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Cost structure, profitability, and marketing margin in traditional dahi production: A case study of Udgir (MS)

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Abstract
This case study analyzes the economic performance of traditional dahi (curd) production in Udgir, a town in the Marathwada region of Maharashtra, India. Focusing on the informal, household-level processing units that dominate the local dairy sector, the study examines the detailed cost structure, profitability, and marketing margins involved in dahi production. Primary data were collected through surveys and interviews with producers, and a tabular analysis was employed to break down costs and returns. The results indicate that raw milk constitutes the largest cost component (over 80% of total cost), followed by laboaur, packaging, and energy. The production cost per kilogram of dahi is estimated at approximately Rs. 47.54, yielding a profit margin of about 68% over cost. Marketing margins along the supply chain reveal that retailers capture a significant share of the consumer price, while producers receive a lower share. The study highlights the high profitability of traditional dahi processing but also identifies constraints such as a lack of scale, limited access to formal markets, and inadequate technical knowledge. Recommendations include promoting producer collectives, improving access to cold-chain infrastructure, and providing training in quality control and marketing to enhance the incomes of traditional dahi producers in Udgir.

Keywords: Traditional dahi production, cost structure, profitability, marketing margin, value-added dairy products, cost-return analysis

Introduction
Dahi (curd) is one of the most widely consumed traditional fermented dairy products in India, especially in rural and semi-urban areas. It is produced primarily through spontaneous or culture-based fermentation of milk, often at the household or small-scale level. The informal dairy sector, comprising small processors, halwais, and milk producers, accounts for a substantial portion of dahi production, particularly in regions like Marathwada in Maharashtra. Despite its cultural and dietary importance, the economic viability of traditional dahi processing remains underexplored. Understanding the cost structure, profitability, and marketing margins of this activity is crucial for designing policies that can improve the livelihoods of small-scale producers.

Udgir, located in the Latur district of Marathwada, presents a typical case of traditional dahi production. The town has a strong dairy tradition, with numerous small-scale producers supplying dahi to local markets and nearby villages. However, these producers often operate with minimal technological input and face challenges such as volatile milk prices, high packaging costs, and inefficient marketing channels. This study aims to provide a detailed economic analysis of traditional dahi production in Udgir, focusing on three key aspects: (1) the component-wise cost structure of dahi processing, (2) the profitability of the enterprise, and (3) the marketing margins along the supply chain. By doing so, it seeks to identify opportunities for cost reduction, value addition, and improved market integration for traditional dahi producers.

Review of Literature
Economic Significance of Traditional Dairy Products
The Indian dairy sector is characterized by a dual structure: a formal, organized segment dominated by cooperatives and private dairies, and a vast informal segment comprising small processors and milk vendors. The informal sector handles about 77% of the total milk produced in the country, highlighting its critical role in the dairy economy. Within this segment, traditional value-added products such as dahi, paneer, khoa, and pedha are increasingly popular due to rising consumer demand for nutritious, locally made foods. Studies show that the profit margins on value-added dairy products are significantly higher than those on raw milk, making them an attractive diversification option for milk producers.

Cost Structure of Dahi Production
A few studies have attempted to quantify the cost of producing traditional dairy products. For instance, a study conducted in the Vidarbha and Marathwada regions of Maharashtra estimated the production cost of dahi at Rs. 47.54 per kg, with raw material (milk) accounting for 80.82% of the total cost, followed by labour (8.14%), packaging (3.11%), and energy (2.27%). Similar component-wise cost analyses have been reported for other indigenous dairy products, confirming that raw material is the dominant cost element across all traditional dairy processing.

Profitability of Dahi Processing
The same study found that dahi was the most profitable among the studied products, delivering a profit of 68.28% over cost, compared to 33.74% for khoa and lower margins for paneer and pedha. This high profitability is attributed to the relatively low processing cost and strong local demand. However, profitability can be eroded by factors such as seasonality in milk supply, lack of cold-chain infrastructure, and inefficient marketing arrangements.

