



ISSN (E): 2277-7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2022; SP-11(8): 235-239  
© 2022 TPI  
[www.thepharmajournal.com](http://www.thepharmajournal.com)  
Received: 01-05-2022  
Accepted: 04-06-2022

#### Mandeep Kaur

Research Scholar, Department of  
Agricultural Economics,  
GBPUAT, Pantnagar,  
Uttarakhand, India

#### Shweta Chaudhary

Assistant Professor, Department  
of Agricultural Economics,  
GBPUAT, Pantnagar,  
Uttarakhand, India

#### Kiran Rana

Assistant Professor, Department  
of Agricultural Communication,  
College of Agriculture,  
GBPUAT, Pantnagar,  
Uttarakhand, India

#### Chandra Dev

Associate Professor, Department  
of Agricultural Economics,  
GBPUAT, Pantnagar,  
Uttarakhand, India

#### Supriya

Assistant Professor, Department  
of Agricultural Economics,  
College of Agriculture,  
ANDUAT, Kumarganj,  
Ayodhya, Uttar Pradesh, India

#### Corresponding Author

#### Mandeep Kaur

Research Scholar, Department of  
Agricultural Economics,  
GBPUAT, Pantnagar,  
Uttarakhand, India

## Economics and marketing of dairy products in cooperative sector of Uttarakhand: A case study of Aanchal plant in Udham Singh Nagar district of Uttarakhand

**Mandeep Kaur, Shweta Chaudhary, Kiran Rana, Chandra Dev and Supriya**

#### Abstract

The research was carried out in a district-level milk co-operative union, Udham Singh Nagar Dugdh Utpadak Sahakari Sangh Limited, Khatima, registered under the brand name 'AANCHAL' (U.S. Nagar). The study relied on descriptive statistical methods, financial efficiency ratios, and Garrett ranking. Financial efficiency of the dairy co-operative plant helps to explore the possibilities of lowering the cost and improving the efficiency of the plant. Procurement costs were the most significant cost component of key milk products. The key milk products whose cost and returns were calculated were curd, ghee, butter, and paneer. The operating ratio, fixed ratio and gross ratio values were observed to be less than one and the capital turnover ratio were observed to be greater than one. The milk producers experienced severe difficulties in the acquisition of milk due to price fluctuations, late and poor compensation, high feed costs and seasonal variance.

**Keywords:** AANCHAL plant, capital turnover ratio, statistical tools, economics, financial efficiency, Garrett ranking

#### Introduction

Uttarakhand Co-operative Dairy Federation Limited came into existence after the existence of Uttarakhand to compete with private sector so as to boost the dairy productivity. It covers all 13 districts of the state through its 11 District Level Member Co-operative Milk Unions among which one is Udham Singh Nagar Dugdh Utpadak Sahakari Sangh Ltd. located in Khatima. It is district level milk co-operative union registered under the brand name 'Aanchal'. Variety of milk products are being produced in the plant namely flavored milk, full cream milk, double toned milk, standard milk, butter, ghee, curd, paneer, skimmed milk etc. For rural families, dairying is a significant source of income and employment. India is currently the world's largest producer of milk, and the dairy industry plays a significant part in improving the rural economy. In addition, milk output has been continuously growing over time. Many families are supported by the dairy industry, which is supported by the country's co-operative societies. Dairy has a greater potential for improving rural income and nutrition, therefore it's an important sector to invest in. The sourcing, processing, packing, and retailing of high-quality products at the lowest cost are all part of a dairy plant's efficiency. The utmost objective of today's era is to reduce plant expenses and improve the efficiency of all activities. Despite its higher quality and hygienic value, due to inefficient procurement techniques, it is unable to attract customers. As a result, a study was done at Udham Singh Nagar Dugdh Utpadak Sahakari Sangh Ltd. to investigate plant's cost and return structure, as well as its financial efficiency and the difficulties it faces in milk procurement.

#### Review of Literature

Badadare (2010) <sup>[1]</sup> worked out costs, returns and net returns of the Hanuman (Yalgud) Co-operative dairy unit in Kolhapur district. The analysis was based on information from the dairy unit's yearly reports and personal interviews with its officials. The information was gathered in order to determine the cost per kg of dairy unit acquisition, processing and delivery. According to the report, the dairy unit raised a total of Rs. 748.30 lakhs in capital. According to the findings, the dairy unit was operating effectively, and the organizational structure of the

chosen unit was well-defined, with suitable assignment of jobs and responsibilities.

