collected and problems faced in milk collection and

marketing was collected from 144 dairy farmers who were using their own channels of marketing and those who are selling the milk directly to mother dairy, milk depots and 20 dealers of mother dairy were identified randomly and data was accessed from the study area.

All the costs of milk production are categorized into fixed and variable costs, Cost of transportation from centre to plant directly, centre to chilling centre and center to the plant and the costs for spoilage of milk were measured

Simple averages were used to estimate cost of production of milk and cost of procurement of milk. Discounting techniques were used to obtain Benefit-Cost Ratio, and Finding of the study showed Farmers sell the milk at an average price of Rs. 30.24 per liter if they are selling to organized dairy and at Rs. 34 to 36 per liter if they are selling directly to consumers.

The major problem faced by dairy farmers in production of milk is availability of feed and fodder throughout the year. The other problems faced in order of importance are labour shortage, maintaining temperature and diseconomies of scale due to small herd size. The major problems faced by dairy farmers in marketing of milk to organized dairy are payment based on fat content, where as when they are marketing to milk agents the problems are related to payment based on fat content and transportation. In case of directly marketing to customer's major problem faced by 85% of dairy farmers is transportation problem.

Organized dairies in Prakasam district procured milk by adopting three procurement channels: Channel-I: Milk producers-societies-organized plants; Channel-II: Milk producers-agents-organized plants; Channel-III: Milk producers-vendors-organized plants. It was noticed that the cost of procurement for organized dairy works out to Rs.2.15 per liter and total procurement costs in channel III is Rs.3.42 per liter of milk. The total fixed cost is highest in case of societies procuring 250 liters and above milk. The total variable cost decreased with the increase in milk procured.

The costs incurred per liter of milk in Five marketing channels, which have been identified to market milk in Prakasam district are channel-I: Milk produce-consumer, Rs. 0.246; channel-II: Milk producer-local vendors-consumer, Rs. 4; channel-III: Milk producer-local vendors-organized plants-distributors-dealers (depots)-consumer ,Rs. 6.415; channel-IV: Milk producer-societies-organized plants-distributors-dealers (depots)-mom and pop stores-consumer, Rs. 5.7675; channel-V: Milk producer-societies-organized plants-distributors-dealers (depots)-consumer, Rs. 5.7675.

It was concluded Price received by dairy farmers supplying to consumers directly is more than farmers supplying to organized dairy, Price received by farmers if they are supplying to organized dairy or vendors is depended on fat content in the milk. As the volume of milk procured by societies increases, costs incurred by them decreases. Total cost incurred by organized dairy in procuring and processing milk is around 10 percent of the total costs of milk. The marketing channel involving vendors has less efficiency when compared to marketing channel involving societies and the net returns obtained by modernized dairy are more in comparison to traditional dairy when the milk is supplied to organized dairy and also when the milk is sold through other marketing channels.

Chapter I

INTRODUCTION

Dairying was basically a backyard enterprise in India with just enough number of animals to cater to the needs of the family. Over the years dairying has become a commercial enterprise in India. A wide range of producers undertake rearing of cattle in both organized and unorganized sectors, which supply milk and milk products to the ever increasing Indian population. Milk is an essential component in the daily diet of Indians. The following table shows the nutritional components present in milk, which make it a whole sum food.

Table1.1. Nutritional content of milk

S.No.	Components	Milk (per 100ml)	
		Cow	Buffalo
1	Proteins(g)	3.3	4.2
2	Fat (g)	4.1	7.0
3	Carbohydrates (g)	4.5	5.1
4	Ash(g)	0.72	0.82
5	Calcium (mg)	120	210
6	Magnesium(mg)	10.6	16.0
7	Sodium (mg)	50.6	-
8	Potassium (mg)	145	-
9	Phosphorus (mg)	82	128

(Source: Singh and Sachan, 2011)

For centuries, milk from various animals like cow, buffalo and goat has been used in the diets of people throughout the world. Milk has carbohydrates and milk fat serves as a ready source of energy. The milk production is a complex biological phenomenon controlled by a number of factors. The milch animals are biological machines which convert roughages and crude protein into milk. The annual value of India's milk production amounted to more than Rs.34,927.9 billion in 2010-11.

India stands first in milk production in the world with a production of 121.7 million tones of liquid milk 2010-11. The per capita availability of milk is about 276 grams per day in India. Milk production contributes 4 per cent to the national GDP (NDDB, 2010). Livestock contributes 22.2 per cent to the GDP from agriculture & allied activities. More than 70 million farmers in rural India are involved in dairy farming. Dairy cooperatives

generate employment opportunities for about 15 million farm families (Pranab Mukherjee, 2011).

In last six decades there has been huge growth in milk production. In India milk production increased at a rate of 2.5 to 4 per cent every year. From 1950s it has increased by 7.5 times, from 17 million tonnes in 1950's to 127 million tonnes in 2011-12. The demand for milk is undergoing a change both in quantitative and qualitative terms. White Revolution would not have been possible without the dairy cooperatives, implementation of operation flood programmes and timely policies of the government. However, work should be done towards enhancing production and productivity of milk and milk products to meet an ever-increasing demand due to increase in population, increase in disposable income and increased awareness among the consumers. In the last two years, the production in India increased by 3 to 4.5 million tonnes a year, against the steady increase of 6 million tonnes a year in the early years. The need of hour is not only to increase live stock population concentration and productivity but also on better handling of milk in terms of procurement, processing and marketing.

1.1 STATUS OF DAIRY SECTOR IN INDIA

India is blessed with a huge population 128 million buffaloes (NDDB, 2010). According to the All India Summary Reports of 17th livestock census, India possesses the largest livestock population in the World after Brazil. It accounts for 16 percent of the cattle population, 57 per cent of the buffalo population and 27 per cent of cow population of the world. Buffaloes contribute more to the milk pool with about 61.6 million tonnes (55 per cent) of milk followed by indigenous cows with 18.30 million tonnes (27 per cent), cross bred cows with 13.5 million tonnes (16 per cent) and goats with about 4.2 million tonnes (5 per cent).

Indian dairy industry can be divided into two types of enterprises, viz; liquid Milk and milk Products. In the procurement and marketing of liquid milk, there is strong presence of co-operatives and traditional private channels though the organized private sector enterprises also exist.

Dairy co-operatives account for the major share of processed liquid milk in the country. Presently, the dairy cooperative network includes 177 milk unions, operating over 346 districts covering near about 1,44,246 village level societies which are owned by about 15 million farmer members of which more than 4 million are women. More than 70 million

farmers in rural India are involved in dairy farming. Through co-operative approach, economy of scale may be introduced in the handling of milk. But, majority of plants are handling milk much below their installed capacity and facing cut throat competition from the vendors, contractors and other players dealing with milk procurement. Due to their high ideal capacity, total operation cost increased enormously in the value addition chain.

Approximately 50 per cent of the total milk produced in the country is consumed as liquid milk, while the remaining is utilized to produce the products like milk powder, curd, butter, *khoa*, *paneer*, butter milk and ice cream. Though milk is produced in villages, the consumption pockets are mainly in towns and cities. Generally in winter (flush) milk production is more than the consumption. This milk surplus is being converted into milk powder which is being utilized in summer (lean season) to maintain the production and consumption gap. Approximately near about 11 liters of milk is being utilized to produce one kg of milk powder.

1.2 SCHEMES AND PROGRAMS

During 1964-65, Intensive Cattle Development Programme (ICDP) was introduced in the country in which a package of improved animal husbandry was given to cattle owners for promoting white revolution in the country. The milk production in India in 1950-51 could meet only 25 per cent of the domestic demand, and the remaining 75 per cent of the demand was met by importing the milk solids. The production stagnated for two decades till 1970, with annual growth rate of milk production of one percent. Based on the vision and foresight of Dr. Varghese Kurien, in 1970, National Dairy Development Board launched “Operation Flood Programme” with an objective of ending milk famine in the country and turning farmer’s co-operatives into powerful catalyst for transforming India into a major milk producer in the World. This movement also aimed at providing milk producers remunerative prices round the year, with this milk production in India touched 74 million tonnes in 1997.

The first phase of “Operation Flood Programme” was between 1970 and 1981 and it laid the foundation for modern dairy industry in India. This period witnessed a self-sustaining growth of producers controlled dairy co-operatives. The second phase was in action during 1981 to 1985, which established 136 milk sheds and captured markets in 290 cities and provided 4.9 billion finance. The operation flood has completed third phase

between 1986 to 31st March 1994 by capturing 500 cities with population target of 300 million customers and at present fourth phase is in operation.

The Operation Flood programme launched another massive programme called "Technology Mission on Dairy Development (TMDD)" in June 1989. The objectives of TMDD were same as that of Operation Flood Programme's objectives (www.indiastat.com, www.amulindia.com).

1.3 MILK PRODUCTION

India's milk production increased from 21.2 mt in 1968-69 to 66.2 mt in 1995-96 and to 121.7 mt in 2010-11. The Per capita availability of milk was around 276 grams per day in 2010-11 which increased from 195 grams per day in 1995-96, and from 112 grams per day in 1968-69. Production increased over 4 per cent annually during 2000-01 to 2010-11 surpassing the 1.6 per cent growth in population. The net increase in availability is around 2.4 per cent per year (NDDB, 2011). Automatic Milk Collection Unit (AMCU) and Bulk Milk Cooler (BMC) at grass root level can preserve quality and reduce post-procurement losses (NDDB, 2011).

Buffaloes play a major role in milk production with buffalo milk contributing 54 per cent to the total milk production. Andhra Pradesh contributes about 10 per cent to national milk production. In Andhra Pradesh majority of people prefer buffalo milk. Most of the dairy farmers prefer rearing buffalo for milk because of low costs involved and high demand. In Andhra Pradesh buffalo milk contribution to over all milk production is 70 per cent. Prakasham district contributes 9.62 percentage to the overall buffalo milk production of Andhra Pradesh. Prakasham district rich with natural resources is the top most milk producing district in Andhra Pradesh.

In general, most of the dairy farmers in India adopt mixed farming practices as agriculture is the main source of income and dairying subsidiary income. The farmers are involved in dairy activities as routine activities in the day and are not calculating their costs and returns. But for the most of the farmers returns from dairy practices would full fill their daily expenses, where as the income from the agriculture would be treated as an asset. Some business oriented farmers are adopting mechanized dairying practices which in turn help them to increase their productivity and profits by reducing the problem of labour shortage and ecto-parasites problem. Even the byproduct of milch animals such as dung is

used by them in biogas plant, by which hygienic conditions are maintained in the cattle sheds.

Major practices followed by mechanized dairy farmers are sequential feeding system, proper ventilation and temperature controlled fans, foggers and sprinklers, milking machines and atomized cleaning system. Their mechanized dairy farms have competitive advantages then traditional dairy farms and will significantly improve the social and financial well being of farmers

1.4 PROCUREMENT A MAJOR FUNCTION IN DAIRY INDUSTRY

In general, the success of dairying is dependent on four components production, procurement, processing and distribution of milk and its products. Among these four components, milk procurement plays a major role. The economic efficiency of milk procurement greatly depends on the operations namely developing a network for collection, transportation and chilling of milk. Different dairy plants have different systems of milk procurement namely contractor system, co-operative system or their own collection network. The milk procurement by co-operative system has been considered as an ideal system under the existing conditions of milk production.

Earlier 30 per cent of the total milk produced in the country is consumed at the producer level and remaining 70 per cent was directly marketed at the door steps of the consumer. Over the years people started using branded milk and cooperative societies played a major role in this change. In this present situation, it is estimated that 15 per cent of the total milk produced in the country is consumed at the producer level and remaining is marketed through various cooperatives, private dairies and vendors. The dairy farmers who are producing milk according to the prescribed quality standards are willing to sell their produce to co-operatives. Those who are producing milk which is not meeting the quality standards prefer to sell directly to consumers. Hence, the major problem with procurement of milk by cooperative societies is that at any point on an average only 50 percent of registered dairy farmers were supplying to cooperatives, because of which, dairy plants are finding it very difficult to forecast the milk procurement.

Another major issue with procurement of milk is minimizing the souring and curdling chances, as spoilt milk will create losses in the milk supply chain. Hence sterilization of cans, vans, chilling of milk and on time delivery of milk at the plants play a major role in procurement function of milk.

1.5 MARKETING

In 2010-11, average daily cooperative milk marketing stood at 219.9 lakh liters; annual growth has averaged about 5.2 per cent compounded over the last decade. Dairy cooperatives now market milk in all metros, major cities and more than 2000 towns or cities. During 2001-2011 the daily milk supply by cooperatives to each 1000 urban consumers has increased from 47.7 to 60 Kg per day. Milk travels as far as 2,200 kilometers to deficit areas, carried by innovative rail and road milk tankers (NDDB 2011).

In general, milk is being marketed through three channels; milk producers to the door steps of the consumers; milk producers to the venders and to the consumers and milk producers to the procurement societies and to the consumers in processed form. In case of cooperatives, of the total milk procured, 60 per cent is consumed in the fluid form and rest is used for manufacturing processed value added products, in case of private dairies 45 per cent is marketed in fluid form and rest is processed into different dairy products. Milk market is a heterogeneous market good product width and length such as toned, double toned, full cream, flavored milk and products such as milk powder, butter, *ghee, panner, kova*, milk based sweets.

