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PRODUCTION AND DISTRIBUTION CHANNEL OF MILK IN THE GAJAPATI DISTRICT OF ODISHA INDIA

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ABSTRACT

In India, Operation Flood (OF) implemented by the National Dairy Development Board (NDDB) (1972–1996) created a national milk grid linking rural producers to urban consumers through a network of dairy co-operatives. Globally, India is the largest milk producer and accounted for 20% of milk production in 2017 (NCAER, 2020).Agricultural and allied activities like dairy farming and poultry farming have increased to a sustainable and profitable level, acting as a better income source for farmers. Odisha has been a great contributor to the livestock sector with a share of around 21.38% of Gross Value Added (GVA) with the incorporation of new technologies into the dairy sector. The sector observed a growth of 11.92% in the year 2019-20 (Odisha Economic Survey, 2020-21). Odisha, in 2019-20 witnessed an increase in milk production from 1784 thousand MT in 2012-13 to 2370 thousand MT (Odisha Economic Survey, 2020-21). The commercial value of milk in this district depends on the channel of selling that a farmer approaches. The market here provides a good pricing opportunity ranging from 45 to 50 Rs. per liter of milk based on the use of the customer. However, as we look closer into the channel the Middlemen intervention still exists, Due to which the price of milk varies from place to place. This research showcases the milk production potential and helps in adapting improved mental strategies and finding the way to reach and fulfill national and international competition in the dairy market. The survey was conducted to Gain different rural and urban areas of Gajapati District i.e., Paralakhemundi (urban), Gurandi, Ranipentha, R. Sitapur, K. Sitapur, and Katalkavitha. The study's main purpose was to obtain a descriptive vision of the milk value chain in the Gajapati district and identify the gaps in the milk marketing strategies.

Keywords **:** Analysis of Milk Distribution, Strength, Weakness, Opportunities, Threats, Gajapati Dist.

Introduction

Operation Flood (OF) implemented by the National Dairy Development Board (NDDB) (1972–1996) created a national milk grid linking rural producers to urban consumers through a network of dairy co-operatives. India's dairy revolution, or the white revolution, was led by the largest and most successful co-operative, Gujarat Co-operative Milk Marketing Federation (GCMMF) Limited or Amul. Globally, India is the largest milk producer and accounted for 20% of milk production in 2017 (NCAER, 2020). AMUL collects 3.45 billion liters of milk from over 3 million farmers in India, due to its strong co-operative roots, better fulfillment of consumer needs, and rooted approach to rural milk vendors (Suvadarshini and Roy, 2014). Odisha, the land of secrets is abundant with a lot of natural resources and a favorable climate throughout the year. The economic rise of Odisha in all sectors has been remarkable over the last ten years. Agricultural and allied activities like dairy farming and poultry farming have increased to a sustainable and profitable level, acting as a better income source for farmers. Livestock production and dairy farming trends with a boost in schemes, proposals, and the availability of livestock animals in the state. The state's rural and urban agricultural background has a strong foundation that provides better income opportunities for farmers in the state. Dairy farming and its business are a great source of income for farmers with livestock animals. Dairy farming is one of the activities that has been proven to benefit rural households in various aspects. Odisha state has a lot of dairy farms with different breeds of cows and buffaloes which increases its contribution to the dairy sector. As per data, over 3,600 milk production cooperatives & 2.83 lakh dairy farmers producing milk in Odisha fall under the ambit of OMFED or Odisha Milk Federation. In addition, there are 1,292 women's cooperatives & 1.5 lakh women farmers who have also contributed to the production of milk (Government of Odisha, 2021). The population rise and varietal food

demands have pressurized the dairy sector to increase the production of different by-products. Around 70 million rural households are engaged in milk production, most of which are landless, marginal, and small farmers (NCAER, 2020). Detailed research of one year in different farms located in the Gajapati district of Odisha has emphasized the importance of dairy farming and the contribution of the district to annual milk production in the state. The research was carried out in a random sampling method from different dairy farms and the data has been tabulated below. Information on the dairy farm structure, annual milk production, value chain analysis, and marketing channel has been detailed in this literature.