Kaware (2011) <sup>[3]</sup> worked out cost and returns of co-operative and private dairy business in his study, An economic appraisal of dairy enterprise in western Maharashtra. The research was conducted using both macro and micro data. According to the findings, milk output increased from 19.09 lakh tonnes in 1981-82 to 74.55 lakh tonnes in 2008-09. The co-operative and government sectors collected the most milk, while the private sector collected the least. In the organized sector, co-operative dairy unions and co-operative dairy societies have grown tremendously and made spectacular development in the state.

Sujatha *et al.* (2015) <sup>[7]</sup> investigated Marketing in milk of Co-operative Sector and Private Sector in Andhra Pradesh and observed that major quantity of the milk produced is marketed through co-operatives and private firms only. The research reveals constraints such as declining water and fodder resources, as well as animal breeding rules in the country, which resulted to a downward trend in genetic diversity, draught power, and other factors. According to the study, intense expansion of fodder resources, such as extending the area under fodder crops and contract farming, can boost milk output, and improved breeds can only produce high milk yields if they are given the proper diet, water, labor, and veterinary care.

Patel (2016) <sup>[4]</sup> made an attempt to evaluate the past and present financial position of the chosen district dairy co-operatives in Gujarat. During the research, ratios such as average gross profit ratio, net profit ratio, current ratio, liquidity ratio, return on equity, and others were calculated. Only three unions were found to have a favorable net profit ratio and current ratio. According to the report, management should work to raise net profits and strengthen marketing methods in order to boost sales.

Talal (2016) <sup>[9]</sup> assessed the role of financial analysis in evaluating the performance of industrial enterprises to predict financial failure with the help of financial ratios. In the study, four financial measures were used: ratio of current assets to total assets, debtors to sales, net profit to current liabilities, and market value to capital to book value of total debt. The study aims to develop a quantitative model that can be used to assess the performance of industrial sectors and anticipate their success. The model also revealed that numerous financial ratios aren't required to predict the failure of a company's financial performance.

### Materials and Methods

Since, there is just one Uttarakhand Co-operative Dairy Federation plant, Udham Singh Nagar Dugdh Utpadak Sahakari Sangh Ltd. (AANCHAL), in Udham Singh Nagar district, the study was limited to Udham Singh Nagar Dugdh Utpadak Sahakari Sangh Ltd. The primary data was gathered using a well-structured survey schedule, while the secondary data was gathered from a variety of published and unpublished sources, including yearly reports and official dairy plant records. Data was obtained from milk producers' co-operative societies that supply milk to the dairy plant, and these milk producers' co-operative societies were chosen using a proportionate technique from three chilling centres of the dairy plant to rank the milk procurement constraints. The following is the analytical framework that was used to achieve the goals:

### Estimation of cost and returns of major milk products of Aanchal milk plant

Curd, Butter, Ghee, and Paneer were the top milk products identified after the survey. To calculate costs and returns, the following procedure was used:

#### Total Fixed Cost

Depreciation on buildings, machinery, and equipment, as well as interest on fixed capital, were all included.

#### Total Variable cost

It included costs for raw materials, packaging and marketing, electricity, phone calls, transportation and other expenses.

Thus,

$$\text{Total cost} = \text{Total Fixed Cost} + \text{Total Variable Cost}$$

#### Gross Returns

Returns were treated as receipts for milk products. It contained the value of milk products produced, interest earned, and dividends received from other organizations' shares, among other things.

$$\text{Net Returns} = \text{Gross returns} - \text{Total cost}$$

### To examine the financial efficiency of dairy co-operative plant

Financial efficiency of the dairy plant was calculated with the help of appropriate ratios for a period of successive three years.

$$\text{Operating ratio} = \frac{\text{Total operating cost}}{\text{Gross income}}$$

$$\text{Fixed ratio} = \frac{\text{Total fixed cost}}{\text{Gross income}}$$

$$\text{Gross ratio} = \frac{\text{Total expenses}}{\text{Gross income}}$$

$$\text{Total expenses} = \text{Total fixed cost} + \text{Total operating Cost}$$

All the above ratios if less than 1, would indicate that organization is able to meet out its expenses.

$$\text{Capital turnover ratio} = \frac{\text{Gross income}}{\text{Average capital investment}}$$

If capital turnover ratio is greater than 1, indicates that organization is able to generate profit.

