COMPETITIVENESS OF DAIRY INDUSTRY- A CASE OF KARIMNAGAR DAIRY

G.SHRUTHI
B.Tech. (Ag.Engg)

MASTER OF BUSINESS ADMINISTRATION
(AGRIBUSINESS MANAGEMENT)

2016

COMPETITIVENESS OF DAIRY INDUSTRY-A CASE OF KARIMNAGAR DAIRY

BY

SHRUTHI.G

B.Tech. (Ag.Engg)

PROJECT REPORT SUBMITTED TO
PROFESSOR JAYASHANKAR TELANGANA STATE AGRICULTURAL UNIVERSITY
IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF

MASTER OF BUSINESS ADMINISTRATION
(AGRIBUSINESS MANAGEMENT)

CHAIRPERSON: Dr. B. Dayakar Rao

SCHOOL OF AGRIBUSINESS MANAGEMENT
COLLEGE OF AGRICULTURE
RAJENDRANAGAR, HYDERABAD-500030
PROFESSOR JAYASHANKAR TELANGANA STATE AGRICULTURAL UNIVERSITY

2016

DECLARATION

I, **SHRUTHI,** hereby declare that the project report entitled **"COMPETITIVENESS OF DAIRY INDUSTRY- A CASE OF KARIMNAGAR DAIRY"** submitted to the **Professor Jayashankar Telangana State Agricultural University** for the degree of **Master of Business Administration** in School of Agribusiness Management 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 report has been published earlier in any manner.

Place: Hyderabad **(SHRUTHI.G)**

Date: **I. D. NO**. **RMBA/14-09**

CERTIFICATE

Ms. SHRUTHI has satisfactorily prosecuted the course of research and that project report entitled **"COMPETITIVENESS OF DAIRY INDUSTRY- A CASE OF KARIMNAGAR DAIRY"** submitted is the result of original research work and is of sufficiently high standard to warrant its presentation to the examination. I also certify that neither the project nor its part thereof has been previously submitted for a degree of any university.

Date: **(Dr. B. DAYAKAR RAO)**

Place: Hyderabad **Chairperson**

CERTIFICATE

This is to certify that the project report entitled **"COMPETITIVENESS OF DAIRY INDUSTRY- A CASE OF KARIMNAGAR DAIRY"** submitted in partial fulfillment of the requirements for the degree of **'**Masters of Business Administration' of the Professor Jayashankar Telangana State Agricultural University, Hyderabad, is a record of the bonafide original research work carried out by **Ms. SHRUTHI** 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 assistance received during the course of investigations have been duly acknowledged by the author of the project report.

Thesis approved by the Student Advisory Committee

Chairperson	**Dr. B. DAYAKAR RAO** Principal scientist Indian institute of millets research Rajendranagar, Hyderabad – 500030	_____
Member	**Dr. SEEMA** Professor & Head School of Agribusiness Management College of Agriculture Rajendranagar, Hyderabad – 500030	_____
Member	**Shri M.H.V.BHAVE** Associate Professor & Head Department of Statistics & Mathematics College of Agriculture Rajendranagar, Hyderabad – 500030	_____

Date of final viva voce:

ACKNOWLEDGEMENTS

I am pleased to place my profound etiquette to my Chairperson of the Advisory Committee, ***Dr.B.Dayakar Rao,*** *Principal Scientist, Indian Institute of Millets Research, Rajendranagar, for his wise counsel, concrete suggestions, his inspiring, meticulous and affectionate guidance, constant help and persistent encouragement during the course of my study and prosecution of project work. I take it as a privilege and pride to have an opportunity of working under his inspiring spirit.*

My deepest gratitude is to ***Dr.Seema****, Professor and Head, School of Agribusiness Management, College of Agriculture, Professor Jayashankar Telangana State Agricultural University, Rajendranagar. I have been amazingly fortunate to have her as Member of Advisory Committee who gave me the freedom to explore on my own and at the same time the guidance to recover when my steps faltered. She taught me how to question thoughts and express ideas. Her patience and support helped me overcome many crisis situations and finish this dissertation.*

I equally owe my deep sense of gratitude to ***Sri. M. H. V. Bhave,*** *Associate Professor & Head, Department of Statistics and Mathematics and Member of the Advisory Committee for his invaluable guidance, suggestions and support during my course of study.*

I deem it my privilege in expressing my deep sense of reverence and gratitude and indebtedness to ***Dr. P. Radhika****, Associate Professor, School of Agribusiness Management, College of Agriculture, Professor Jayashankar Telangana State Agricultural University, Rajendranagar, for her encouragement and guidance.*

It will be a great lapse on my part if I fail to extend my best regards to all my teachers and well-wishers who have contributed in building up my career. I also thank to the staff of School of Agribusiness Management for their help during my project work.

Language falls short of to express my undoubtful gratitude, indebtedness, love and affection to my beloved and venerable parents ***Smt.G. Shobha*** *and* ***Sri.G. Sampath,*** *who constantly educated, guided and moulded me into the present position and whose boundless love, unparallel affection, dedicated efforts, encouragement and moral support is a constant source of motivation for me in shaping up my career.*

*It is time to surface out my affectionate gratitude to my brother **Manu Venkat.G.** and **all** my family members whose everlasting love and encouragement were my strongest assets during the course of my life with whose moral support I achieved this level of education.*

*It is time to surface out my genuflect love and affection for my friend **Ramakrishna. Ch.** who have been a pillar of constant support throughout the process and encouraged me to accomplish this work.*

*My acknowledgement would be incomplete and meaningless without thanks to my friends **Ravali, Srihari, Rajinikanth, Lathika, Kumaraswamy, Arline Christina, Ramesh, Harsha, Prasanna, Wagdevi, Pragna , Priyanka, Jhansi** for their voluntary help in completing the report.*

*I take it as a special privilege to thank all the authorities and staff of **PJTSAU**, who provided me an opportunity to undertake the course and those who directly and indirectly helped me in all my endeavours.*

Date:

Place: Hyderabad (**SHRUTHI.G)**

LIST OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

LIST OF ABBREVIATIONS

ASSOCHAM	:	Associated Chambers of Commerce and Industry of India
APMACS	:	Andhra Pradesh Mutually Aided Cooperative Societies
BCU	:	Bulk Cooling Units
CACG	:	Compound Annual Growth Rate
C & F	:	Carry and Forward
CLR	:	Corrected Lactometer Reading
COB	:	Clot on Boiling
CY	:	Calendar Year
et al.	:	and other people
EU	:	European Union
GATT	:	General Agreement on Tariffs and Trade
HTST	:	High Temperature Short Time
ICMR	:	Indian Council of Medical Research
IDI	:	Indian Dairy Industry
INR	:	Indian Rupee
ISO	:	International Organization for Standardization
kg	:	Kilogram
KMPCL	:	Karimnagar Milk Producer Company Ltd
lt	:	Liters
mg	:	Milli Grams
MT	:	Million Tonnes
MBRT	:	Methylene Blue Reduction Test

MMPO	:	Milk and Milk Products
MNC	:	Multi National Company
NDDB	:	National Dairy Development Board
NDP	:	National Dairy Plan
NSSO	:	National Sample Survey Organization
PJTSAU	:	Professor Jayashankar Telangana State Agriculture University
Psi	:	Pound force per square inch
QC	:	Quality Control
Rs.	:	Rupee
RMRD	:	Raw Milk Receiving Dock
TIDP	:	Traditional Indian Dairy Products
UAE	:	United Arab Emirates
UCDFL	:	Uttaranchal Cooperative Dairy Federation Ltd
USA	:	United States of America
USD	:	United States Dollar

Author	**:**	**G.SHRUTHI**
Title of the thesis	**:**	**COMPETITIVENESS OF DAIRY INDUSTRY- A CASE OF KARIMNAGAR DAIRY**
Degree	**:**	**MASTER OF BUSINESS ADMINISTRATION (AGRIBUSINESS MANAGEMENT)**
Faculty	**:**	**AGRICULTURE**
Department	**:**	**AGRIBUSINESS MANAGEMENT**
Major advisor	**:**	**Dr. B. DAYAKAR RAO, Principal Scientist ICAR – Indian Institute of Millets Research Rajendranagar, Hyderabad- 500030**
University	**:**	**PROFESSOR JAYASHANKAR TELANGANA STATE AGRICULTURAL UNIVERSITY**
Year of submission	**:**	**2016**

ABSTRACT

The present study entitled "COMPETITIVENESS OF DAIRY INDUSTRY- A CASE OF KARIMNAGAR DAIRY" was undertaken to study the profile of Karimnagar Milk Producer Company Ltd (KMPCL), its competitiveness and perceptions of various stakeholders of KMPCL dairy from Karimnagar district with the following objectives:

1. To study milk consumption in India vis-a-vis pre bifurcation AP and post bifurcation Telangana state.
2. To assess functional strategies of Karimnagar Milk Producer Company Ltd., and its advancement in technology.
3. To evaluate the competitiveness of Karimnagar Milk Producer Company Ltd., vis-a-vis other dairies and constraints for future growth.

4. To outline future prospects of Karimnagar Milk Producer Company Ltd.

The data were collected from both primary and secondary sources. Secondary data was collected from NDDB, various journals, NSSO report, company records etc. Primary data was collected from milk producers, consumers and dealers by using structured schedule. The data collected from various sources were analyzed in multiple stages. Various analytical tools were employed for analysis of collected data. Likert scale technique was employed to know the factors influencing the purchase decision of the consumers, factors influencing the producer's decision to supply the milk and consumer perception on various brands of milk products.

The milk consumption in India is increasing both in rural and urban areas in the country over the study period. There is an increase of 28.43 per cent and 25.78 per cent over 26 years (1987-88 to 2013-14) of consumption of milk in rural and urban India respectively. The per capita consumption of milk was more in urban than rural India during the study period. The percent increase in availability of milk in India over the study year is more than the percent increase in consumption. The per capita consumption both in rural and urban Andhra Pradesh is less than the all India level.

A functional strategy includes financial strategies, organizational strategies, marketing strategies which help in the functioning of the dairy industry. The profit generation of the KMPCL was 11.335 lakhs in the year 2014-15. The Karimnagar Milk Producer Company Ltd (KMPCL) is an organization which has a specified structure for functioning of various operations.

The factors influencing the producer's decision for selling milk to KMPCL dairy over other dairy company is price paid by the dairy followed by credit and transport facilities provided by the KMPCL dairy. The analysis of consumer's perception about the various brands of milk and milk products shows that the milk and milk product taste, flavor and promotional offers given by KMPCL got the highest mean score compared to other brands. With regard to the milk dealers the margin and price received from the KMPCL got highest mean score compared to other dairy brands. The major constraints faced by the KMPCL are high cost of labour, low shelf life and power availability.

It is suggested that the entire milk firm may focus on maintaining consistent quality in milk and milk products. The KMPCL may adopt more advance technology in milk processing and marketing to improve efficiency and enhance profits. Price, Packaging, brand name, quality and availability of milk needs to be ensured in order to compete with other brand. More range of products suitable to different consumer segments can be evolved to attract more customers. Periodic consumer surveys should be conducted to update upon the changing consumers need and preferences.

Brand name carries lot of importance amongst the consumers, therefore investment in improving brand image will help in boosting up the sales. The KMPCL can increase the quality of services and loyalty offered to milk producers for more competitiveness. Dealer's margins will be a real incentive for boosting sales. In addition innovative deals may be initiated to motivate dealers to promote sales. i.e., varied margins for different sales slab. Besides advertisement, sponsoring of events in schools and colleges will also enhance the firm's image.

It is suggested that KMPCL can increase the share of value added products in order to increase the profits of the dairy. Offering more incentives to milk producers will increase the preference of supplying milk to the company. Eventually with its highest market share it has social objective of increasing per capita availability of milk in the state by bridging the gap with that of national average per capita availability.

CHAPTER-I

INTRODUCTION

The dairy industry in India has been on a sturdy path of progression since independence. The milk production of India has grown from 17 million tonnes in (1951) to 138 million tonnes in 2014 and is expected to increase up to 200 million tonnes, worth 0.05 lakh billion by the end of the year 2020 (ASSOCHAM, 2015). Today, India is the world's largest milk producer accounting for more than 17 per cent of the world's total milk production; still the per capita milk consumption is around 276 g per day. India has the largest cattle and buffalo population in the world. Out of all bovine population in India, 40 percent are indigenous cows, 46 percent are buffaloes and 14 percent are imported European or North American cattle crossbreeds (6.9 kg daily yield /animal). More than 67 percent of dairy animals are owned by marginal and small farmers. Interestingly, buffalo milk accounts for the largest share of the total milk production in the country (NDDB, 2015).