The present study was under taken to understand the different channels of procurement and marketing of milk at Prakasham district of Andhra Pradesh through a research entitled "A Study on Procurement and Marketing of Milk at Mother Dairy in Prakasham District of Andhra Pradesh" with the collaboration of Mother Dairy, a leading player in milk procurement processing and marketing in Prakasham district.

1.6 OBJECTIVES OF INVESTIGATION

The study was undertaken with the following objectives

1. To study the different channels of procurement of milk by organized dairy industry in Prakasham district of Andhra Pradesh.
2. To study the marketing channels involved in marketing of milk and compare profitability of dairy farmers supplying to the organized dairy with farmers who are adopting other ways of marketing.
3. To compare the costs and returns of a modernized (mechanized) dairy farm with a traditional dairy farm.

1.7 SCOPE OF THE STUDY

Prakasham is one of the top milk producing districts of Andhra Pradesh with two major cooperative dairies viz., Vijaya and Mother Dairy and many other potential private dairies like Priya, Jersey, Reliance, Ruchi, Tirumala, Sri Sai, Heritage and Nagarjuna. To reap benefits from dairy farming and decrease the gap in supply and demand it is essential to professionally manage all stages of dairy farming and marketing .This study concentrates on the procurement and marketing of milk in Prakasham district. It throws light on various issues in procuring milk by organized dairy and the competition and challenges faced by organized dairy in marketing of milk. The study also analyses the profitability of dairy farmers adopting various channels of marketing. Mechanization being encouraged in all operations of farming has scope even in dairy farming. The costs and returns of a modern (mechanized) dairy farm are compared with the costs and return of a traditional dairy farm to known the benefits accruing from mechanization.

1.8 LIMITATIONS OF THE STUDY

Though the study was undertaken to get full information with regard to the objectives elicited, certain limitations like company personnel not too willing to reveal the data because of high competition and certain farmers and customers not giving appropriate data led to making a few assumptions in the study.

1.9 STRUCTURE OF THESIS

The study is presented in six chapters as follows:

I. Introduction: The importance of the study, problem setting and objectives are covered.

II. Review of literature: The available and relevant literature is thoroughly reviewed.

III. Methodology: The methods and materials encompassing sampling, data collection, analytical tools, and methods of evaluation are explained.

IV. Results and discussion: The results and discussion covering the aspects such as procurement channels, marketing channels, cost and returns of dairy farmers and profitability of modernized dairy units are presented.

V. Summary and conclusions: Summary and conclusions and suggestions for improving the income levels of dairy farmers and dairy plants are presented.

CHAPTER II

REVIEW OF LITERATURE

The review of literature pertaining to the study has been done to gain better insight into the topic of the study. The review of literature is presented under four subheads.

1. Production aspects and profitability relating to dairy farming.
2. Procurement of milk and other dairy products
3. Marketing of milk and other dairy products.
4. Mechanization of dairy farming and others.

2.1 PRODUCTION ASPECTS AND PROFITABILITY RELATING TO DAIRY FARMING

Tripathi *et al*. (1986) studied on "Economic analysis of dairy enterprise in Andra Pradesh". He observed that in buffaloes the feed was a major component (72.03%) followed by labour charges (13.63%).The study also pointed out that the input –output ratio in buffaloes worked out to be 1:1.31 and the net farm income was observed to increase with the farm size.

Meena and Fulzele (2004) in their article "A standardized scale to measure decision making pattern among tribal dairy farmers regarding improved dairy farming practices" evaluated a scale to measure the decision making pattern by the procedure described by Likert (1932). It was reported that, to measure the improved dairy farming practices, mean value for each section was calculated and items having better mean score were finally retained in the inventory. Further, coefficient of reliability was worked out and the scale satisfied the content validity.

Dwaipayan *et al.* (2005) studied that economics of buffalo milk production in Taria area of Uttaranchal and concluded that net returns over total costs were negative for all categories of farmers. Medium farmers incurred highest losses, while marginal farmers could break even. He confirmed that rearing for milk production is an uneconomic proposition in the study area.

Srinivasa (2007) in his research entitled "A study on the production and marketing aspects of Kolar Milk Union, Karnataka state" reported that, milk production of a crossbred cow per annum was higher in high milk producing dairy units (1619 liters) as compared to medium (1585 liters) and low milk producing units (1581 liters). The milk yield is proportional to the land holdings of sample dairy farmers and increases with size of dairy unit. Further, it was observed that, stability in milk production was more in high milk producing units followed by medium and low groups.

Meena *et al.* (2010) studied economic analysis of milk production in Alwar district of Rajasthan. They revealed that the net cost of maintaining a buffalo was relatively higher in case of society member group (RS.47.99 per day) as compared to non-member group (Rs. 44.22 per day). The net income of buffalo per day was relatively high in case of member group (RS. 7.38) as compared to non-member group (Rs. 2.70).

Kaur *et al.* (2010) worked on milk market structure in Punjab-organized vs. unorganized sector. The average production consumption and marketed surplus of milk worked out to 330 and 315 liters per day at the aggregate levels respectively. The surplus has accounted for about 95% of the total milk produced. The milk producer made disposal of surplus milk to the extent of 84.4%, 14.3% and 1.3% to cooperatives, milk vendors and consumers respectively.

Wani *et al.* (2010) studied on 'Economics of milk production by small holders across agro-climatic zones of Jammu and Kashmir'. The study in essence revealed that keeping of milch animals is economically beneficial to the farming community in all the agro-climatic zones of the state in terms of gross, net and family labour income as well as employment generation and he suggested the need for a prospective plan which shall take in to account effort to increase productivity of individual livestock in all the agro-climatic zones.

Meena *et al.* (2011) worked on determination of production and marketing surplus of milk in Alwar district (Rajasthan). They mentioned that increase in the green fodder, dry fodder; concentrate and labour can go a long way in increasing the production of buffalo milk. In their study the results of marketing surplus function revealed that milk production and price of milk had a positive and significant influence on the marketed surplus of milk and the family size showed the negative and significant influence.

Wakchaure *et al.* (2011) worked on increasing productivity of Indian livestock and they found that timely artificial insemination, vaccination, record keeping, proper diagnosis and treatment of sick animals and providing balanced nutrition and proper management will help in increasing productivity per animal.

2.2. PROCUREMENT OF MILK AND OTHER DAIRY PRODUCTS

Rangaswamy (2005)(a) studied on cost of transportation of milk in a co-operative sector dairy plant in Tamilnadu In the study it was seen that by installing bulk coolers in the society, the transport vehicles transport the milk from collection centers to plant only once per day. He suggested that under utilization of tankers should be avoided, efficient route planning should be done to reduce the distance covered by vehicle and perfect links should be maintained between the subsidiary routes and main route.

Rangasamy (2005)(b) studied on cost of transportation of milk in a co-operative sector dairy plant in Tamilnadu. He concluded that the average per liter cost of transporting from collection centers to plants directly and from collections centers to chilling centers was 37 paise. The average per liter cost of transporting from chilling center to plants was found to be 5 paise.

Rangasamy *et al.* (2007) studied on Economics of milk procurement in a cooperative sector dairy plant in Tamilnadu. He mentioned that the economic efficiency of milk procurement greatly depends on the operations namely collection, transportation and chilling of milk. The success of the dairy industry is rotating around a triangle *i.e.* procurement, processing and distribution of milk and its products.

2.3 MARKETING OF MILK AND OTHER DAIRY PRODUCTS

Sujatha *et al.* (2003) studied cost, margins and price- spread in marketing of milk in Chittoor district of Andhra Pradesh and they concluded that profitability of dairy enterprises depend up on cost structure and the income generation capacity of the enterprises and existence of good marketing outlet. The chains of intermediaries involved in milk marketing are traders, middlemen, private, government or cooperative rural dairies.

Vedamurthy and Chauhan (2005) worked on economic analysis of milk marketing in Shimoga district of Karnataka. The study suggests the necessity of establishment of cooperative societies, strengthening of the organized sector and increasing the marketed surplus. The study made a suggestion to increase the production by adopting new economically feasible technologies.

Inderpreet *et al.* (2010) studied pattern of milk production marketing in Ludhiana and Sagnrur districts of Punjab and they revealed that the most preferred mode for selling milk was local vendor followed by cooperative societies, private milk plants and direct sale to consumers. The large quantity of milk sold per household indicated that dairy farmers in Punjab are adopting dairy farming on a commercial basis and more efficient and organized milk marketing system is essential to stimulate the milk production and growth of dairy industry in Punjab.

Kumar and Gogoi (2011) worked on the case study on consumer buying behavior and brand loyalty with regard to processed liquid packed milk in Guwahati (Assam)'. They concluded that not only the economic factors but also the emotional factors of the consumers' like the culture and subculture, habits, likes and dislikes also influence the buying behavior of liquid packed milk. These factors can affect the marketing efforts of a firm to a great extent.

Asthana *et al.* (2012) carried out a study titled 'Amul: Evolution of an international brand'. The study mentioned that Amul was conceived from the acronym of Anand milk-production's union Ltd. Amul is not a proprietary brand, but it is collectively owned by 3.03 millions milk producers of 15712 village level cooperative societies of Gujarat. Establishing brand awareness and building brand was a major challenge in the initial year's of establishment. Amul was a regional brand with six brand elements (Memorability, Likeability, Transferability, Adaptability, Protectability and Meaningfulness).

2.4. MECHANISATION OF DAIRY FARMING AND OTHERS

Garg *et al.* (2005) studied on housing, feeding and milking management practices of dairy cattle in Baran district of Rajasthan and mentioned that the average herd size per household was 5.06 animals and the average daily milk yield was 4.80±2.54kg per household. The majority of the farmers (48.43 & 44.02%) followed low level of housing

and milking management. It was also mentioned that majority of the farmers do not maintain regular feeding of milk cattle and the group feeding was practiced once a day.

Randhawa *et al.* (2009b) worked on a study in to the factors determining market surplus of milk in rural Punjab, the results revealed that high income category of household produced 291.21 kg of milk per month per household, which was higher than both low (796.13kg) and medium category of households in the developed region of the state.

Gangasagar *et al.* (2010) worked on role of dairy co-operative society for improvement in dairy industry in Marathwada region. They found that higher proportions of the dairy farmers were enjoying the benefits of co-operative societies. Twenty percent dairy farmers believed in proper supply of quality feeds at subsidized rate, 74% dairy farmers have availed the financial facility, 4% got the technical advice from society.

Pradeep and Rajkamal (2010) worked on availability preference and frequency of communication source to dairy entrepreneurs. Milk co-operative society was found to be the most available communication source to dairy entrepreneurs followed by newspapers and radio. Veterinary hospital was the most preferred source of communication followed by other qualified persons in animal husbandry and veterinary college. Radio followed by newspapers and friends were the most frequently utilized communication source.

Singh and Mangesh (2010) carried out a study on improved housing system for sustained productivity in dairy animals and they found that housing system must be temperature controlled with the help of fans and foggers and the shed should be well ventilated and covered by leafy trees, cool water must be provided in buckets to maintain the body temperature in hygienic condition to improve productivity of milking animals.

Ravikant *et al.* (2011) studied on man power utilization, in hand and machine milking operations of crossbred cows in organized farm and they concluded that machine milking method was more time efficient than hand milking method where as other time components were constant such as udder washing, udder massaging, weighing of milk etc. They also concluded that machine milking was most useful in labour scarce areas.

Tripathi and Pandey (2011) studied on impact of drudgery reducing technology on ergonomics of rural women engaged in milking animals. He revealed that there will be 26 per cent there will be saving in cost of women workers per unit of output white milking a

buffalo using a revolving stool as compared to the continuous squatting position while milking an animal traditionally. He concluded on the basis of degree of difficulty, body posture difficulty, handling difficulty, time spending on activities and frequency of operation.

Mukherjee *et al.* (2011) studied on more light equals more milk effect of photoperiods on milk production in dairy cattle. According to him a number of management tools are available to increase milk production. In dairy cattle, increased light exposure from less than 12 hrs of light/day (short-day photoperiod) to 16 to 18 hrs of light/day (long - day period) enhances milk production by an average of 2.5 kg/cattle per day.

Gupta *et al.* (2011) study on man power utilization, in hand and machine milking operations of crossbred cows in organized farm and concluded that machine milking method was more time efficient than hand milking method where as other time components were constant such as udder washing, udder massaging, weighing of milk etc. They also concluded that machine milking was most useful in labour scarce areas.

Singh and Valdiya (2011) carried out a study on improved housing system for high milk yielding animal. They suggested that the feeding, watering and milking place should always provide shade. Cool drinking water either from ponds /hand pumps/tube wells will help the animals to maintain their body temperature. The intermittent showering of cattle and buffaloes with cool water has proven to be efficient way for them to get rid of excess heat.

Satbir (2011) worked on ‘Improved dairy production and processing through trainings programmes’. It was noticed that the knowledge level of the respondent before and after training for cattle breeding, feeding, healthcare and management was 29.31, 46.41, 30.61, 57.49, and 71.33, 86.32, 68.72 and 89.90 per cent respectively. Milk yielding has increased with decrease in anoestrus cases and calf mortality which in turn fetched more profits to the dairy farmers.

Wakchaure *et al.* (2011) carried out a study on role of livestock in the livelihood of poor and they concluded that livestock is an important natural resource for supporting and enhancing the income of livelihood in rural India and most of farmers in rural areas adopted

mixed farming practices i.e. dairy farming in addition to crop cultivation. Byproducts obtained from dairy sector are being utilized as an input for crop sector and vice versa.