### Constraints faced in milk procurement

The Garrett ranking approach was selected. The samples were asked to rank the specified milk procurement limitations. Following that, their ranks were transformed into percent positions using the following formula, which were then converted back to scores using Garrett and Woodworth's table (1969).

$$\text{Percent position} = \frac{100 * (R_i - 0.5)}{N_j}$$

Where,

$R_{ij}$  = Rank given to  $i^{th}$  constraint by  $j^{th}$  individual

$N_j$  = Number of constraints ranked by  $j^{th}$  individual

The scores of individual respondents were then summed and divided by the total number of respondents from whose scores were obtained for each limitation. Constraints were ranked according to their mean scores for the factors, which were organized in descending order.

**Results and Discussion**

**Estimation of cost and returns of major milk products of Aanchal milk plant**

18605318.60 kg of milk was purchased throughout the year, with an average of 50973. Every day, 47 kg of milk is procured. The dairy cooperative factory produced a total of 12043726.4 kg of milk products. Table 1 shows the cost per kg of key milk products by component.

**Curd production**

The Khatima dairy facility produces curd, which is one of the most significant dairy products. It is available in a variety of milk parlors and retail shops around the region. The raw material cost, which accounted for Rs. 19.29 per kg, or around 41.4 percent of the overall cost, was the most important cost component in curd production. For the fiscal year 2018-19, the net returns from total curd production at the Khatima dairy plant were Rs. 3.36 per kg, accounting for 3.2 percent of the dairy plant's gross profits.

**Butter production**

The cost of raw materials in butter production was Rs. 122.69 per kg, or around 41.38 percent of the overall cost, and the cost of packaging and marketing was Rs. 15.38 per kg. The variable cost was Rs. 267.69 per kg, accounting for about 90.30 percent of the overall cost, and the total fixed cost was Rs. 28.75 per kg, accounting for approximately 9.70 percent of the total cost. The net returns per kg from butter production were Rs. 113.55, accounting for 3% of the dairy plant's gross profits.

**Ghee production**

The agency price for one kg of ghee is Rs. 440, whereas the consumer price is Rs. 470. Raw material costs contributed for 40.87 percent of total costs in ghee production, with Rs. 147.58 per kg, and packaging and marketing costs accounted for 8.25 percent. The net returns from ghee production were Rs. 108.99 per kg, accounting for 2.6 percent of the dairy plant's gross profits.

**Paneer production**

In the 2018-19 fiscal year, the Khatima facility produced 97932.2 kg of paneer. Paneer production has a total variable cost of Rs. 268.76 per kg and a total fixed cost of Rs. 32.56 per kg. The cost of raw materials was Rs. 123.18 per kg, or around 40.88 percent of the overall cost. The net profit from paneer production was Rs. 23.67 per kg.

**Table 1:** Component wise cost of production and returns from the major milk products (Rs. /kg)

Cost Components	Curd production	Butter production	Paneer production	Ghee production
<b>Variable cost</b>				
Raw material cost	19.29	122.69	123.18	147.58
Transportation	10.31	65.57	65.83	78.87
Electricity/ Refrigeration	1.88	11.98	12.03	14.41
Fuel	2.03	12.91	12.96	15.53
Water	0.07	0.5	0.51	0.61
Labor Charges	2.01	12.81	12.86	15.41
Repair and maintenance	3.89	24.77	24.87	29.8
Packaging and marketing	2.41	15.38	15.44	18.5
Other miscellaneous test	0.16	1.04	1.04	1.25
Total variable cost	42.1	267.69	268.76	322
<b>Fixed cost</b>				
Depreciation	2.89	18.38	18.46	22.11
Interest	1.63	10.37	10.41	12.47
Others	0.57	3.67	3.69	4.42
Total fixed cost	4.52	28.75	32.56	39.01
Total cost	46.52	296.44	301.32	361.01
Gross returns	50	410	325	470
Net returns	3.36	113.55	23.67	108.99

**Financial efficiency of the dairy cooperative plant**

The financial efficiency of the dairy co-operative plant was analyzed for the past three years and was measured with the

help of appropriate ratios. Table 2 shows the operational ratios, fixed ratios, gross ratios, and capital turnover ratios for the dairy co-operative factory over the last three years.

