

DAIRY SECTOR IN INDIA: A CRITICAL STUDY ON THE PRODUCTION AND UTILIZATION OF MILK AND MILK PRODUCTS

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Abstract

India is the world's largest milk producer. This was not the case a few years ago. The country used to be milk short, and imported milk from other countries to serve its growing population. India accounts for over one-fifth of the global milk production followed by the US, China, Pakistan and Brazil. In 1950s and 1960s, India was heavily dependent on milk imports until 1965, the Indian government decided to establish a National Dairy Development Board to improve India's dairy sector.

From 1970s, the country aimed to enhance milk production, which led to the launch of Operation Flood and in 1998, India surpassed the US and became the largest milk producer in the world. India's per capita availability of milk more than doubled during 1991-2017, with the production growing at a 4% CAGR. In 1991 per capita availability in India is 178 gm/day whereas in 2017 per capita availability in India is 411 gm/day. Similarly, per capita availability in the world during 2017 was 302 gm/day.

Keywords: - Indian Government, Milk Producer, CAGR, Growing Population, Dairy Sector

1. Introduction

Dairying became a subsidiary of agriculture and now gained economic importance and introduced white revolution after "Green Revolution". It plays a critical role in the economic development of rural India by satisfying the needs of urban India. It is practiced along with agricultural activities to generate additional income in addition to meet its own household requirement of milk and milk products. Since 1997, India is the largest milk-producing country and also the largest consumer of dairy products. In India, the co-operatives and private dairies have access to only 20.0% of the milk produced. Among the produced milk, 34.0 % of the milk is sold in the unorganized market whereas 46.0 % is consumed locally. Indian dairy sector is the world's largest milk production system producing 187.70 million tonnes (Mt) of milk where about 70.0% of the milk is produced by smallholders having 1 to 3 animals per household. India dominates about 13.0% of world milk production and India consumes about 100% of its production. The livestock sector contributes 4.20% GDP as of 2017 and 25.60% of total Agriculture GDP. In 2017, the Indian dairy sector was reported to be growing at 4.90% yearly. Uttar Pradesh is the massive contributor of 17.60% and Tamil Nadu clenches the ninth position by contributing 5.03%.

1.1 Evolution of Dairy Sector since India's independence

The Indian economy has been witnessing steady growth in the last four to five decades. This has had a huge positive impact on critical sectors of the economy – agriculture, manufacturing

and services. In the immediate post-independence decades, the focus was on ensuring food security for the country's growing population as India was surviving on food aid from various developed countries including the United States till the late 1960s. The Green Revolution initiated in the late 1960s and early 1970s ensured food security for India and the White Revolution initiated during the same period ensured self-sufficiency in milk while many other developing countries continue to depend on the import of milk products even today.

2. Literature Review

Vishita Khanna (2010) in her research on Consumer behaviour and perception towards selected dairy products in selected cities of Gujarat concluded that the perception among respondents of packaged dahi and home-made dahi based on different parameters such as price, safety, quality, convenience, storage time, etc. It was discovered that consumers noticed the difference in home-made and bought dahi and other dairy products, but they did not know why this difference in quality was due to unsafe practices.

Rubaina (2010) carried out a consumer preference study on dairy products. The research attempted to describe the customer's preference for dairy products and the factors influencing the choice of different dairy product brands. The study revealed that the company would research consumers' preferences and manufacture the product in a way that draws more buyers to their brand and can be achieved through mass media to increase sales and inform customers about the product.

Elangovan. N and Gomatheeswaran. M (2015) concentrated on consumer behaviour towards specific dairy and milk product brands. Number of factors affect the lifestyles of customers. Including society, subculture, beliefs, demographic factors, social status, comparison classes, household and also the consumer's internal make-up, attitudes, purchasing personality motivations, understanding and training. The study examined the disparities in consumer behaviour against product choice with socio-economic characteristics.

Research on Aavin's consumer behavior was conducted by **Jothi Mary. C (2016)**. The consumer behaviour analysis is a subset of consumer practices dealing with actions leading up to the purchasing act. The influence of the variable price brand image, product quality, regularity of service could be the influence. The study aims to illustrate the factors that lead to product purchasing behaviour and perception when buying Aavin milk. Similar to other brands, customers were satisfied with the quality of the Aavin brand.