Milk Production Scenario in India

The global trade in dairy products amounted to about USD 45 billion in 2017, significantly up from USD 39 billion in 2016 (Global Dairy Industry 2018). The state currently represents India's fourteenth largest dairy market (Government of Orissa, 2020-21). India accounts for about 20% of global milk production, almost the same as the European Union (EU), followed by the USA (12%), with China and Pakistan producing roughly 5% each (Dairy Value Chain Nanda Kumar, Sandip Das, and Ashok Gulati, 2022). India has the world's largest bovine (cattle, buffalo, Mithun, and yak) population of 302.8 million, which is 56.5% of the total livestock population (535.8 million) (DAHD, 2019). Cross-bred/exotic milch cattle population increased by 32.2% between 2012 and 2019. However, indigenous buffaloes account for 48.9% of the milk production, followed by cross-bred cattle at 27.3%. In 2018–19, ten states contributed more than 81% of the country's milk production.

Milk Production Scenario in Odisha

The milk production in Orissa mainly consists of cow and buffalo milk. Odisha has been a great contributor to the livestock sector with a share of around 21.38% of Gross Value Added (GVA) with the incorporation of new technologies into the dairy sector. The sector observed a growth of 11.92% in the year 2019-20 (Odisha Economic Survey, 2020-21). Odisha witnessed an increase in milk production from 1784 thousand MT in 2012-13 to 2370 thousand MT in 2019-20 (Odisha Economic Survey, 2020-21) (Table 1). The addition of dairy farming to farmers' agricultural activities has been an economical boost for many farmers in the state. The per day earning of a marginal farmer with 2 cows or 2 buffalos has increased recovering up their input expenses. Dairy farming for farmers is now a stable and supportive source of income generation. The study on value chain analysis of milk in the east and southeast regions of Odisha showed that the net return per liter of milk for crossbred cows (9.83) was more than buffalo (6.46). Milk productivity and returns per liter of milk of crossbred cows were more than buffalo. Therefore, it can be concluded that rearing of a crossbred cow would economically benefit the farmers (Acharya and Malhotra, 2020). The main player in the milk value chain of Odisha consists of both formal and informal sectors. In Odisha, most of the milk marketing is done through the informal sector with milk being sold to the dealers or locally directly to the consumers or other small businesses. The total milk output in Orissa is distributed into home consumption (30 %) while the rest 70 % is marketed through the different informal and formal channels.

Table 1 : Milk production in Odisha (Odisha Economic Survey, 2020-21).

Year	Production (1000 tonnes)
2015-16	1903
2016-17	2003
2017-18	2088
2018-19	2311
2019-20	2370
Year	**Per Capita Availability of Milk by (gms/day)**
2015-16	121
2016-17	125
2017-18	129
2018-19	142
2019-20	144

Existing schemes and financial initiatives

There have been a lot of schemes assisting financing initiatives for the dairy value chain that have been implemented to uplift the production and economics of dairy units. These include Dairy Entrepreneurship Development Scheme (DEDS), Animal Husbandry Infrastructure Development Fund (ADF), Dairy Processing and Infrastructure Development Fund (DIDF), NDDB Term Loans, and Working Capital Finance Scheme for Dairy Co-operatives and the Ministry of Food Processing Industries sponsored Cold Chain scheme. The National Co-operative Development Corporation (NCDC) under MoA & FW also provides financing to dairy co-operatives. At the farmer level, programs such as Pradhan Mantri Mudra Yojana (PMMY), Kisan Credit Cards (KCC) for dairy farmers, and financing by banks for setting up small dairy units are some of the existing channels of finance.