**Table 2:** Values of financial efficiency ratios for three years

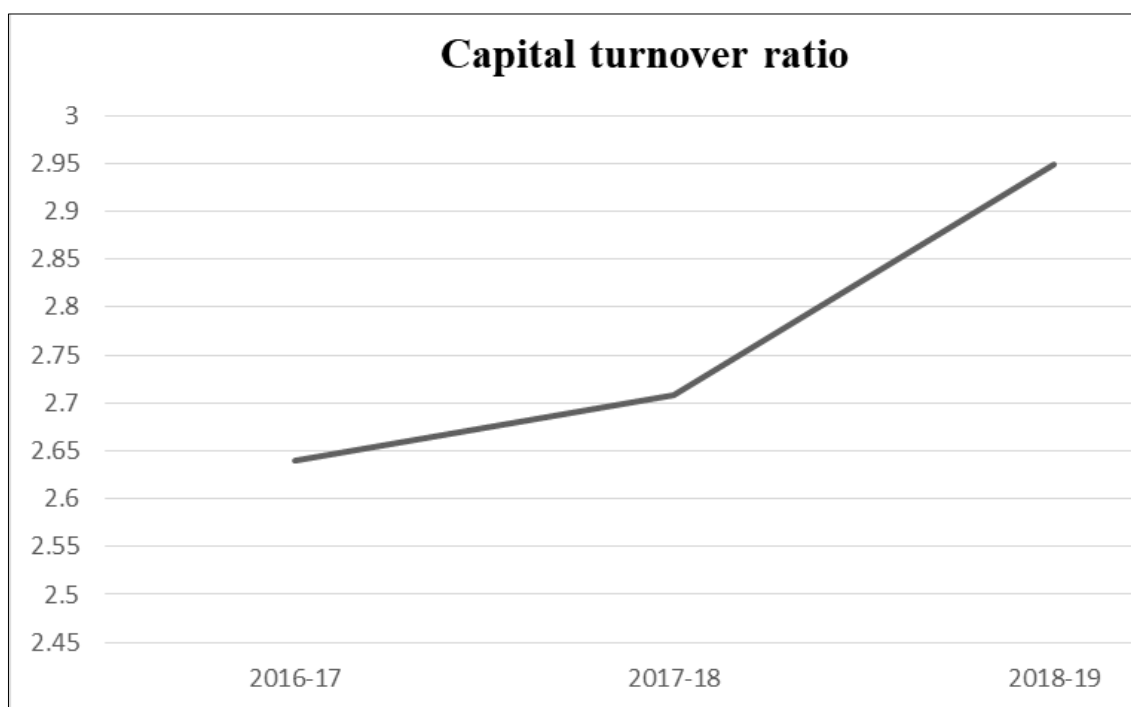
Ratio	2016-17	2017-18	2018-19
Operating ratio	0.096	0.109	0.112
Fixed ratio	0.052	0.063	0.066
Gross ratio	0.149	0.172	0.179
Capital turnover ratio	2.64	2.708	2.949

During the analysis the operating ratio for the past three years was less than one i.e., 0.096 in 2016-17, 0.109 in 2017-18 and

0.112 in 2018-19. Similarly, fixed ratio and gross ratio values were less than one, fixed ratio value being 0.052 in 2016-17,

0.063 in 2017-18, 0.066 in 2018-19 and gross ratio value 0.149 in 2016-17, 0.172 in 2017-18 and 0.179 in 2018-19. These ratios indicate that organization is able to meet out its expenses effectively. The capital turnover ratio value for three years was revealed to be greater than one. During 2016-17 capital turnover ratio was 2.64 which increased to 2.708 in

2017-18 and later increased to 2.949 in 2018-19. The increment in the capital turnover ratio signifies that dairy co-operative plant is able to utilize its capital efficiently so as to maximize its profit year by year and gain maximum output. Further fig:1 represents the growth in the capital turnover ratio for three years.



**Fig 1:** Growth in the capital turnover ratio for three years

**Constraints faced in milk procurement**

The dairy plant's significant milk procurement restrictions are price fluctuation, which received a score of 68.3, followed by untimely and incorrect remuneration, which received a score of 61.9, and seasonal variance, which received a score of 60.9. The minor obstacles were insufficient veterinary

facilities and the lack of insurance coverage. Milk producers' cooperative organizations must endeavor to alleviate these obstacles in order to enhance milk output and maximize sales. The difficulties faced by milk producers supplying milk to the dairy plant are depicted in Table 3.