Chapter III

MATERIALS AND METHODS

The present study was carried out in Prakasham district of Andhra Pradesh. The study pertains to procurement and marketing of milk with respect to estimation of costs and returns, comparison of modernized dairy farms with traditional dairy farms and existing market channels for marketing of milk in Prakasham district. This chapter presents the sampling design, nature and methods of data collection and analytical tools being applied in attaining the specific objectives of the study. The chapter is presented under the following sub heads.

3.1 Sampling procedure

3.2 Collection and sources of data

3.3 Tools and techniques

3.4 Description of study area and company profile.

3.1 SAMPLING PROCEDURE

Both purposive and random sampling techniques were used to select district, market functionaries, markets and dairy farmers.

3.1.1 Selection of district

The present study was conducted in Prakasham district of Andhra Pradesh. Prakasham district is one of the important dairy farming districts in Andhra Pradesh. It contributes about 9.62 percentage to the total milk production of A.P. Prakasham district was purposively selected for the study as it stands first in milk production in Andhra Pradesh and the operations of mother dairy are predominantly in Prakasham district

3.1.2 Selection of villages

Top twelve milk producing villages from Prakasham district were purposively selected for the study. The villages where the study was conducted include Kunchepally, Dhanavakonda, Thatimeedhapalem, Annangi, Mannuru, Ravanapally, Valetivaaripalem, Nippetlapadu, Aluru, Kondrapadu, Bollaram and Medanuru.

3.1.3 Selection of dairy farmers

From each village twelve dairy farmers were randomly selected for the study. Hence a total sample size of 144 dairy farmers were interviewed to collect the data.

3.1.4 Selection of milk dealers

Marketing is an important function for dairy business. To know the information with respect to various marketing aspects, 20 dealers of mother dairy were identified randomly and data was accessed.

3.1.5 Selection of Agents / Village representatives

Ten Agents and ten village representatives of mother dairy were identified randomly and data was collected from them.

3.2 COLLECTION AND SOURCES OF DATA

Primary data was collected from the selected dairy farmers, milk depots and dealers of mother dairy from the study area through survey method with the help of different pre-tested schedules specially designed for the purpose. The data regarding investment cost and returns from dairy farming and cost incurred per liter of milk collected and problems faced in milk collection and marketing was collected from dairy farmers Data regarding the net profits from milk marketing was elicited from both the dairy farmers who were using their own channels of marketing and those who are selling the milk directly to mother dairy. Data regarding problems in procuring of milk, cost incurred in procuring a liter of milk was collected from agents and village representatives of Mother dairy.

Secondary data was collected from websites, journals, articles, dairy news, past studies, veterinary doctors and company personal of both mother dairy and mechanized dairy units.

3.3 TOOLS AND TECHNIQUES

The data collected has been analyzed by using various tools and techniques which are presented below

3.3.1 Tabular analysis

This has been was done by working out simple averages, and percentages. Discounting techniques were used to obtain Net Present Value, Benefit-Cost Ratio, and Internal Rate of Return.

Simple averages were used to estimate cost of production of milk and cost of procurement of milk. Appropriate percentages were worked out for the purpose of comparison.

3.3.2 Cost of milk production

Certain expenses were incurred by the dairy farmers for the entire herd on the dairy farm for milk production. All these costs are categorized into fixed and variable costs. Fixed cost includes rental value of leased in land, land revenue, depreciation on cattle, depreciation on shed, fencing, building for storage, fans and foggers, milk machines, dairy utilities, interest on investment where variable costs involve feed, fodder, human labour, family labour, engaged labour, cost of veterinary and health care, electricity, water, cost incurred in supplying of milk, insurance on cattle and miscellaneous expenses. The total cost incurred for milk production is the sum of fixed cost and variable cost

Total cost = Fixed cost + variable cost

The cost incurred for production of one liter milk was calculated from the formula

Cost per liter of milk = total cost/total milk produced in a year

$$CMl = TC/MPt$$

Where,

CMI= cost per liter of milk

TC= total cost

MPt= total milk produced in a year

In dairy units, average milk yield (liters) of the milch breed would be considered as main product and the revenue generated from it was main revenue. The dung from the cattle is used as Farm Yard Manure (FYM) which is considered as byproduct, the revenue generated from it was subsidiary revenue.

Average milk yield per year can be calculated by product of number of live stock in particular breed, average lactation days and average milk yield per day. The formula comes to be

$$My = B1*(Ly*Md) + B2*(Ly*Md)$$

Where,

My = Average milk yield per year

B1 = type of breed

Ly = Average lactation days in a year

Md = Average milk yield per day

The revenue generated from the milk production can be calculated by product of average milk yield per year, price received and the average fat content in the milk.

$$RMy = B1\ (My*PFm) + B2(My*PFm)$$

Where,

RMy = revenue of milk yield per year

B1 = type of breed

My = average milk yield per year

PFm = price received for average fat content of milk gained

Revenue from dung can be calculated by,

$$RDy = DDy\ *Pd$$

Where,

RDy = revenue of dung deposited in a year

DDy = dung deposited in a year (tones)

Pd = price received per one tone of dung

Total revenue generated in a year can be calculated as,

$$TRy = RMy + DDy$$

Where,

Try = Total revenue generated

RMy = revenue of milk yield per year

RDy = revenue of dung deposited in a year

Revenue generated per liter of milk can be calculated as,

$$RGl = TRy / QMy$$

RGl = Revenue generated per liter of milk

TRy = Total revenue generated in a year

QMy = quantity of milk yield per year

Net returns can be calculated by,

$$\text{Net returns} = RGl - CMl$$

Benefit cost ratio: BC ratio is calculated to know the profitability of a business.

$$\text{Benefit cost ratio} = \text{Present worth of gross returns} / \text{Presents worth of costs}$$

The benefit cost ratio for a profitable business will always be more than one.

3.3.3. Cost of milk procurement

Cost of milk procurement was ascertained by taking into account the cost of collection, transportation, chilling and cost of reception of milk at the reception dock.

Cost of milk procurement = Cost of collection + Cost of transportation + Cost of chilling + Cost of milk reception.

3.3.3.1. Milk Collection cost:

Total cost incurred on collection of milk comprised of the fixed and variable costs. Fixed cost included

Cost of milk testing equipment (depreciated over period of time), Depreciation on fixed assets, Interest on capital invested in fixed assets, Depreciation on dairy utilities. Variable cost included the expenditure incurred on consumable articles like salaries and

wages paid to the procurement and administrative staff (apportioned as per the utilities derived) engaged in the process of procuring the milk, gerber acid, isoamyl alcohol, various detergents and chemicals etc. used in the testing of milk, cleaning of cans, glass apparatus and stationery supplied by the plant.

Total cost of collection = Fixed cost + variable cost

Total cost of collection = CiPi+SSi+AiDi+AiRi

Where,

TCi=Total cost of collection at the i^{th} collection centre

Ci=Quantity of consumable articles used in i^{th} collection centre

Pi=Price of the consumable article

SSi= Salary and wages paid to the staff at collection centers

Ai=Fixed capital invested in i^{th} collection centre

Di=Depreciation rate of fixed capital on the i^{th} collection centre

Ri=Rate of interest on capital investment at the i^{th} collection centre

Cost of collection per lit of milk= Total cost (TCi)/total quantity of milk collected (MCi)

3.3.3.2. Cost of transportation:

The milk collected at various collection centres was either transported to chilling centers or sent directly to the plant, depending on the distance from the processing plant. Those depots which were in the vicinity of mother dairy directly supplied to mother dairy while those which were far away send the milk to chilling centres which in turn after chilling the milk sent the chilled milk in insulated tanks to the mother dairy. Taking these facts into consideration, the transportation cost was calculated in three phases:

1. From collection centre to plant directly (13 Roots)

2. From collection centre to chilling centre

3. From chilling center to the plant.

The mathematical formula used to find out the cost of transportation is

1. From collection centre to plant directly

   Transportation cost per lit of milk =TCi/MTi

Where,

TC_i =Total transportation cost on the i^{th} route

MT_i=Total quantity of milk transported on i^{th} route

2. From collection centre to chilling centre

$$TC_i + SP_i = PT_i - MS_i$$

Where

TC_i= Total transportation cost on the i^{th} route

SP_i=salary and wages paid to the procurement staff for the ith route

PT_i=payment made to the transporter on the i^{th} route

MS_i=penalty levied for the spoilt milk on the i^{th} route

Transportion cost per lit of milk = TC_i/MT_i

Where,

TC_i =Total transportation cost on the i^{th} route

MT_i=Total quantity of milk transported on i^{th} route

Spoilage of milk:

Souring of milk and curdling of milk are common phenomena in milk procurement. The costs for spoilage of milk are calculated depending on whether it is transporters fault or depot fault. If it is fault of the society then the value of the milk will be completely deducted from the payments that should be made to the society however in case of souring of milk the payment would be made to the societies at the rate of Rs 40 per kg of fat separated from the soured milk. Where as in case of transporters fault total value of the spoilt milk will be deducted from the transporters bill.

Transportation cost from chilling centre to plant:

The insulated tankers were used by the plant for transporting the milk from chilling centres to the dairy plant. The mathematical formula used to calculate cost of transportation is under: from chilling center to plant:

$$\text{Cost of transportation per liter of milk} = \frac{\text{Total payment made to the transporter}}{\text{---}}$$

Total quantity of milk transported

3.3.3.3 Chilling cost of milk:

The milk collected from various collection centres was transported to chilling centres At the chilling centres, the milk is tested, weighed, cooled/chilled and stored in insulated storage tanks. The mathematical formula to estimate the cost of chilling is as under

Total cost of chilling=Fixed cost + Variable cost

$$CC_i = VC_i + FC_i$$

Where,

CC_i=Total cost of chilling for i^{th} chilling centre

VC_i=Total variable cost at the i^{th} chilling centre

FC_i= Total fixed cost at i^{th} the chilling centre

Variable cost at the chilling centre comprised of electricity charges, water charges, refrigeration charges, stationary cost, repairs and maintenance cost, wages of staff and miscellaneous cost (cost of testing material and compressor oil)

The fixed expenditure at the chilling centre included the salary of managerial staff, depreciation on fixed assets and interest on fixed assets.

$$\text{Cost of chilling per liter of milk} = \frac{\text{Total cost of chilling}}{\text{Total quantity of milk chilled}}$$

3.3.3.4 Cost of milk reception:

The milk was received at milk reception dock from 13 routes. Cost of milk reception was ascertained by taking into account the salaries and wages of procurement staff at milk reception dock, water, chemicals, detergents and electricity consumed in cleaning, washing and sterilization of insulated vans and cans. The depreciation and interest on fixed capital was also taken into account.

The mathematical formula to estimate the cost of milk reception is as under:

$$\text{Cost of reception per liter of milk} = \frac{\text{Total cost}}{\text{Total quantity of milk received}}$$

3.3.4 Project Evaluation techniques

In case of dairy farming sector, for the capital invested now, the returns would be realized in regular intervals of small amounts. The payback period would be in long term. Discounted cash flow measures were used to evaluate the profitability of investment in milk production. The discounted cash flow method of evaluating long term projects is a process of finding the present worth of the amount received or paid in the future. This technique has an advantage that future cash flows are reduced to a single sum at one specific point of time i.e one year, and this facilitates comparison between alternative investment choices, if any. Depreciation, rental value of owned land, interest on working capital and fixed capital were excluded while estimating the stream of costs over the economic life period of milk production. The discounted cash flow measures used in the analysis were Benefit-Cost ratio (B-C ratio).

3.3.4.1. Benefit Cost Ratio (BCR): This is another time adjusted method of evaluating the investment proposal. The common procedure of selecting the project is to choose the projects having the B-C ratio of more than one where cash inflows and outflows are discounted at opportunity cost of capital. This ratio was arrived by using the following formula.

$$\text{B.C. Ratio} = \frac{\sum_{1}^{n} \frac{B_n}{(1+i)^n}}{\sum_{1}^{n} \frac{C_n}{(1+i)^n}}$$

