

ECONOMIC DEVELOPMENT THROUGH DAIRY VALUE CHAIN: AN INVESTIGATION IN BIKANER DISTRICT OF RAJASTHAN

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Abstract—: The dairy industry plays a pivotal role in fostering economic development in rural areas of India. In Bikaner district, Rajasthan, dairy farming has emerged as a significant contributor to livelihoods and regional economic growth. This research paper investigates the dairy value chain in Bikaner, highlighting its components, challenges, and its role in driving economic development. By examining the socio-economic impact of the dairy sector and the policy environment, this study offers insights into how the dairy value chain can be further harnessed to promote sustainable economic development in the region.

The present study is an extensive evaluation of the dairy industry's value chain in Bikaner district, encompassing a wide range of activities from evaluation and analysis to proposing solutions and strategies for improvement. The findings from this study can be valuable for stakeholders involved in the dairy industry, including policymakers, farmers, processors, and distributors, to enhance the efficiency and competitiveness of the actors involved in dairy value chain to enhance the economic development of the region.

I. INTRODUCTION

Over the last 35 years, India's agricultural landscape has witnessed a notable transformation, marked by the increasing significance of the livestock sector within the agricultural gross domestic product (Ag.GDP). From 1970 to 2008, there has been a substantial growth in the contribution of livestock to the Ag.GDP, with its share escalating from 17 percent to 29 percent. A pivotal factor behind this upward trend has been the burgeoning dairy industry, which now accounts for more than two-thirds of the livestock sector's output. This flourishing dairy sector engaged in elevating the overall importance of the livestock industry in India, propelling the nation to the position of the world's leading milk producer. Furthermore, the production of milk continues to exhibit robust growth, affirming its status as a key driver of the sector's expansion. Indian agriculture has historically served as the cornerstone of the country's economy, providing livelihoods for a substantial 64 percent of the population. Agriculture section assumes a crucial part in fostering the economic advancement of the nation. Currently, agriculture and its associated sectors collectively contribute approximately 14.6 percent to the

nation's Gross Domestic Product (GDP), when calculated at 1999-00 prices.

Despite India's substantial livestock population and overall high milk production, the average milk yield per individual animal remains relatively low. This situation is compounded by various constraints that hinder the realization of the full potential of milch animals. These challenges encompass not only milk production per animal but also extend to factors affecting the production and distribution of milk in rural areas. The significance of raising milch animals becomes even more pronounced in arid and rainfed agro-ecosystems, where it plays a vital role in generating sustainable income.

India's dairy industry possesses a distinctive characteristic in that a substantial 70% of its milk production is attributed to farmers who are poor and landless typically maintain limited dairy animals. Even households that supply private dairies usually maintain a relatively modest herd size, averaging around 10 animals. It's worth noting that out of the 70 million individuals engaged in milk production across the nation and only around 11 million milk farmers are officially enlist in dairy cooperatives.

Dairy cooperatives play a pivotal role in the marketing of processed liquid milk in India, capturing a significant share of the market. The processing and marketing of milk in India are organized under 15 State Cooperative Milk Marketing Federations and managed by managed by 170 Milk Producers' Cooperative Unions. Uttar Pradesh, Punjab, Haryana, Rajasthan, Gujarat, Maharashtra, Andhra Pradesh, Karnataka, and Tamil Nadu are the states which are recognized as milk surplus regions. As a result, these states have developed a strong manufacturing capacity for various milk products. The export of dairy products has shown impressive growth, with an annual increase of 25% since 2001. This trend offers attractive investment opportunities in the production of value-added milk products such as milk powder, packaged milk, butter, ghee, cheese, and ready-to-drink milk products.

However, it's important to note that the relatively low enrollment of farmers in dairy cooperatives results in a limited supply of milk to the market. In India about 50% of the milk produced is kept by the milk producer for own consumption and local market and balance sold in the organised market. However other countries who involved in dairy production sell 80% of milk in organised market.

Approximately 35 percent of the milk remains unprocessed and is consumed as raw milk; this raw milk is distributed via both informal and formal distribution market network. This limited supply of milk, along with the low rate of conversion into processed milk products, contributes to significantly higher prices for milk and milk-based products. The elevated prices of milk adversely impact its affordability, particularly among the lower-income segments of the population. Consequently, India faces the concerning issue of undernourished children which is one-third of world's undernourished children. The gap between milk demand and supply is substantial, despite milk being one of the crucial agricultural products. Although the per capita availability of milk in India is relatively high at 290 grams per day, slightly surpassing the world average of around 285 grams per day, which is not evenly distributed across the population.

Moreover, in states with abundant milk availability, access to it is often restricted to affluent families, further exacerbating the challenge of ensuring nourishment for families living below the poverty line. According to the Integrated Child Development Services (ICDS) report,

Approximately 25 million children in India suffer from malnutrition, leading to annual economic losses of around 2 billion US dollars.