Dairy Farm Structure in Gajapati District, Odisha

The core of the study includes both individual and commercial producers, The Individual producers in the area have one or two cows of local breeds, which yields around 4 Litres (average) of milk every day which is used for both own consumption and marketing sometimes. The commercial producers in this district have more numbers of buffaloes (Murra breed and cows cross breed jersey) so the milk gets a good selling price in different places of the district. The farm is well maintained with good care of the livestock animals, providing them with a safe environment and hygienic food products. The commercial value of milk in this district depends on the channel of selling that a farmer approaches. The market here provides a good pricing opportunity ranging from 45 to 50 Rs. per liter of milk based on the use of the customer. The feeding governmental and non-governmental organizations, restaurants, hotels, and private institutions depend on commercial milk producers for their own consumptive and marketing uses. The fat content of the milk is concerned before purchase and the price of milk/liter is fixed by the customer or milk dealing agencies. In a study done in Odisha, it was reported that the state has the lowest dairy developments among all the states (Kale *et al.,* 2016). The revolution of the OMFED cooperative in Odisha witnessed the rich milk production capacity of the state. As per the latest reports, the per capita milk productivity is increasing with the progressing years and currently, it was 132 gm/day (National Dairy Development Board, 2018-19). The inclusion of cooperatives into the rural marketing

channel has provided farmers with an ample number of opportunities to sell their milk and after products at a fair and sustainable price. The installation of milk testing, skimming, and cold storage facilities in different villages have provided scope and encouragement to farmers in this district to increase their milk production. The overall average Capacity (in litres) of chilling Plants of OMFED at different areas in whole over Odisha is around 5800 litres producing a turnover of 567.17 crores (until January, 2022) in the year 2021-22 (OMFED Statistics, 2022).There is a total of 12 OMFED collection centers in the districts for milk collection. The last five years (2016-2021) economic turnovers of OMFED in Odisha were around 747.75 Cr, 746.06 Cr, 725.91 Cr, 727.21 Cr and 659.74 crores respectively (OMFED Statistics, 2022).

Dairy Product Segments of Gajapati Dist.

Based on the product type, this report has categorized some of themajor product segments in the Odisha Market apart from Liquid Milk: those are Paneer, Curd, Lassi, Ghee, Cheese, Khoa, Flavored milk, and Yogurt apart from these other products are very popular seasonally like Ice- cream and Frozen Yogurt. The picture shows the data of a survey conducted on dairy products preferred by the consumers from the given choices i.e., paneer, curd, lassi, Ghee, Cheese, Khoa, and Flavored yogurt (Fig. 1)

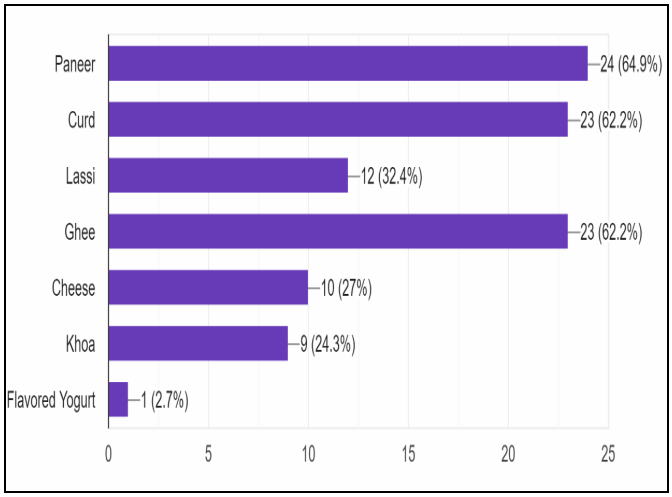

Fig. 1 : Dairy Product Segment Survey of Paralakhemundi, Gajapati Dist.

Value Chain of Milk in Gajapati Dist.

The Milk Producers

The milk value chain in the Gajapati district has both Private and Govt. Players, in recent years the value chain has also seen a middlemen intervention since milk production is increasing, and the middlemen intervention in the rural areas has also increased. There are individual producers and commercial producers in the area. The individual producers are small-scale farmers and are also engaged in labour work, for them livestock is not the main source of income, rather it is for their consumption (Fig. 2 and Fig. 3). The individual milk producers keep a portion of their milk for their consumption and the rest is sold to nearby households. The commercial producers are the producers who have bigger farms with more than 5 cows and buffaloes, Livestock is the main source of income for the commercial producers

