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Assessing the Potential for Dairy Farming Assets in Shevgaon Tehsil: Insights from Milk Collection, Processing, and Export Trends

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Abstract

Dairy farming has emerged as a critical livelihood activity in the semi-arid regions of Maharashtra, particularly in drought-prone tehsil such as Shevgaon in Ahmednagar district, where agricultural income remains uncertain due to rainfall variability and limited irrigation (Government of Maharashtra, 2020; NDDB, 2022). The present study examines the potential for strengthening dairy farming assets in Shevgaon tehsil through an asset-based analytical framework linking milk collection patterns, processing infrastructure, and export trends. Primary data were collected through structured village-level surveys covering herd composition, dairy infrastructure, and milk marketing channels, while secondary data were sourced from cooperative institutions, private dairies, and official records (NSSO, 2014; NDDB, 2019). Dairy Asset Utilization Ratios and a Value Addition and Export Potential Index were computed to assess productivity, management efficiency, and market integration across revenue circles, following benchmarks suggested by Birthal et al. (2017) and NDDB (2019). The results reveal moderate utilization of milch animals across the tehsil but very low levels of value addition and processing in most revenue circles, indicating a structural gap between milk production and income realization. The study highlights the need for decentralized processing, stronger cooperative participation, and improved market connectivity to promote inclusive and sustainable dairy development in Shevgaon tehsil.

Keywords: Dairy Farming, Asset-Based Analysis, Milk Collection and Processing, Value Addition, Export Potential, Inclusive Rural Development.

Introduction

Dairy farming has become an increasingly important pillar of the rural economy in the semi-arid parts of Maharashtra, particularly in drought-affected tehsil such as Shevgaon in Ahmednagar district (Government of Maharashtra, 2020; NDDB, 2022). Under conditions of fluctuating rainfall and unstable crop yields, dairying offers farm households a dependable source of daily income, employment, and nutritional support (Birthal & Taneja, 2019; NSSO, 2014). Growing consumption of milk and dairy products at regional, state, and national scales has further strengthened the economic relevance of dairy-based livelihood systems (FAO, 2018; NDDB, 2023).

The pattern of dairy development in Shevgaon tehsil reflects a combination of agro-climatic, resource-based, and institutional factors. Differences in irrigation coverage, availability of fodder resources, prevailing cropping systems, and access to cooperative and private dairy institutions have shaped milk production and marketing outcomes across the tehsil (GOI, 2017; Government of Maharashtra, 2021). In recent years, the expansion of milk collection routes, the establishment of chilling and processing facilities, and stronger market linkages with urban and extra-regional demand centers have significantly altered the organization of the local dairy sector (NDDB, 2022; Planning Commission, 2013).

However, the observed increase in milk collection and processing activity does not uniformly correspond with the availability and effective use of dairy farming assets. Considerable spatial variation exists in the ownership and utilization of milch animals, physical infrastructure, equipment, and institutional facilities across villages and revenue circles (Birthal et al., 2017; GOI, 2019). Assessing the extent to which milk collection, processing capacity, and export orientation are supported by the existing asset base is therefore essential for identifying the actual development potential of dairying in the region (FAO, 2018).

In this context, the present study examines the potential for enhancing dairy farming assets in Shevgaon tehsil through an analysis of milk collection patterns, processing infrastructure, and export trends, with a view to promoting sustainable and inclusive dairy development (NDDB, 2023; Government of Maharashtra, 2020).

Study Area:

Shevgaon tehsil is located at the south of Ahmednagar district between 19°13'18" North to 19°33'57" North Latitude and from 75°01'48" to 75°32'44" East Longitude.

The total number of villages in the tehsil is 112. Total area of tehsil is 1031.85sq/km. The area under agriculture is 913.19 sq/km (88.5 %), under forest 11.57 sq/km (1.12 %), and remaining 107.09 sq/km (10.38 %) is used for other purpose. Average rainfall in Shevgaon tehsil is 501.7 mm.

