



Economics and Marketing of Dairy products in Private and Cooperative Sectors of Uttarakhand

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ABSTRACT

On analyzing economics of production of dairy product under private system, it was concluded private producers enjoyed higher net returns as compared to cooperative dairy products producers. The higher net returns under private system could be attributed towards high prices that private producers fetched from the consumers. In case of milk marketing in cooperative and private sectors, only one channel was found to exist under cooperative system, while private system of milk marketing deals with four different channels. Channel I (Milk producer → Consumer) was found to be efficient when producer's share in consumer's rupee was considered. On taking into consideration, the value addition part Channel II (Milk producer → Duddhia → Consumer) was found to be the most efficient marketing channel. In case of milk products it was concluded that Channel III (Cooperative producer - distributor - Consumer) was the most efficient marketing channel because marketing cost involved in this marketing system was relatively low. Based on marketing efficiency index, efficiency of marketing channels could not be compared because the scale of production and area of operation is limited in case of private marketing system. Therefore it was concluded that cooperative ghee and paneer marketing system was more efficient and consumer friendly as consumer has to pay relatively lower price for assured quality products. Surety of price was reported to the most favourable strength of cooperative marketing system, while lack of quality control measures was judged as the severe weakness of cooperative marketing. Milk and milk product producers under private system of marketing considered high price of milk and current payment facility to be most favourable strengths and highly competitive marketing conditions was considered to be the severe weakness. The important policy implications of the study emerged were Development of efficient milk collection centers with proper cooling facilities and transportation networks, In fixing price of milk, the cost of milk production should also be considered besides fat and SNF percentage, the private milk product producers should enhance their scale of production in order to reduce manufacturing cost and marketing cost.

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INTRODUCTION

India has achieved impressive growth in agriculture since mid-sixties. The technology led transformation of Indian agriculture under the "Green Revolution" that has enabled the country not only to achieve self-sufficiency in food production but also to earn foreign exchange. The food grain production reached a record level of 284.83 million tonnes during 2017-18 [5]. However, despite significant achievements on agricultural front, the problem of mass poverty and unemployment has been haunting the rural economy. Indian agriculture is an economic symbiosis of crop and livestock production and cattle is the foundation of Indian agriculture. These are perhaps the only tangible asset and mainstay for the socio-economic security of small and marginal farmers. Dairying has emerged as a major subsidiary occupation in agriculture for the rural masses. Dairying as a profession revolves around milk and milk products. These products provide complete nutrition to all walks of life.

India ranks first in world milk production and is a net exporter of milk and milk product. It contributes about 0.6 per cent in country's export. The per capita availability of milk is 337 gms per day with an annual milk production of 176.35 million tonnes in 2017-18 [5].

Uttarakhand 27th state of India came into existence on 9th Nov. 2000. After formulation of Uttarakhand there was emergence of functional cooperative society "Uttarakhand Cooperative Dairy Federation Ltd." trade named "Aanchal" for milk procurement and processing in Uttarakhand. Major milk producing animals in Uttarakhand are cattle and buffalo which constitute about 43% and 24 % of the total livestock population in the state respectively. The annual milk production is about 1,195 thousand tonnes. (1). Out of total milk produced in Uttarakhand, only 21900 thousand litres of milk is handled by cooperative, which is about 7.6 percent of total milk produced [4].

PROBLEM STATEMENT: India has emerged as a largest producer of milk in the world. Bulk of milk produced is utilized for drinking purposes (direct use) and processing is mainly done in unorganized sector for making traditional product like khoa, curd etc. Value addition consequently is low. Demand for milk and milk products are income elastic. Further it has also been estimated that supply of milk and milk products has been growing at a faster rate than its demand giving rise to expected surplus (71.54 million tonnes) of milk in the country by 2020. Therefore there exists good prospects for value addition in Indian dairy industry.