Where**,**

B_n = Gross benefit in nth year

C_n = Cost in nth year

n = 1, 2, 3 . . . . . n

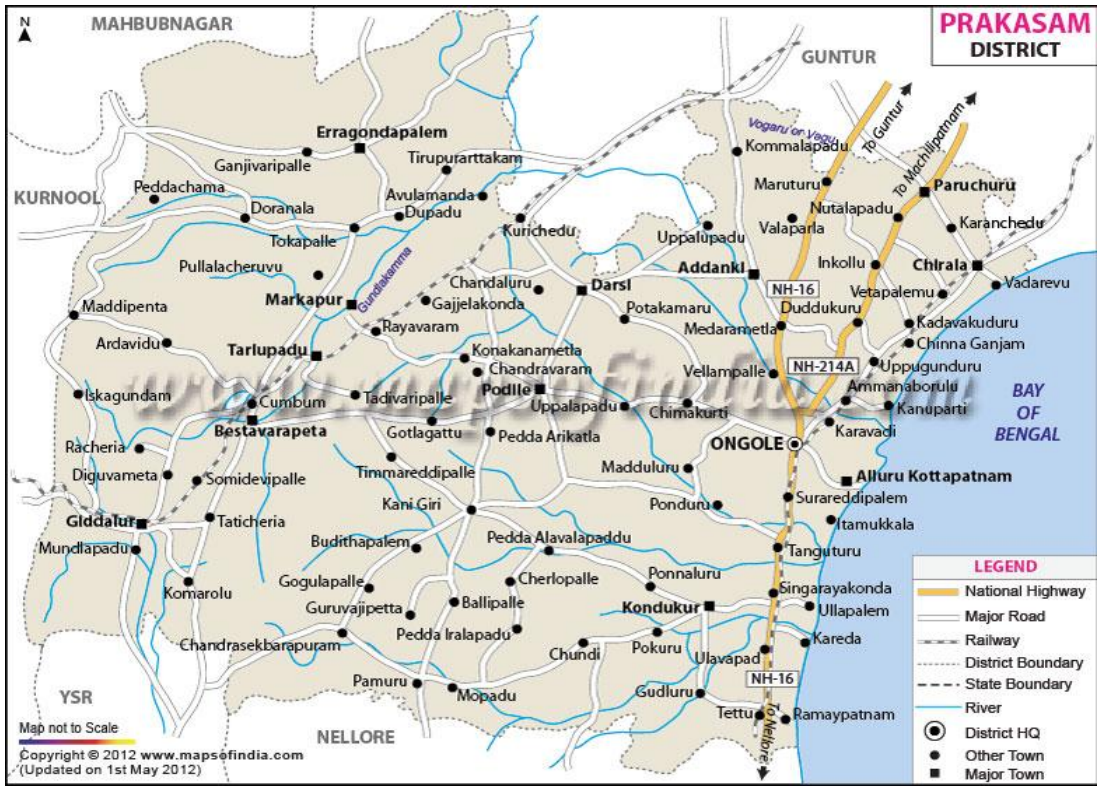
i = Discount rate

When B-C ratio exceeds unity, investment is considered viable**.**

3.4 Description of Study Area and Company Profile

Prakasam District is an administrative district in the state of Andhra Pradesh, in India. The district headquarters is located at Ongole. Prakasham district was originally constituted on the 2 February 1970, carved out of Guntur, Nellore and Kurnool districts of Andhra Pradesh. Prakasam district occupies an area of 17,626 square kilometers. There are 56 mandals in Prakasham district. The district has a forest area of 4425 square km and has a population of 33, 92,764 among that the male population is 17,12,735 and the female population is 16,80,029. Out of these 15.28 percent live in urban areas. The district has a population density of 192 inhabitants per square kilometer. Its population growth rate over the decade 2001-2011 was 10.9 percent. Prakasam has a sex ratio of 981 females for every 1000 males, and a literacy rate of 63.53 percent. The major amount of rainfall is during the North-East monsoon and the normal rainfall is 750.9 mm.

Fig 3.1. Prakasham district map.



The livestock population of Prakasham district is:

S. No.	Particulars	No.
1	Cattle	125492
2	Buffaloes	1055435
3	sheep	1205396
4	Goats	325797
5	Poultry	1678825

"Ongole Githa" is the famous "OX" breed in the world and the commonly used breeds in districts are local breeds, murrah, etc.

Nagarjunasagar - Srisailam sanctuary, Mothupalle, Vodarevu, Chadavaram, Gundla Brahmeswaram are the tourist places in Prakasham district and it is being irrigated by river basins with coverage of Gundlakamma River 45.96 percentage, Musi River 12.27 percentage, Paleru River 13.31 percentage, Manner River 19.61 percentage and others 8.85 percentage.

3.5 COMPANY PROFILE

Mother Dairy was set up in 1974 under the Operation Flood Programme. It is a wholly owned company of the National Dairy Development Board (NDDB). Mother Dairy manufactures, markets & sells milk and milk products under the Mother Dairy brand (Milk, Cultured Products, Ice Creams, Paneer and Ghee), Dhara range of edible oils, Safal range of fresh fruit & vegetables, frozen vegetables, processed fruit & vegetable Products, fruit Pulps & concentrates in bulk aseptic packaging and fruit juices at a national level through its sales and distribution networks for marketing food items.

The significant part of its requirement of liquid milk come from dairy cooperatives. It is Mother Dairy's constant endeavor, to ensure that milk producers and farmers regularly and continually receive market prices by offering quality milk, milk products and other food products to consumers at competitive prices and uphold institutional structures that empower milk producers and farmers through processes that are equitable.

At Mother Dairy, processing of milk is controlled by process automation whereby state-of-the-art microprocessor technology is adopted to integrate and completely automate

all functions of the milk processing areas to ensure high product quality/ reliability and safety. Mother Dairy is an ISO 9001:2008 (QMS), ISO 22000:2005 (FSMS) and ISO 14001:2004 (EMS) certified organization. Mother Dairy has certificate of approval from Export Inspection Council of India also. Moreover, its Quality Assurance Laboratory is certified by National Accreditation Board for Testing and Calibration Laboratory (NABL)- Department of Science and Technology, Government of India.

Over the past 3 decades, mother diary harnessed the power of farmer cooperatives to deliver a range of delicious products. Even in Prakasam District the National Dairy Development Board (NDDB) bought out its Mother Dairy brand of milk and milk products from the Cooperative Dairy and is marketing them throughout the state from December 1, 2005 under the brand name of MOTHER DAIRY. Ongole is the first production centre of NDDB in the state. NDDB took over the milk powder plant, processing and marketing of milk of Prakasham diary plant. As per the agreement, NDDB would run the dairy, collect its dues, and later hand it over to the elected body. As a goodwill gesture, NDDB has waived up to Rs 50 crore of the Rs 63 crore owed to it. The Prakasam dairy had been defunct for 10-12 years, though the milk powder plant with latest technology was set up 10 years ago. Out of the 7-8 lakh litres of milk produced everyday by farmers in Prakasam district, the society used to collect just 60,000 litres per day. At present the Mother Diary (Prakasham Milk society) stood first in milk procurement in the district. More than 15 dairy plants send their surplus milk to Mother diary in flesh season and the marketing network of mother diary covers near about 3000 dealers in the district.

Chapter IV

RESULTS AND DISCUSSION

The results obtained by analyzing the collected data from both primary and secondary sources have been presented in this chapter along with proper interpretation. The results are discussed under the following sub heads.

4.1 Profile of dairy farmers

4.2 Volume of milk produced, price received per liter and problems faced by dairy farmers.

4.3 Procurement channels adopted by organized dairy to procure milk

4.4 Marketing channels of milk

4.5 Costs and returns comparison of dairy farmers supplying to organized dairy and those adopting other channels of marketing and also comparison of a traditional dairy farm and modern dairy farm.

4.1 PROFILE OF DAIRY FARMERS

4.1.1 Age of Dairy Farmers

The information on the demographic background of dairy farmers with regard to the age had been collected to know in which age group majority of the dairy farmers fall.

Table 4.1. Age profile of sample dairy farmers

S. No	Age of dairy farmers	Frequency	Percentage
1	25-35 age group	36	25
2	36-45 age group	28	20
3	46-55 age group	42	30
4	56-65 age group	38	26
	TOTAL	144	100

Table 4.1. Summarizes the data collected with regard to the age of the dairy farmers. From the table it can be noticed that 46-55 years age group dairy farmers are more in number compared to the other age groups. Twenty six per cent and 25 per cent of farmers fall in the age group of 25-35 years and 56-65 years respectively. Around 20 per

cent of farmers fall in the age group of 36-45 years. It can be noticed that more than half of the dairy farmers are above 46years of age.

4.1.2 Educational Status of Dairy Farmers

The information on the demographic background of dairy farmers with regard to the educational qualification had been collected to know in which educational status category majority of the dairy farmers fall.

Table 4.2. Education level of sample dairy farmers

S. No.	Educational level	Frequency	Percentage
1	Illiterate	76	53
2	Primary Education (1-5 years of education)	46	32
3	Secondary education (6-10 years of education)	17	12
4	Higher Education (11 and above years of education)	5	3
	Total	144	100

Table 4.2. Summarizes the data collected with regard to the educational status of the dairy farmers. From the table it can be noticed that illiterate dairy farmers are more in number (53 per cent) compared to the other levels. Thirty two and twelve per cent of farmers had received primary and secondary education respectively. Only 3 per cent of the dairy farmers have received higher education. It can be noticed that more than half of the dairy farmers are illiterate, which can act as a hindrance in adopting mechanization and improved practices and technology by the dairy farmers.

4.1.3 Land Holdings of Dairy Farmers

The information with respect to the land holdings of dairy farmers had been collected to know in which financial status majority of the dairy farmers fall and also to know whether dairy farming is a primary or subsidiary occupation for them.

Table 4.3. Land holdings of sample dairy farmers

S. No.	Size of land holdings	No of respondents	Percentage
1	Land less	16	11
2	Marginal (up to 1 ha)	45	31
3	Small farmers (1- 2.5 ha)	49	34
4	Medium farmers (2.5- 4 ha)	20	14
5	Large farmers (above 4 ha)	14	10
	Total	144	100

Table 4.3. Summarizes the data collected with regard to the land holding pattern of the sample dairy farmers. From the table it can be noticed that eleven per cent of dairy farmers are landless and they work as agriculture labour. Majority of the dairy farmers have marginal and small land holdings. Fourteen per cent of dairy farmers fall in the category of medium scale land holdings. Only 10 per cent of the dairy farmers were financially secure with large scale land holdings, among them 57 per cent were operating dairy farming practices on large scale.

4.1.4 Family Size of the Dairy Farmers

The information on the demographic background of dairy farmers with regard to their family size had been collected to know in which family size majority of the dairy farmers fall. The family size of the dairy farmers can affect the consumption and marketing practices of milk produced by them.

Table 4.4. Family sizes of sample dairy farmers

S. No.	Family Size	No of respondents	Percentage
1	Less than 4	29	20
2	4 to 6	74	51
3	7 to 9	29	20
4	10 & above	12	8
	Total	144	100

Table 4.4. Summarizes the data collected with regard to the family size of the dairy farmers. From the table it can be noticed that, 20 per cent each of dairy farmers belonged to family size category of less than four members and seven to nine members. Majority of dairy farmers (51 percent) fell under the category of family size 4 to 6 members. Only 8 per cent of the dairy farmers were having large families of more than 10 members.

It was noticed in the study that more than 80 per cent of dairy farmers engaged their family members in dairy farming practices and agriculture to minimize their costs and to have more margins.

4.1.5 Occupation of Dairy Farmers

Farmers in the study region were taking up agriculture and dairy farming as an occupation. Information has been collected to known whether dairy farming is a major occupation to them or it is a subsidiary occupation.

Table 4.5. Occupation of sample dairy farmers

S. No	Occupation category	Main occupation		Subsidiary occupation	
		Frequency	Percentage	Frequency	Percentage
1	Agriculture	78	54	35	24
2	Dairying	41	28	103	72
3	Others (hotel, lending money, travels)	25	17	6	4
	Total	144	100	144	100

From the above table it can be noticed that majority of dairy farmers (54 per cent) were adopting agriculture as major occupation. It was observed that only 28 percent of sample dairy farmers were adopting dairy farming as major occupation. For 17 per cent of dairy farmers occupations such as running a hotel, lending money or running travelling services or employment in organized sector were major occupations and dairy farming was a secondary occupation.

Majority of dairy farmers (72 per cent) are adopting dairy farming as a subsidiary occupation mostly to their main occupation of agriculture, as they can realize the affects of synergy among agriculture and dairy farming and reduce their costs.

4.1.6 Buffalo Population with Dairy Farmers

The information regarding number of buffaloes reared by dairy farmers has been collected. The dairy practices followed by dairy farmers depend on the scale of their operation.

Table 4.6. Buffalo heard size of sample dairy farmers

S. No.	Herd Size	Frequency	Percentage
1	1-3 Buffaloes	58	40
2	4-6 buffaloes	38	26
3	7-10 buffaloes	15	10
4	11-20 buffaloes	13	9
5	above 20	20	13
	TOTAL	144	100

Table 4.6. Summarizes the data collected with regard to the buffalo population of the dairy farmers. From the table it can be noticed that, majority of dairy farmers (40 per cent) were rearing one to three buffaloes to meet their daily expenses. Twenty-six per cent of dairy farmers were rearing buffaloes in mini scale (4 to 6 buffaloes) as a subsidiary

source of income. Ten per cent and nine per cent of dairy farmers were rearing 7 to 10 buffaloes and 11 to 20 buffaloes population respectively. Only 13 per cent of the dairy farmers adopted dairy farming in large scale by rearing above 20 buffaloes, for these farmers dairy farming is a major source of income. Among these large dairy farmers 50 percent have adopted modernized practices in cleaning, feeding, watering, pest control and temperature control. 10 per cent dairy farmers were adopting mechanized practices such as milking machines, fans, foggers and chaff cutting machines.

4.1.7 Cow Population with Dairy Farmers

The information regarding rearing of cow by dairy farmers has been collected to know whether the dairy farmers prefer rearing of cows or buffaloes.

Table 4.7. Cow population of small dairy farmers

S. No	Herd Size	Frequency	Percentage
1	1-3 cows	28	20
2	4-6 cows	12	8
3	7-10 cows	0	0
4	11-20 cows	0	0
5	above 20	0	0
	TOTAL	40	28

Table 4.7. Summarizes the data collected with regard to the cow population of the dairy farmers. From the table it can be noticed that, 20 per cent of dairy farmers were rearing one to three cows in addition to buffalo rearing. These farmers are rearing cows because of religious beliefs and for feeding milk to infants in the family as cow milk is considered to be the best for infants after mother milk. Only 8 per cent of dairy farmers are interested in rearing cows in addition to buffaloes for generating income.

It is observed that dairy farmers are interested in rearing buffaloes than cows because of low maintenance costs and high returns in buffalo milk production in comparison to cow milk production.