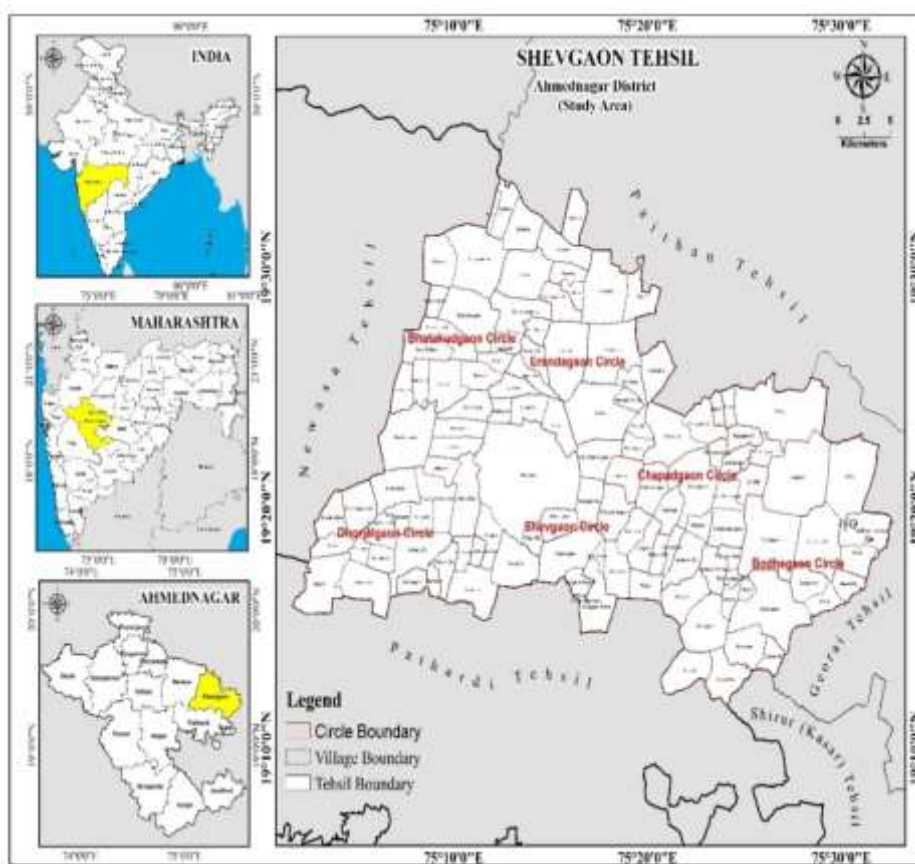


Fig. No. 1 Location map of Study Area

Objectives:

1. To assess the relationship between milk collection and processing trends and the existing dairy farming asset base in Shevgaon tehsil.
2. To evaluate the potential for strengthening dairy farming assets based on milk export linkages and value-addition capacity.

Methodology:

The study adopts an asset-based analytical framework to examine the relationship between milk collection and processing patterns and existing dairy assets in Shevgaon tehsil, while assessing opportunities for asset enhancement through value addition and export connectivity (BIRTHAL et al., 2017; FAO, 2018). Primary data were generated through structured village-level field surveys focusing on herd composition, dairy infrastructure, and milk marketing channels (NSSO, 2014). Secondary data on milk procurement, processing capacity, and dairy product exports were obtained from cooperative institutions, private dairies, and administrative records (NDDB, 2019).

Dairy Asset Utilization Ratios were calculated using normalized, ratio-based indicators and categorized as high, moderate, low, and very low to interpret management efficiency, breed quality, feeding practices, and resource constraints across villages (BIRTHAL et al., 2017; GOI, 2019). In addition, a Value Addition and Export Potential Index was computed as the percentage of milk processed and exported relative to total milk collected. Based on benchmarks suggested by NDDB (2019) and BIRTHAL et al. (2017), index values were classified into very low, low, and moderate categories to evaluate the extent of value addition and market integration of dairy activity within the study area.