In Uttarakhand per capita consumption of milk is 220 gms per day, whereas per capita availability is 365 gms per day, which is more than as recommended by WHO (283gms per day) [1]. Thus the state is having substantial surplus of milk. In spite of sincere efforts being made for the development of organized sector, only 15% of the total milk produced in the country and 7.6 % in the state of Uttarakhand is marketed through organized sector. Efficiency in a dairy plant involves the procurement, processing, packaging and merchandising of a high quality products at the lowest cost. Reducing the dairy plant costs and improving the efficiency of all operations are very important. For the success of the dairy industry it is essential that the milk is processed efficiently at maximum operational efficiency which requires detailed cost analysis at different stages of production. The above problematic situation calls for a thorough investigation into economics of production of milk and milk products under cooperative and private sectors. Therefore to sustain the pace of production and processing of milk in the state, the empirical findings of the present study would serve as a guide to the policy makers, producers in improving the efficiency of various functions of the system, which would ultimately benefit the private producers as well as cooperative organization on which a good deal of emphasis is being placed for planned economic development of the country. With this practical utility in mind, this study has been undertaken in Udham Singh Nagar district of Uttarakhand with the following objectives.

OBJECTIVES:

1. To work out economics of dairy products under cooperative and private sectors.
 2. To find out marketing efficiency of dairy products under cooperative and private sectors.
- To identify strength and weaknesses of dairy products marketing in private and cooperative sectors

MATERIAL AND METHODS

Data and Its Sources: The study was based on primary and secondary data in order to analyse economic status of milk and milk products in potential sectors. The primary data was collected through the personal interview method from milk producers as well as from milk product producers on a well constructed survey schedule, questionnaire through personal interviews. The secondary data was collected from Dughd Utpadak Sahkari Sangh [4], Khatima and from various published records.

Sampling Technique: A multistage random sampling was used to achieve the objectives of the study. Two samples were drawn for the study, one for milk and another for milk products. The district Udham Singh Nagar comprises seven development blocks. These are Rudrapur, Gadarpur, Bajpur, Kashipur, Jaspur, Khatima and Sitarganj. The blocks are more or less agriculturally homogeneous. In the first stage, two highest milk producing blocks were purposively selected from district Udham Singh Nagar. Rudrapur and Khatima are the two highest milk producing blocks in district Udham Singh Nagar. So in the first stage, these two blocks were purposively selected for the study. In the next stage, a list of all the villages in the selected blocks was prepared and then two villages were purposively selected from each block; one having majority of farmers selling milk to cooperatives and other village having majority of farmers selling milk to private sectors. From Rudrapur block Jawahar Nagar was randomly selected to study farmers selling milk to cooperative and from Kiccha to study farmers/milk producers selling milk to private sector. Majhola and Melaghat were the two villages which were randomly selected to study respectively the cooperative and private milk production in Khatima block of district Udham Singh Nagar. Finally a random sample of fifteen farmers was drawn from each village. Thus a random sample of 60 farmers was drawn for the study purpose (30 milk producers selling milk to private and 30 milk producers selling milk to cooperative sectors). The detail of sampling is presented in Table 1.

Table 1.

Udham Singh Nagar District (Two Blocks)			
Rudrapur		Khatima	
Villages			
JawaharNagar(Coop.) (15)	Kiccha (private) (15)	Majhola (Coop.) (15)	Melaghat (Private) (15)
Total sample milk producers =60			

In case of milk products, there is only one cooperative unit namely Dugh Utpadak Sakhari Sangh(DUSS) , Khatima in U.S. Nagar district and was selected for the study purpose. A random sample of 10 private milk product producers was drawn from Rudrapur and Khatima blocks of district Udham Singh Nagar.

ANALYTICAL PROCEDURES:

(a) Estimation of cost and returns from production of milk.

Estimation of Cost: The cost incurred in milk production was classified into two groups viz., Variable cost, Fixed cost, Total cost and Net cost.

Net cost: Net cost per litre of milk was calculated by deducting the income from dung and calf from total cost.

Estimation of returns:

- **Net returns before marketing cost:** Net returns was calculated as the difference between value of milk and net cost.
- **Net returns after marketing cost:** Net returns per litre of milk was calculated by deducting the marketing cost incurred per litre of milk from net returns before deducting marketing cost.