Milk production is growing at 7 per cent by volume and approximately 5 per cent by value (NDDB, 2015). This progress is primarily attributed to structural changes in Indian Dairy Industry (IDI) brought about by the advent of dairy cooperatives. A market size of IDI was USD 48.5 billion in 2011. With a Compound Annual Growth Rate (CAGR) of 16 percent, India represents one of the world's most lucrative dairy markets. IMARC Group, one of the world's leading research and advisory firms, finds in its new report entitled "Indian Dairy Market Report and Forecasts 2012-2017" that driven by a strong growth in both urban and rural demands, the market for milk products in India is expected to surpass US$ 163 billion by 2017. The market size of milk and milk products (organized and unorganized) is estimated about INR 0.036 lakh billion. The organized sector dairy market is growing 10 per cent annually. About 50 per cent of total milk produced in India is converted into Traditional Indian Dairy Products (TIDP) (NDDB, 2013).

India is otherwise known as the 'Oyster' of the global dairy industry, with opportunities galore to the entrepreneurs globally. Anyone might want to capitalize on the largest and fastest growing milk and milk products market. The dairy industry in India has

been witnessing rapid growth. The liberalized economy provides more opportunities for MNCs and foreign investors to realize the full potential of this industry. The main aim of the Indian dairy industry is only to better manage the national resources to enhance milk production and upgrade milk processing using innovative technologies. The growth of the dairy sector during the last three decades has also been impressive, at more than four per cent per annum, although the country has emerged as the largest producer of milk. This is not a small achievement when we consider the fact that dairying in India is largely a subsistence activity, farmers in general keep dairy animals in proportion to their free crop residues as also the available family labour with little inputs and a minimum of marketed outputs.

A restrictive trade policy for milk products and the emergence of co-operatives has changed dairy farming practices in the country. The crossbred technology has further augmented the viability of the dairy units by increasing the milk production per animal. Subsequently milk production has increased at an exponential rate while the benefits of an increase in milk production also reached the consumers as apparent from a relatively lower increase in the price of milk (Anonymous, 2015).

1.1 World scenario

India is the largest milk producer in the world. India produces 14 per cent of the world milk production, but its share in the international dairy trade even less than 0.1 per cent. The international dairy trade is dominated by four players - European Union (EU), New Zealand, Australia and United States of America (USA) – which all together account for 85 per cent of all exports. New Zealand and Australia export as much as 80 and 50 per cent of their milk production respectively. The Asia-Pacific region has been and will remain a net milk importer in the foreseeable future. It accounts for the bulk of milk powder imports and half of the imports of condensed and evaporated milk. The dairy industry is regulated in most countries through various ways. Imports are commonly restricted, and exports frequently subsidized. High dairy price supports in many countries are put in place to stimulate production to the extent that subsidies for exports are necessitated to maintain domestic dairy programs.

In the United Kingdom, total milk produced by farmers is procured by the co-operatives. Private dairies are required to buy their milk requirement from co-operatives. New Zealand has no private sector dairy plants. 90 per cent of dairies in the erstwhile West

Germany and 100 per cent in Denmark, Netherlands and Sweden are in the co-operative sector.

In the United States, 70 per cent of the dairy industry is co-operative. Dairy programs are subject to more government participation or regulation than most other domestic agricultural industries in the USA. There are also Federal Milk Marketing Orders and movement barriers in the USA for orderly marketing control, which is associated with stabilizing fluid milk prices, providing secure and dependable markets for individual dairy farmers, primarily for the fluid market and improving the balance of market power between farmers and handlers.

1.2 HISTORICAL PERSPECTIVE OF DAIRY INDUSTRY IN INDIA

India is having more than 200 million cows and 250 million buffaloes with the largest population of cattle in the world. More than fifty percent of the buffaloes and twenty percent of the cattle in the world are found in India and most of these are milch cows and milch buffaloes. Indian dairy sector contributes the large share in agricultural gross domestic product. Presently there are around 80,000 village dairy cooperatives across the country (NDDB, 2015). The co-operative societies are federated into 170 district milk producers unions, which in turn has 22 State Cooperative Dairy Federation. Milk production gives employment to more than 72 million dairy farmers. In terms of total production, India is the leading producer of milk in the world followed by USA. The milk production is over 100 million tonnes. Of this, total produce cow's milk constitutes 36 million tonnes while rest is from buffaloes.

1.3 STRUCTURE OF DAIRY INDUSTRY IN INDIA

Out of the total milk produced only 35 per cent is distributed through the organized sector and the rest 65 per cent is through the traditional unorganized sector (NDDB, 2015). In the organized sector, cooperatives and private dairies are playing major role in selling the processed milk, whereas the traditional unorganized sector involves selling the loose milk.

1.4 Present scenario

Dairy development in India has been acknowledged the world over as one of modern India's most successful developmental programs. Today, India is the largest milk producing country in the world. The total milk production is over 133 million tonnes in 2013 and the demand for milk is estimated at around 140.6 million tonnes. The milk surplus states in India are Uttar Pradesh, Punjab, Haryana, Rajasthan, Gujarat, Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu. The manufacturing of milk products is concentrated in these milk surplus states.

The Indian dairy sector is different from other dairy producing countries as India places its emphasis on both cattle and buffalo milk. In 2010, the government and the National Dairy Development Board have drawn up a National Dairy Plan (NDP) that proposes to nearly double India's milk production by 2020. This plan will endeavor to increase the country's milk productivity, improve access to quality feeds and improve farmer access to the organized market. These goals will be achieved through activities that focus on increasing co-operative membership and growing the network of milk collection facilities throughout India (NDDB, 2015).

Despite its huge production volume, India nevertheless faces a milk supply gap due to increasing demand from a growing middle class population. Estimation suggests that Indian dairy production is growing at a rate of about four per cent per year, yet consumer demand is growing at approximately double that rate. Apart from the rapidly increasing demand for milk and dairy products, other reasons such as the increased cattle feed cost and low availability of dairy farm labour in the rural areas have also resulted in increase in the cost of production. On the other hand, the strong pressure from EU to open up its market as well as the proposed free trade agreement with Australia and New Zealand may also put India's dairy sector in the risk of being jeopardized. In order to maintain the development of its dairy industry, focus needs to be placed on several areas. First, cost of production has to be reduced through increasing productivity of animals, improve animal health care and breeding facilities and management of dairy animals. Second, Indian dairy industry needs to further develop proper dairy production, processing and marketing infrastructure, which is capable of meeting international quality requirements. Third, India can focus on buffalo

milk based specialty products, such as Mozzarella cheese, in order to meet the needs of the target consumers (Chawla, 2009).

1.5 Telangana Scenario

Telangana is blessed with rich livestock resources especially cattle and sheep population accounting to 5.52 per cent of country's population. The State stands 10^{th} in Livestock population, 13^{th} in Bovine population, in the country as per the Livestock Census, 2015. About 29 Lakh families in Telangana State are engaged in livestock sector for their livelihood. The value of livestock produce is estimated to be Rs. 30584 crores at current prices and livestock contributes 7.1 per cent to the Gross State Domestic Product and formed 39.69 per cent of the Agriculture sector in 2014-15.

With the annual production of 39.24 lakh million tonnes of milk, Telangana occupies 13th position in the country in milk production. The State has produced 2354.32 lakh million tonnes of milk during 2014-15 (up to 31.10.2014). The per capita availability of milk was 234 gm/day in the state in which is short of meeting the national average of 263 gm/day. Till January, 2015 an amount of Rs. 537.49 lakhs is paid to the dairy farmers of Telangana as an incentive amount.

The Karimnagar Milk Producer Company Ltd (KMPCL) is a leading dairy industry in Telangana state and therefore KMPCL is purposively selected for the present study.

1.6 Statement of the problem

This study was carried out to know the prevailing competitiveness of the dairy industry with a special focus on "Karimnagar Milk Producer Company Ltd (KMPCL)". The indicators selected for studying the competitiveness of the dairy included various strategies that are adopted by the dairy industry and also the new technologies that are continuously followed or implemented to have a grip over day today progress that is happening in the sector. Apart from this, type of constraints faced by the dairy and various coping mechanism developed by the dairy and future prospect has been studied. The secondary data are collected from NSSO report, NDDB website, India Stat, Company records of KMPCL and the relevant primary data was collected from milk producers, consumers, milk traders, and company representatives etc. The results were analyzed and suggested the suitable policy measures to address the identified problems.

1.7 Practical utility of the study

The results of the study were expected to throw light on the competitiveness of the Karimnagar Milk Producer Company Ltd., in various parameters and probable changes to be made for maintaining the competitiveness by the dairy for its successful running.

1.8 Objectives of the study

1. To study milk consumption in India vis-a-vis pre bifurcation AP and post bifurcation Telangana state.
2. To assess functional strategies of Karimnagar Milk Producer Company Ltd., and advancement in technology.
3. To evaluate the competitiveness of Karimnagar Milk Producer Company Ltd., vis-a-vis other dairies and constraints for future growth.
4. To outline future prospects of Karimnagar Milk Producer Company Ltd.

1.9 LIMITATIONS OF THE STUDY

1. The study has been conducted over a limited period of time, in a limited area of two mandals of Karimnagar district and hence suffers from draw backs.
2. The conclusions drawn were applicable to those areas with similar conditions.
3. The primary data collected from milk producers and other field level functionaries were collected based on their memory by survey method and hence have an inherent limitations.

1.10 Structure of the thesis

The study is presented in five chapters as follows

a. **Introduction:** Importance of the study, problem setting and objectives are covered.
b. **Review of Literature:** The available and relevant literature is thoroughly reviewed.
c. **Material and Methods:** The methodology adopted in sampling, data collection, analytical tools used and methods of evaluation are explained.
d. **Results and Discussion:** The results of the study and the discussion evolved from the study are presented under this sub heads.
e. **Summary and conclusions**: Summary and conclusion of the study are presented under this section.

Chapter II

REVIEW OF LITERATURE

For a research work to be carried upon, the previous work done gives an insight into the background and provides a set of directions to the present research problem. Collection of literature should be done to understand various related aspects of the issue. The analysis of the collected studies gives way to further understanding of the problem and identifies the aspects needed to be focused upon and would help the researcher to organize the research on proper lines and bring about refinement in the study. The reviews have been presented under the following headings.

2.1. Milk Consumption in the World and India

2.2. Functional Strategies of Dairy Industry

2.3. Competitiveness of Dairy Industry and constraints for future growth

2.4. Future prospects of Dairy Industry

2.1. Milk consumption in the World and India.

Reshma and Babu (2014) projected the house hold demand of milk for the year 2021 in Karnataka state .The result of the study revealed that Karnataka which has a marginal surplus of milk in 2010 - 11 may fall short by 2016 and 2021. It appears that there will be an acute shortage of milk with total consumption increasing to 54.04 lakh tonnes and 81.29 lakh tonnes, for 2016 and 2021 respectively The corresponding increase in production in the state will be 50.4 lakh tonnes and 52.4 lakh tonnes for 2016 and 2021 respectively due to the slow growth of output of milk in relation to consumption growth.

Mani and Intodia (2014) observed that for the calendar year (CY)-2015 fluid milk projected to increase to 147 million tonnes (MT) assuming a normal monsoon and continued public and private sector efforts to improve farm management and production through extension services. CY-2015 fluid milk consumption is forecast to increase to 59.75 MT on population growth and rising incomes, which likely to increase pressure on dairy sector to expand.

India's estimated demand for milk is likely to be about 155 million tonnes by 2016-17 and around 200 million tonnes in 2021-22 (Anonymous, 2014). To meet the growing demand there is a need to increase the annual incremental milk production from 4 million tonnes per year in past 10 years to 7.8 million tonnes in the next 8 years. In absence of accelerated growth and better business performance, millions of dairy farmers will be left out of the cooperative domain. Only true professionalism, transparency in governance and management will give farmers their rightful and deserve place in our agriculture economy.

Clayes *et al.* (2013) reported that the consumption of raw milk poses a realistic health threat due to a possible contamination with human pathogens. It is therefore strongly recommended that milk should be heated before consumption. With the exception of an altered organoleptic profile, heating will not substantially change the nutritional value of raw milk or other benefits associated with raw milk consumption.

Fawi and Abdalla (2013) studied the preferences and consumption pattern of milk and factors affecting consumers purchase decision. The study reported that quality is the main factor affecting purchase decision. Fresh milk is highly preferred milk among the consumers and concluded that the processors and producers of milk should implement a modern marketing concept that focuses on the consumer's needs and wants and further producers and processors should also use marketing mix to increase sales.

Srivastava (2012) stated that India is on track to become one of the largest dairy industries in the world. With 20 million more mouths to feed every year, and an increasingly affluent population, the demand for high quality dairy nutrition continues to grow at a rapid pace. Annual dairy consumption is forecast to reach around 180-200 million tonnes by the end of the decade 2020.

Gerosa and Skoet (2012) reviewed that trend in global production and consumption of dairy products as well as the drivers behind increasing production and consumption. Increasing consumption in developing countries has been accompanied by a major expansion of production in several developing countries, outpacing production growth in the developed country group. The growing demand, production growth has been driven by technological change in the sector, which has permitted major increases in productivity and

the emergence of large-scale commercial dairy farms. Small-scale dairy producers in several developing countries have remained at the margin of these developments. Also trade in dairy products has expanded due to technological development in processing and shipping, which has facilitated product movements. The potential for future expansion of dairy consumption remains significant, as income levels continue to grow in developing countries, especially in countries where levels of per capita consumption are still relatively low. The rapid expansion and transformation of the global dairy sector contributes to growing threats to the environment and to human and animal health as well as to increasing pressures on the livelihoods of small-scale dairy producers.