4.2 VOLUME OF MILK PRODUCED, PRICE RECEIVED PER AND PROBLEMS FACED BY DAIRY FARMERS

4.2.1 Quantity of Buffalo Milk Produced in Dairy Farming

The information regarding buffalo milk production by dairy farmers has been collected to know the quantity of milk produced by dairy farmers. Marketing means adopted by the dairy farmers can depend on the number of liters of milk produced by them.

Table 4.8. Quantity of buffalo milk produced by dairy farmers

S. No	Liters of milk	Frequency	Percentage
1	1-15	96	66
2	16-30	18	14
3	31-45	16	11
4	46-60	10	7
5	above 60	4	3
	TOTAL	144	100

Table 4.8. Summarizes the data collected with regard to the buffalo milk production of the dairy farmers. From the table it can be noticed that 66 percent of the dairy farmers belonged to the category of low volume (1 to 15 liters per day) of milk production, with a buffalo population of 1 to 6 numbers. These milk producers were rearing local breed of buffaloes which give lesser milk in comparison to *Murrah* breeds. Fourteen per cent of dairy farmers fell under category of 16 to 30 liters per day with a buffalo population of 6 to 20 buffaloes. These dairy farmers are rearing local breads as well as a few *Murrah* breeds. Eleven per cent and seven per cent of dairy farmers were producing milk in the range of 31 to 45 liters and 46 to 60 liters per day respectively with a buffalo population of above 20 buffaloes. These dairy farmers are mostly rearing *Murrah* breeds. Higher milk yield was obtained by rearing *Murrah* buffaloes when compared to local breeds. Only three per cent of dairy farmers belong to a category of high volume (above 60 liters per day) of milk producers with a bovine population of twenty five.

In the study it was observed that some of the dairy farmers with a large heard size are getting lower milk production and the others were getting high volume with the same heard size by rearing *Murrah* buffaloes.

4.2.2 Quantity of Cow Milk Produced in Dairy Farming

The information regarding cow milk production by dairy farmers has been collected to know the volume of cow milk produced by the dairy farmers. Cow milk producers were classified based on milk producing capacity of their dairy units.

Table 4.9. Quantity of cow milk produced in dairy farming

S. No	Liters of milk	Frequency	Percentage
1	1-15	40	100
2	16-30	0	0
3	31-45	0	0
4	46-60	0	0
5	above 60	0	0

Table 4.9. Summarizes the data collected with regard to the cow milk production of the dairy farmers. From the table it can be noticed that cow milk producers are very less in number (40). All the dairy farmers rearing cows fell in the low volume category with regards to cow milk production. Most of the dairy farmers rearing cows as in Hindu religion it is thought to be a good deed, they are also rearing to feed the infants in the family. The study revealed that only eight per cent of the total dairy farmers are rearing cows for commercial purpose and they are comparing their returns from rearing cows against buffalo rearing.

From this table we can understand that dairy farmers benefited more in rearing buffalos than cows for milk because of low maintenance costs and high returns in buffalo milk production.

4.2.3 Disposal of Milk by Sampled Dairy Farmers

The information regarding disposal of milk which is being produced by dairy farming had been collected. The dairy farmers adopt various ways of disposal based on convenience and returns.

All the sampled dairy farmers retained milk for their own consumption. The volume of milk retained for own consumption depended on family size, their economic condition and volume of production. Dairy farmers adopt a combination of ways to dispose their milk. Around 36% of dairy farmers supplied milk to mother dairy. Ninety percent of the farmers are selling milk directly to consumers as the payment is not based on the fat content.

Table 4.10. Disposal of milk by sampled dairy farmers

S. No	Disposal of milk	Frequency	Percentage
1	Own consumption	144	100
2	Supply to mother dairy	52	36.11
3	Quantity supplied to Other than mother dairy	85	59.02
4	Quantity supplied direct to costumers	120	89.33

Around 60% of farmers market their produce to other organized because of the nearness of the collection point. The payment given by any plant is based on fat content i.e. for every 1% fat they use to pay Rs. 4.20 is paid per liter of milk.

Some of the farmers directly tie up with some of the tea stalls and hotels to dispose their milk.

4.2.4 Price Received by the Dairy Farmers from Per Liter of Milk

Organized dairy plants in the study area were paying the farmers on the basis of fat content of the milk. It was observed that, when farmers sell their milk to the organized dairy or agents they receive Rs. 30.24 per liter with a fat content of 7.2%. Whereas marketing of the milk directly to the door steps of the consumers fetched Rs. 34 – Rs 36 to dairy farmers per liter as payment by consumers is not based on fat content.

Table 4.11. Price received by the dairy farmers

S. No	Price paid	Price per 1 liter in Rs.
1	Organized dairy	30.24 (at 7.2 per cent fat content)
2	Supplied to agents	30.24 (at 7.2 per cent fat content)
3	Supplied to customers	34 to 36

The organized dairy plants pay Rs. 4.20 per a percent of fat content in the milk. More the fat content dairy farmers will get more price per liter, less the fat content dairy farmers will get less price per liter. Since the fat content would usually be 7.2 per cent, prices are worked out for 7.2 per cent fat content milk.

4.2.5 Problems Faced by the Dairy Farmers in Milk Production

Problems in milk production related to feed and fodder, maintaining temperature at shed, scarcity of labour and diseconomies of scale in producing milk. The data pertaining to problems faced by the dairy farmers during production is furnished in the following table.

From the data, it was analyzed that high percentage (38 per cent) of the respondents said that they were facing an acute problem of continuous supply of feed and fodder for their cattle throughout the year. Next important problem for the dairy farmers was labour. Near about 31 per cent of the farmers agreed that there was a huge labour problem in maintaining the large dairy units. In recent past this problem has increased because of migration of people to cities and also because of rural upliftment schemes of Government. Maintaining congenial temperature in cattle sheds is found to be another problem faced by the farmers. Eighteen per cent of the total farmers reported this problem. Eleven per cent of the total respondents' especially small dairy farmers said that their farms were under threat because of diseconomies of scales in milk production.

Table 4.12. Problems in milk production by sample dairy farmers

S. No	Problems	Frequency	Percentage
1	Feed and Fodder	55	38
2	Temperature	27	18
3	Labour	45	31
4	Diseconomies of scale	17	11

4.2.6 Problems Faced by Dairy Farmers in Marketing of Milk

In general, marketing of milk by dairy farmers takes place in three ways i.e. selling the produce to village representatives or agents or to consumers directly. Problems in marketing of milk were identified separately for various channels and are presented in the table. Payment based on fat content and distribution of benefits was identified as an important problem while marketing the milk to village representatives. It was analyzed from the data that, payment based on fat content seemed to be the major problem as the farmers are unable to get required fat content (on an average 7 per cent fat content) milk production in their dairy. Hence by marketing to organized dairy plants they will get paid less in comparison to payment received per liter if they supply milk directly to consumers, as consumers do not pay on the basis of fat content. Marketing of milk to agents created two important problems to the dairy farmers in the locality. Seventy per cent of the farmers expressed that payment based on fat content was the major problem, whereas 30 per cent of the respondents spoke that transportation of milk from their dairy farm to the agents place of collection was another important problem. Transportation of milk from dairy farm to consumer and mode of payment were the major problems in marketing of milk to the consumers directly. Near about 60 per cent of the respondents agreed that transportation of

milk from production place to consumers was the major problem in marketing milk directly to the consumers and around 40 per cent said payment period is the problem as consumers paid dairy farmers on monthly basis, whereas village representatives and agents paid the money every 10 days or 15 days.

Table4.13. Problems faced by dairy farmers in marketing of milk

S. No	Problems	Frequency	Percentage
A) Problems in marketing of milk to village representatives			
1	Payment based fat content	43	59
2	Distribution of benefits	29	41
B) Problems in marketing of milk to Agents			
1	Payment based on fat content	51	70
2	Transportation	21	30
C) Problems in marketing of milk to consumers			
1	Transportation Problem	85	59
2	Monthly payment	59	41

4.2.7 Suggestions by Sample Dairy Farmers to Mother Dairy

Near about 50 per cent of the respondents reported that mother dairy should increase the market price of the milk to attract potential suppliers. Whereas 27 per cent expressed that there was a need to improve the hygienic conditions at various levels of procurement like sterilization of cans and other utensils to avoid the spoilage of milk. 25 percentage of respondents said that utilities distributed by Mother dairy were confined to very few village representatives which is damaging the image of the organization.

Table 4.14. Suggestions by sample dairy farmers to Mother dairy

S. No	Problems	Frequency	Percentage
1	Increase in Payment	70	48
2	Sterilization of cans	39	27
3	Insufficient dairy utilities	35	25

4.3 PROCUREMENT CHANNELS ADOPTED BY ORGANIZED DAIRY TO PROCURE MILK

4.3.1 Procurement Channels of Milk and Costs Incurred in Each Channel

Table 4.15. Procurement channels of milk and costs incurred in each channel (Rupees per liter)

S. No.	Particulars	Channel I	Channel II	Channel III
1	T.C for channel member	0.00	0.00	0.10
2	labour cost	0.63	0.58	0.35
3	Reception cost	0.28	0.01	0.28
4	Chilling cost	0.00	0.17	0.00
5	Room rent	0.10	0.10	0.00
6	Other cost	0.10	0.10	0.10
7	T.C for organized dairy	0.23	0.19	0.21
8	Marginal cost	0.81	0.80	0.81
	Total	2.15	2.04	2.25

(T.C – Transportation Cost)

Organized dairy procures milk for processing from dairy farmers. Milk is procured through three different channels which are as follows:

Channel I: Milk producers -Societies - Organized dairy plants

Channel II: Milk producers - Agents - Organized dairy plants

Channel III: Milk producers - Vendors - Organized dairy plants

The costs incurred in channel by the organized dairy are worked out per liter of milk. From the Table 4.15. it can be noticed that the costs incurred in channel III, in which vendors procure milk from the milk producers is highest followed by the cost in channel I. Channel II which involved agents was the least cost incurring channel among the three channels of procurement. The cost incurred in channel I, II and III are Rs 2.15, Rs 2.04 and Rs. 2.25.

The third channel of procurement involving societies is the major channel adopted by organized dairy plants. The agents of the other dairies will sell the milk to the mother dairy only if their milk procurement is more than their requirement. The vendors collect the milk from dairy farmers and supply the milk directly to organized dairy plants.

The costs incurred in channel I have been worked out on the basis of the milk handling capacity of the societies. Each society employs few persons to procure milk from dairy farmers, to check fat percentage, to maintain records and to make payments to the farmers. The milk procured at societies is filled in containers and loaded in the vehicles (which the organised dairy arranges) and transported to organized dairy plants.

4.3.2 Costs Incurred in Procuring Milk in Channel- III Based on Volume of Milk Procured

4.3.2.1 Costs incurred in collection of milk in channel- III based on volume of milk procured:

Table 4.16. Costs involved in procuring milk in channel III based on volume of milk procured (Rupees per liter)

S. No	Particulars	Up to 100 liter	101-150liter	151-200liter	201-250liter	250 liters &above
1	Depreciation on fixed assets	4.01	4.75	4.9	5.28	5.52
	Percent to total cost	(4.74)	(5.72)	(6.01)	(6.63)	(7.20)
2	Interest on fixed assets	6.55	6.92	7.46	7.85	8.2
	Percent to total cost	(7.74)	(8.33)	(9.16)	(9.86)	(10.70)
3	Total fixed cost	10.56	11.67	12.36	13.13	13.72
	Per cent to total cost	(12.48)	(14.05)	(15.17)	(16.49)	(17.91)
4	Salary of staff	69.56	66.45	63.54	60.25	56.23
	Percent to total cost	(82.25)	(80.04)	(78.03)	(75.70)	(73.43)
5	Electricity & water charges	3.45	3.65	3.78	3.95	4.02
	Percent to total cost	(4.07)	(4.39)	(4.64)	(4.9)	(5.25)
6	chemicals	1	1.25	1.75	2.25	2.6
	Percent to total cost	(1.18)	(1.50)	(2.14)	(2.82)	(3.39)
7	Total variable cost	74.01	71.35	69.07	66.45	62.85
	Percent to the total cost	(87.51)	(85.94)	(84.82)	(83.50)	(82.08)
8	Grand Total	84.57	83.02	81.43	79.58	76.57

(Figures in parenthesis denote percentage)

From the Table 4.16. it can be noticed that the total fixed cost increases with the amount of milk produced. The total fixed cost is highest in case of societies procuring 250 liters and above milk. The total variable cost decreased with the increase in milk procured. Highest variable cost of 74.01 paise/liter was noticed in case of societies procuring less than 100 liters of milk per day. The total costs are highest in case of societies procuring

above 250 liters per day. The analysis shows that total costs of procurement decreases as the volume increases due to economies of scale.

4.3.2.2 Transportation costs incurred in procurement channel III by the organized dairy:

Table 4.17. Transportation costs incurred in procurement channel III by the organized dairy (paisa per liter)

S. No	Particulars	Cost of transportation	Losses	Total Cost of transportation
1	Depot to plant	22.03	0.6	22.63
2	Depot to chilling plant	18.25	0.5	18.75
3	Chilling plant to processing plant	4.37	0	4.37

The transportation of milk to processing plant involves directly transporting to the plant or sending first to chilling plant and then to the dairy. Losses can be incurred while transporting due to delay in transporting milk to the chilling plants/ processing plants. The losses are worked out at 2% of the cost of milk procured. The losses are assumed to be two percent based on the previous data available with the company. The cost of transporting from depot directly to plant is 22.63 paisa/liter, whereas transporting to chilling plant and then transporting to processing plant incurred cost of Rs. 23.12 paise/liter. The cost incurred when the milk is transported to the chilling plants and then to the processing plants is more than when it is directly transported to the processing plant by 0.49 paise/liter.