Fig. 2

Fig. 3

Middlemen and Distribution

The commercial producers are the big dairies in the area who are linked with all sorts of dairy businesses in the area, such as sweet shops, Paneer shops, and collection agents (Fig. 5). The commercial producers divide the milk produced to different sources of businesses in the area to have a different source of income. A major portion of the milk that goes to other private dairy is from the involvement of collection agents in the channel, the collection agents generally reach out to the individual producers, who are more into farming and cannot invest time in regular transportation of milk to collection centres. The collection agents collect the milk from these small producers and sell the milk to various milk collection centres. Commercial producers sometimes act as collection agents (Fig. 4) for small farmers and sell the milk. Apart from OMFED, the milk is also sold to sweet shops, Paneer shops, Local Milk brands, and other private entities such as Vishakha and Heritage. The farmer's cooperatives in some of the areas are mostly inactive and are collecting milk for other companies and businesses.

The intervention of middlemen has been a constraint in selling strategies for farmers, forming a no linkage zone of the dairy market with the marketing demands. This competition and illegal interventions decrease milk quality and increase the cost price for the dependent customers. The competition between cooperatives like OMFED, Heritage, and Vishakha dairy also impacts the quality of milk in the district. The milk distribution channel of Gajapatiis shown in Fig. 6. and the price distribution in the channel is in Table 2.

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Fig. 4

Fig. 5

Table 2 : Price Distribution of milk

The Channel	Producer	Middlemen	Cooperatives/ Processors	Consumers
Cost of Cow Milk per Liter (Rs)	35-40	40-45	30-40	40-45
Cost of Buffalo Milk per Liter (Rs)	50-55	50-60	40-50	50-55

Economic analysis of dairy farming provides the basis for finding out the possibilities of controlling costs of milk production and increasing the returns to make it a potential dairy enterprise. The profit percentage from dairy business can only be increased by reducing cost per litre or increasing the milk production. (Bhowmik and Sirohi, 2008). The fat content of the milk has been the most concerning factor for milk producers in this district. The fat content of cow milk ranges from 3 to 4%, whereas the fat content of buffalo milk varies from 5% to 10% (based on the feed provided). In Two Axis pricing, the fat and SNF content determines the price per liter and its usage for cooperative marketing. The competition in the market based on fat and SNF content has been an advantageous factor for local milk producers in the district to save from unjustifiable pricing strategies by the middlemen and also serves as a better market channel for better income. The Two axis pricing is the best way to encourage the stop the adulteration of milk, but in recent years this has also led to middlemen intervention in the channel in the area, the individual farmers with average milk production of 4L to 5L per day prefer selling the milk to the collection agents. Water adulteration is very common in the case of milk; this also increases the risk of spoilage of fresh milk. In the area of study, farmers consider fixed pricing more than the two-axis pricing, as they are stable and focus on the amount of milk and quantity of milk.