Goutam *et al.* (2011) assessed the existing pattern of milk and milk products consumption across different socio-economic groups. For 100 sample households selected from rural and urban areas of North Tripura District in 2008 using multistage random sampling technique. The study reported that in rural area, liquid milk, curd, ghee and total milk and milk products were elastic whereas milk powder and sweets were inelastic while in urban area, liquid milk, ghee and total milk and milk products were elastic whereas milk powder, curd and sweets were inelastic. However, the degrees of elasticity were higher in rural areas. Education exerts positive influence on the expenditure on milk and milk products in both rural and urban areas.

Wiley (2011) revealed in his study that milk production and consumption and the genes that allow for milk digestion throughout life are strong variables across populations, historically only a minority of human groups valued milk as an important component of local food ways. By the early 21st century, milk consumption has become globally normative, and a spectacular rise in intake in countries such as China and India. Meanwhile, in the United States, consumption has declined markedly, especially among children. Milk has been able to succeed in India and China by being positioned as a food with special qualities that enhance physical growth, which in turn serves as a powerful metaphor for individual and national power and wealth. Milk is being repackaged as a salve for the problems of modernity in the United States.

Gautam *et al.* (2010) observed in their findings that the demand for milk and milk products is rapidly increasing with achievement of high economic growth in India. There is

chances that demand growth will surpass the output growth are high. In the past, substantial increment in production was achieved with the implementation of a comprehensive dairy development programme-operation flood. It is opined that available technology is of limited use in supporting future productivity improvement. Constraints in the supply of feed and fodder are also highlighted. Lack of research and development support and in adequate market access to smallholders as factors contributing to the list of challenges are identified. Finally, climate change, as having direct and indirect adverse effects on the production, is identified as a factor adding to the complexity of situation. While seeking to analyze the current challenges confronting the Indian dairy sector in the face of imminent demand increases.

Kubendran and Vanniaraja (2005) reported that the per capita milk availability in India was only 200 grams per day in 1996-97 against 220 grams requirement as recommended by the ICMR and National Institute of Nutrition. With a constant increase in disposable incomes among the strong middle-income class, the scope of marketing of milk is wider. Since the consumers are not homogeneous, the consumption pattern of milk like quantum of purchase, mode of purchase, brand preference etc., change from consumer to consumer. The socio-economic profile of the consumers namely income status, occupational position, educational level, sex, age and region are the major determinants of the consumption pattern of milk.

Sivasubramanian (2003) examined the per capita milk consumption from 300 respondents in Chennai and Chidambaram and analyzed the relationship between milk consumption, income and education. It was found that the per capita consumption of milk was more in Chennai than Chidambaram. Irrespective of the region, income level and education was found to have a significant impact on milk consumption as it was found to be more in higher income and higher educational groups. He stressed on the fact that total quality management is of vital importance and it depends on proper education, suitable training and in-service training from time to time in accordance with the changing scenario.

Delgado (2003) reported that people in developing countries consume on an average one-third the meat and one-quarter of the milk products per capita compared to the richer North, but this is changing rapidly. By 2020, the share of developing countries in total

world meat consumption will expand from 52 per cent currently to 63 per cent. By 2020, developing countries will consume 107 million tonnes (MT) more meat and 177 MT more milk than they did in 1996/1998, dwarfing developed-country increases of 19 MT for meat and 32 MT for milk.

Arya and Ram (1988) studied the factors affecting consumption pattern of milk and milk products in rural and urban areas of the Kamal district of Haryana state with the sample of 240 households. The log-linear multiple regression analysis was employed to measure the contribution of various factors affecting expenditure on milk and milk products. The major findings of the study revealed that the average per capita total expenditure was almost double in the urban areas as compared to rural areas. The food habits of the consumers did not have any significant impact over the capital expenditure on milk and milk products. The study concluded that the independent variable namely per capita monthly total expenditure, family size, education status of the family members and food habit of the households largely influence per capita expenditure on milk and milk products.

2.2. Functional Strategies of Dairy Industry

Ghule *et al.* (2012) examined 40 commercial dairy farms in Ahmednagar district of Maharashtra (India) in the year 2009-10 to analyses their capital investment, cost and returns and the profitability. The farms were classified into small, medium and large categories based on herd size. The study revealed that small, medium and large dairy farms maintained on an average 10.55, 14.11 and 34.66 milch animals respectively. The average investment per farm was estimated to be Rs. 12.17 lakhs. The share of dairy animals in total investment ranged from 51.28 per cent (small farms) to 70.12 per cent (large farms). The average productivity of cross-bred cattle was 9.72, 9.58 and 9.49 liters of milk per day for small, medium and large category of commercial farms; while per liter cost of milk production thereon were Rs. 12.49, Rs.12.58 and Rs. 11.48 respectively. The net return over cost per liter of cow milk produced was Rs. 2.16. All the farms were financially viable earning a net profit of Rs. 1, 91,458 per farm per year**.**

Singh *et al.* (2012) observed that dairy farming has emerged as an important source of livelihood, particularly on small holder households and analyze the milk contribution to dairy co-operative, producers' share in consumer rupee and cost of milk production in Bihar. The study revealed that per liter cost of milk production varied from Rs.10.12 for crossbred cows to Rs. 13.90 and Rs. 13.57 for buffalo and local cows, respectively, which are higher than price paid by co-operatives for standard milk. Production cost is likely to decrease with increase in size of unit and in production of crossbred cows in herd. More than two-third of milk produced by co-operative members is marketed through dairy co-operatives in Bihar. The producers' share in consumer rupee is about 58 per cent for all categories of herd since all are marketing their milk through co-operatives only.

Goyal and Goyal (2012) observed that packaging is an integral part of processing in the dairy industry. Package is the gateway to know a product and is a brand ambassador of a product. It serves as a vital link in the long line of production, storage, transport, distribution and marketing. The investments made in the manufacture of an excellent dairy product can be a complete failure if the packaging is not appropriate. The major advancement in dairy industry in recent years is packaging.

Imam *et al.* (2011) reported that Globalization remains a key force in driving Indian Economy and India's dairy industry products acknowledge the demands and preferences around the world by the consumers. The study revealed that dairy farmers need immediate solutions to retain their competitiveness and access to global markets and for this we need innovation which is important that the industry maintains a unified approach and adapts to the changing nature of the people involved. The longer-term success of the dairy industry will depend on attracting and retaining talented people and growing these individuals using effective skills development programmes especially for marketing strategies department.

Kumar *et al.* (2011) conducted study in 3 states of India, namely, Bihar, Punjab, and Uttar Pradesh, in the year 2007. The study shows that the status of compliance with food safety measures at the dairy farm level is not encouraging and a lot of efforts are needed to bridge this gap. The adoption intensity of food safety practices shows wide inter- and intra-regional variations. This intensity depicts a positive relationship with herd size. The additional cost of compliance with food milk safety measures reveals an inverse

relationship with herd size. The adoption intensity of food safety practices has been found to be influenced by the dairy farmers' characteristics. Herd size, education level, expertise in dairying and integration of dairy farmers with modern milk supply chain have positive influence on the adoption intensity of food safety practices at the farm level. The positive relationship between adoption intensity of food safety measures and farmers' realization of milk price would influence farmers for greater adoption of these measures.

Ohlan (2011) revealed that exports of dairy products from India have witnessed a remarkable growth in recent years. The estimate shows that India has price competitiveness and comparative advantage in the production of milk. Some instability is observed in the export markets of Indian dairy products, as notably shown by the high probabilities of Bangladesh and the UAE to gain market shares from the other importers of Indian dairy products. Furthermore, the results indicated that dairy export from India is elastic to the world market size, price divergence, exchange rate, and trade policy. The authors suggested that India should focus on improving the quality of its dairy products to get a premium price in the world market.

Kumar *et al.* (2010) conducted their study in Assam, India, to examine whether traditional milk marketing and processing is viable and efficient or not. They found that there is a continued dominance of traditional milk marketing and processing which are efficient too. The increased attention to quality by the growing middle class may work against these markets which are otherwise competitive and efficient. The quality gap can be bridged to a large extent by introducing training and certification for small scale milk and dairy product processors which in turn would be helpful in maintaining the efficiency and competitiveness of these milk market agents.

Omore *et al.* (2009) in their research work on market mechanisms and efficiency in urban dairy products markets in Ghana and Tanzania, emphasized on infrastructure and advocated that profitability is shown to be associated with higher investments in capital equipment including metal cans and transportation and processing equipment. Efficiency increases with scale of operation. These suggests the favorable opportunities in more intensive enterprise can be achieved with investment , sophisticated enterprises, pointing at opportunities for those agents who are particularly entrepreneurial. Small scale milk

sellers, formation of milk marketing institutions such as groups may be one policy goal with aim of improving efficiency in the system overall.

Siddaram *et al.* (2007) in their study on marketing management of milk and milk products in North Karnataka evaluated and analyzed data relating to the investment and procurement management of milk for three years i.e., 2000-2003. The results indicated that the investment in private processing unit was quite high compared to the co-operative sector unit. The performance with respect to economies of scale can be realized through adequate investment. The procurement pattern of raw milk by the private sector unit involved many intermediaries like contractors, sub-contractors and there was lack of producers' involvement due to absence of village level producer's societies.

Chauhan *et al.* (2006) conducted study in an ISO-9002 dairy plant situated in the North-Eastern part of Haryana. It was observed that all the products, except the double-toned milk are being produced above the recommended breakeven level. A comparison of unit manufacturing cost with unit price received by the plant for different products has revealed that ice-cream manufacturing has been the most profitable proposition among different dairy products, and standardized milk has provided the maximum profit margin among the milk pouches manufactured during the study period, 2000-01. The double-toned milk was incurring a loss. Therefore, the study has suggested that the quantity of double-toned milk production should be raised at least equal to the recommended break-even level to avoid losses, if there is a market demand for this product or the resources of this product could be shifted to some other profitable products.

Karmakar and Banerjee (2006) in their study suggested that India has to emerge as an exporting country, it is imperative that the country should develop proper production, processing and marketing infrastructure, which is capable of meeting international quality requirement. A comprehensive strategy for producing quality and safe dairy products should be formulated with suitable backup.

Shah (2002) in his investigation found that dairy industry has undergone considerable transformation mainly due to the application of scientific production techniques and greater importance being given to the development of dairy co-operation

infrastructure that has contributed in no small measure towards substantial growth in milk production since the early seventies. Viewing the dairy spectrum in the light of variability's and changes that have taken place over time, it was pertinent that the future of co-operatives will remain as bright as in the past.

Kurien (1997) accounted that 70000 village milk co-operatives are linked up in mutually supportive networks with district-level unions and state and national-level cooperative federation. Since the late 1980s, the principles learned in the dairy operation have been used in mounting a major oilseeds operation, followed by cotton and fruit production, the manufacture of salt, and tree growing to deal with the growing rural shortages of fuel and fodder. The 3 main principles are: (1) link the producer with the market; (2) invest in modern facilities and trained people; and (3) follow a logical sequence of programme activities.

2.3. Competitiveness of Dairy Industry and constraints for future growth

Shankar and Perumal (2014) studied about the strategies followed by AMUL. The results analyzed that AMUL started with liquid milk adopted a low-cost price strategy now adopted a higher value product while maintaining the growth of the existing products. AMULs production is free from contamination and maintaining standards is because of training offered to the employees from point of production to process.

Hung *et al*. (2013) conducted a study in Vietnam and observed that rural livelihood augmentation has long been a crucial challenge for the effectiveness of Vietnamese government policies in agricultural sector. The results of the study revealed that farmers face the constraints of high input prices, feed scarcity, exploitation by downstream actors, capital investment inadequacy, inadequate poor market information and knowledge, lack of technical support from dairy manufacturer and local authority, land limit, and cow diseases.

Moran (2013) categorized the constraints to profitable dairy farming in tropical Asia into institutional, government, socio-economic, technical and post farm gate. The study listed out 35 key on farm constraints to milk production technology, based on their position in the dairy production chain, together with a range of possible solution to overcome each one. The future for small holder dairy farming in tropical Asia is optimistic so long as the

industry can rectify many of these constraints for improving domestic production of raw milk, particularly those at the farm level.

Khovio (2012) studied the cost and returns from milk production and to identify various constraints in milk production and marketing. The study was conducted in Kohima and Dimapur districts of Nagaland state. The results shows that the net returns was found to be positive for crossbred cows while it was negative for local cows across all the categories of households. Low availability and high price of concentrate was the major production constraint in both member and non member households followed by lack of availability of green fodder. Low price of liquid milk was found to be the major marketing constraint among the cooperative members while delay in payment by unorganized sector was the major constraint in case of non-members.