Kumar's Ananda. A and Babu. S (2017), with an emphasis on dairy products, made an attempt to identify the factors affecting consumer purchasing behaviour. The variables include packaging, price, availability, ingredients, product popularity, product quality, consumer taste, etc., affecting a brand's selection from among those in the consideration list, but may not be the most relevant and primary determinants for brand short listing. The research is useful for advertisers as they can create different advertising campaigns that they feel will be of consumer interest. It can improve their marketing strategy as well.

Lokanathan. S (2017), on his report on customer satisfaction with mothers' dairy products, found that the mother dairy is a large organization as well as a market leader in dairy products

and has the largest milk demand. The study also found that most consumers were pleased with the overall quality of the dairy products of mother.

Dhaka (2017) conducted a marketing output analysis of Tamil Nadu's Dairy Products for Co-operative and Private Dairy Plants. Their research aimed to compare the marketing of milk and milk products by cooperative and private sector dairy plants in Tamil Nadu. The marketing cost for toned milk was found to be the same in both dairy plants, whereas in the cooperative dairy plant it was higher for other milk. Most dairy products, apart from toned milk, receive higher private marketing margins than cooperative dairy plants. Consequently, the marketing performance of cooperative dairy plants for all dairy products was found to be relatively lower than that of private dairy plants, except for toned milk. The study also found that greater attention should be paid to adding value to dairy products without compromising quality and consumer-oriented market research and development.

N Ramya, Dr. SA Mohamed Ali (2017) in their research on a study on consumer buying behaviour towards Amul products with special reference to Coimbatore city concluded that compared to other goods, the consumption of Amul products is high. The purchasing behaviour is optimistic, which means that consumers' buying behaviour is strong. The product's promotional strategies can be improved to increase the company's sales as much as possible. Thus, the project concludes that consumers' purchasing behaviour is optimistic, so the brand in Coimbatore city has a good reach.

3. Methodology and Database

The present study is an empirical study and it pursued with the help of the secondary data to fulfil the purpose of the study. The required secondary data was collected by the researcher from personally visiting dairy co-operative societies. Other necessary secondary data is available from various published and unpublished sources such as annual reports and office records of the Amar dairy – Amreli, publications, journals and magazines issued by the governments, has been used in the study. More details required for the study were obtained from the officials of the dairy. The researcher had extensive discussions with the concerned dairy personnel and the information obtained from them is used in support of the findings. The researcher also used various websites of concerned departments of state and central governments as well as dairy companies.

4. Problem Statement

Dairying is considered as the boon to the small farmers and especially for landless labourers for creating more employment opportunities and generating additional income for balancing their family budget. The economy of Amreli district is totally based on agricultural activities. Co-operatives play a vital role in the development of the dairy sector in India. The major portion of dairying in India is carried on through co-operatives. The success of co-operative milk supply societies depends on their efficiency in working.

5. Objectives of The Study

Following are the main objectives of the present study.

1. To study the overview about the milk production in India.

2. To study the milk procurement in India.
3. To ascertain the evolution and development of Indian dairy Industry.

6. Operations Flood and its impact

Milk production in the country was stagnant during the 1950s and 1960s, and annual production growth was negative in many years. The annual compound growth rate in milk production during the first decade after independence was 1.64%; during the 1960s, this growth rate declined to 1.15%. In 1950-51, per capita consumption of milk in the country was only 124 grams per day. By 1970 this figure had dropped to 107 grams per day, one of the lowest in the world and well below the minimum recommended nutritional standards. "Our dairy industry was struggling to survive. We produced less than 21 million tonnes of milk per annum despite the fact that we had the largest cattle population in the world.

Things were beginning to look grim," Imports of dairy commodities were often resorted to in the 1950s and 1960s, comprising 50 to 60% of the dairy industry's total requirement. Following the visit of Prime Minister Lal Bahadur Shastri to Anand district of Gujarat in 1964, the National Dairy Development Board (NDDB) was created in 1965 with a mandate to support creation of the 'Anand pattern' of dairy cooperatives across the country through Operation Flood (OF) programme which was to be implemented in phases. Verghese Kurien, the first chairman of NDDB, along with his team commenced work on the launch of the project which envisaged the organisation of Anand-pattern cooperatives in milk-sheds across the country from where liquid milk produced and procured by milk cooperatives would be transported to cities. In the late 1960s in Europe, there was over-production of milk which caused accumulation of a huge quantity of dried skim milk and butter oil. The then European Economic Community (EEC) was unable to sell this surplus. A charitable alternative was sought in desperation, and stocks of dairy commodities were offered as a gift to India through 'food aid' of World Food Programme (WFP).

