Study on Factors Affecting Milk Procurement and Constraints Faced in Milk Procurement in Udham Singh Nagar District of Uttarakhand

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ABSTRACT: The study was conducted in Udham Singh Nagar Dugdh Utpadak Sahakari Sangh Limited, Khatima (U.S. Nagar). It is a district level milk co-operative union registered under the brand name 'AANCHAL'. Descriptive statistical tools, multiple regression analysis and Garrett ranking were used for the study. Positive and statistically significant regression coefficients of average number of members per milk producers' co-operative societies per month and average price paid to milk producers per month indicated that quantity of milk procurement was positively influenced by these factors. Fluctuation in prices, untimely and improper compensation, high expenses of feed and seasonal variation were the severe constraints faced by the milk producers in the procurement of milk.

Keywords: Economics, AANCHAL Milk Plant, Descriptive statistical tools, Multiple regression analysis, Regression coefficients, Garrett ranking.

INTRODUCTION

Uttarakhand Co-operative Dairy Federation Limited came into existence as a successor body to Uttar Pradesh Co-operative Dairy Federation Limited after the formation of Uttarakhand. It covers all the 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 a district level milk co-operative union registered under the brand name 'Aanchal'. Number of milk products are being established in the plant namely flavored milk, full cream milk, toned milk, standard milk, butter, ghee, curd, paneer, skimmed milk etc. Dairying is an important source of income and employment for rural families. India, at present is the largest producer of milk in the world and the dairy sector assumes a great role in improving the rural economy. Also, the milk production has been increasing steadily over the years. The dairy sector supports numerous families through co-operative societies existing in the country. Dairy has a lot of potential to improve rural income and nutrition hence, is a very critical area for investment. Numerous factors have been affecting the procurement level of milk due to which people are at times willing to sell the milk to the private sectors without considering the government sectors. In spite of, its better quality and hygiene value it is not able to attract consumers due to its inefficient procurement strategies. Therefore, a study was conducted in Udham Singh Nagar Dugdh Utpadak Sahakari Sangh Ltd. to study the factors affecting the milk procurement and to find out the constraints faced in milk procurement.

MATERIALS AND METHOD

There is only one Uttarakhand Co-operative Dairy Federation plant i.e., Udham Singh Nagar DugdhUtpadakSahakari Sangh Ltd. (AANCHAL), in Udham Singh Nagar district. Therefore, the study was confined to Udham Singh Nagar DugdhUtpadakSahakari Sangh Ltd. The primary data was collected using well-structured survey schedule and the secondary data was collected from various published and un-published sources such as annual reports and official records of the dairy plant. To identify the procurement constraints, data were collected from the milk producer's co-operative societies supplying milk to the dairy plant and these milk producers' co-operative societies were selected using proportionate method from three chilling centers of the dairy plant to rank the constraints regarding the milk procurement. The analytical framework adopted for the attainment of objectives is as follows:

A. To study various factors on the level of milk procurement
Multiple regression analysis was used which is a situation where Y is a function of several explanatory variables. Following functional form of the model was used:

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + U$

Where,
Y= Qty of milk procured per month (kg).
X_1 = Average number of members per milk producers' co-operative societies per month (No.).
X_2 = Average price paid to milk producers per month (Rs.).
X_3 = Average commission paid to milk producers co-operative societies per month (Rs.).

X_4 = Average amount spent on transportation for procurement of milk per month (Rs.).

U = error

Before undertaking regression analysis multicollinearity among the explanatory variables was examined, thereafter multiple regression model was used to estimate parameters using optimum least square technique. The estimated parameters were later tested for their significance using statistic.

B. Constraints faced in milk procurement

Garrett ranking technique was used. The samples were asked to rank the given constraints related to milk procurement. Thereafter, ranks given by them were converted into the per cent position by using the following formula which were later again converted to scores by referring to table given by Garrett and Woodworth (1969).

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

Where,

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

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

Later, for each constraint the scores of individual respondents were added and divided by the total number of respondents from whom scores were collected. The mean scores for the factors were arranged in descending order and thus constraints were ranked accordingly.

RESULTS AND DISCUSSION

A. Study of various factors affecting milk procurement

Regression analysis was carried out in which level of milk procurement (kg) was regressed on explanatory variables. Table 1 reveals the influence of the factors on the level of milk procurement. The results of the regression analysis revealed that the coefficient of multiple determination (R^2) was 0.87, indicating that 87 percent of total variation in the level of milk procurement was explained by the explanatory variables included in the function. It was observed that regression coefficient of average number of members per milk producers' co-operative societies per month (X_1) was found to be positive and statistically significant indicating that on an increase in number of members milk procurement would increase by 39066.25 kg per month and the regression coefficient of average price paid to milk producers per month (X_2) was also revealed to be positive and statistically significant which indicated level of milk procurement could boost up with the increase in price paid to milk producers. The regression coefficient of average commission paid to milk producers co-operative societies per month (X_3) and average amount spent on transportation for procurement of milk per month (X_4) was found to be positive but statistically non-significant which indicated their non-significant impact on the level of milk procurement.

Table 1: Estimated parameters of milk procurement function.

Variables	Regression coefficients	Standard error
Avg. no. of members (X_1)	39066.25[*]	17417.14
Avg. price (X_2)	0.016[*]	0.006
Avg. commission (X_3)	0.266	0.294
Avg. amount spent on transportation (X_4)	0.643	0.439
R^2	0.87	

[*]Significant at 5 percent level of probability

B. Constraints faced in milk procurement

The major milk procurement constraints that were observed by the dairy plant are fluctuation in prices with a score of 68.3 followed by untimely and improper compensation with a score of 61.9 and seasonal variation with a score of 60.9. Inadequate veterinary facilities and unavailability of insurance facilities were the minor constraints. There is a need to work on these constraints by the milk producers' co-operative societies so as to increase the milk production and maximize their sales. Table 2 depicts the constraints faced by the milk producers supplying milk to the dairy plant.

Table 2: 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

As most of the dairy farmers in the state are in the category of small and marginal farmers undertaking dairy at subsistence level, there is an urge to motivate a greater number of milk producers to be a part of the dairy co-operative plant as it was observed in the regression analysis that average number of members per milk producers' co-operative societies per month have a positive influence on the procurement of milk. Interventions on the part of local, state and government are needed so as to convince the milk producers to sell milk to milk producers' co-operative societies and increase the procurement of milk. Also, measures are to be taken on the major problems faced by the milk producers like untimely and improper compensation, fluctuation in prices and high expenses of feed etc. as observed in the analysis of milk procurement constraints. Future research in the dairy sector can be conducted using both qualitative and quantitative method to develop broad understanding of private and public sector dairy industries. The research can also focus on a larger sample of firms to strengthen the results of the present study. The study would be of great help to policy makers to improvise the performance of dairy co-operatives and motivate the farmers to join the dairy co-operatives.

Conflict of Interest. There is absolutely no conflict of interest by the authors to declare.

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