4.3.2.3 Total costs incurred by organized dairy in procuring milk: The secondary data pertaining to procurement costs incurred by organized dairy is collected from the records of mother dairy. The procurement costs for an organized dairy include chilling costs, packing costs and cost of reception. The milk procured is directly sent for processing or it is first chilled in chilling plants and then sent for processing.

From the following table it can be noticed that the cost of procurement for organized dairy works out to Rs. 2.15 per liter

Table 4.18. Total costs incurred by organized dairy in procuring and processing milk

S. No	Particulars	Cost (Paisa/ liter)
1	Chilling costs	17
2	Processing costs	83
3	Direct processing cost	100
4	Packaging cost	27
5	Cost of reception	28

From the above tables related to procurement costs in channel III, it can be said that the total cost of procurement in this channel is Rs.3.42 per liter of milk.

4.4 CHANNELS OF MARKETING MILK AND EFFICIENCY OF MARKETING CHANNELS IN PRAKASHAM DISTRICT

The chain of intermediaries through whom the milk produce passes from dairy farmers to consumers constitutes its marketing channel. There are alternative channels adopted for marketing of milk in the study area.

Predominantly five marketing channels are identified in the sale of liquid milk, they are.

Channel-I: Milk Producer-Consumer.

Channel-II: Milk Producer- Local vendors- Consumer.

Channel-III: Milk Producer- Local vendors- Organized plants- Distributors- Dealers (Depots)-Consumer.

Channel-IV: Milk Producer- societies- Organized plants- Distributors- Mom and Pop stores- Consumer.

Channel-V: Milk Producer- Societies- Organized plants- Distributors- Dealers (depots) - Consumer.

4.4.1 Middlemen

The intermediaries involved in the marketing channel are

(i) Organized dairy plants (ii) Distributors (iii) Dealers (iv) Mom and Pop stores, (v) Local vendors

(i) Organized dairy plants: - Organized plants are the milk processing industries who process the milk procured from the farmers into different categories like toned, double toned, whole milk etc.

(ii) Distributors: - Distributors are the persons who purchase milk from organized dairy plants and distribute to dealers according to the order placed by them. Distributors are the only persons who have direct contact with organized dairy plants. They act as postman between organized plant and dealers.

(iv) Dealers: - Dealers are the persons who collect the ordered quantity of liquid milk from distributors and sell at depots to the consumers. Dealers are closest to consumers and in milk marketing dealers usually supply milk at the door step of the consumers.

(v) Mom and Pop stores: - These are the general *kirana* stores which are located in residential areas. They stock milk and sell to the consumers directly. The milk sachets are procured by them from the dealers.

(vi) Local venders: - The persons who act as an agent between dairy farmers and organized plants and work on commission basis are called local vendors. They collect milk from dairy farmers and supply the milk to the organized plants or directly to consumers.

4.4.2 The cost and margins relating to various marketing channels

The cost and margins relating to various marketing channels identified are calculated and shown in the table 4.19.

Channel 1: Milk producer – consumer

In this channel, dairy farmers directly sell the milk to the consumers either in their village, neighboring villages or nearby towns. From the table, it can be noticed that the marketing cost incurred on an average per liter of milk in this channel is Rs. 0.246. The marketing costs include only transportation costs. In this channel, milk is sold to the consumers at Rs.34-36 per liter.

Table 4.19. Costs and margins of various market channels (Per liter of milk in rupees)

S. No	Particulars	Channel I	Channel II	Channel III	Channel IV	Channel V
A	Cost incurred by farmers for marketing of milk					
1	Transportation cost	0.246				
B	Cost incurred by vendors					
1	Transportation	0	1.25	0.41	0	0
2	labour	0	0.35	0.35	0	0
3	Other charges	0	0.025	0.025	0	0
4	Margin		2.375	1.1	0	0
	Sub Total		4	1.885	0	0
B	Cost incurred by societies					
1	labour	0	0	0	0.6	0.6
2	Dep & Int on fixed assests	0	0	0	0.1	0.1
3	Room Rent	0	0	0	0.1	0.1
4	Margin	0	0	0	0.81	0.81
	Sub Total		0	0	1.62	1.62
C	Organized Plants					
1	Transportation cost	0	0	0	0.23	0.23
2	Reception cost	0	0	0.1	0.28	0.28
3	Chilling cost	0	0	0.17	0.17	0.17
4	Processing + Dep+ Int on fixed assests	0	0	0.83	0.83	0.83
5	Packaging		0	0.27	0.27	0.27
6	Overheads	0	0	0.1	0.1	0.1
7	Margin	0	0	1	0.2	0.2
	Sub Total		0	2.47	2.08	2.08
D	Distributors					
1	Transportation		0	0.55	0.55	0.55
2	labour	0	0	0.15	0.15	0.15
3	Margin	0		0.3	0.3	0.3
	Sub Total		0	1	1	1
E	Dealers					
1	Staff	0	0	0.3	0	0.3
2	Overheads	0	0	0.1	0	0.1
3	Depo Rent		0	0.16	0	0.16
4	Margin	0	0	0.5	0	0.5
	Sub Total		0	1.06	0	1.06
F	Cost Incurred for Mom & Pop stores					
1	Overheads	0	0	0	0.3	0
2	Margin	0	0	0	0.6	0
	Sub Total		0	0	0.9	0
	Total	0.246	4	6.415	6.6675	6.6675

Channel II:

Milk Producer - local vendor - consumer

The milk producer sells the milk to the local vendor and the local vendor sells the milk to the consumers in nearby towns. The local vendor collects milk from one dairy farmer or many dairy farmers depending on his requirement. The cost incurred in this channel by vendors is Rs. 1.625 per liter which includes transportation costs, labour charges and other charges. The major portion of the costs is contributed by transportation costs. In this channel, vendor buys the milk from the producer at a rate of Rs.29.40 per liter and sold at a rate of Rs.35 (average rate). The margin a vendor gets in this channel has worked out to Rs.2.375.

Channel III:

Milk Producer - local vendor - organised plants - Distributor – Dealer (depots) - consumer

In this milk marketing channel many intermediaries are involved. From the table it can be noticed that cost incurred by vendors is around Rs.0.8, where as the costs incurred by organized plants, distributors and dealers are Rs.1.47, Rs. 0.7, Rs. 0.56 respectively. It can be noticed that organized plants incurred more costs than any of the channel members. The local vendors in this channel made a margin of Rs. 1.1 whereas the organized plants, distributors and dealers made margins of Rs. 1.0, Rs. 0.3 and Rs.0.5 respectively. The margin made by organized plants is less than local vendors but much better than the margins received by other two channel members. The total costs incurred in this channel are Rs. 6.415 which is more than costs incurred in second channel. In this channel the milk procured from the farmers at a cost of Rs. 30.24.

Channel IV:

Milk producer - societies - organized plants - distributors – mom and pop stores - consumer.

In this channel societies collect the milk from the producers and send it to the organized plants. The organized plants after processing the milk sell the milk sachets to distributors who in turn sell it to dealers. The dealers supply the milk to mom and pop stores and these stores sell the milk in turn to consumers. The costs and margins incurred

by societies, organized plants, distributors, dealers, mom and pop stores in this channel are Rs.0.81, Rs.1.88, Rs.0.7, Rs.0.56, Rs. 0.31 and Rs. 0.81, Rs. 0.21, Rs. 0.3, Rs. 0.5 and Rs 0.6 respectively. The total costs incurred in this channel are Rs. 6.6675 which is more than the costs incurred in any other channel. Major costs in this channel are incurred by the organized plants followed by societies. In this channel milk is procured from farmers at a rate of Rs.30.24 per liter (7.2% fat content).

Channel V:

Milk producer - societies - organized plants - distributors - dealers - consumer

In this channel, instead of dealers supplying the milk to mom and pop stores as in channel IV, they supply the milk directly to consumers. The costs and margins incurred by societies, organized plants, distributors, and dealers are Rs.0.81, Rs.1.88, Rs.0.7, Rs. 0.56 and Rs.0.81, Rs.0.21, Rs.0.3, Rs 0.5 respectively. Major costs are incurred in this channel by the organized plants followed by societies as in case of channel IV. The total costs in this channel are same as that of in channel IV. Milk is procured at cost of Rs.30.24 from dairy farmers by societies in this channel.

4.5 COSTS AND RETURNS COMPARISON OF DAIRY FARMERS SUPPLYING TO ORGANIZED DAIRY AND THOSE ADOPTING OTHER CHANNELS OF MARKETING AND ALSO COMPARISON OF A TRADITIONAL DAIRY FARM AND MODERN DAIRY FARM

4.5.1 Comparison of Traditional Dairy and Modernized Dairy

In Prakasham District, few dairies have established modernized dairy plants for large herd sizes because of increasing labour storages and decreases in yields. A comparison has been made between the costs and returns of a traditional dairy farm and a modern dairy farm. Further costs and returns have also been worked out for traditional dairy having different herd sizes.

The terms used in calculation of costs and returns are explained below:

Variable costs: Variable costs include feed and fodder costs, concentrates, family and engaged labour costs, veterinary and health care costs, electricity charges, water charges, supplying charges, insurance costs and other miscellaneous items.

Fixed costs: Fixed costs include rent on own or leased land, cost of milk machines. cost of buffalo, shed, fans and foggers, dairy utilities, bore well and interest on fixed capital.

Returns: It includes revenue from selling milk and farm yard manure.

Traditional dairy farms: Traditional farms are dairy farms which do not use any mechanization. These are again classified on the basis of their herd size into 1-3 buffaloes herd, 2-6 buffaloes herd, 7-10 buffaloes herd, 11-20 buffaloes herd and 20 and above herd size.

Modernized farms: Modernized dairy farms usually have more than 20 buffaloes and use machinery like milking machines, fans and foggers, automised washing facilities, better design of shed and feeding system.

4.5.2 Variable Costs Incurred by Dairy Farmers

4.5.2.1 Variable costs incurred by dairy farmers-those who are supplying to organized dairy plants: The data with regard to the variable costs incurred by traditional dairy farms for various herd sizes and modern dairy farms for herd size of more than 20 buffaloes has been worked out and shown in the table 4.20.

The variable costs in table 4.20 have been worked out for dairy farms with herd size of 1-3 buffaloes, 4-6 buffaloes, 7-10 buffaloes, 11-20 buffaloes, above 20 buffaloes. From the table it can be noticed that the total variable cost of traditional farms having herd size of 1-3 buffaloes was Rs. 24,619 per annum per buffalo while it was Rs. 23,050 per annum per buffaloes for herd size 4-6 buffaloes which is 6.8% less than that compared to 1-3 buffalo herd size. The variable costs for 7-10 buffaloes, 11-20 buffaloes and above 20 buffaloes is Rs. 29,666, Rs. 29,909.99 and Rs. 35,006 respectively. More variable costs are noticed in case of above 20 buffaloes herd size because of increase in the number of engaged labor and also because of use of high amount of concentrates.

The percentage of feed and fodder cost to the total variable cost varied from about 60% to 72% for various herd sizes. It can be noticed that feed and fodder is the major variable cost followed by labour charges.

Traditional dairy farmers of first two categories *i.e.* herd size up to 4-6 buffaloes were not investing money on the concentrates. Cost on concentrates for the farmers with

herd size of 7 to 10 buffaloes is less (6.15%) than 11-20 buffaloes (9.76%) and modern dairy farms (14.54%)

Family labour was engaged more in traditional dairy farms when compared to modernized dairy farms. Labor cost was Rs. 7300 for the farmers with herd size of 1-3 buffaloes while it was reduced to Rs.2880 for modernized dairy farms. Small dairy farmers were not employing any engaged labour to maintain their dairy farm.

Farmers with herd size of 7 to 10 incurred more cost on engaged labour Rs. 3500, followed by 11-20 buffaloes Rs. 3333.33 and above 20 buffaloes Rs.2400. Cost on veterinary and health care was in proportionate to the herd size of the dairy farmers. It was only Rs.600 for farmers with 1-3 buffaloes while it was Rs.1000 for farmers with the herd size of 7-10 buffaloes, 11-20 buffaloes and above 20 buffaloes.

Electricity charges constituted just under 2 percent of total variable cost for all the categories of farmers. It was observed that, electricity charges are low for farmers with herd size 7-10 buffaloes. Water charges incurred by small dairy farmers is Rs. 900 (3.6%) per annum and it was Rs. 1500 (6.5%) for the farmers with herd size of 4-6 buffaloes. Marketing charges of milk was more for farmers with the herd size of 1-3 buffaloes (Rs. 307.5) and low for farmers with the herd size of 4-6 buffaloes (Rs. 164). Farmers who are supplying their milk to organized dairy units were not incurring any cost on insurance.

Reason for the high feed and fodder cost for large dairy farmers was mainly because the dairy farmers (4 to 6 buffaloes) have started feeding green fodder. Concentrates cost was more to the modern dairy farmers as they use more concentrates to obtain the highest possible fat content in the milk. Awareness among the large dairy farmers was the main reason to invest more on veterinary and health care to avoid viral infections to the animals.