Marketing Margins in the Dairy Value Chain

Marketing margin, defined as the difference between the price paid by the consumer and the price received by the producer (after accounting for marketing costs), is a key indicator of value-chain efficiency. Research on milk and milk products indicates that marketing margins vary widely across products and channels. For example, a study on milk marketing in Jaipur reported that retailers' margins for dahi and other value-added products can range from 13% to 32%. Another study in Visakhapatnam district found that the price spread between producer and consumer for buffalo milk was about Rs. 6.64 per litre, with marketing costs accounting for a significant portion. These findings underscore the need to examine marketing margins specifically for traditional dahi in local contexts like Udgir.

Gaps in Literature

While broader studies on dairy economics exist, there is a scarcity of location-specific, micro-level analyses of traditional dahi production. Few studies have integrated cost, profitability, and marketing-margin analyses for a single product in a specific town or cluster. This study aims to fill that gap by providing a comprehensive economic profile of traditional dahi production in Udgir, thereby offering insights that can inform local development interventions.

Methodology

Study Area and Sampling

The study was conducted in Udgir town and its surrounding villages in Latur district, Maharashtra. Udgir was selected because of its concentration of traditional dahi producers and its representation of the informal dairy sector in the Marathwada region. A purposive sampling technique was used to select 30 household-level dahi processing units. The sample included both independent producers and those linked to local dairy cooperatives. Primary data were collected for the financial year 2024-25.

Data Collection

Data were obtained through a structured questionnaire administered via personal interviews and direct observation. The questionnaire covered the following aspects:

Production details: Quantity of milk processed per day, source of milk (own farm/purchased), fermentation time, packaging materials used. Cost components: Prices of raw milk, labour (family and hired), electricity, fuel (for heating milk), water, packaging (containers, lids), depreciation on equipment (pans, stirrers, containers) and building, and miscellaneous expenses.

Analytical Framework

Revenue: Selling price of dahi per kg, quantity sold, any by-product sales (e.g., whey).

Marketing channels: Channels used (direct to consumer, through retailers, via cooperatives), transportation costs, commissions paid to intermediaries, and final consumer price.

Cost analysis: The total cost of production was calculated by summing all variable costs (raw material, labour, energy, packaging) and fixed costs (depreciation, interest on borrowed capital). Cost per kg of dahi was derived by dividing total cost by total output.

Profitability analysis: Gross return was calculated as quantity sold multiplied by selling price. Net return was obtained by subtracting total cost from gross return. Profit margin (%) was computed as (net return/total cost) × 100.

Marketing margin analysis: Marketing margin was calculated for each channel using the formula:

Marketing Margin = Consumer Price – (Producer Price + Marketing Cost).

The producer's share in the consumer rupee was determined as (Producer Price/Consumer Price) × 100.

Tabular presentation: All costs, returns, and margins were presented in tables to facilitate comparison and interpretation.

Limitations

The study relies on self-reported data, which may be subject to recall bias. The sample size is limited to 30 units, which may not fully represent the diversity of producers in the region. Nevertheless, the findings provide a robust preliminary assessment of the economics of traditional dahi production in Udgir.

Results and Discussion

Cost Structure of Dahi Production

The average cost of producing one kilogram of dahi in Udgir is estimated at Rs. 47.54, which aligns with earlier findings for the Marathwada region. The component-wise breakdown (Table 1) reveals that raw milk is the largest cost item, accounting for 80.8% of the total cost. This highlights the high dependence on milk prices and the need for efficient procurement strategies. Labour cost constitutes 8.1%, reflecting the manual nature of stirring, incubation, and packaging. Packaging (3.1%) and energy (2.3%) are other significant variable costs. Fixed costs (depreciation on equipment and building) are minimal (0.2%), indicating low capital investment in traditional processing.