(b). Estimation of cost and returns from production of of milk products

In order to work out economics of milk products in private and cooperative sectors , two products were specified for the study purpose i.e Ghee and Paneer .The costs and returns components of ghee and paneer production were available and calculated for both the categories of milk product producers viz., cooperative as well as private.

i) Estimation of costs : In case of large sized multi-product dairy plant, the major problem encountered is that of apportionment of the joint costs as most of the items of expenditure are incurred jointly on different products. Since the basis of apportionment for one kind of expenditure may not be the same as that of others, therefore , proper grouping of expenditure is essential .After proper grouping is done on scientific and adaptable basis , the joint costs are apportioned to the major milk products as indicated in Table 1. After apportionment of joint costs, unit cost of milk products was estimated (Kumar, 1990).

(ii) Estimation of returns

Gross returns was calculated as price of milk products received by the producer per kg.Net returns per kg of milk product was calculated by adding cost of production and marketing cost incurred per kg of milk product then deducting it from gross returns i.e price of milk products .

II. Estimation of marketing efficiency of milk and milk products marketing.

In order to find out, the relative efficiency of either of the system, marketing cost, market margin and marketing efficiency was worked out.

III. Identification of strengths and weaknesses of dairy products under Co-operative and Private marketing system

To identify the various strengths and weaknesses of cooperative and private network, responses of the milk and milk product producers were solely taken into account. A grading scale was adopted to fulfill the objective of the study. A three-point scale was adopted to find out the rank.

Strengths	Grade scale	Weaknesses
Not of accounting	0-3.5	Least severe
Favourable	3.5-7.5	Severe
Most favourable	7.5-10	Most severe

The respondent was asked to allot marks to various variables indicating strengths and weaknesses and accordingly strengths and weaknesses of either of the system were found out.

RESULT AND DISCUSSION

Economics of production of milk in private and cooperative sectors

The cost incurred and returns obtained were worked out for the entire intercalving period, which includes both lactation as well as dry period. Two sample mean 't' test was applied to test statistically the

significance of difference between the costs and returns of milk production for both the categories of milk producers i.e. private and cooperative. The results presented in table 2 shows that the average cost of milk production for cooperative milk producers was Rs9.58 per litre. Variable cost accounted for Rs. 7.79 per litre (81.31%) while fixed cost accounted for Rs. 1.79 per litre (18.69%) of the total cost of milk production. Feed cost at Rs. 5.85 per litre (61.05%) was the single largest component of the total cost incurred by the milk producers. Among feed costs, concentrate grasped a major share accounting for Rs. 2.73 per litre (28.49%) followed by green fodder and dry fodder accounting for Rs. 2.15 per litre and Re.0.97 per litre, respectively of total milk production cost. Labour expenditure stood at second position, accounting for Rs. 1.54 per litre (16.07%) of total cost of milk produced. Among fixed costs, interest on fixed investment and depreciation accounted for Rs. 1.03 per litre and Re. 0.76 per litre of the total production cost which, respectively were the two important fixed cost components. The net cost incurred per litre of milk was found to be Rs. 9.02. The cooperative milk producers enjoyed a price of Rs. 12.82 per litre of milk sold, thus ensuring a net return of Rs. 3.8 per litre of milk sold with no marketing cost. On analyzing the results of milk producers under private network, it was found that the cost of milk production was Rs. 10.45 per litre as against Rs. 9.58 per litre under cooperative system. Variable cost contributed Rs. 8.88 per litre (84.97%) and fixed cost accounted for Rs. 1.57 per litre (15.03%). On breaking the different cost component it was found that cost incurred on concentrate was Rs. 3.16 per litre (30.23%) of milk produced. Feed cost accounted for 66.97 % of the total cost. Labour cost (13.11%) stood at second position accounting for Rs.1.37 per litre of milk produced. Veterinary expenses and miscellaneous expenses each contributing at Re. 0.03 per litre and Re.0.02 per litre of milk produced, respectively.