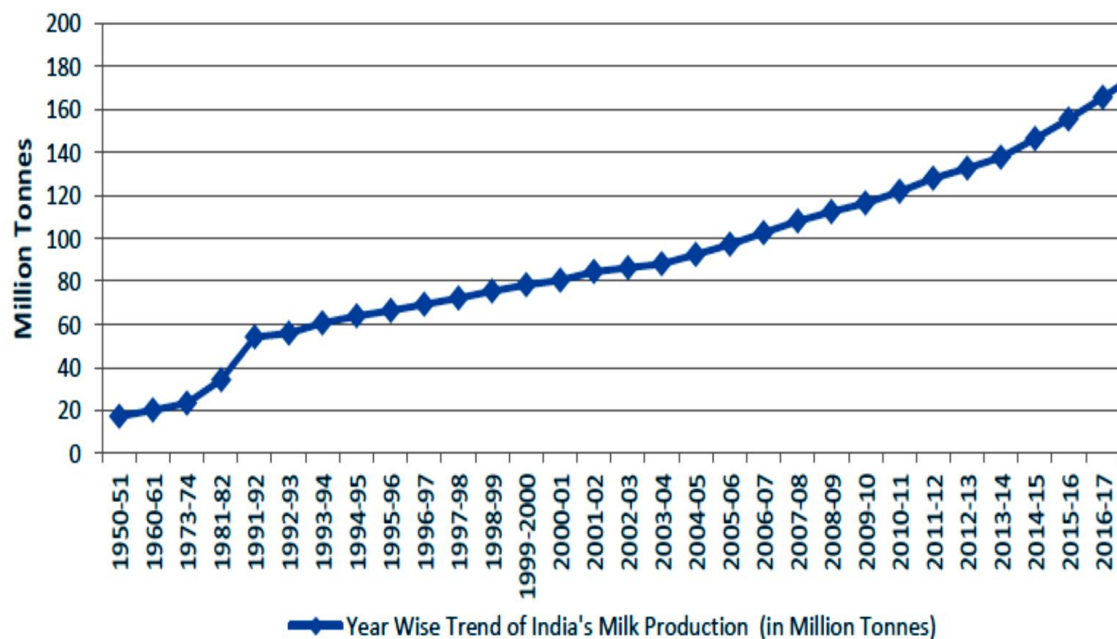
However, NDDB in its proposal before WFP had stated the 'donated skim milk powder' would be reconstituted to milk and sold in metros at a price comparable to domestic price. This would build a market for quality milk in key Indian cities. It was the first time in the history of economic development that food aid was used as buffer stock to stabilise market fluctuations as well as to prime the pump of markets that would later be supplied by domestic market. 'The overriding objective of all aid was the elimination of the need for aid,'.

The NDDB felt that direct unloading of these dairy commodities onto India's milk market would be destabilising, so some developmental use should be made of them. It was to this end that Operation Flood was designed.'. Milk production in 1968-69 prior to the launch of Operation Flood was only 21.2 million tonnes (MT) which increased to 30.4 MT by 1979-80, 51.4 MT by 1989-90 and 84.6 MT by 2001-02. It also transformed India from a milk-deficient nation into the world's largest milk producer, surpassing the USA in 1997-98. In three decades (1980s, 1990s and 2000s), the daily milk consumption in the country rose from a low of 107 grams per person in 1970 to over 226 grams per person in 2002.