Sarkar and Ghosh (2010) reported that non-cooperative farms face major constraints and high severity compared with cooperative farms in expanding milk production. The most severe constraints are infrastructural in nature. The study suggested that for expanding milk production, the expansion of cooperative dairy farms other than non-cooperative dairy farms may overcome most of these difficulties.

Reddy (2010) conducted a study on consumer perception on Priya milk vis-à-vis other competing brands in Karimnagar district. Most of the retailers of Priya brand expressed timely supply, reasonable margin and convenient stock returns policy as very satisfactory whereas there was disappointment with regard to their promotional activities and the brand name. Therefore the study concluded that Priya diary's poor performance of sales is the result of its poor promotional activities and brand name amongst the retailers.

Millogo *et al.* (2008) carried out survey for two large cities in Burkina Faso to contribute to the understanding of the situation of local milk production and milk processing. The result of the survey shows that daily milk yield was 1 - 2 liter per cow in sedentary traditional farms and 2 - 4 liter per cow in semi-intensive farms. Milk temperature at dairy farm level was an important factor reducing milk quality before reaching the collection centre. According to the survey, the use of cotton seed cake in the diet resulted in higher milk yield per cow, both during the rainy and dry season. The use of

crossbred cows was also related to higher daily milk yield per cow. It was concluded that more extensive supplementation of diets and cross-breeding would improve milk production in Burkina Faso.

Rakotoarisoa and Gulati (2006) observed that India's dairy products lack export competitiveness. But with less distorted world dairy markets, India could be competitive and would emerge as a net exporter of whole milk powder, benefiting dairy industries and milk producers in India.

Rajendran and Mohanty (2004) studied that dairy cooperatives milk marketing India. The study analyzed that the 80 percent of milk produced by rural producers is handled by Unorganized sector and remaining 20 percent is handled by an organized sector. The major constraints identified are Involvement of intermediaries, lack of bargaining power by the producers and lack of infrastructure facilities for collection, storage, transportation and processing which affects the price received by producers in milk marketing.

Sharma and Sharma (2002) the research focuses on the issues of efficiency and global competitiveness of the Indian dairy sector in an open economy environment. The findings of the study indicated that the Indian dairy industry was technically highly efficient and the Indian dairy industry had achieved remarkable progress during the last three decades despite the restrictions on the imports and exports of dairy products. The major policy implication of the study is that the Indian dairy industry is globally competitive but must be protected from distorted and unfair trade competition from developed countries in a liberalized environment. The study also emphasis that the effects of commitments by developed countries to reduce tariffs, domestic support and export subsidies had been minimal and unless these countries significantly reduce the trade distorting supports to their dairy sector it will be difficult for India to compete in the world market.

2.4. Future Prospects of Dairy Industry

Srivastava and Kumaresan (2015) stated that milk is the second largest agriculture commodity produced in India next to rice. The Indian dairy industry is rapidly growing,

trying to keep pace with galloping progress around the world and offers opportunities galore to entrepreneurs worldwide. The demand of milk in India is projected to increase to 191.3 million tonnes in 2020. Technology intervention at the grass root level coupled with the synergy of technological and organizational improvements at all levels of dairying would assist to improve milk quality, quantity and competitiveness of Indian dairying.

Shaphiya and Sanjeev (2014) studied dairy farming in Andhra Pradesh by taking the case of Prakasam district, which has 18 milk processing units. The dairy income represents a considerable share even for poor households. However, there is scope for enhancement of the effectiveness of government dairy support programs, as a major share of the subsidies currently goes to the households of the large livestock and landholding categories.

Poonia *et al*. (2013) reviewed the situation of dairying in Varanasi with the objectives to comprehend the nature and status of dairy industry of Eastern Varanasi and to study the issues pertaining to the dairy industry of Varanasi. The results obtained are production issues of the dairy sector, education and information issues, infrastructural issues, investment and compensation and inadequate government policies and social awareness. The total mean for these issues were 5.23, 5.38, 5.13, 5.13 and 5.03, respectively

Rao (2013) stated that Dairy Cooperatives had a major role in the white revolution in India. Dairy Cooperatives are expected to develop backward, forward and horizontal integration and increase the income of the milk producers through rationalization of cost and through undertaking value addition function. Post APMACS Act 1995, 9 districts in Andhra Pradesh opted for APMACS, leading to loss of additional income of the farmers of AP of about Rs.1200 crores in last 10 years.

Kolekar *et al.* (2012) stated that livestock sector has important role in Indian economy, but there is a need to improve the present stage of livestock sector further to fulfill demand of growing population. The process of contract dairy farming in Indian rural economy is a new concept which involves domesticating animals for and on behalf of private or government agencies and forwarding the produce at a pre determined price. Indian dairy is at the crossroads of development, it is said to be the one of the faster

growing sectors among various agricultural and allied sectors. In spite of being first in milk production in world, per capita availability of milk in India is low around 269 gm/person/day which is far behind ICMR recommendation of 285 gm/person/day. Moreover, wide disparity exists between the per capita consumption of rural and urban people. So the contract dairy farming can help us to move forward in overcoming both these gaps more holistically.

Singh and Datt (2010) cited that Indian dairy sector has shown tremendous growth in terms of milk production, from 17 million tonnes (1950-51) to 112 million tonnes (2009-10). This transition from deficiency to sufficiency has been achieved by a series of policy interventions by the government. It has been found that in the first phase of 'Operation Flood', growth rate of value-added products was 0.93 per cent per annum, but in the third phase, it became 9.10 per cent per annum. Milk processing in India is around 35 per cent, of which the organized dairy industry accounts for only 13 per cent of the milk produced, the remaining 22 per cent is processed in the unorganized sector. While value addition in milk is unavoidable if one has to enhance sector profitability, the same does not seem feasible unless the organized sector improves its penetration. Because, it is the involvement of the organized sector that will drive the growth by resorting to value addition in basic product and harnessing the consumer market. The mechanics of the organized sector penetration could be agency-specific as also area-specific.

Sharma *et al*. (2007) studied the functioning strategy of Uttaranchal Cooperative Dairy Federation Ltd (UCDFL) which is also known as '*Anchal'*. The study found that it has focused mainly on liquid milk marketing and has not adopted product diversification. The study suggested that it should evolve a refine policy with regard to procurement of milk and to sustain its members. It should establish fodder banks at strategic locations for providing fodder during emergencies. Local sale of milk at society level should be encouraged to increase the popularity of its brand.

Dang *et al*. (2004) research analyzes the problems and future prospects of Indian Dairy Industry. Lack of use of scientific practices in milching, inadequate availability of fodder in all seasons, non-availability of veterinary health services and shortage of quality dairy animals were said to be reasons for low milk yield. It was said that India has the

potential to become one of the leading players in milk and milk products due to its location advantage of being situated amidst major milk deficit countries in Asia and Africa.

CHAPTER III

MATERIALS AND METHODS

This chapter deals with the detailed sampling design, nature and mode of data collection, analytical tools in achieving the objectives of the study. Different concepts and methods followed in the course of the study are outlined under the following headings.

3.1 Description of the study area

3.2 Selection of the study area and sampled respondents

3.3 Method of data collection

3.4 Tools of analysis

3.1 Description of the study area

3.1.1 Description of Karimnagar District

Karimnagar district is one of the few districts in the Telangana state endowed with vast natural resources both for agriculture and industries. This district has made rapid strides in agriculture production since the advent of Sree Rama Sagar Project (SRSP), which covers 35 mandals in the district.

3.1.2 Location

Karimnagar district is located in the Northern part of Telangana state occupying an area of 11,823 km². The district is situated between 17°-50□-0□ and 19°-05□-00□ Northern latitude and 78°-29□-0□ and 80°-22□-00□ Eastern latitude.

3.1.3 Demographics

According to the 2011 census, Karimnagar district has a population of 3,811,738. This gives it a ranking of 67th in India (out of 640). The district has a population density of 322 inhabitants per square kilometer. Its population growth rate over the decade 2001-2011 was 9.16 per cent. Karimnagar has a sex ratio of 1009 females for every 1000 males, and a literacy rate of 76 per cent.

3.1.4 Geography

The mighty Godavari River forms Northern and Eastern boundary of the district, separating it from Adilabad district. The district is bordered in the South by Warangal and Medak Districts, in the North by Adilabad district, in West Nizamabad district and in the East by Baster district of Madhya Pradesh.

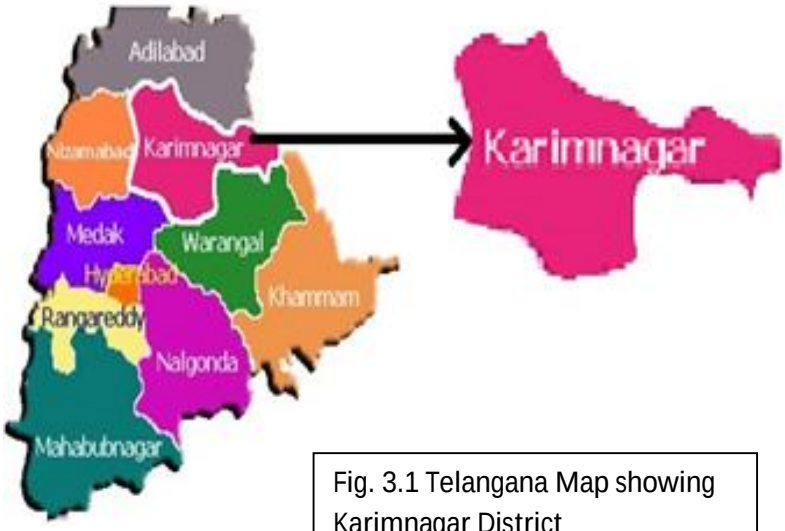

Fig. 3.1 Telangana Map showing Karimnagar District

3.1.5 Economy

Economy of Karimnagar district is mainly dependent on agriculture and its allied industries such as rice mills, saw mills, oil processing industry, other grain mills, animal husbandry, seed and other processing mills etc. Other important small sector industries include manufacture of paper, tiles, stone dressing and crushing, cement concrete pipes etc. Silver filigree work is also famous in Karimnagar city and provide livelihood to a lot of artisans. The major industries in the district are Food Corporation of India, National Thermal Power Corporation, Singareni Collieries at Godavari Khani, and Kesoram Cement Factory at Basantnagar etc.

3.2 Selection of the study area and sampled respondents

3.2.1 Selection of the study area

Karimnagar Milk Producer Company Limited (KMPCL), Karimnagar, Telangana has been purposively selected for the present study as it is one of the promising milk producing company in Telangana and its salient feature is that only farmers (milk producers) are the stake holders of the company. It procures 1.42 lakh liters per day from farmers directly and it is a farmers owned and farmers operated milk producing company. In addition, Karimnagar district is one of the typical drought hit district of Telangana and also the largest milk producing district in Telangana followed by Warangal district. The diversification of enterprises in the area by the farmers for a viable farming systems helps

to ascertain, multiplication and propagation particularly through dairying. It is useful to suggest across the country as most of the districts in entire nation have similar socio economic and agro-climatic condition as that of the present study area.

3.2.2 Selection of the respondents

For collecting the primary data**,** two villages each of highest procurement, medium procurement and lowest procurement of milk which falls within the operational area of KMPCL are identified for the study. The detail of selected sample from six villages is given in Table 3.1.Of the selected six villages, 10 milk producers each and 10 consumers each from each village were selected for the study. 30 milk dealers were identified for the study.

Table 3.1 Selection of the respondents- Milk producers and Consumers

District	Procurement Category	Villages	Procurement capacity (in liters/day)	Milk Producers	Consumers
Karimnagar	High	Bommanapally	1500-2000	10	10
		Rekonda	1500-2000	10	10
	Moderate	Kothagattu	1000	10	10
		Sirsapalli	1000	10	10
	Low	Valbhapur	<200	10	10
		Dharmaram	<200	10	10
	Total			60	60

3.3 Method of data collection

All the necessary information required for the research was collected from primary and secondary source.

3.3.1. Primary data

The primary data was collected through survey method, by personally interviewing the respondents using the pre-tested questionnaire on cost involved, production, marketing, prices, perception etc. Similarly information on return policy, stocking pattern, margins etc was collected.

3.3.2. Secondary data

The secondary information was gathered from the KMPCL report, Directorate of Agriculture and Cooperation, GoI, various NSSO report, National Dairy Development Board websites, journals, books etc.

3.4 Tools of analysis

The data was analyzed using Likert scale technique. Simple tools like percentages were also used to analyze the data.

3.4.1 Likert scale

A Likert scale is a psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research, such that the term is often used interchangeably with rating scale, or more accurately the Likert-type scale, even though the two are not synonymous. The scale is named after its inventor, psychologist Rensis Likert. Likert distinguished between a scale proper, which emerges from collective responses to a set of items (usually eight or more), and the format in which responses are scored along a range. Technically speaking, a Likert scale refers only to the consumers. The difference between these two concepts has to do with the distinction Likert made between the underlying phenomenon being investigated and the means of capturing variation those points to the underlying phenomenon. When responding to a Likert questionnaire item, respondents specify their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. Thus, the range captures the intensity of their feelings for a given item. A scale can be created as the simple sum of questionnaire responses over the full range of the scale. In so doing, Likert scaling assumes that distances on each item are equal.