Table 2: Cost and return structure of milk production under cooperative and private system

Cost/return	Milk production	
	cooperative (Rs. per lt)	Private (Rs. per lt)
A)Variable cost		
1. Green fodder	2.15	2.53
2. Dry fodder	0.97	1.31
3. Concentrate	2.73	3.16
4. Labour	1.54	1.37
5. Vet.Expenses	0.02	0.03
6. Misc.exp.	0.01	0.02
7. Interest on working capital	0.37	0.46
8. Total variable cost	7.79	8.88
B)Fixed cost		
9. Interest on capital investment	1.03	0.89
10. Depreciation	0.76	0.68
11. Total fixed cost	1.79	1.57
12. Total cost(A+B)	9.58	10.45
13. Value of dung	0.18	0.68
14. Value of calf	0.38	1.08
15. Net cost (12-(13+14))	9.02	8.69
16. Price of milk	12.82	16.9
17. Marketing cost	Nil	1.48
18. Net returns before marketing cost	3.8	8.21
19. Net returns after marketing cost	3.8	6.73

Among fixed cost component, interest on fixed cost accounted for Re. 0.89 per litre, followed by depreciation of Re. 0.66 per litre of milk produced. The net cost incurred per litre of milk produced was found to be Rs. 8.69 per litre lower by Re. 0.33 per litre as compared to the cooperative milk producers. The private milk producers enjoyed a higher price of milk accounting to Rs. 16.9 per litre thus ensuring the milk producers a net returns of Rs. 8.21 per litre before incurring marketing cost which is considerably higher as compared to cooperative milk producers. The milk producers under private

system attributed to get high net returns due to higher price received by private milk producers per litre of milk sold as compared to the milk producers under cooperative system.

Economics of production of milk products in private and cooperative sectors:

Ghee and paneer are the only two common products found whose comparative study is made in private and cooperative sectors. The plant maintained by Khatima Dugdh Utpadak Sahakari Sangh Ltd. at Khatima is a multi-product large sized cooperative dairy plant. In the present section the component-wise cost of ghee and paneer production by the plant during the year 2007-08 have been estimated and given in Table 3. The results are discussed product wise as follows:

Table 3: Component-wise cost of ghee and paneer production and their average prices by Dugdh Utpadak Sahakari Sangh, Khatima (2007-08) (Rs./kg)

Cost component	Ghee production	Paneer production
I. Procurement cost		
1. Raw material cost	126	105
2. Transportation	1.1	0.65
3. Salaries	1.5	0.99
4. Others	1.06	0.56
5. Depreciation	0.36	0.25
Sub-total	130.02	107.45
II. Processing costs		
1. Salaries	3	1.04
2. Fuel	0.58	0.68
3. Electricity/refrigeration	0.95	0.34
4. Packaging	1	0.95
5. Repair & maintenance	0.2	0.02
6. Depreciation	0.67	0.03
Sub-total	6.4	3.06
III. Marketing costs		
1. Salaries	2.5	1.01
2. Transportation	2	0.99
3. Commission	nil	nil
4. Depreciation	0.72	0.42
5. Others	0.02	0.03
Sub-total	5.24	2.45
IV. Administrative cost		
1. Salaries	2	1
2. Depreciation/rent		
i. Building	0.56	0.14
iii. Others*	25.38	12
Sub-total	27.94	13.14
V. Total cost	169.6	126.1
VI. Average price/Gross Returns	190	130
VII. Net returns(VI-V)	20.4	3.9

* includes VAT (value added tax) and mandi tax.