The variable costs in case of modern dairy farm worked out to Rs. 30,106 per annum per buffalo. It can be observed that total variable costs in case of modern dairy are less than traditional dairy for the same herd size. The difference in costs is mainly due to the difference in labour charges, as mechanized dairy employees less labour in compression to traditional dairy.

4.5.2.2 Variable costs incurred by dairy farmers - those who are using other marketing channels: Dairy farmers can market their produce to organized dairies through intermediaries or they can directly market to consumers or vendors.

The total variable costs were highest for dairy farms having above 20 buffaloes when compared to other herd sizes. The total variable cost of dairy farms adopting other marketing channels than supplying to organized dairy are more than those who are supplying to organized dairy because of mainly addition of veterinary and health care charges and insurance cost. In case of dairy farmers supplying to organized dairy these to an extent health care and veterinary cost are born by organized dairy to an extent and insurance cost are totally taken care by them.

When the total variable costs of modernized dairy or compared to traditional dairy (>20 buffaloes) it was noticed that modernized dairy was incurring less variable costs than traditional dairy. The difference is due to the difference in labor charges as modernized dairy employees less labor than traditional dairy.

Table 4.20.Variable costs incurred by dairy farmers, those who are supplying to organized dairy (per annum, per buffalo in rupees)

S.No	Costs	Traditional dairy farm					Modernised dairy farm
		1-3 buffalos	4-6 buffalos	7-10 buffalos	11-20 buffalos	above 20 buffalos	above 20 buffalos
	variable costs						
1	feed & fodder	14600	16420	18250	18250	18250	18250
		(59.30)	(71.23)	(61.51)	(61.01)	(52.13)	(60.61)
2	concentrate	0	0	1825	2920	4380	4380
		(0)	(0)	(6.15)	(9.76)	(12.51)	(14.54)
3	family labour	7300	3285	4055	3200	2880	2880
		(29.65)	(14.25)	(13.66)	(10.69)	(8.22)	(9.57)
4	engaged labor	0	0	3500	3333.33	7200	2400
		(0)	(0)	(11.80)	(11.14)	(20.56)	(7.97)
5	veterinary &healthcare	600	800	1000	1000	1200	1000
		(2.44)	(3.47)	(3.37)	(3.34)	(3.43)	(3.32)
6	electricity charges	411.75	381.25	270	426.66	380	480
		(1.67)	(1.65)	(0.91)	(1.43)	(1.09)	(1.60)
7	water charges	900	1500	0	0	0	0
		(3.66)	(6.51)	0	0	0	0
8	supplying charges	307.5	164	266	280	216	216
		(1.25)	(0.71)	(0.90)	(0.94)	(0.62)	(0.72)
9	insurance	0	0	0	0	0	0
		(0)	(0)	(0)	(0)	(0)	(0)
10	miscellaneous	500	500	500	500	500	500
		(2.03)	(2.17)	(1.69)	(1.67)	(1.43)	(1.66)
	total	24619.25	23050.25	29666	29909.99	35006	30106

(Figures in parenthesis denote percentages)

Table 4.21. Variable costs incurred by dairy farmers - those who are using other marketing channels

S.No	Costs	Traditional dairy farm				Modern dairy farm
		1-3 buffalos	4-6 buffalos	7-10 buffalos	11-20 buffalos	above 20 buffalos
	Variable cost					
1	Feed & fodder	14600	16420	18250	18250	18250
		(57.89)	(62.98)	(57.90)	(55.66)	(53.50)
2	Concentrate	0	1200	1825	2920	4380
		(0)	(4.60)	(5.79)	(8.90)	(12.84)
3	Family labour	7300	4285	4055	3200	2880
		(28.94)	(16.43)	(12.86)	(9.76)	(8.44)
4	engaged labour	0	0	3500	3333.33	2400
		(0)	(0)	(11.10)	(10.16)	(7.03)
5	Veterinary &healthcare	1200	1500	1800	2000	2000
		(4.75)	(5.75)	(5.71)	(6.10)	(5.86)
6	Electricity charges	411.75	381.25	320	300	480
		(1.63)	(1.46)	(1.01)	(0.91)	(1.40)
7	Water charges	900	1500	0	0	0
		(3.56)	(5.75)	(0)	(0)	(0)
8	Supplying charges	307.5	285	266	280	216
		(1.21)	(1.09)	(0.84)	(0.85)	(0.63)
9	Insurance	0	0	1000	2000	3000
		(0)	(0)	(3.17)	(6.10)	(8.79)
10	Miscellaneous	500	500	500	500	500
		(1.98)	(1.91)	(1.58)	(1.52)	(1.46)
	Total	25219.25	26071.25	31516	32783.33	34106

(Figures in parenthesis denote percentages)

4.5.2.3 Fixed costs incurred by dairy farmers: The fixed costs incurred by dairy farmers who supply to organized dairy and those using other marketing channels would remain the same as they have to invest in fixed assets irrespective of the marketing channel they are adopting.

The fixed cost of farms having farm size of 4-6 buffaloes was Rs.8720 per buffalo per annum. For this category of farms, rent on leased land was 4.3% less in comparison to former category of dairy farm *i.e*. 1-3 herd size. Depreciation on buffaloes was Rs.3000 (34 per cent) of total fixed cost. Depreciation on shed was Rs.320 which is less by Rs. 80 when compared with farm size of 1-3 buffaloes.

The fixed cost of farms having farm size of 7-10 buffaloes was Rs.10551 which was 21% higher than that of farm size having 4-6 buffaloes. Increase in the investment for this category was because of their investments in borewells and good breed of buffaloes.

The fixed cost for farm sizes of 11-20 buffaloes was Rs.12454 which was18% more when compared with the farm sizes of 7-10 buffaloes. Interest on fixed capital (52 %) and depreciation on buffaloes (36 %) together constituted almost 88 per cent of total fixed cost. More fixed cost for this category of farms was mainly because of farmer's investments in good breeds, shed and other utilities.

From the table it can be noticed that the total costs per annum per buffalo incase of above 20 buffalo herd size under traditional dairy farm is high when compared to other herd size groups under traditional dairy. The major cost under all herd sizes is interest on fixed assets followed by depreciation on buffalo. The depreciation of buffaloes was calculated by considering the productive milking years of buffaloes as ten years. Depreciation on buffaloes accounted to 33% of the total fixed cost. These two costs account to almost 80 per cent of the total fixed costs. When the fixed costs of traditional dairy farms (> 20 herd size) is compared with modernised dairy it was noticed that for modernised dairy the fixed costs are higher by almost 80 per cent. This is because of the investments that are required to buy milk machines and the costs involved in buying fans & foggers, fodder cutting machine etc. The major fixed costs in case of modernised dairy is depreciation on milk machines which is almost 85 per cent of total fixed cost followed by depreciation on buffalo.

Table 4.22. Fixed costs incurred by dairy farmers

S. No	Costs	Traditional dairy farm					Modernized dairy farm
		1-3 buffalos	4-6 buffalos	7-10 buffalos	11-20 buffalos	Above 20 buffalos	Above 20 buffalos
	Fixed cost						
	Rent of leased land	1200	1000	666	533	400	400
		(13)	(11)	(6)	(4)	(2)	(1)
	Dep. Of milk machines	0	0	0	0	0	13480
		(0)	(0)	(0)	(0)	(0)	(85)
	Dep. Of buffalo	3000	3000	3500	4500	8000	8000
		(33)	(34)	(33)	(36)	(41)	(22)
	Dep. Of shed	400	320	355	480	320	480
		(4)	(4)	(3)	(4)	(2)	(1)
	Dep. Of fans and foggers	0	0	0	0	0	400
		(0)	(0)	(0)	(0)	(0)	(1)
	Dep. Of dairy utilities	200	200	200	200	200	240
		(2)	(2)	(2)	(2)	(1)	(1)
	Dep. Of borewell	0	0	444	261	200	200
		(0)	(0)	(4)	(2)	(1)	(1)
	Total -A	4800	4520	5165	5974	9120	23200
	Interest on fixed assets	4320	4200	5386	6480	10392	12369
	% (calculated 12% per buffalo per annum)	47	48	51	52	53	35
	Total- B	9120	8720	10551	12454	19512	35569

(Figure in parenthesis denote percentages)

4.5.3 Costs and Returns of Dairy Farmers

The total costs and returns for traditional dairy farmers with different herd sizes and modernized dairy are calculated and furnished in the following sub paragraphs.

4.5.3.1 Cost and returns of dairy farmers who sold milk to organized sectors: In case of dairy farmers who supplied milk to organized sector the traditional dairy farm with above 20 buffaloes was giving highest profits in comparison to other herd sizes. The percentages to total returns on milk and from FYM were similar to the dairy farmers utilizing other ways of marketing. The returns from modernized dairy are higher than traditional dairy (> 20 herd size) by about 41 per cent. In case of herd size of 1-3 buffaloes looses to an amount of Rs. 685 per annum per buffalo are noticed if dairy farmers are supplying milk to organized dairy. This is because the payment at organized dairy is based

on fat content and small dairy farmers will not be able to get the required fat content due to local breads and low quality fodder.

4.5.3.2 Cost and Returns of Dairy Farmers Who Sold Milk Through Other Marketing Channels: The profit percentage to total cost was highest in case of dairy farmers with herd sizes of above 20 buffaloes under traditional dairy. It is almost 38 % of the total costs where as in case of 11-20 buffaloes (15 %), 4-6 buffaloes (13 %) and 1-3 buffaloes (6.24%). For each of the categories the returns from milk constituted around 83-92% of total revenues. The percent of returns from milk to total returns increased with the herd size where as the percent of returns from farm yard manure decreased. The percent of returns from milk increased as size of herd increased, because the dairy farmers with big herd sizes select better breeds of buffaloes and give quality feed due to which the milk yield per buffalo will be more in comparison to small herd size dairy farmers.

The percentage of profit to total cost is little less in case of modernized dairy in comparison to traditional dairy (>20 herd size).

Table 4.23. Cost and Returns of the dairy farmers who sold milk to organized sector

S.No	Particulars	1-3 buffaloes	4-6 buffaloes	7-10 buffaloes	11-20 buffaloes	>20 buffaloes	> 20 buffaloes
1	variable cost	24619.25	23050.25	29666	29909.99	35006	30106
		(72.96)	(72.55)	(73.76)	(70.60)	(64.20)	(45.84)
2	fixed cost	9120	8720	10551.4	12453.6	19512	35569
		(27.03)	(27.44)	(26.23)	(29.39)	(35.79)	(54.15)
3	total cost	33739.25	31770.25	40217.4	42363.59	54518	65675
4	returns on milk	27578.88	28835	38976	48719	68208	88005
		(83.43)	(84.04)	(85.91)	(88.40)	(90.33)	(92.34)
5	returns on dung	5475	5475	6387.5	6387.5	7300	7300
		(16.56)	(15.95)	(14.08)	(11.59)	(9.66)	(7.65)
6	gross returns	33053.88	34310	45363.5	55106.5	75508	95305
7	net returns	-685.37	2539.75	5146.1	12742.91	20990	29630
8	% profit to total cost	-2.031372956	7.99411399	12.79570534	30.07986339	38.50104553	45.11610202
9	B:C	0.97968627	1.07994114	1.127957053	1.300798634	1.385010455	1.45116102

(Figure in parenthesis denote percentages)

Table 4.24. Cost and Returns of the dairy farmers who sold milk through other marketing channels

S.No	Particulars	1-3 buffaloes	4-6 buffaloes	7-10 buffaloes	11-20 buffaloes	>20 buffaloes	> 20 buffaloes
1	variable cost	25219.25	26071.25	31516	32783.33	38806	34106
		(73.44)	(74.93)	(74.91)	(72.47)	(66.54)	(48.95)
2	fixed cost	9120	8720	10551.4	12453.6	19512	35569
		(26.55)	(25.06)	(25.08)	(27.52)	(33.45)	(51.04)
3	total cost	34339.25	34791.25	42067.4	45236.93	58318	69675
4	returns on milk	31008	33915	42000	48719	73080	88005
		(84.99)	(86.10)	(86.79)	(88.40)	(90.91)	(92.34)
5	returns on dung	5475	5475	6387.5	6387.5	7300	7300
		(15.00)	(13.89)	(13.20)	(11.59)	(9.08)	(7.65)
6	gross returns	36483	39390	48387.5	55106.5	80380	95305
7	net returns	2143.75	4598.75	6320.1	9869.57	22062	25630
8	% profit to total cost	6.242856207	13.21812237	15.02374761	21.81750618	37.83051545	36.78507356
9	B:C	1.062428562	1.132181224	1.150237476	1.218175062	1.378305154	1.367850736

(Figure in parenthesis denote percentages)

From the analysis of Table 4.23. and Table 4.24. it can be noticed that in case of 1-3 herd size it is better to market milk directly to consumers as this will give them a profit of Rs. 2143.75, where as if they are supplying to organized dairy they have to incur a loss of Rs.685. In case of herd size of 4-6 buffaloes also it is better to market directly to consumers as it is giving them better profits than supplying to organized dairy. A difference of about Rs.2060 is noticed in the profits. In case of 7-10 buffaloes dairy farmers supplying to organized dairy are making less profits than those supplying to consumers directly. In case of 11-20 buffaloes dairy farmers supplying to organized dairy are making more profits than those supplying to consumers directly, how even in case of above 20 buffaloes herd size the reverse is true.