A Likert item is simply a statement which the respondent is asked to evaluate according to any kind of subjective or objective criteria. Generally the level of agreement or disagreement is measured. It is considered symmetric or "balanced" because there are equal numbers of positive and negative positions. Likert scaling is a bipolar scaling method, measuring either positive or negative response to a statement. The categories like strongly agree, agree, neutral, disagree, and strongly disagree responses are also included in Likert scale.

CHAPTER IV

RESULTS AND DISCUSSIONS

In this chapter, the data collected from the Karimnagar Milk Producer Company Ltd and sample respondents are critically analyzed using different analytical tools and the major findings are presented under the following sub heads:

4.1. Milk consumption in India vis-a-vis pre bifurcated AP.

4.2. Functional strategies of Karimnagar Milk Producer Company Ltd., and advancement in technology.

4.3. Competitiveness of Karimnagar Milk Producer Company Ltd., vis-a-vis other dairies and constraints for future growth.

4.4. Future prospects of Karimnagar Milk Producer Company Ltd.

4.1. Milk consumption in India vis-a-vis pre bifurcated AP.

The milk consumption and availability in India is shown in the Table 4.1. From the Table, observed that the milk consumption in India is increasing both in rural and urban areas in the country over the study period. There is an increase of 28.43 per cent and 25.78 per cent over 26 years of consumption of milk in rural and urban India respectively. The per capita consumption of milk was more in urban than rural India in all the study period. In rural India the milk consumption was 38.93 liter per capita per annum during 1987-88 which gradually increase over the year to 50.09 liter per capita per annum (2013-14). The milk consumption in urban India was 59.50 per capita per liter during 1987-88 which increase to 65 per capita per annum in 2013-14. Similarly, the per capita availability of liquid milk was 59.13 which increase to 112.06 liters per capita per annum over the 26 years. The percent increase in availability of milk in India over the study year is more than the percent increase in consumption.

Table: 4.1 Milk Consumption in India (Liter per capita per annum)

S. No	Year	Per capita Consumption		Per capita availability of milk	% increase of consumption from base year (1987-88)		% increase of availability from base year (1987-88)
		Rural	Urban		Rural	Urban	
1	1987-88	38.93	51.83	59.13	-	-	-
2	1993-94	47.94	59.50	67.89	23.144	14.79	14.81
3	1999-2000	46.11	62.05	78.11	18.44	19.71	32.09
4	2004-05	47.09	62.17	85.05	20.96	19.94	43.83
5	2009-10	49.40	64.29	99.65	26.99	24.04	68.53
6	2011-12	51.99	65.04	105.85	33.55	25.49	79.01
7	2013-14	50.09	65.19	112.06	28.43	25.78	89.51

(Source: Various NSSO report, 2013-14 and NDDB report, 2014-15**)**

The consumption of milk in Pre bifurcation Andhra Pradesh is shown in the Table 4.2. From the Table, observed that the milk consumption in rural Andhra Pradesh increased from 36 liters per capita per annum during 2004-05 to 42 liters per capita per annum in 2011-12 but the milk consumption in urban Andhra Pradesh was stagnant over the year (54 liters per capita per annum). The per capita availability of milk in Pre bifurcated Andhra Pradesh is increasing rapidly from 91.25 liters per capita per annum during 2004-05 to 142.71 liters per capita per annum in 2011-12. The per capita consumption both in rural and urban Pre bifurcated Andhra Pradesh is less than the all India level.

Table: 4.2 Milk Consumption in Andhra Pradesh (AP) (Pre bifurcation) (Liter per capita per annum)

S. No	Year	Consumption of A.P		Per capita availability of A.P
		Rural	Urban	
1	2004-05	36.61	54.17	91.25
2	2009-10	40.44	54.94	124.83
3	2011-12	42.73	54.17	142.71

(Source: NSSO, 2011-12)

As the Telangana state is separated from Andhra Pradesh in 2014, the data related to consumption and availability of milk of Telangana state i.e., post bifurcation of Andhra Pradesh is not available.

4.2. Functional Strategies of Karimnagar Milk Producer Company Ltd., and Advancement in Technology.

A functional strategy includes financial strategies, organizational strategies, marketing strategies which help in the functioning of the dairy industry.

4.2.1. Financial Strategies of the Dairy

Finance plays an important role in the functioning of the dairy industry. The particulars related to financial investment of Karimnagar Milk Producer Company Ltd. (KMPCL) are presented in Table 4.3 and 4.4. The Table 4.3 represents the fixed assets of KMPCL include land, buildings, machinery, vehicles and civil works altogether has a value of Rs.3081.85 lakhs. The highest share of the total cost is occupied by the total variable cost which is 93.31 per cent of which interest on operating cost is 9.99 per cent. In the operating cost, the maximum share is occupied by cost of raw material which is 67.55 per cent and remaining 15.74 per cent occupies by raw materials for value addition of milk, transportation, advertising, selling and distribution, telephone charges, stationary, salaries to hired labors, packaging cost. The share of the total fixed cost is 6.69 per cent of which 1.72 per cent is interest on fixed assets and depreciation on machinery, vehicles, buildings and other equipments altogether is 1.41 per cent and opportunity cost, salaries to permanent staff, insurance, taxes, repairs and maintenance share is 3.59 per cent.

Table 4.3 Fixed assets of Karimnagar Milk Producer Company Ltd.

S.No	Particulars	Value (Rs.)
1	Land	24000000
2	Buildings	17385000
3	Machinery	234500000
4	Transport vehicles	16000000
5	Civil works	16300000
Total fixed assets		**308185000**

Table 4.4 Operational Expenditure of the Karimnagar Milk Producer Company Ltd. during 2014-15

S.No	Particulars	Value (Rs.)	Percentage in total cost (%)
I.	**Fixed cost**		
1	Opportunity cost of land	1800000	0.10
2	Salaries of permanent staff	28000000	1.55
3	Annual Repairs and Maintenance Expenses	14600000	0.81
4	Insurance	15000000	0.83
5	Taxes	5100000	0.28
6	**Interest on fixed assets (10 %)**	**30818500**	**1.72**
7	Depreciation on Machinery	15000000	0.83
8	Depreciation on Buildings	5100000	0.28
9	Depreciation on Vehicles	3250000	0.18
10	Depreciation on other equipment	1950000	0.11
	Total Fixed cost	**120718500**	**6.69**
II.	**Variable cost**		
1	Cost of Raw Material	1214800000	67.55
2	Raw material for value added products	61400000	3.41
3	Transportation	52200000	2.90
4	Packaging Charges	53100000	2.95
5	Electricity	400000	0.02
6	Salaries of hired labor	4000000	0.22
7	Advertisement	2100000	0.12
8	Selling and distribution Expenses	60000000	3.34
9	Printing and stationary	4300000	0.23
10	Telephone charges	500000	0.02
11	Others	45100000	2.50
12	**Interest on variable cost (12%)**	**179748000**	**9.99**
	Total Variable Cost	**1677648000**	**93.31**
	Total cost	**1798366500**	**100**

The total cost of the KMPCL during 2014-15 was Rs. 17,983.665 lakhs. The incomes generated by the investment are shown in the Table 4.5 for 2014-15. It was observed that 81.50 per cent of income is generated from the selling of liquid milk whereas 17.92 per cent of revenue is from value added milk products and 0.58 per cent from other sources. The total income generated by the KMPCL was Rs. 17,995 lakhs during 2014-15. It can be concluded that the total cost of KMPCL was Rs. 17,983.665 lakhs whereas the income generated from it was Rs. 17,995 lakhs which shows that there is a profit generation to the extent of Rs. 11.335 lakhs during the year 2014-15.

Table: 4.5 Income earned by Karimnagar Milk Producer Company Ltd. during 2014-15

S. No	Particulars	Amount (Rs.)	Percentage in total income (%)
1	Liquid Milk	1466600000	81.50
2	Value added Milk products	322500000	17.92
3	Other income	10400000	0.58
Total		**1799500000**	**100**

The income generated through liquid milk and value added product of KMPCL of same quantity is not same. When 30 percent of total milk procured is processed and sell as liquid milk, income generated was Rs. 10.71 lakhs per day while the same quantity of milk is use for value added product, the income generated was Rs. 10.80 lakh. Hence the value added product of milk generates more profit of Rs. 9000 per day. Currently, 70 per cent of the milk in the KMPCL is processed and sell it as liquid milk and remaining 30 per cent is converted into value added products. So, the KMPCL should diversify the value added product and increase the share of value added milk products in total milk processed in future to earn more profit.

4.2.2 Organizational Strategies

The Karimnagar Milk Producer Company Ltd is an organization which has a specified structure for functioning of various operations. The Organogram of the company is given in

Fig. 4.1. The organization is headed by a Chairman who looks after all the functions of the dairy and formulates the strategies for functioning of the dairy. The Chairman has the right to do any action on any aspect. The Managing Director is the executor of the strategies formulated by the Chairman. The Managing Director is responsible for performance of the dairy and he should give the report to the Chairman. The Technical Officer is the one who looks after all the operations at the field level. The Technical Officer generally goes for inspections to milk chilling centers. He is responsible mainly for quality maintenance and for giving trainings to the employees. The Technical officer monitors different operations managers such as Procurement Manager, Production Manager, Finance Manager, Human Resource Manager and Marketing Manager.

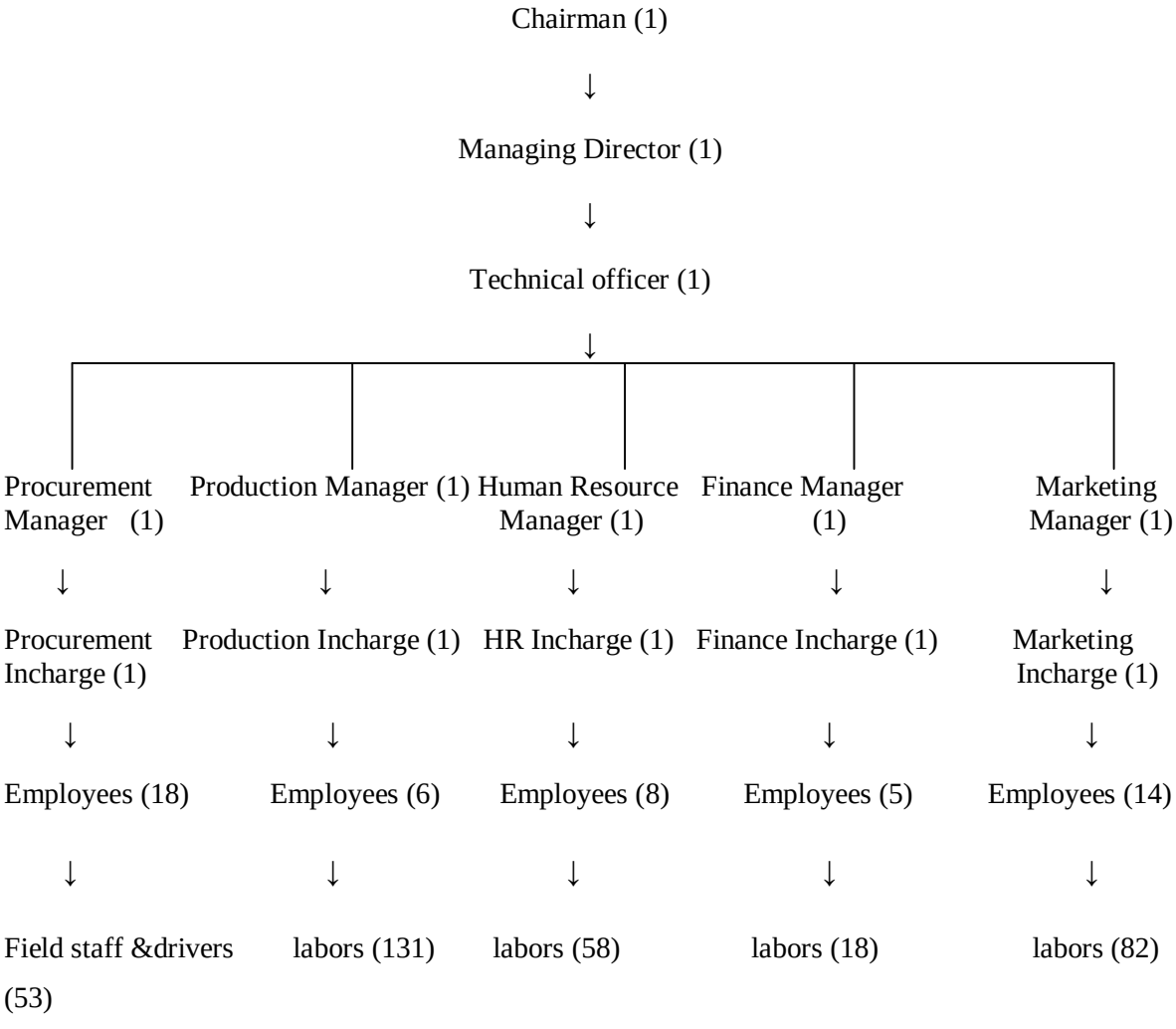

Fig 4. 1: Organogram of Karimnagar Milk Producer Company Ltd.