Although the proportion of underweight children in India decreased from 45.1 percent in 2005-06 to a historic low of 30.7 percent in 2014, the country still has the highest number of underweight children under the age of five globally, with 70 percent of children facing undernourishment.

This situation is exacerbated by a significant portion of the population being vegetarian, relying primarily on milk and milk-related products because milk is considered as main source of protein and essential nutrition. So to solve this urgent problem there is need not only to increase per capita milk production but also to expand milk processing capabilities.

In the 2010-11 period, Rajasthan experienced a remarkable 28 percent increase in milk production. However, the state's milk processing industry is still in its early development stages. Bikaner district, known for being one of the top milk-producing areas in Rajasthan, holds significant potential to greatly impact the milk processing sector and help resolve key issues related to milk accessibility and affordability.

II OBJECTIVES OF THE STUDY

The aim of the current investigation is to assess the existing state of the Dairy Value Chain in Bikaner district, Rajasthan. Additionally, it aims to uncover the potential opportunities and challenges within this value chain, with the intent of identifying the primary factors that impact its functionality. Furthermore, the study seeks to analyze the inherent strengths of each participant and actor within the value chain, and ultimately, to propose a framework that can harness and capitalize on these strengths to enhance the value chain's overall efficiency and effectiveness.

III METHODOLOGY

The nature of the paper was exploratory, primarily aimed at gaining insights into various aspects related to milk production in the Bikaner region.

To select the dairy cooperatives and private dairy farms for the study, a comprehensive list of all dairy farms operating in Bikaner was compiled. From this list, five dairy farms with a herd size of more than 100 milch animals were randomly selected for inclusion in the study.

Data collection was carried out using the personal interview method, utilizing pre-structured and pretested schedules. The data collection process was conducted with selected dairy farms, and the information was gathered for the year 2020-21. The collected data encompassed various aspects, including cost components, milk production, consumption patterns, investment details, and marketed surplus, among others.

The data collected were subsequently analyzed using a range of statistical methods, such as simple tabular analysis, calculation of averages, percentage calculations, and the use of ratios. These analytical techniques were applied to draw meaningful insights and conclusions from the gathered information, providing a comprehensive understanding of the dairy industry in the Bikaner region during the specified time frame.

Bikaner is a major distributor of dairy product in Rajasthan and is arguably the largest milk producer in northern Rajasthan. To evaluate different aspects of milk production, a plant from the cooperative sector, URMUL (Uttari Rajasthan Sahkari Dugdh Utpadak Sangh Limited),

and a private sector dairy organisation in Bikaner were chosen for comparison. This analysis focuses on the procurement, processing, and marketing practices of both types of dairy plants. In the Bikaner district of Rajasthan, there are three clearly defined agricultural situations, namely, canal irrigated, tubewell irrigated, and unirrigated areas. Thus, from the eight tehsils present in Bikaner district, we purposefully chose one tehsil from each of the three distinct types of irrigation conditions, specifically targeting the tehsil within each category that had the highest cattle population.

For the purpose of the current investigation, Respondents were classified into four distinct groups:

Input suppliers: this category encompassed the persons who were engaged in the providing cow feed products to the dairy industry.

Milk producers: within this tier, the respondents were farmers actively involved in the supply of milk to the dairy processing unit.

Milk processing unit personal: this category included managers who played a pivotal role in various aspects of milk processing.

Other stakeholders: this tier comprised individuals such as veterinary scientists and marketing personnel who were associated with the dairy industry but did not fall into the aforementioned categories.

IV VALUE CHAIN ANALYSIS

As per information gathered from local industry sources, Bikaner district boasts an impressive daily milk production of over 20 lakh litres. Out of this substantial quantity, approximately 6.5 lakh litres are channelled to URMUL, while another 7 lakh litres are directed towards private dairy companies. The remaining portion finds its way into the open market for sale.

Notably, URMUL has established connections with 32 cooperative societies across over 5,000 villages, whereas private dairies are linked with approximately 2,500 villages. The above information is important because it provides valuable insight into the factors driving Bikaner's impressive milk collection volume.

The perspectives of various stakeholders in the Dairy Value Chain Industry of Bikaner are insightful:

****Suppliers' Perspective (Cow Feed Suppliers):****

- Twenty cow feed suppliers participated in the study, chosen randomly. A significant number of them expressed optimism about the dairy processing industry's potential in Bikaner.
- More than 70 percent of these suppliers attributed their optimism to the increased involvement of private industry players in the area.
- They believed that the cooperative-based model might not offer substantial value addition but acknowledged its role in enabling farmers to negotiate with private dairies.