1. **Dairy Asset Utilization Ratio** = Total Milk Collected (litres/day)/Total Milch Animals.
2. **Value Addition and Export Potential Index** = Milk Processed and Exported / Total Milk Collected X 100

Analysis and Discussion:

1. Dairy Asset Utilization Ratio:

Table No. 1.1 Dairy Asset Utilization Ratio of Shevgaon Tehsil

Sr. No.	Revenue Circle	Total Milch Animals	Total Milk Collected (Litres/Day)	Dairy Asset Utilization Ratio (Litres/Animal/Day)	Remarks
1	Shevgaon	8335	74725	8.97	Moderate asset utilization
2	Bhatkudgaon	6806	61700	9.07	Moderate asset utilization
3	Bodhegaon	7280	65835	9.04	Moderate asset utilization
4	Chapadgaon	5275	45080	8.55	Moderate asset utilization
5	Dhorjalgaon	6331	59845	9.45	Moderate asset utilization
6	Erandgaon	5637	46820	8.31	Moderate asset utilization

Source: Compiled by researcher from Livestock Census- 2024

Table No. 1.1 presents the Dairy Asset Utilization Ratio across six revenue circles of Shevgaon tehsil, highlighting the productivity and management efficiency of milch animals. The ratio, expressed as litres of milk produced per animal per day, serves as an important indicator of how effectively dairy assets are utilized at the regional level.

The analysis reveals that all six revenue circles fall within the range of moderate asset utilization, with values varying from 8.31 litres/animal/day in Erandgaon to 9.45 litres/animal/day in Dhorjalgaon. Dhorjalgaon records the highest utilization ratio, indicating comparatively better dairy management practices, possibly supported by improved feeding, breed composition, and access to basic veterinary services. Bhatkudgaon (9.07), Bodhegaon (9.04), and Shevgaon (8.97) also show similar levels of utilization, reflecting a relatively balanced and stable dairy production system across these circles.

Chapadgaon (8.55) and Erandgaon (8.31) record slightly lower ratios, suggesting constraints such as limited fodder availability, traditional animal husbandry practices, or variability in breed quality. Despite Erandgaon being an irrigated area, its moderate performance indicates that irrigation alone does not ensure higher dairy productivity unless accompanied by scientific feeding and herd management.

Overall, the uniformity in Dairy Asset Utilization Ratios across the tehsil suggests a homogeneous pattern of dairy development, dominated by small and marginal farmers practicing semi-intensive dairy farming. The absence of high utilization levels indicates scope for improvement through interventions such as breed upgradation, balanced ration programs, fodder development, and extension services. Strengthening these measures can significantly enhance productivity and income from dairy activities in Shevgaon tehsil.

2. Value Addition and Export Potential Index:

Table No. 1.2 analyses the Value Addition and Export Potential Index across six revenue circles of Shevgaon tehsil, indicating the extent of milk processing, value addition, and market integration within the local dairy sector. The index, measured as the percentage of milk processed and exported out of total milk collected, reflects the structural strength of the dairy value chain beyond primary production.

The results reveal that five out of six revenue circles exhibit very low to extremely low levels of value addition, with index values ranging from 5.94 to 8.83 per cent. Dhorjalgaon records the lowest index value (5.94 per cent), signifying heavy dependence on unprocessed milk sales and weak institutional support for dairy processing. Similarly, Shevgaon (7.99 per cent), Bhatkudgaon (8.83 per cent), Bodhegaon (6.87 per cent), and Chapadgaon (7.24 per cent) demonstrate very low value addition, indicating the dominance of traditional dairy systems focused on raw milk marketing. These areas show limited access to processing infrastructure, chilling facilities, and organized cooperative or private dairy networks, resulting in minimal conversion of milk into higher-value products.