(Figure in parentheses indicates the number)

All these managers are responsible for their department functioning. They look after the activities performed in their departments. They are the Head of their respective Departments and they in turn monitor the work of the employees and labors working under them.

4.2.3 Marketing Strategies

For successful functioning of the dairy industry the marketing strategies are very important. The liquid milk of the KMPCL is available in different packages at different prices. The details are presented in the Table 4.5. From the table, it is observed that the different types of liquid milk marketed are toned milk of different sizes such as 200 ml, 500 ml, 1000 ml and pure milk, Karimnagar Gold. Different prices for different sizes are charged. The MRP of Toned milk of 500 ml is Rs.20 whereas per liter is Rs 37. The MRP of toned milk of 200 ml is Rs. 9.50 whereas per liter is Rs. 38. The standardized milk price for 500 ml is Rs 24 whereas per liter is Rs. 45. For the Gold milk per 500 ml is Rs. 25 whereas per liter is Rs. 47. Karimnagar Milk Producer Company Ltd., share in total milk market of Karimnagar district is 63 per cent whereas Mulkanoor dairy is 25 per cent, Priya dairy is 11 per cent and 1 per cent share includes other dairies. The share of the KMPCL is increased drastically over the period of 2012-2015, yearly there is an increase of 10 per cent in the market share.

Table: 4.6 Pricing of the various milk varieties of KMPCL brand

S. No	Milk	Price Per liter	MRP (per SKU)
1	Toned milk 500 ml	37.00	20.00
2	Toned milk 200 ml	38.00	9.50
3	Standardized milk 500 ml	45.00	24.00
4	Toned milk 1000 ml	37	20.00
5	Gold 500 ml	47	25.00

The KMPCL not only sell liquid milk but it also produces various value added products of milk such as ice cream, ghee, paneer, curd, dood peda, butter milk, plain kova, malai laddu, milk cake, basundi, lassi and date khova. These value added-products are marketed under

different sizes at different prices. The different value added-products are listed in the Table 4.7.

Table: 4.7 Price list of different value added milk products of KMPCL brand

S. No	Name of the Item	All C&F & Local supply & credit customers	Agent rate	MRP	
1	Ghee 100 ml jar	52.00	53.00	55.00	Per/jar
2	Ghee 200 ml jar	95.00	98	105.00	Per/jar
3	Ghee 500 ml jar	220.00	225.00	235.00	Per/jar
4	Ghee 1000 ml jar	420.00	430.00	450.00	Per/jar
5	Loose Ghee (15 kg Tin)	6300.00	6400.00	6700.00	Per/tin
6	Loose Ghee (35 kg can)	450.00	450.00	480	Per/kg
7	Paneer 200 g	65.00	70.00	75.00	Per/Pack
8	Paneer 500 g	160.00	170.00	180.00	Per/Pack
9	Paneer 1 kg	305.00	320.00	340.00	Per/Pack
10	Mixed Sweet 500 gms	150.00	153.00	165.00	Per/Box
11	Dood Peda 500 g Box	155.00	160.00	170.00	Per/Box
12	Dood Peda 200 g Box	63.00	65.00	70.00	Per/Box
13	Butter Milk 200 ml	4.75	5.00	6.00	Per/Pack
14	Plain Kova Per kg	285.00	290.00	300.00	Per/Kg
15	Curd cup 100 ml	7.50	8.00	9.00	Per/Cup
16	Curd pouch 200 ml	8.40	9.00	12.00	Per/Pack
17	Curd 3 l Tub	152.00	155.00	155.00	Per/ Tub
18	Curd Loose	51.00	52.00	52.00	Per/Kg
19	Curd Bucket 5kg	280.00	285.00	300.00	Per/Bucket
20	S.F.M 200 ml	16.00	17.00	20.00	Per/Bottle
21	Malai laddu 150 g	54.00	55.00	60.00	Per/ Box
22	Malai laddu 300 g	104.00	107.00	115.00	Per/Box
23	Date Khova 200 g	55.00	56.00	60.00	Per/Box
24	Date Khova 500 g	126.00	128.00	140.00	Per/Box
25	Milk Cake-200 g	58.00	60.00	65.00	Per/Box
26	Milk Cake-500 g	140.00	142.00	150.00	Per/Box
27	Basandi 50 g	9.25	10.00	12.00	Per cup
28	Lassi 200 ml	14.5	15.00	18.00	Per glass

It is observed that different products are marketed in different form such as ghee is marketed in the jars of different sizes at different prices. Paneer, butter milk, curd pouch are marketed in polythene package of different sizes whereas the dood peda, malai laddu, date khova, milk cake are marketed in boxes. Plain kova, loose curd, loose ghee is marketed per kg and Lassi of 200 ml is marketed in glass. These are available in different sizes and prices vary for agents, local suppliers, and credit customers on MRP price. The share of value added products in the total production is 28 per cent of milk production.

4.2.4 Technology used

Raw milk: Raw milk is collected at Raw Milk Receiving Dock (RMRD) from different villages. There are 19 Raw Milk Receiving Dock (RMRD) centers for KMPCL which covers 960 villages. After procuring the raw milk, the samples are sent to quality control lab for testing.

The following tests are conducted at milk testing (QC) lab:

1. Clot on Boiling (COB)
2. Heat stability
3. Acidity
4. Fat
5. Corrected Lactometer Reading (CLR)
6. O.T: color, flavor, aroma
7. Adulterants
8. Methylene Blue Reduction Test (MBRT)

The Raw Milk Receiving Docks (RMRD) are 100 per cent self financed by the KMPCL. Of the 19 RMRDs, 15 are bulk cooling centers (BCU) and 4 are chilling centers with a capacity of more than 10,000 liters. The raw milk after testing and chilling in RMRDs are transported to the company with the help of tankers. There are 7 tankers for the KMPCL of which 4 have a capacity of 15,000 liters and 3 tankers has a capacity of 9,000 liters. In order to know about the technology used in the KMPCL, the structure of the milk processing is important. The flow chart showing the technology used in milk processing is given in the Fig 4.2 and the process is explained below.

a. **Pasteurization:** The process of pasteurization involves heating of milk to temperature 63ºC/30 mins or 72ºC/15 sec. After pasteurization the milk is cooled to 5ºC or below. But in actual practice the milk is heated up to 77ºC/15 sec and cooled around to 2-4º C. The Pasteurizer used in the KMPCL is High Temperature Short Time (HTST) pasteurizer with a capacity of 10,000 liters/hr and another pasteurizer with a capacity of 20,000 liters/hr.

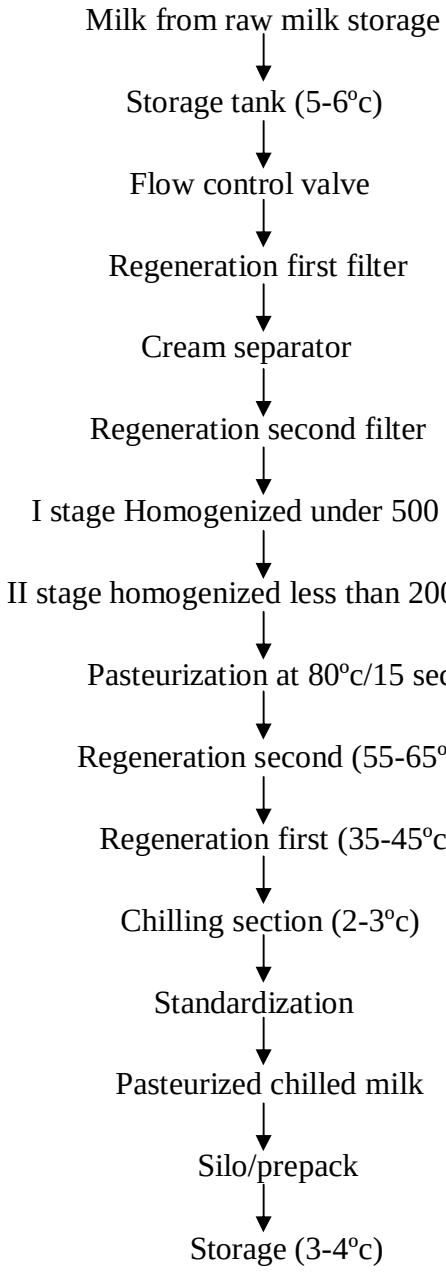

Fig 4.2: Flow Chart of Milk Processing in KMPCL

b. **Cream separation:** Cream separated from milk with the help of cream separator, which is located between the filters. The temperature of separation is 42-45º C in routine practice. The cream is collected from upper line and skim milk from lower line and the separation cream is forwarded to butter and ghee section for standardization or forwarded to powder plant. The type of technology used for this in the dairy is green pasteurizer of Goma Company with a capacity of 3000 liters/hr.
c. **Standardization:** The standardization is the key step in the processing of milk, for producing different variety of milk to reach desired percentage of fat and solids not fat. The fat percent is adjusted with the skim milk and cream as well as SNF% is adjusted with available skim milk or skim milk powder.
d. **Homogenization:** The homogenization is the process in which breaking of fat globules takes place and fat globules are dispersed throughout the milk and size of fat globules after homogenization would less than 2 micron diameter. The homogenization achieved in two stages first and second pressure is 500 psi and 2000 psi is respectively for checking of homogenization efficiency by conducting NIZO test.

The processing of milk by KMPCL is different when compared with the normal processing of milk. In order to maintain the quality of milk, the KMPCL is maintaining two filters and the homogenization is done twice with different pressures. Pasteurization is done twice with different temperatures. Thus, KMPCL is equipping with advance technology for maintaining quality of milk and milk products.

4.3. Competitiveness of Karimnagar Milk Producer Company Ltd., vis-a-vis other dairies and constraints for future growth.

Competitiveness pertains to the ability and performance of a firm, sub-sector or country to sell and supply goods and services in a given market, in relation to the ability and performance of other firms, sub-sectors or countries in the same market. The competitiveness of KMPCL was examined based on producer, consumer and dealer's perception and factors affecting their preferences towards KMPCL compared to other dairies. Priya Dairy and Mulkanoor Dairy are selected to study the competitiveness of KMPCL.

4.3.1 Factors influencing producers supplying milk to KMPCL vis-à-vis competitive brands

The factors influencing the milk producer to supply milk to KMPCL compared to other dairy companies are given in Table 4.8. It is observed that the majority of the milk producers (68 Per cent) preferred the credit facility offered by the KMPCL when compared with the other dairies such as Mulkanoor Dairy (32 per cent) and Priya Dairy as important factor. Similarly, the price paid by the KMPCL is favored by 61 per cent of sample respondents. About 53 and 56 per cent of respondents are aware of KMPCL brand and are inclined towards the transport facilities provided by the company. However, services and loyalty factor for Mulkanoor Dairy are preferred by majority of the respondents.

Table: 4.8 Factors influencing producers supplying milk to KMPCL and other brand

S. No	Parameters	KMPCL	Mulkanoor Dairy	Priya Dairy
1	Awareness	32 (53)	19 (32)	9 (15)
2	Transportation	34 (56)	14 (23)	12 (21)
3	Price	37 (61)	14 (23)	9 (16)
4	Services	26 (43)	29 (48)	5 (9)
5	Credit Facility	41 (68)	19 (32)	0 (0)
6	Loyalty	26 (43)	29 (48)	5 (9)

Note: Figure in parentheses indicates the percentage of sample

4.3.2 Factors influencing consumer's preference towards KMPCL brand of milk and milk products vis-à-vis competitive brands

The response of the consumers in terms of ranking for the milk and milk products of KMPCL compared to other dairy brand is presented in the Table 4.9. Likert scale technique was used to analyze the data and the same is presented in the following table. The analysis showed that the milk and milk products taste, flavor and promotional offers given by KMPCL got the highest mean score compared to other brands. This shows that taste, flavor and promotional offers given by KMPCL has a competitive advantage over the other

brands. The KMPCL are lacking behind in other parameters like price, packaging, brand name, shelf life, color and availability of milk in varied sizes and respondent revealed the preference of other milk products. The respondents of KMPCL reveals that taste is most essential parameter ranked 1st followed by brand name and flavor rank 2nd and 3rd respectively. The consumers opined that packaging, price and availability of varied sizes of milk and milk products is the least important factor.