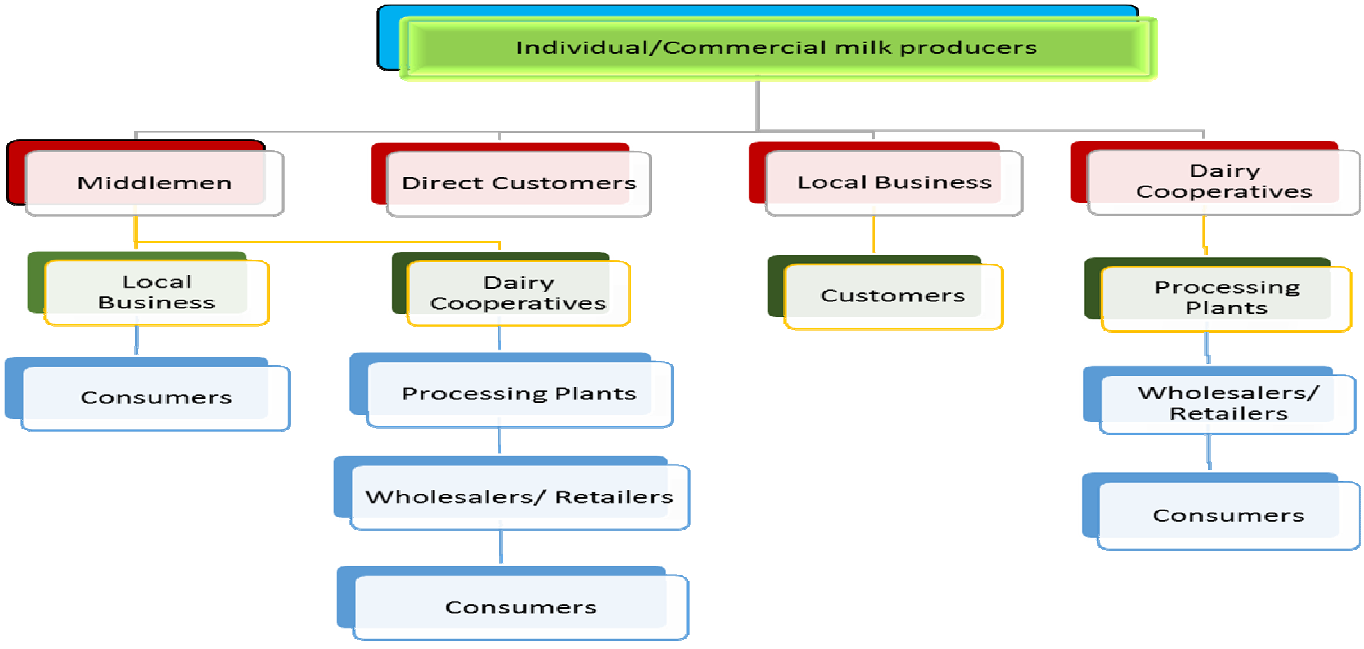

Fig. 6 : Distribution Channel of Milk in Gajapati Dist.

SWOT Analysis of Milk Distribution Channel in Gajapati Dist.

Strength	Weakness
• High demand for milk in the market • Demand for milk-based products and value-added products • Health benefits • Milk has a high demand with or without value addition • Developing healthy competition in the industry	• High chances of Adulteration • Highly perishable • Availability of good quality milk • Pricing based on Fat SNF and khoa content • Requires authorization for processing or value-added products • More collection centres can be set up by the cooperatives.
Opportunities	**Threats**
• Variety of dairy product segments • Continuous change in the pricing strategy to keep the farmers motivated • Providing time-to-time benefits and incentives to farmers • Forming/Motivating FPOs or Farmers Cooperatives for value addition • Increase export of products • Use of frontier technologies like sex-sorted semen, genomic selection of high merit animals, embryo transfer, data collection, and analytics need to be promoted	• High competition between companies • High cost of maintenance at farm level • Increasing Fodder price • Less returns at farm level • High price inflations in market • Require in-depth knowledge of the industry to start a dairy business • High chances of product contamination at every stage

Conclusion

The dairy industry in Odisha still needs to grow a lot, The per capita milk production in Orissa is very low at 26 kg per capita per year while the annual per capita production in India is 82 kg (IFCN, 2021).With Adequate excess to finance, the dairy value chain in India can be more competitive, inclusive, sustainable, and scalable. To make the dairy industry more sustainable, farmers should also invest in forage production with proper land use strategy & cropping system and utilization of all other bi-products from the farm level. Advanced herd management opted for the better genetic potential of the cattle. Dairy co-operatives need to have more transparency financially, Dairy cooperative needs to be treated as private enterprises of farmers and freed from government-imposed controls at some level. Expansion and modernization of milk processing facilities would need substantial investments, the financial institutions must provide working capital assistance to dairy farmers at reasonable rates. In the absence of an institutional financing structure at the ground level, dairy farmers are forced to seek credit from informal sources at much higher interest rates. Provision of specific windows for accessing credit for the purchase of animals needs to be made. Kisan Credit Cards to dairy farmers would help farmers in meeting their working capital requirements. Including more women in the actual functioning of co-operatives through greater representation on the board of dairy co-operatives. At present, less than 3% of the board of dairy co-operatives members are women, although they constitute 18% of the membership. The climatic changing climatic conditions are also a big concern for the industries, increasing temperature can not only impact the forage production but affects the milk yield per animal, this is something that needs to be taken into consideration to have a yearlong milk production.

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