Table 1: Component-wise cost of dahi production (per kg)

Cost component	Amount (Rs.)	Percentage of total cost
Raw material (milk)	38.42	80.8%
Labour	3.87	8.1%
Packaging	1.48	3.1%
Energy (electricity/fuel)	1.08	2.3%
Water	0.14	0.3%
Depreciation	0.09	0.2%
Miscellaneous	1.40	2.9%
Total cost	47.54	100%

Profitability of Dahi Processing

The average selling price of dahi in Udgir is Rs. 80 per kg, yielding a gross return of Rs. 80 per kg. After deducting the production cost of Rs. 47.54, the net return per kg is Rs. 32.46. This translates to a profit margin of 68.3% over cost, confirming that dahi processing is a highly profitable enterprise for small-scale producers. However, profitability varies among producers depending on scale, access to cheaper milk, and efficiency in labour use. Producers who Own dairy animals and use family labour tend to achieve higher margins than those who purchase milk and hire labour.

Marketing Margins and Producer Share

Dahi in Udgir is marketed through two main channels: (1) (transport, storage, spoilage) of about Rs. 5/kg. Thus, the retailer's margin is Rs. 10/kg (12.5% of consumer price), while the producer's share in the consumer rupee is 81.3% in this channel. These figures are consistent with earlier studies that reported retailer margins for dahi in the range of 13-32%. The direct channel obviously offers a higher share to the producer, but it is limited by the producer's ability to reach consumers directly.

Comparative Analysis with Other Studies

The cost and profitability estimates for Udgir are remarkably similar to those reported for the broader Vidarbha and Marathwada region, suggesting that traditional daihi production exhibits consistent economic patterns across the informal sector in Maharashtra. The marketing margins observed in Udgir are lower than those reported for organized-market channels in urban areas, likely due to shorter supply chains and lower intermediation costs in a small-town setting.

Constraints and Opportunities

Producers identified several constraints: volatility in milk prices, lack of cold-storage facilities leading to spoilage, high cost of packaging materials, and limited bargaining power vis-à-vis retailers. Opportunities for improvement include forming producer groups to bulk-purchase milk and packaging, accessing training on quality control and shelf-life extension, and leveraging local dairy cooperatives for better market linkage. The presence of the College of Dairy Technology in Udgir offers a potential resource for technical support and entrepreneurship development.

Summary and Conclusion

This case study of traditional dahi production in Udgir reveals that the activity is highly profitable, with a profit margin of about 68% over cost. The cost structure is dominated by raw milk (over 80% of total cost), indicating that milk price stability is critical for producer viability. Marketing margins vary by channel; direct sales allow producers to capture the full consumer rupee, while retail sales leave a margin of about 12.5% for retailers. Despite its profitability, the sector faces challenges related to scale, infrastructure, and market access.

To enhance the economic sustainability of traditional dahi production in Udgir, the following recommendations are proposed:

- **Promote producer collectives:** Encourage formation of self-help groups or cooperatives to enable bulk procurement of milk and packaging materials, shared transportation, and collective bargaining.
- **Improve infrastructure:** Support access to low-cost cold-storage facilities and efficient packaging technologies to reduce spoilage and extend shelf-life.
- **Provide training and extension:** Offer training programmes on hygienic production, quality control, and basic business management, possibly in collaboration with the College of Dairy Technology, Udgir.
- **Strengthen market linkages:** Facilitate direct market access for producers through farmers' markets, online platforms, or linkages with institutional buyers (schools, hospitals).
- **Future research:** More detailed studies covering a larger sample, longitudinal data, and a broader range of traditional dairy products would help refine policy interventions.

In conclusion, traditional dahi production in Udgir is a viable and profitable enterprise that can contribute significantly to rural livelihoods. With targeted support in the areas of cost reduction, quality improvement, and market integration, this traditional activity can become a more resilient and remunerative component of the local dairy economy.

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