**Table 3:** Rank of milk procurement constraints

Constraints	Dairy plant	
	Score	Rank
High cost of production	44.7	11
Seasonal variation	60.9	3
Inadequate veterinary facilities	29.8	15
Lack of technical guidance	42.6	13
Lack of management	45.7	8
Lack of knowledge regarding schemes related to dairy activities	45	10
Shortage of labor	45.4	9
lack of credit facility	46.7	7
Untimely and improper compensation	61.9	2
High expenses of feed	60	4
Lack of storage facilities	59.8	5
Fluctuation in prices	68.3	1
Unavailability of insurance facilities	41.4	14
Willing to associate with the dairy plant	44.2	12
Lack of infrastructural development	47.6	6

**Conclusion and Implications**

Because the majority of dairy farmers in the state are small and marginal farmers who rely on dairy for subsistence, there is a strong desire to encourage a larger number of milk producers to join the dairy co-operative plant. Even though the dairy industry has a lot of potential, many people are

ignorant of the benefits they may get from it. Local, state, and federal interventions are required to persuade milk producers to sell their milk-to-milk producers' co-operative societies and increase milk procurement. In addition, as identified in the analysis of milk procurement constraints, actions must be implemented to address the key challenges faced by milk

producers, such as untimely and inappropriate payments, price fluctuations, and high feed expenses, among others.

#### Limitations and directions for future research

Inevitably, the study is subject to limitations. One of the study's limitations is time constraint and spread of pandemic COVID-19. The study was based on information collected from the staff members of the dairy plant and the milk co-operative societies associated with it. Another limitation is the lack of comparability of the present study results with the other private sector industries. Future research in the dairy sector can be conducted using both qualitative and quantitative method to develop a deeper and broad understanding of private and public sector dairy industries. The research can also focus on a larger sample of firms over an extended period and links from different economies to strengthen the empirical results of the present study. The study would be of great help to policy makers to enhance the performance of dairy co-operatives.

#### Acknowledgement

This article has been drawn from a M.Sc. Ag Thesis entitled "Study of Procurement and Processing of milk and milk products of Aanchal milk plant in Udham Singh Nagar district of Uttarakhand" by Ms. Mandeep Kaur. Authors are highly grateful to all members of all Advisory Committee viz: Dr M. L. Sharma and Dr Chandra Dev for their valuable support and cooperation extended during conducting study and completion of research work.

#### Conflict of interest

The authors claim to be free of any conflicts of interest.

#### References

1. Badadare, Digvijay V. Economic Evaluation of Hanuman (Yalgud) Co-operative Dairy unit in Kolhapur district- a case study. Thesis, Master of Science in Agriculture (Agricultural Economics), Mahatma Phule Krishi VidyaPeeth, Rahuri, 2010, 96-102p.
2. Bansal Sonal. A comparative analysis of milk procurement system followed by cooperative and private sector milk processing units. Thesis, Master of Business Administration (Agricultural Economics), Punjab Agricultural University, Ludhiana, 2010, 18-44.
3. Kaware SS. An Economic appraisal of dairy enterprise in western Maharashtra. Thesis, Ph.D. (Agricultural Economics), Mahatma Phule Krishi Vidyapeeth, Rahuri, 2011, 230-260p.
4. Patel, Ashavkumar K. Empirical study of the financial performance of selected district Dairy co-operatives in Gujarat. Thesis, Ph.D. (Business Studies), Sardar Patel University, Vallabh Vidyanagar, 2016, 239-252.
5. Rangaswamy N. Economics of milk procurement in a co-operative dairy plant in Tamil Nadu. Thesis, Master of Science in Dairying (Dairy Economics), National Dairy Research Institute, Karnal, 2001, 73-78.
6. Roy SK. A Study on the Financial Performance of Farmer Producer Companies with Special Reference to Northeast India. Amity Journal of Agribusiness. 2017;2(1):38-55.
7. Sujatha RVTA. Milk Marketing in Co-operative sector and Private sector in Andhra Pradesh, India: A Comparative Study. International Journal of Scientific and Research Publications, 2015, 5(12).

8. Singh K. Financial Performance Evaluation of Dairy Cooperative Federations: Comparative study, Punjab and Haryana. Radix International Journal of Economics and Business Management, 2014, 3(10).
9. Talal AK, Kouachi M, Nasruldeen A. The role of financial analysis in evaluating the performance of industrial enterprises to predict financial failure. Revue Sciences Humaines. 2016;(45):91113.