Chapter V

SUMMARY AND CONCLUSIONS

Milk is an essential component in the daily diet of Indians. A wide range of producers undertake rearing of cattle in both organized and unorganized sectors. India stands first in milk production in the world with a production of 121.7 million tones of liquid milk in the year 2010-11. The need of hour is not only to increase live stock population concentration and productivity but also to focus on better handling of milk in terms of procurement, processing and marketing.

The study was undertaken with the collaboration of mother dairy with the following objectives:

1. To study the different channels of procurement of milk by organized dairy industry in Prakasham district of Andhra Pradesh.
2. To study the marketing channels involved in marketing of milk and its profitability of dairy farmers supplying to the organized dairy with farmers who are adopting other ways of marketing.
3. To compare the costs and returns of a modernized (mechanized) dairy farm with a traditional dairy farm.

5.1 METHODOLOGY

The present study was undertaken in Prakasam district of Andhra Pradesh as it stands first in milk production in Andhra Pradesh. The sample consisted of 144 diary farmers from 12 villages of Prakasam district and 20 dealers of mother dairy. Primary data was collected from dairy farmers, dealers, village representatives, agents and company personnel. Secondary data was mainly gathered from journals, websites and company personnel. Costs and returns have been calculated using appropriate procedures.

5.2 FINDING OF THE STUDY

More than half of the dairy farmers are above 46 years of age and around 53 percent of sampled dairy farmers are illiterate. Around 65 percent of dairy farmers engaged their family members in dairy farming practices to minimize their costs. Majority (72%) of dairy farmers are adopting dairy farming as a subsidiary occupation. Forty percent of dairy farmers are rearing 1-3 buffaloes and 26% are rearing 4-6 buffaloes. Only 28% of dairy farmers are rearing cows in addition to buffaloes and the

cow population ranged from 1 to 6 cows. Majority (66%) of dairy farmers are producing 1-15 litres of milk per day from buffaloes and all the dairy farmers rearing cows are producing 1-15 litres of cow milk per day. Farmers sell the milk at an average price of Rs. 30.24 per litre if they are selling to organized dairy and at Rs. 34 to 36 per liter if they are selling directly to consumers. All the dairy farmers used milk for their own consumption and also sold the milk either to mother dairy, any other organized dairy or directly to consumers or used a combination of any of these marketing ways.

The major problem faced by dairy farmers in production of milk is availability of feed and fodder through out the year. The other problems faced in order of importance are labour shortage, maintaining temperature and diseconomies of scale due to small herd size. The major problems faced by dairy farmers in marketing of milk to organized dairy are payment based on fat content, where as when they are marketing to milk agents the problems are related to payment based on fat content and transportation. In case of directly marketing to customers major problem faced by 85% of dairy farmers is transportation problem.

Organized dairies in Prakasam district procured milk by adopting three procurement channels: Channel-I: Milk producers-societies-organized plants; Channel-II: Milk producers-agents-organized plants; Channel-III: Milk producers-vendors-organized plants. The costs incurred in Channel-I, II and III are Rs. 2.15, Rs. 2.04 and Rs. 2.25 respectively. The cost incurred for procuring milk in channel III by societies for up to 100 liters, 101-150 liters, 151-200 liters, 201-250 liters and above 250 liters are 84.57 paise, 83.02 paise, 81.43 paise 79.58 P and 76.57 paise. The total costs incurred by organized dairy in procuring milk is Rs. 3.42 per liter of milk.

Five marketing channels have been identified to market milk in Prakasam district. They are channel-I: Milk produce-consumer; channel-II: Milk producer-local vendors-consumer; channel-III: Milk producer-local vendors-organized plants-distributors-dealers (depots)-consumer; channel-IV: Milk producer-societies-organized plants-distributors-dealers (depots)-mom and pop stores-consumer; channel-V: Milk producer-societies-organized plants-distributors-dealers (depots)-consumer. The costs incurred in channel I, II, III, IV and V are Rs. 0.246, Rs. 4, Rs. 6.415, Rs. 5.7675 and Rs. 5.7675 respectively per liter of milk.

Variable costs incurred by dairy farmers those who are supplying to organized dairy plant per annum, per buffalo in rupees for 1-3 buffaloes, 4-6 buffaloes, 7-10 buffaloes, 11-20 buffaloes and above 20 buffaloes in traditional dairy farming and above 20 buffaloes herd size in modern dairy farm are Rs. 24619.25, Rs. 23050.25, Rs. 29666, Rs. 29909.99, Rs. 35006 and Rs. 30106. Variable cost incurred by dairy farmers those who are using other marketing channels for 1-3 buffaloes, 4-6 buffaloes, 7-10 buffaloes, 11-20 buffaloes and above 20 buffaloes in traditional dairy farming and above 20 buffaloes in modern dairy farm are Rs. 25219.25, Rs. 26071.25, Rs. 31516, Rs. 32783.33 and Rs. 34106.

Fixed costs incurred by dairy farmers will be same irrespective of the ways of marketing they are adopting. The fixed costs for herd size of 1-3 buffaloes, 4-6 buffaloes, 7-10 buffaloes, 11-20 buffaloes and above 20 buffaloes in modernized dairy farm are Rs. 9120, Rs. 8720, Rs. 10551, Rs. 12454, and Rs. 35569.

The net returns for dairy farmers who sold milk to organized diary for herd size of 1-3 buffaloes, 4-6 buffaloes, 7-10 buffaloes, 11-20 buffaloes, and >20 buffaloes in traditional dairy farming and >20 buffaloes in modernized dairy farming per buffalo per year are Rs. 685.7, Rs. 2539.75, Rs. 5146.1, Rs. 12742.91, Rs. 20990 and Rs. 29630 respectively. Net returns for dairy farmers adopting other ways of marketing are Rs. 2143.75, Rs. 4598.75, Rs.6320, Rs. 9869, Rs. 22062 and Rs. 25630 in case of herd sizes of 1-3 buffaloes, 4-6 buffaloes, 7-10 buffaloes, 11-20 buffaloes, > 20 buffaloes in traditional dairy and >20 buffaloes in modernized dairy respectively. The B: C ratio in case of >20 herd size in traditional dairy and modernized dairy is almost similar in case of those who sold milk through other marketing channels whereas this ratio was higher for modernized dairy in comparison to traditional dairy in case of dairy farmers supplying milk to organized dairy.

5.3 CONCLUSIONS

Based on the study following conclusions can be drawn:

- Most of dairy farmers in Prakasham district are small dairy farmers and take up diary farming as a secondary occupation.

- Dairy farmers prefer rearing buffaloes rather than cows as maintenance costs are less for buffaloes in comparison to cows and fat content in milk is more in buffalo milk in comparison to cow milk.

- The volume of milk produced is low for most of the dairy farmers and farmers are finding it difficult to get the required fat content of 7.2%.

- Fat content in milk increases with the herd size because of use of good quality feed and fodder and concentrates by large dairy farmers.

- Price received by dairy farmers supplying to consumers directly is more than farmers supplying to organized dairy.

- Most of dairy farmers retain some volume of milk for their own consumption and rest in sold to agents, village representatives and consumers. Most of the dairy farmers adopt multiple channels for disposing milk produced.

- Price received by farmers if they are supplying to organized dairy or vendors is depended on fat content in the milk.

- Feed and fodder availability thorough out the year is the major problem faced by dairy farmers.

- The procurement channel involving societies is most efficient procurement channel.

- As the volume of milk procured by societies increases, costs incurred by them decreases.

- Total costs incurred by organized dairy in procuring and processing milk is around 10 percent of the total costs of milk.

- The marketing channel involving vendors has less efficiency when compared to marketing channel involving societies.

- As the herd size increases, variable costs per buffalo per annum increase, and as the herd size increases fixed costs also increase.

- Dairy farmers having large herd size usually go in for good breeds of buffaloes and small dairy farmers will go in for local breeds.

- The net returns for dairy farmers adopting other marketing channel is more than dairy farmers supplying to organized dairy for herd size of 1-3 buffaloes, 4-6 buffaloes, 7-10 buffaloes and above 20 buffaloes except for 11-20 buffaloes.

- The next returns obtained by modernized dairy are more in comparison to traditional dairy when the milk is supplied to organized dairy and also when the milk is sold through other marketing channels.

5.4 SUGGESTIONS

Based on the finds of the study and conclusions drawn following few suggestions are given to improve profitability to dairy farmers, intermediaries and organized dairy plants.

- It would be beneficial for the organized dairy plants if they completely depended on societies to procure milk as this channel of procurement is incurring least costs.

- Since the net returns when the dairy farmers are supply to organized dairy in comparison to dairy farmers supplying milk through other channels is more in case of 11-20 buffaloes herd size, it is advised that mother dairy should give loans to purchase 11-20 buffaloes instead of supporting to buy only 4-6 buffaloes.

- Organized dairy plants can support purchase of good breeds instead of local breeds.

- Since feed and fodder is a major problem the dairy firms can think of arranging quality fodder at reasonable prices and also arrange for supply of concentrates to the dairy farmers, which will result in procuring good fat content milk with out any hiccups from dairy farmers.

- Transportation routes may be rescheduled by adding more connecting links so as to increase the utilization of transportation vehicles and decreases the transportation costs.

- Organized dairy plants can also look at decreasing the time of procurement so as to reduce the spoilage losses.

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ANNEXURE-I

DAIRY FARMERS SCHEDULE

1. Farmers Profile:

Farmer Name			
Age		Village	
Contact No.		Mandal	
Education		Districts	
Land holding			

2. Family Particulars

S. No.	Gender	Adults	Children	Total
1				
2				
3				

3. Occupation
   a) Main: .....
   b) Subsidiary: .....

4. No. of buffaloes/cows farmer has.....
   a) No. of buffaloes: .....
   b) No. of cows: .....
   c) Age of buffaloes/cows: .....

5. Average quantity of milk produced in a day
   a) Average quantity of buffalo milk: .....
   b) Average quantity of cow milk:.....

6. Disposal of milk
   a) Quantity of own consumption.....litres
   b) Quantity supplied to organised dairy through village representative..... litres
   c) Quantity supplied to agents.....litres
   d) Quantity supplied directly to consumers ..... litres

7. Do you supply milk to Mother Dairy
   Yes/ No
8. Average price for 1 litre:
   a) Supplying to organized dairy
      Mother dairy.....
      Agents of any other dairy.....
   b) Supplying to agents
      Agents of Mother Dairy.....
      Agents of any other dairy.....
   c) Supplying directly to consumer.....
   d) Supplying to vendors.....
9. Cost of dairy farming:

FIXED COST:

a) Cost of Land.....
b) Rental value of leased in land.....
c) Shed & fencing.....
d) Cattle.....
e) Store for fodder & other implements.....
f) Fans & Foggers.....
g) Milking machines.....
h) Bore well.....
i) Dairy utilities.....
j) Interest on Investment.....
k) Depreciation. On fixed assets.....

VARIABLE COSTS /OPERATING COSTS:

a) Feed & fodder.....
b) concentrates
c) Human Labour.....

   Family Labour

   Engaged labour

d) Cost of veterinary & Health care.....
e) Electricity.....
f) Water.....

g) Cost incurred in supplying of milk.....
h) Insurance on cattle.....
i) Miscellaneous Expenses.....

10. Milk producing years of cattle.....

11.Average lactation period in a year.....

12.Problems faced in various channels.
a) Organised dairy

b) Agents

c) Directly to consumers

13.Value addition by dairy farmers

14.Suggestion to Mother Dairy

ANNEXURE-II

QUETIONNAIRE FOR AGENTS & VILLAGE REPRESENTATIVES

Agents representative			
Name		Village	
Age		Mandals	
Education		District	
Land holding			

1) Occupation:
a) Primary occupation.....
b) Secondary occupation.....

2) Milk collecting details

Percentage of fat content	Average litres per day	No. of farmers from which you collect	Village covered
7%			
7.5%			
8%			
8.5%			
9%			
9.5%			

3) Costs

Fixed costs:

a) Rent of premises (shop/depo).....
b) Dairy utilities.....
c) Far testing equipments.....
d) Depreciation.....

Operating cost

a) Human labour.....
b) Electricity.....
c) Water charges.....
d) Chemicals.....
e) Miscellaneous.....

4) Price received for each litre-agents

Percentage of fat content	7%	7.5%	8%	8.5%	9%
Price					

5) Bases of commission for VRs.....

6) Problems faced in procuring milk

7) Payments terms

8) Any suggestions to Mother dairy

ANNEXURE-III

COMPANIES QUESTIONNAIRE

1) Chilling costs.....

2) Processing costs.....

3) Selling price.....

4) Margins under each category.....

5) Procurement problems.....

6) Distribution channels for milk

7) Cost for other milk products

a) Processing costs

b) Selling price

c) Distribution Channels

d) Margins for each products

ANNEXURE-IV

QUESTIONNAIRE FOR DEALERS AND DISTRIBUTORS OF MOTHER DAIRY

DISTRIBUTOR

1) **average quantity of milk ordered per day**
2) Price per each litter sold.....
3) Margins .....
4) Transportation cost.....

DEALERS

1) Average quantity sold (per day).....
   (Category wise)

2) Price per litre.....
   (Category wise)

3) Margins (per litre)
   (Category wise)

4) Returns management.....
   a. Milk
   b. Milk Products

5) Losses due to Spoilage.....

6) Loading/unloading charges.....

7) Rent paid for depot/storage space.....

8) Miscellaneous costs.....
   (Crates etc.)

9) Human labour costs.....

10) Human Labour costs.....

11) Net profit (per litre).....