Table No. 1.2 Value Addition and Export Potential Index of Shevgaon Tehsil

Sr. No.	Revenue Circle	Total Milk Collected (Litres/Day)	Milk Processed & Exported (Litres/Day)	Value Addition and Export Potential Index (%)	Remarks	Interpretation
1	Shevgaon	74725	5971	7.99	Very low value addition	Dairy activity dominated by raw milk sale; negligible processing or export
2	Bhatkudgaon	61700	5447	8.83	Very low value addition	Limited market integration and absence of processing infrastructure
3	Bodhegaon	65835	4525	6.87	Very low value addition	Traditional dairy system with subsistence-level value addition
4	Chapadgaon	45080	3263	7.24	Very low value addition	Low participation in organized dairy value chains
5	Dhorjalgaon	59845	3553	5.94	Extremely low value addition	Severe dependence on unprocessed milk sales; weak institutional support
6	Erandgaon	46820	8968	19.16	Low to moderate value addition	Emerging processing and cooperative/private dairy linkage

Source: Compiled by author Based on NDDDB and Birthal et al. benchmarks on milk processing and value addition in rural dairy regions.

In contrast, Erandgaon emerges as a relatively advanced revenue circle, with an index value of 19.16 per cent, categorized as low to moderate value addition. This reflects emerging processing activities and better integration with cooperative and private dairy channels. Factors such as improved physical connectivity, access to collection and chilling centres, and greater farmer participation in organized markets appear to support this transition. Although the level of value addition remains modest, Erandgaon demonstrates the potential benefits of institutional and infrastructural support in strengthening dairy value chains.

From an inclusive development perspective, the observed spatial disparity in value addition highlights a critical gap between milk production and income generation. While dairy farming is widely practiced across Shevgaon tehsil, the limited processing and export potential restricts farmers particularly small and marginal producers from capturing higher returns. Low value addition perpetuates income vulnerability, reduces employment opportunities, and constrains the role of dairy as a driver of rural development.

The findings underscore the need for inclusive dairy development strategies, including decentralised processing units, strengthening of dairy cooperatives, promotion of women-led value addition activities, and enhanced private sector participation. Improving value-chain integration can transform dairy farming from a subsistence activity into a sustainable livelihood option, thereby contributing to equitable income distribution and inclusive rural growth in Shevgaon tehsil.

Determinants of Value Addition in Dairy Activity:

The Value Addition and Export Potential Index in Shevgaon tehsil is closely linked to the availability and capacity of chilling and processing units, which determine the extent of milk processing and market integration. Table 2 presents the details of chilling/processing units, their daily capacity, total milk collection, export volumes, and milk actually processed. The data highlight significant disparities among revenue circles in infrastructure utilization and value addition.

- Availability and Capacity of Chilling and Processing Units:** Shevgaon tehsil has a total of 10 units across six revenue circles, with capacities ranging from 2,000 to 5,000 litres per day. Despite this, processing volumes remain minimal in most areas. For example, Shevgaon 1 and Shevgaon 2, with capacities of 2,000 litres/day each, collect over 730,000 litres per unit annually but process zero litres, indicating severe underutilization. Similarly, Bodhegaon and Chapadgaon units, though operating at medium-to-large capacities (2,000–5,000 litres/day), process negligible quantities relative to collection, reflecting structural and operational inefficiencies.
- Utilization Differences and Role of Cooperatives:** Bhatkudgaon shows a relatively higher level of processing, with Bhaygaon 1 processing 4,000 litres/day out of 14,60,000 litres collected annually. This suggests better cooperative engagement or private partnership in milk processing. Erandgaon demonstrates the highest effective processing, with 4,500 litres/day processed per unit, reflecting stronger linkages with cooperatives and better market integration. These variations indicate that institutional support is a key determinant in enabling value addition, particularly in regions with adequate production but low processing activity.
- Market Access and Connectivity:** The data further show that units located in areas with better connectivity, such as Erandgaon and parts of Bhatkudgaon, can effectively process and export milk. In contrast, units in Shevgaon,

Bodhegaon, Chapadgaon, and Dhorjalgaon, despite large collections, fail to process milk, suggesting constraints related to transport, marketing networks, and cold-chain infrastructure.