Table 4.9 Consumers perception about the various brands of milk and milk products

S. No	Parameters	KMPCL		Priya Dairy		Mulkanoor Dairy	
		Mean Score	Rank	Mean Score	Rank	Mean Score	Rank
1	Taste	66.74	1	65.53	1	62.13	1
2	Price	38.76	9	37.34	9	43.11	8
3	Flavor	59	3	55.93	3	56.58	3
4	Packing	40.44	8	43.63	7	44.41	7
5	Brand name	64	2	64.86	2	52.09	5
6	Shelf life	55.5	4	53.56	5	61.23	2
7	Color	53.98	5	54.87	4	54.84	4
8	Availability	44.51	6	46.9	6	46.88	6
9	Promotional offers	42.21	7	41.45	8	39.58	9
10	Varied sizes	30.53	10	31.4	10	31.2	10

4.3.3 Parameters considered by dealers in selection of different dairy brands

Likert scale technique was used to analyze the perception of milk dealers and is given in Table 4.10. The margin and price offered by the KMPCL got highest mean score compared to other dairy brands. The Mulkanoor Dairy has more competitive advantage in the area like regular supply, consumer promotion, brand name, shelf life, advertisement and availability of varied sizes of milk packages. While the Priya Dairy has comparative advantage in return supply, trade promotion and advertisement. Among the ten parameters,

dealer respondent rank margin of KMPCL as 1st while brand name and shelf life as 2nd and 3rd rank respectively. Availability of different packages of milk revealed to be the least important parameter.

Table 4.10 Dealer's perception with regard to various Dairy brands

S. No	Factors	Priya Dairy		Mulkanoor Dairy		KMPCL	
		Mean score	Rank	Mean score	Rank	Mean score	Rank
1	Margin	55.24	3	64.52	1	67.06	1
2	Regular supply	43.22	6	47.89	7	38.52	7
3	Return supply	79.21	1	56.45	9	29.17	9
4	Trade promotion	52.58	5	50.68	4	51.79	4
5	Consumer promotion	47.65	7	48.76	5	47.72	5
6	Brand name	55.26	2	63.24	2	60.27	2
7	Shelf life	53.39	4	60.88	3	56.98	3
8	Price	39.27	9	39.41	6	42.67	6
9	Advertisement	39.52	8	40.45	8	37.85	8
10	Varied sizes	29.66	10	30.14	10	10.92	10

4.3.3 Constraints faced by the KMPCL

The constraints faced by the KMPCL are presented in the Table 4.11. The major constraint faced by the KMPCL is the high cost of labor followed by low shelf life of the milk and milk products. The 3rd important problem is electricity supply whereas the 4th constraint is lack of effective technology. The next constraints are high and unaffordable investment on machinery, non availability of quality input, marketing, transportation and other problems.

Table: 4.11 Constraints Faced by Karimnagar Milk Producer Company Ltd.

S. No	Constraints	Rank
1	Lack of effective technology	4
2	Non availability of quality input	6
3	Marketing	7
4	Electricity problem	3
5	Transportation Problem	8
6	High cost of labor	1
7	High and unaffordable investment on machinery	5
8	Low shelf life	2
9	Others if any	9

4.4 Future prospects of KMPCL

The future prospects of the Karimnagar Milk Producer Company Ltd. include the production capacity, consumer demand, future plan and the employment opportunities. The production capacity of the KMPCL dairy is shown in the Table 4.12.

Table: 4.12 Production capacity of the KMPCL over the previous year

S. No	Parameters	Previous year 30-3-2015	Present year 30-3-2016	Increase
1	Procurement of milk/day(liters)	1,12,843	1,66,102	53,259
2	Sales of milk/day (liters)	1,01,179	1,03,903	2724

From the above table, it is examine that there is an increase in the procurement of milk per day of 53,259 liters from 2015 to 2016. Similarly, quantity of milk sale per day also increases by 2,724 liters during the same period. It indicates that there is a scope of increase of both procurement and sales. The dairy is expecting to increase the sales by 4-5 thousand liters in near future. The increase of procurement and sale is due to the increase in demand of KMPCL milk and milk products. The future prospects of the Karimnagar Milk Producer Company Ltd. are summarized below:

1) The dairy is expecting to increase an annual profit by 5 per cent as there is an increase trend over the past years.

2) At present the dairy is processing 1-1.2 Lakh liters per day, it is estimating to increase the capacity by 4-5 thousand liters per day.

3) The dairy membership card holders at present are 66,969 members and efforts are made to increase this number to 68,561 members in the near future.

4) The KMPCL is procuring milk from 960 villages. In order to increase the coverage of village, the company is actively involving in producer's welfare activities.

5) The KMPCL is pursuing to increase its market share by engaging through more promotional activities.

6) The KMPCL has a prospect to expand its outlets by providing employment to many people.

7) The KMPCL is earning more profit from value added products than liquid milk so there is a scope of earning more profits if the dairy increase the share of value added products of milk.

8) The KMPCL is increasing its share in the market year by year and it is standing in the top with the market share of 63 per cent. It shows KMPCL is more concentrated on its market when compared to the other Dairies.

CHAPTER V

SUMMARY AND CONCLUSION

The dairy industry in India has been on a sturdy path of progression since independence. The milk production of India has grown from 17 million tonnes in 1951 to 138 million tonnes in 2014 and is expected to increase up to 200 million tonnes, worth 0.05 lakh billion by the end of the year 2020 (ASSOCHAM, 2015). Today, India is the world's largest milk producer accounting for more than 17 per cent of the world's total milk production; still the per capita milk consumption is around 276 g per day. India has the largest cattle and buffalo population in the world. Out of all bovine population in India, 40 percent are indigenous cows, 46 percent are buffaloes and 14 percent are imported European or North American cattle crossbreeds (6.9 kg daily yield /animal). More than 67 percent of dairy animals are owned by marginal and small farmers. Interestingly, buffalo milk accounts for the largest share of the total milk production in the country (NDDB, 2015).

Milk production is growing 7 per cent by volume and approximately 5 per cent by value. This progress is primarily attributed to structural changes in Indian Dairy Industry (IDI) brought about by the advent of dairy cooperatives. A market size of IDI was USD 48.5 billion in 2011. With a Compound Annual Growth Rate (CAGR) of 16 percent, India represents one of the world's most lucrative dairy markets. IMARC Group, one of the world's leading research and advisory firms, finds in its new report entitled "Indian Dairy Market Report and Forecasts 2012-2017" that driven by a strong growth in both urban and rural demands, the market for milk products in India is expected to surpass US$ 163 billion by 2017. The market size of milk and milk products (organized and unorganized) is estimated to about INR 0.036 lakh billion. The organized sector dairy market is growing 10% annually. About 50% of total milk produced in India is converted into traditional Indian dairy products (NDDB, 2013).

The Karimnagar Milk Producer Company Ltd is the leading dairy industry in the Telangana state and therefore KMPCL is purposively selected for present study.

5.1 Objectives of the study

1. To study milk consumption in India vis-a-vis pre bifurcation AP and post bifurcation Telangana state.
2. To asses functional strategies of Karimnagar Milk Producer Company Ltd., and its advancement in technology.
3. To evaluate the competitiveness of Karimnagar Milk Producer Company Ltd., vis-a-vis other dairies and constraints for future growth.
4. To outline future prospects of Karimnagar Milk Producer Company Ltd.

5.2 Methodology

The survey was conducted in Karimnagar district. Six villages were identified in the district based on the quantum of milk procurement by the Karimnagar Milk Producer Company Ltd. The identified villages were Bommanapally, Rekonda, Kothagattu, Sirsapalli, Valbhapur, and Dharmaram. The data was collected from both primary and secondary sources. Primary data was collected from KMPCL management; dealers and both milk producers and consumers. Primary data regarding factors influencing the producers, consumption pattern, perception about the brands, constraints faced by dairy were collected from producers, consumers and KMPCL staff. The secondary data was collected from NSSO reports, NDDB website, journals and Company reports.

The data collected from various sources were analyzed in multiple stages. Likert scale was employed to know the factors influencing the purchase decision of the consumer's and perception about the various brands of milk products besides parameters considered by dealers in selection of the milk brands etc.

5.3 Major findings of the study

5.3.1 Milk consumption in India vis-a-vis pre bifurcated AP

The milk consumption in India is increasing both in rural and urban areas in the country over the study period. The per capita consumption of milk was more in urban than rural India during the study period. The per cent increase in availability of milk in India over the study period is more than the per cent increase in consumption.

The milk consumption in rural Andhra Pradesh is increasing but the milk consumption in urban Andhra Pradesh was stagnant over the year. The per capita consumption both in rural and urban Andhra Pradesh is less than the all India level.

5.3.2 Functional Strategies of Karimnagar Milk Producer Company Ltd. and advancement in Technology.

The fixed assets of KMPCL include land, buildings, machinery and vehicles valued at Rs. 3081.85 lakhs. The maximum percentage share of the total cost is the total variable cost which is 93.38 per cent of which the major share is towards cost of raw material with 67.55 per cent. The share of the total fixed cost is 6.62 per cent of which 1.72 per cent is interest on fixed assets and depreciation is 0.83 per cent on machinery, 0.28 per cent on buildings, 0.18 per cent on vehicles and 0.11 per cent on other equipments. The total operational cost of the KMPCL during 2014-15 worked out to Rs. 17,983.665 lakhs. It was observed that 81.50 per cent of income is generated from the selling of liquid milk whereas 17.92 per cent of revenue is from value added milk products and 0.58 per cent from other sources. The total income generated by the KMPCL was 17,995 lakhs in 2014-15. Thus, profit generated by the company is Rs. 11.335 lakhs during the year 2014-15.

Owning currently, 70 per cent of the milk in the KMPCL is processed and sold as liquid milk and remaining 30 per cent is converted and sold as value added product. There is a difference of income generated through the value added products and liquid milk of same quantity which is Rs.9000 per day. The income generated through the 30 per cent of milk processing is 10.71 lakhs where as the income generated through 30 per cent of milk which is converted into value added products is 10.80 lakhs.

The Karimnagar Milk Producer Company Ltd (KMPCL) is an organization which has a specified structure for functioning of various operations. The organization is headed by the Chairman who looks after all the functions of the dairy and formulates the strategies for functioning of the dairy. The Managing director is the executor of the strategies formulated by the Chairman. The Technical Officer is the one who looks after all the operations at the field level. The Technical Officer monitors different operations managers such as Procurement Manager, Production Manager, Finance Manager, Human Resource Manager and Marketing Manager. All these managers are responsible for their department functioning. They look after the activities performed in their departments.

For successful functioning of the dairy industry the marketing strategies are very important. KMPCL share in total milk market of Karimnagar district is 63 per cent whereas Mulkanoor dairy is 25 per cent, Priya dairy is 11 per cent and 1 per cent share includes other dairies. The share of the KMPCL is increased drastically over the period of 2012-2015, yearly there is an increase of 10 per cent market share.

The liquid milk of the KMPCL is available in different packages and at different prices. The KMPCL not only sells liquid milk but it also produces various value added products such as ghee, paneer, curd, dood peda, butter milk, plain kova, malai laddu, milk cake, basandi, lassi and date khova. These value added-products are of different sizes sold at varied prices.

5.3.3 Competitiveness of Karimnagar Milk Producer Company Ltd., vis-a-vis other dairies and constraints for future growth.

The competitiveness of KMPCL was examined based on producer, consumer and dealer's perception and factors affecting preference of KMPCL products over other dairies. Priya Dairy and Mulkanoor Dairy are selected to study the competitiveness of KMPCL.

The majority of the milk producers (68 per cent) prefered KMPCL because of the credit facility offered by the KMPCL when compared with the other dairies such as Mulkanoor Dairy and Priya Dairy. Similarly, the price paid by the KMPCL is favored by majority of sample respondents. About 53 and 56 per cent of respondents were aware of KMPCL and the transport facilities extended by the company. However, services and loyalty offered by the Mulkanoor Dairy was preferred by majority of the respondents.

The analysis showed that the milk and milk products taste, flavor and promotional offers given by KMPCL got the highest mean score compared to other brands. This shows that taste, flavor and promotional offers given by KMPCL has a competitive advantage over the other brands. The KMPCL is lagging behind in other parameters like price, packaging, brand name, shelf life, color and availability of milk in different sizes and consumer preference of various milk products. The customers of KMPCL opined that taste is the most essential parameter and was ranked 1st followed by brand name and flavor rank 2nd and 3rd respectively. The consumers expressed that packaging, price and availability of different size of milk and milk products are not important factors.

The margin and price received by milk dealers from the KMPCL got highest mean score compared to other dairy brands. The Mulkanoor Dairy has more competitive advantage with respect to aspects such as regular supply, consumer promotion, brand name, shelf life, advertisement and availability of varied sizes of milk packages. While Priya Dairy has comparative advantage in return supply, trade promotion and advertisement. Among the ten parameters, dealer's allotted margin to KMPCL as 1st while brand name and shelf life as 2nd and 3rd rank respectively. Availability of different packages of milk was considered least important parameter.

The major constraint faced by the KMPCL is high cost of labor followed by low shelf life of the milk and milk products. The 3rd position is occupied by electricity problem whereas the 4th constraint is lack of effective technology. The next constraints are high and unaffordable investment on machinery, non availability of quality input, marketing, transportation and other problems.

5.3.4 Future prospects of KMPCL

There is an increase in the procurement of milk per day of 53,259 liters from 2015 to 2016 whereas there is also an increase of 2,724 liters in sales of milk per day in the same period. It indicates that there is a scope of increase in both procurement and sales. The dairy is expecting to increase their sales by 4-5 thousand liters per day in future. It was found that 50 per cent of respondents claim that they will consume the same Karimnagar Milk Producer Company Ltd., brand in the future expressing their brand loyalty.