7. Present Overview of Indian Dairy Sector

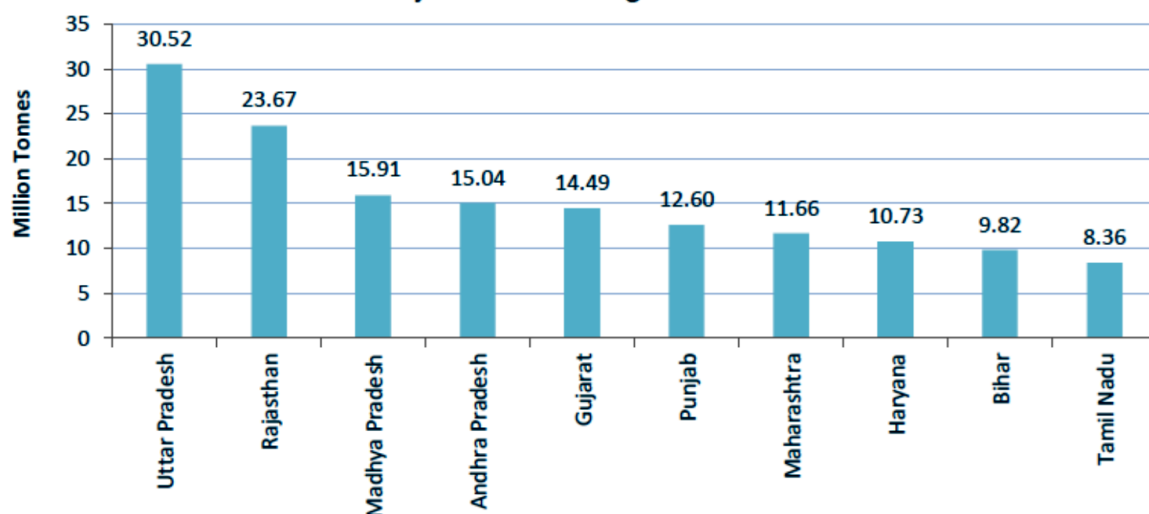
India ranks first among the world's milk producing nations since 1998 and has the largest bovine population in the world. Milk production in India during the period 1950-51 to 2017-18, has increased from 17 million tonnes (MT) to 176.4 MT as compared to 165.4 MT during 2016-17 recording a growth of 6.65%. FAO reported 1.46% increase in world milk production from 800.2 MT in 2016 to 811.9 MT in 2017. The per capita availability of milk in the country which was 130 grams per day during 1950-51 has increased to 374 grams per day in 2017-18 as against the world estimated average consumption of 294 grams per day during 2017. This represents sustained growth in the availability of milk and milk products for our growing population.

Figure 1: India's Milk Production (in Million Tonnes)



Source: Basic Animal Husbandry Statistics, DAHD&F, GOI

Figure 2: Major Milk Producing States of India in 2015-2017



Source: Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture & Farmers Welfare, GOI

8. SWOT analysis of Indian dairy industry

a) Strengths

- Large number of livestock population is vital asset for Indian dairy industry. Sustainable re-production can assure future supply and will continue to propel industry growth.
- Indian milk animal has very low milk productivity; there is a huge scope of improvement in terms of milk productivity of animals.
- With continues growth in economy there is a growth in the income of middle-class population this result in to high purchasing power.
- In India milk consumption is a part of people's daily dietary habit this assure steady growth in milk demand
- Cheap labor availability of low-cost fodder in form of farm residual keeps the cost of milk production low
- India has well developed co-operative's structure and large number of milk cooperatives help farmer in getting proper milk price.

b) Weaknesses

- Penetration of cross breeds and high yielding animal are limited and Indian dairy farms have large number of low milk yielding animals.
- Lack of road connectivity and poor infrastructure are major challenge for dairy farms in terms of supplying their raw milk to processing facility.
- Majority of dairy farms are unaware about modern scientific dairy farming techniques, clean milk production and integrated supply chain.
- Low growth rate, low returns on investment, lack of research, lack of reliable milk production data are reasoning that investor are not willing to invest in dairy farming

c) Threats

- Urbanization, Industrialization and excessive grazing have put pressure on grazing lands. Result into complete degradation of grazing land.
- Crossbreeds have created threat many valuable indigenous cattle breeds.
- Adulteration, Synthetic milk etc. has decreased milk buyer's confidence. Eventfully milk consumers can shift to other options. Substitutes like soya milk; coconut milk etc. can replace farm cattle milk.
- Middleman is still controlling majority of milk procurements. Serious steps should be taken to reduce that.
- There is a gross lack of awareness among farmers about the quality parameters, including microbiological and chemical contaminants as well as residual antibiotics.

d) Opportunities

- With opening up of Indian economy milk producer has huge opportunity to sell products in global market
• High economy growth has created opportunity to invest in dairy farms.