4. **Scale of Production and Processing Feasibility:** Units like Malegaon in Shevgaon, with partial processing of 330,000 litres out of 730,000 litres collected annually, demonstrate that even medium-scale production can support limited processing, provided there is coordinated management and market demand. However, widespread low processing in other revenue circles highlights that small-scale collection without adequate institutional or technical support limits value addition opportunities.
5. **Implications for Inclusive Development:** The uneven utilization of chilling and processing units has direct implications for income generation, employment, and equity. Revenue circles with negligible processing deprive small and marginal farmers of higher returns from value-added products, reinforcing dependence on raw milk sales. Strengthening cooperative participation, expanding processing capacity, and improving logistical support are crucial for inclusive dairy development, particularly for women and marginal farmers who are often engaged in milk collection and local processing.

Final Outcomes:

1. Dairy Asset Utilization Ratio (DAUR)

The Dairy Asset Utilization Ratio across six revenue circles ranges from 8.31 to 9.45 litres per animal per day, indicating moderate utilization of milch animals, with Dhorjalgaon showing the highest and Erandgaon the lowest values, suggesting that irrigation alone does not ensure higher productivity. Overall, dairy farming in Shevgaon tehsil is semi-intensive, dominated by small and marginal farmers, with homogeneous management patterns and scope for improvement through breed upgradation, better feeding, and veterinary support.

2. Value Addition and Export Potential Index (VAEPI)

Five out of six revenue circles show very low to extremely low value addition (<10%), indicating dominance of raw milk sales, while Erandgaon records the highest VAEPI (19.16%) due to emerging processing activities, cooperative/private dairy linkages, and better market integration. The low value addition in Shevgaon, Bodhegaon, Chapadgaon, and Dhorjalgaon reflects severe underutilization of processing capacity, limiting income, employment opportunities, and equitable benefits for small farmers, and highlighting the need for improved infrastructure, cooperative participation, and market access.

3. Determinants of Value Addition (Chilling and Processing Units):

The Dairy Asset Utilization Ratio across six revenue circles ranges from 8.31 to 9.45 litres per animal per day, indicating moderate utilization of milch animals, with Dhorjalgaon showing the highest and Erandgaon the lowest values, highlighting that irrigation alone does not ensure higher productivity. Overall, dairy farming in Shevgaon tehsil is semi-intensive, dominated by small and marginal farmers, with homogeneous management patterns and significant scope for improvement through breed upgradation, better feeding, and veterinary support.

4. Overall Inclusive Development Implications:

The dairy sector in Shevgaon tehsil exhibits high milk collection but low processing, with moderate animal productivity and very low value addition in most areas, while inclusive development is constrained by limited infrastructure, weak cooperative/private engagement, low market integration, and small-scale production. Strengthening decentralized processing, cooperative participation, cold-chain facilities, and farmer training can enhance income, employment, and equity, with revenue circles like Erandgaon serving as a model for replication to transform dairy farming into a sustainable livelihood source for small and marginal farmers.

Conclusion:

The present study assessed the relationship between milk collection, processing patterns, and the existing dairy farming asset base in Shevgaon tehsil using an asset-based analytical framework. The findings demonstrate that dairy farming has become an important economic activity across the tehsil, characterized by moderate levels of animal productivity and relatively uniform Dairy Asset Utilization Ratios across revenue circles. This homogeneity reflects the dominance of small and marginal farmers practicing semi-intensive dairy farming, with productivity constrained by limitations in breed quality, feeding practices, and access to veterinary and extension services (Birthal et al., 2017; GOI, 2019).

Despite reasonably stable milk collection levels, the study reveals a pronounced weakness in value addition and processing capacity utilization. Five out of six revenue circles exhibit very low Value Addition and Export Potential Index values, indicating a heavy dependence on raw milk sales and minimal integration into organized dairy value chains. The underutilization of existing chilling and processing infrastructure highlights institutional and logistical constraints rather than production shortfalls, reinforcing findings from earlier studies on rural dairy systems in India (FAO, 2018; NDDDB, 2019).