The KMPCL is expecting to increase their annual profit by 5 per cent as there is an increasing trend of profit over the past years. At present the dairy is processing 1-1.2 Lakh liters per day, they aim to increase the capacity by 4-5 thousand liters per day. The dairy membership card holders at present are 66,969 members. There is likely to increase the membership in the near future. The KMPCL is procuring milk from 960 villages. In order to increase the number of villages it is actively engaging in the producer's welfare activities. The market share of KMPCL is likely to increase in near future by going for more promotional activities. The Karimnagar Milk Producer Company Ltd. desires to expand its outlets by providing employment to many people. The KMPCL is earning marginally higher profits from value added products than liquid milk so there is a scope of earning more profits if the dairy through increase in share of value added products of milk

rather than direct sale. The KMPCL is increasing its market share year by year with 63 per cent.

5.4 Conclusion

The milk consumption in both India and pre bifurcated Andhra Pradesh has increased over the years and urban consumption is more than rural during the study period. The KMPCL has a profit margin of Rs.11.335 lakhs in 2014-15 backed by a good organizational hierarchy structure for proper functioning of the day to day operations. The KMPCL not only marketing milk but also value added products such as ghee, paneer, curd, dood peda, butter milk, etc. The milk producers are mostly influenced by the price offered and credit facility given by the KMPCL. The factors that have influenced consumers in the selection of milk and milk products of KMPCL are shelf life followed by flavor. The analysis clearly indicated that the margin is an important factor for all the milk dealers. This was followed by brand name and shelf life. Therefore, the firms of milk products should concentrate on these factors for promotion of their brands. Overall, KMPCL is competitive over other dairy brands with respect to performance on awareness, price, and transportation and credit facilities from the point of view of milk supplier/producers. The KMPCL was competitive over other dairy companies in taste, flavor, brand name and promotional offers given by company from the consumer point of view. Similarly, the KMPCL has advantage over other companies in margin and price received by the milk dealers. The major constraints faced by the KMPCL are high cost of labor followed by low shelf life of the milk and milk products. The KMPCL is expecting to increase the sales by 4-5 thousand liters in future. The KMPCL is earning more profits from value added products than liquid milk so there is a scope of earning more profits if the dairy increase the share of value added products of milk.

5.5 Way Forward

- The per capita consumption of milk can be increased as it is less than the all India level through various promotions.
- The KMPCL may adopt more advance technology in milk processing and marketing to improve efficiency and enhance profits.

- The KMPCL can increase the quality of services and loyalty offered to milk producers for more competitiveness.
- Price, packaging, brand name, quality and availability of milk needs to be ensured in order to compete with other brands.
- Offering more incentives to milk producers will increase the preference of supplying milk to the company.
- Conducting more producer welfare activities will increase the loyalty towards the dairy.
- Dealer's margins will be a real incentive for boosting sales. In addition innovative deals may be initiated to motivate dealers to promote sales. i.e., varied margins for different sales slab.
- More range of products suitable to different consumer segments can be evolved to attract more customers.
- Periodic consumer surveys should be conducted to update upon the changing consumers need and preferences.
- Use of advanced technology can reduce the cost of human labor.
- It is suggested that KMPCL can increase the share of value added products in order to increase the profits of the dairy.
- Eventually with its highest market share it has social objective of increasing per capita availability of milk in the state by bridging the gap with the national average per capita availability.

LITERATURE CITED

Anonymous. 2014. India's estimated milk demand to be about 155 mn tonnes by 2016-17: NDDB chairman. *Business Standard.*4. Accessed on 27th August, 2014.

Anonymous. 2015. Overview of Indian dairy sector. Available at < www.dairyindia.com > last accessed on 12th March, 2015.

Arya, S and Ram, K. 1998. Factors affecting consumption pattern of milk and milk products in rural and urban areas. *Indian Journal of Dairy Science*. 41 (1): 46-52.

Assocham. 2015. Indian organized dairy sector to grow by 25 per cent, says report. *Agriculture Times.* Accessed on 3rd April, 2015.

Chauhan A.K., Kalra K.K., Singh Vir Raj and Raina B.B. 2006. A study on the economics of milk processing in a Dairy plant in Haryana. *Agricultural Economics Research Review.* 19(1): 399-406.

Claeys Wendie L. , Cardoen Sabine , Daube Georges , Block Jan De , Dierick Koen Dewettinck Katelijne, Zutter Lieven De , Huyghebaert André , Imberechts Hein , Thiange Pierre,Vandenplas Yvan , Herman Lieve. 2013. Raw or heated cow milk consumption: Review of risks and benefits. *Food Control.* (31): 251-262.

Dang, G. P., Sapra, KM. Neeta and Kaur, KM. Gursharan .2004. "Indian Dairy Industry - Changing Scenario - Its Problems and Future Prospects", *Agricultural Situation in India*, February, 1(1): 712-714.

Delgado L. Christinopher. 2003. Rising consumption of meat and milk in developing countries has created a new food revolution. *Journal of Nutrition.* 133(11): 1-3.

Fawi,N. M. T. and Abdalla, M. O. 2013. Milk preferences of consumers and effect of marketing mix on consumers purchase decision of dairy products. *Indian Journal of Marketing*. 43 (2): 57-62.

Gautam, Dalal R.S., Pathak,V. 2010. Indian dairy sector: Time to revisit operational flood. *Livestock Science.* 127(1): 164-175

Gerosa Stefano and Skoet Jakob. 2012. Milk availability: trends in production and demand and medium term outlook. *Food and Agriculture Organization of the United Nations*.1(1): 11-40.

Ghule K. Avinash, Varma N. K., Chauhan A. K. and sawale pravin. 2012. An economic Analysis of Investment pattern Cost of milk production and profitability of commercial dairy farms in maharastra. *Indian Journal of Dairy Science.* 65(4): 1-8.

Goutam Das, Varma N. K., and Jain D. K. 2011. Consumption patterns of milk products across different socio-economic groups of north Tripura district. *Journal of Dairy Foods and Home Sciences.* 30(4): 230-238.

Goyal, S. and Goyal, G.K. 2012. Recent technologies for dairy products packaging. *Scientific Journal of Agriculture.* 1(6): 164-167.

Hung Anh Nguyen, Tran Huu Cuong and Bui Thi Nga. 2013. Production and Marketing constraints of dairy farmers in sonla milk value chain, Vietnam. *Greener Journal of Business and Management Business Studies.* 3(1): 031-037.

Imam Asharf, Zadeh, M. N. and Dubey Rani Laxmi. 2011. Dairy marketing strategies in context to Globalization: Issues and Challenges. *International Journal of Trade, Economics and Finance.* 2(2): 1-6.

Karmakar K.G. and Banerjee G.D. 2006. Opportunities and Challenges in the Indian dairy industry. *Technical Digest.* 9: 1-4.

Khoveio LL. Michael. 2012. Economics of milk production and its constraints in Nagaland. *Indian Journal of Dairy Science.* 65(6): 160-175.

Kolekar, D. V., Kokate, L. S., Bangar, Y. C. and Khillare, G. S. 2012. Review on contract farming: to boost Indian dairying. *Livestock Research for Rural Development.* 24(10): 1-5.

Kubendran V. and Vanniarajan T. 2005. Comparative analysis of rural and urban consumers on milk consumption. *Indian Journal of Marketing.* 35(12):1-12.

Kumar, A. and Staal, Steven J. 2010. Is traditional milk marketing and processing viable and efficient? An empirical evidence from Assam, India. *Quarterly Journal of International Agriculture.* 1: 15-18.

Kumar Anjani, wright A. Iain and Singh K. Dhiraj. 2011. Adoption of food safety practices in milk production: Implications for dairy farmers in India. *Journal of International Food and Agribusiness Marketing.* 23(4): 330-344.

Kurien V. 1997. "The AMUL Dairy Cooperatives: Putting the Means of Development into the Hands of Small Producers in India", in Krishna, Anirudh, Uphoff, Norman and Esman,

MiltonJ. (Ed.), Reasons for Hope: Instructive Experiments in Rural Development, Kumarian Press, West Hartford. Reasons for hope: instructive experiences in rural development. 2(1):105-119.

Mani Radha and Intodia Vijay. 2014. India dairy and products annual 2014. *Global Agriculture and Information Network.* IN4089.

Millogo,V., Ouedraogo, G.A., Agenas, S., Svennersten, K. and Sjaunja. 2008. Survey on dairy cattle milk production and milk quality problems in peri-urban areas in Burkino Faso. *African Journal of Agriculture Research.* 3(3): 215-224.

Moran B. John. 2013. Addressing the key constraints to increasing milk production from small holder dairy farms in tropical Asia. *International Journal of Agriculture and Biosciences.* 2(3): 90-98.

NDDB. 2015. www.nddb.org/information/stats/milkproindia.

NDDB. 2013. www.nddb.org/information/stats/milkproindia.

Ohlan Ramphul. 2011. Competitiveness and Trade performance of India's Dairy Industry. *Asian Journal of Agriculture and Development.* 11(2): 1-21.

Omore A., Staal SJ, Wanyoike F, Osafo ELK, Kurwijila L, Barton D, Mdoe N, Nurah G and Aning G. 2009. Market mechanisms and efficiency in urban dairy products markets in Ghana and Tanzania. *International Livestock Research Report.* 19(4): 1-56.

Poonia Amrita, Abhilash Payasi and Dharmendra Kumar. 2013. Management issues and prospects of dairy industry in Varanasi district of Uttar Pradesh, India. *Indian Journal of Agriculture.* 33(3): 159-165.

Rajendran K. and Mohanty Samarendu. 2004. Dairy cooperatives and milk marketing in India: Constraints and opportunities. *Journal of Food Distribution Research.* 35(2): 34-41.

Rakotoarisoa Manitra and Gulati Ashok. 2006. Competitiveness and trade potential of India's diary industry. *International Diary Journal.* 31(1): 216-227.

Rao Madhusudhana. 2013. Contribution of cooperative sector in development of dairy industry in Andhra Pradesh. *Asian Journal of Dairy and Food Research.* 32(3): 180-185.

Reddy,S. T. 2010. Consumer perception of Priya milk vis-à-vis other competing brands in Karimnagar district of Andhra Pradesh. *MBA (ABM) Thesis*. Acharaya N.G. Ranga Agriculture University, Hyderabad, India.

Reshma M. and Babu A.Sachindra. 2014. Demand and supply of milk in Karnataka by 2021, Are we hindering towards a crisis? *International Journal of Innovation Research in Science, Engineering and Technology*. 3(1): 11117-11123.

Sarkar D. and Ghosh, B. K. 2010. Constraints of milk production: a study on cooperative and non-cooperative dairy farms in West Bengal. *Agricultural Economics Research Review.* 1(23): 303-314.

Shah Deepak. 2002. Indian dairy industry: Present status and Future prospects. *Indian Journal of Animal Sciences*. 42(3): 474-483.

Shankar N. and Perumal Muthu P. V. 2014. A comprehensive strategic evaluation of success of AMUL model. *EXCEL International Journal of Multidisciplinary Management Studies.* 4(6):222-232.

Shaphiya S.K. and Rao Sanjeev. 2014. Dairy farming in Andhra Pradesh- a case study in Prakasham district. *Agriculture Economics Research Review.* 27(1): 171-172.

Sharma M.L., Saxena Raka, Mahato Tirthankar and Das Dipan. 2007. Potential and prospects of dairy business in Uttarkhand: A case study of Uttaranchal cooperative dairy federation limited. *Agriculture Economics Research Review.* 20: 489-502.

Sharma, V. P. and Sharma, Pritee (2002), "Trade liberalization and Indian Dairy Industry", Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi. 280-283.

Siddaram, Sonnad and Shivashankar. 2007. Processing and Marketing Management of Milk and Milk Products in North Karnataka. *Karnataka Journal of Agricultural Science*. 20(2): 316-319.

Singh K. M, Meena M. S., Bharati, R. S. and Kumar Abhay. 2012. An economic analysis of milk prodution in Bihar. *The Indian Journal of Animal Science.* 82(10): 1-4.

Singh R. S. and Datta, K. K. 2010. Understanding value addition in dairy sector: Some perspectives. *Agriculture Economics Research Review.* 23(1): 487-493.

Sivasubramanian, M. 2003. Impact study on per capita milk consumption among consumers. *Indian Cooperative Review*. 40 (4): 256-265.

Srivastava A.K. and Kumaresan A. 2015. Indian Dairy Industry - The changing and prospective scenario. *Intas Polivet*. 16(1):1-10.

Srivastava S. 2012. Demand for milk in India is fast outgoing supply. *Indian Journal of Dairy Science.* 2(1): 12-13.

Wiley S. Andrea. 2011. Milk for growth: Global and local meanings of milk consumption in India and China and the United States. *Food and Foodways localties.* 19(1): 11-33.

www.nddb.org.