- Forward integration with milk cooperatives can improve the productivity and profitability of dairy farms
- Cooperative animal rearing and animal hostels can unlock the potential
- Dairy farm can adopt new technologies that can improve productivity, operations and profitability

9. Trends of Milk production, procurement

Dairying has become an important secondary source of income for millions of rural families and has assumed the most important role in providing employment and income generating opportunities, particularly for marginal and women farmers. Most of the milk is produced by animals reared by small, marginal farmers and landless labourers. Of the total milk production in India, about 48% milk is either consumed at the producer level or sold to non-producers in the rural area. The balance 52% of the milk is marketable surplus available for sale to consumers in urban areas. Out of marketable surplus it is estimated that about 40% of the milk sold is handled by the organised sector (16.93 million farmers have been brought under the ambit of about 1,90,516 village-level Dairy Cooperative Societies (DCS) up to March 2017. The cooperative milk unions collectively procured an average of 507.69 lakh kg of milk per day in 2015-17 as compared to 475.29 lakh kg per day in the previous year, with a growth of about 7%. The sales of liquid milk reached 354.53 lakh liters per day, which is marginally higher than that in 2017-18. As on March 2017, the total number of women members in dairy cooperatives across the country was 5.06 million, representing almost 30% of the total membership.

Table 1 Milk Procurement (in kg/per day)

Regions	1980-81	1990-91	2000-2001	2010-11
North	310,000	1,259,000	2,890,000	3,741,000
East / North-east	34,000	200,000	642,000	1,666,000
West	1577,000	5,246,000	7,897,000	12,862,000
South	641,000	2,997,000	5,075,000	7,932,000
Total	2562,000	9,702,000	16,504,000	26,202,000

Source-FICCI Paper

Table 2 Top five states in terms of procurement – (kg per day / 2014-17)

State	Procurement in Kg/Day
Gujarat	22,920,000
Karnataka	74,75,000
Maharashtra	3,998,000
Tamil Nadu	3,381,000
Rajasthan	2,791,000
Total	40,565,000

Source-FICCI Paper

10. Milk utilization pattern in India

The data revealed that 78 per cent of the rural households were consuming milk. There were only 27 per cent families taking milk out of home produce, while 51 per cent through outright purchase. While comparing northern and southern India, it shows that the percentage of household consumption of liquid milk was higher in northern India & outright of purchase was higher in southern India. In Tamil Nadu, only 10% of households consumed their home produce and 76% of households are from outright purchase. In rural areas of the country,

consumption of milk out of home produce was 270 grams/day/ consumer, almost double compared to outright purchase (131 grams/day) (Patel, 2017). This indicates that a person of a producing household in the rural areas consumed about 140 grams of additional milk than a person of a purchasing household.

In India milk production is growing by 6.4% during the last five years and has increased from 146.3 million MT in 2014-15 to 187.7 million MT in 2015-17. However, India exports a relatively smaller volume of dairy products and has a small share in global dairy trade despite being the largest milk producer in the world. Dairy products exported from India are mainly Skimmed Milk Powder (SMP), butter, butter oil, cheese, ghee and butter milk. SMP has share of around 30% in the exports of the dairy products from the country. The major export destinations for dairy products are Turkey, United Arab Emirates, Egypt, Bangladesh, Bhutan, the United States, Saudi Arabia and Malaysia.

11. Conclusion

In 2017, it was 198 MMT of milk was produced which is comparatively lower than the demand estimated for 2016-2017 (Vinay Patel et al., 2016). The assessment suggests that in comparison to CY 2017's 191 million metric tons (MMT), the CY 2017 may go as high as 195 MMT, which is a piece of good news for Indian consumers. National Dairy Development Board (NDDB) Chairman Amrita Patel said that, with increased income levels, India's demand for milk is expected to go up to 200-210 million tonnes by 2010-17 and called for collective efforts and increased productivity to raise milk production to meet it. As per the study on demand for milk conducted by the National Dairy Development Board (NDDB), the estimated demand for 2017 at and all India level is 266.5 million metric tonnes for milk and milk products.

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