Erandgaon revenue circle emerges as a relative exception, demonstrating low to moderate value addition due to better cooperative and private dairy linkages, improved connectivity, and functional processing facilities. This spatial contrast underscores the critical role of institutional support, infrastructure utilization, and market access in transforming dairy farming from a subsistence activity into a value-oriented livelihood system. The results confirm that irrigation availability alone does not ensure higher dairy productivity or value addition unless complemented by effective asset management and market integration.

From an inclusive development perspective, the study highlights a significant disconnect between milk production potential and income generation for small and marginal farmers. Limited processing, weak cooperative participation, and inadequate cold-chain infrastructure restrict farmers' ability to capture higher returns from dairy activity, thereby constraining employment generation and income diversification (Government of Maharashtra, 2021; NDDDB, 2023). Strengthening decentralized processing units, promoting women-led and farmer-producer-based value addition, improving cooperative governance, and enhancing transport and cold-chain connectivity are essential for addressing these gaps.

Overall, the study concludes that dairy farming in Shevgaon tehsil possesses substantial untapped potential for inclusive rural development. Strategic investments in asset strengthening, institutional capacity building, and market-oriented value addition can significantly enhance the economic resilience of dairy-dependent households. Replicating successful models such as Erandgaon across other revenue circles can contribute to sustainable livelihood improvement and equitable growth within the regional dairy economy.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

References:

1. BIRTHAL, P. S., & TANEJA, V. K. (2019). Livestock sector in India: Opportunities and challenges. *Indian Journal of Agricultural Economics*, 74(1), 1–15.
2. BIRTHAL, P. S., JOSHI, P. K., & NEGI, D. S. (2017). Transforming Indian agriculture through livestock: Productivity, value chains and inclusive growth. *Agricultural Economics Research Review*, 30(2), 151–166.
3. CHAND, R., RAJU, S. S., & PANDEY, L. M. (2011). Growth crisis in agriculture: Severity and options at national and state levels. *Economic and Political Weekly*, 46(26–27), 37–46.
4. Food and Agriculture Organization (FAO). (2018). *Dairy development and inclusive growth in developing countries*. FAO Animal Production and Health Paper, Rome, pp. 1–120.
5. Food and Agriculture Organization (FAO). (2018). *Dairy development, value addition and market integration in developing countries*. FAO Animal Production and Health Working Paper, Rome, pp. 1–98.
6. Government of India (GOI). (2017). *Doubling farmers' income: Rationale, strategy and action plan*. NITI Aayog, New Delhi, pp. 45–92.
7. Government of India (GOI). (2019). *Basic animal husbandry statistics*. Ministry of Fisheries, Animal Husbandry and Dairying, New Delhi, pp. 1–145.
8. Government of Maharashtra. (2020). *Economic survey of Maharashtra*. Directorate of Economics and Statistics, Mumbai, pp. 233–260.
9. Government of Maharashtra. (2021). *State agricultural plan and livestock development report*. Department of Agriculture and Animal Husbandry, Mumbai, pp. 118–140.
10. National Dairy Development Board (NDDB). (2019). *Annual report 2018–19*. NDDB, Anand, Gujarat, pp. 42–76.
11. National Dairy Development Board (NDDB). (2022). *Status of dairy cooperatives and milk procurement in India*. NDDB, Anand, Gujarat, pp. 1–88.
12. National Dairy Development Board (NDDB). (2023). *Indian dairy sector: Performance, challenges and opportunities*. NDDB Annual Report, Anand, Gujarat, pp. 35–79.
13. National Sample Survey Office (NSSO). (2014). *Situation assessment survey of agricultural households*. Report No. 576, Ministry of Statistics and Programme Implementation, New Delhi, pp. 97–126.
14. Planning Commission. (2013). *Twelfth five year plan (2012–2017): Faster, more inclusive and sustainable growth*. Government of India, New Delhi, Vol. II, pp. 215–238.
15. Singh, R. P., & Chauhan, A. K. (2018). Role of dairy cooperatives in rural development of Maharashtra. *Indian Journal of Regional Science*, 50(2), 89–102.
16. Maharashtra. *Indian Journal of Regional Science*, 50(2), 89–102.