Ghee production: Ghee is the important dairy product produced at Khatima dairy plant. It is being sold at various places within the district at specified milk parlors. The important disposal places are Rudrapur, Sitarganj, Khatima, Kiccha and Pantnagar. For the study period i.e. 2007-08, the price of ghee realized by the plant from the consumer is found at Rs. 200 per kg and the agent price was Rs. 190 per kg. On the other hand the average cost of making ghee by Khatima dairy plant comes to Rs. 169.6 per kg. The most important cost component of ghee was found to be the procurement cost (Rs. 130.02) which is around 76 % of the total cost. For obvious reasons, the cost by raw material (milk) in it contributes the most (Rs. 126 per kg). [4] also revealed that in the cost of milk products, major share was of raw material (74.60% in Khoa, 87.68% in Paneer and 90.65% in Ghee). The cost of processing of ghee comes to Rs. 6.4 per kg i.e. about 3.71 per cent of the total cost. The component of salaries in it was found to be highest. The cost of packaging, electricity, fuel, repairs and maintenance were found to be the important components. The marketing cost of ghee incurred by the plant was Rs. 5.24 per kg (3.09 %) of the total cost of ghee

production Salaries were found to be the most important component (Rs. 2.5 per kg) in the total marketing cost. Next to salaries the cost of transportation of ghee was the major component which appears to be on higher side. The administrative cost on making ghee comes to Rs. 27.94 which is about 16 per cent of the total cost. In administrative cost contribution of VAT(value added tax) and Mandi tax comes to Rs. 25.38 per kg

Paneer Production: Like ghee, the Khatima plant prepares paneer also mainly to meet the demand of institutional users viz., hotels, restaurants etc. The average agent price fixed for one kg of paneer is Rs. 130 and consumer price is Rs. 140 per kg. The procurement cost of raw material i.e milk was the most important cost component of paneer production. It contributed around 85 % in the total cost (Rs. 107.45 per kg). In procurement group, the cost of raw material i.e. milk alone was Rs. 105 per kg. The cost of processing paneer was worked out at Rs. 3.06 per kg in which the maximum contribution was of salaries. The % of processing cost in the total cost of paneer production came to be about 2.43 %. The unit cost of marketing of paneer was worked out to Rs. 2.45 per kg. The percentage of the processing cost component in the total cost came to about 1.94 %. The administrative cost in preparing one kg of paneer was Rs.13.14, which was about 10.42 per cent of the total cost. In administrative cost contribution of VAT and Mandi tax was Rs. 12 per kg. On analyzing the results of Ghee and Paneer production under private network, it was found that cost of ghee production was 200.771 per kg as against Rs. 169.6 per kg under cooperative system. The component wise cost of production and average price of ghee and paneer production in private sector is given in Table 4.

Table 4: Component wise cost of production and average prices of ghee and paneer in private sector (Rs./Kg).

	Ghee production	Paneer production
I. Procurement costs		
1. Raw material cost	179.5	110.45
2. Transportation	2.12	
3. Salaries	1.76	
4. Others	0.5	
5. Depreciation	0.262	
Sub-total	184	110.45
II. Processing costs		
1. Salaries	3.7	1.77
2. Fuel	3.2	0.877
3. Electricity/refrigeration	0.08	0.388
4. Packaging	1.9	1
5. Repair & maintenance	0.234	0.014
6. Depreciation	0.289	0.021
Sub-total	9.403	4.08
III. Marketing costs		
1. Salaries	1.75	0.494
2. Transportation	1	
3. Commission		
4. Depreciation		
5. Others		
Sub-total	2.75	0.494
IV. Administrative cost		
1. Salaries	3.27	0.926
2. Depreciation/rent		
i. Building	1.24	1.224
iii. Others	0.108	0.037
Sub-total	4.618	2.188
V.Total cost	200.771	117.212
VI.Price/Gross Returns	229	151.11
VII.Net returns	28.229	33.898