- Concerns have been raised regarding the increasing cases of infiltration among cow breeders and milk producers.
- They expressed upset about the non availability of financial facilities for milk farmers at low rates and the absence of an effective platform to connect with farmers.

****Milk Producers' Perspective (Farmers):****

- The study included 54 milk producers, with 35 connected to the cooperative movement, 12 associated with private dairies, and the remaining selling their milk in local market.
- All milk producers were confident about the emerging opportunities in the district.
- Many milk producers expressed dissatisfaction with the prices they received for their milk, emphasizing the need for government intervention.
- Transparency issues were raised in both cooperative and private dairy setups.
- Inadequate public transportation infrastructure was criticized for hampering access to open markets and making producers vulnerable to middlemen.

****Milk Processing Perspective:****

- Seventeen individuals directly involved in milk processing participated in the study, with nine from cooperative industries and eight from private dairies.
- The most of them were passionate about the prospects of the dairy processing industry in Bikaner.
- Milk processing unit echoed concerns rose by farmers and underscored the need for addressing these issues.
- Lack of an airport facility was identified as major problem in transportation facilities that hinders dairy development in Bikaner.

These perspectives come up with an extensive view of the challenges and opportunities within Bikaner dairy industry, highlighting the importance of addressing issues related to pricing, transparency, infrastructure, and the role of cooperatives and private enterprises in the value chain.

The perspectives of other stakeholders, such as veterinary scientists and government officials directly involved in the dairy industry, provide valuable insights into a comprehensive understanding of the prospects for the dairy industry's value chain.

****Veterinary Scientists:****

- The three veterinary scientists expressed concerns about the absence of educational platforms and curricula specifically designed to cater to the needs of milk producers.
- Their concerns likely revolve around the importance of providing milk producers with access to education and training that can enhance their knowledge and skills in dairy farming.

****Government Servants: ****

- The eight government officials offered valuable feedback on initiatives taken by government that benefit farmers and the dairy industry.

- Their insights likely pertain to government programs, policies, and support mechanisms designed to uplift the dairy sector, which could include subsidies, training programs, or infrastructure development.
- The government officials also expressed concern about the lack of public support for their initiatives. They suggested that, despite government efforts, challenges in effectively implementing and executing these programs may arise due to limited public engagement or participation.

Overall, the perspectives of these stakeholders underscore the importance of education and support for milk producers, as well as the need for stronger public engagement and support to bolster the dairy industry's value chain in the Bikaner region.

V FACTORS IDENTIFIED

The findings of the study emphasize several critical points that require attention from both government sectors and non-government organizations:

1. **Curriculum Development:** There is a need to develop educational curricula tailored specifically for milk producers. This education should encompass best practices in dairy farming, milk preservation, and modern techniques to enhance milk production.
2. **Coordination and Supply Chain:** The study underscores the importance of improved collaboration between government agencies and academic institutions, and milk producers. A well-coordinated supply chain is essential for the efficient and uninterrupted flow of milk from producers to processing units.
3. **Transportation Infrastructure:** The absence of an airport and insufficient transportation facilities in Bikaner district present considerable obstacles for the dairy industry. Addressing this issue is crucial for ensuring smooth transportation of milk and dairy products.
4. **Road Conditions:** Poor Road conditions were identified as a barrier to milk supply to the dairy industry. Road infrastructure improvement should be prioritized to enable seamless transportation of milk and related goods.
5. **Financial Challenges:** The study highlights the industry's struggle with low cash inflow, which hampers its ability to invest in necessary heavy machinery. Strategies to improve the financial health of dairy businesses should be explored.

In conclusion, the study points to various systemic challenges and opportunities within the dairy industry in Bikaner. Addressing these issues will require collaborative efforts from government bodies, educational institutions, and industry stakeholders to create a conducive environment for sustainable dairy production and processing.

VI CONCLUSION

Dairy development has indeed emerged as a crucial component of India's rural economy over the past decade. Its importance extends beyond merely alleviating poverty, as it provides significant potential for increasing income and creating job opportunities for rural communities. This development is vital not only to address poverty but also to cover up the gap between the demand and supply of milk, particularly for India's underprivileged children who require proper nutrition.

To achieve the goal of ensuring adequate nutrition for underprivileged children, it is imperative that India focuses on boosting milk supply. This entails increasing milk production and processing capabilities to meet the nutritional needs of the population. Bikaner, with its considerable milk production potential, can play a pivotal role in this endeavor by adopting well-directed policies and strategies aimed at fostering the growth of the dairy industry.

Efforts should be directed towards supporting dairy farmers, improving infrastructure, enhancing milk processing, and facilitating the smooth transportation of dairy products. By harnessing its dairy potential and implementing effective policies, Bikaner can contribute significantly to addressing the nutritional needs of not only its own population but also the broader national goal of ensuring proper nutrition for all, particularly the most vulnerable segments of society.

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