The most important cost component of ghee in private sector was also found to be the procurement cost. The average cost of raw material therein was Rs. 179.5 per kg as against Rs. 126 per kg in cooperative system. The average cost of processing of ghee came to Rs. 9.403 per kg compared to Rs. 6.4 per kg in

cooperative system. The contribution of marketing costs in private system was only Rs. 2.75 per kg as compared to Rs.5.24 per kg in cooperative ghee production. Administrative cost accounted to Rs. 4.618 per kg, which was about 2.3 per cent of total cost, while in cooperative system, administrative cost was second most important cost component after procurement cost, accounting around 16 per cent of the total cost incurred in ghee production. Similarly cost and returns for paneer production was worked out in private system. It was found that cost of paneer production was Rs. 117.21 per kg as against Rs. 126.1 per kg under cooperative system. The most important cost component of paneer production in private sector was the procurement cost. The average cost of raw material is Rs. 110.45 per kg against Rs. 105 per kg in cooperative system. The average cost of processing paneer was Rs. 4.08 per kg in private sector and Rs. 3.06 per kg in cooperative sector. The contribution of marketing cost in private system was only Re.0.494 per kg contrary to cooperative system where total marketing cost stood at Rs. 2.45 per kg. Administrative cost in paneer production in private system was very less as compared to cooperative system. Administrative cost accounted for Rs. 2.188 per kg in private paneer production as compared to Rs. 13.14 per kg in cooperative system.

III. Further, the significant difference between various cost component of milk production was worked out. As indicated from the Table No. 5 the difference between various feed components was not found statistically significant.

Table 5 : Significant structural difference between cost and return of milk production under cooperative and private systems.(Rs./litres)

Cost/Returns	Cooperative	Private	Difference
Variable cost			
Green fodder	2.15	2.53	0.38
Dry fodder	0.97	1.31	0.34
Concentrate	2.73	3.16	0.43
Labour	1.54	1.37	0.17
Vet.Expenses	0.02	0.03	0.01*
Misc.exp.	0.01	0.02	0.01
Total	7.42	8.42	
Interest on working capital	0.37	0.46	0.09*
Total variable cost	7.79	8.88	
Fixed cost			
Interest on capital investment	1.03	0.89	0.14
Depreciation	0.76	0.68	0.08
Net cost	9.02	8.69	0.33
Price of milk	12.82	16.9	
Net returns before marketing cost	3.8	8.21	4.41*
Net returns after marketing cost	3.8	6.73	2.93*

* Significant difference at 5% level of significance

Only the difference between the veterinary expenses and interest on working capital was found statistically significant at 5 % level of significance among various components of variable cost. Expenses made by cooperative milk producers on health and medical care facilities are comparatively less than private milk producers, as they get veterinary facilities being the member of cooperative union (Dughd Utpadak Sahkari Sangh, Khatima). Moreover members of cooperative union get working capital at 10 % interest rate while private milk producers have to pay 12 % interest on working capital. Net cost was found to be non significant, conversely the net returns were significantly higher in case of private milk producers compared to cooperative milk producers because private milk producers get comparatively higher price for the milk sold by them. Several studies also revealed that traditional milk societies were found to be more feasible and profitable albeit they are less organized than cooperative societies (2). Further, the significant difference between various cost component of ghee and paneer production in cooperative and private sectors was statistically tested by applying one-sample 't'-test as indicated in Table No 5.1

Table 5.1 : Component wise cost of production of ghee in private and cooperative sectors with their significant differences(Rs./kg)

Cost component		Ghee Production		
		Cooperative	Private	Difference
I.	Procurement cost	130.02	184	53.98*
II.	Processing costs	6.4	9.403	3.003*
III.	Marketing costs	5.24	2.75	2.49*
IV.	Administrative cost	27.94	4.618	23.32*
V.	Total cost	169.6	200.771	31.171*
VI.	Average price/Gross Returns	190	229	
VII.	Net returns	20.4	28.229	7.829*

* Significant at 5% level of significance

Table 5.1 indicates that the difference between various cost component of ghee production was found to be statistically significant at 5 % level of significance. Further Table 5.2 indicates that the difference between most of the components of paneer production in private and cooperative system was also statistically significant except procurement and processing cost. As DUSS is a large sized multi-product cooperative dairy unit incurring more expenses on its marketing and administration network as compared to private units that usually undertake ghee and paneer production on small scale. Thus the null hypothesis regarding first objective that there is no significant difference in cost and returns of milk and milk products in private and cooperative sectors is rejected indicating significant differences in cost and return components of milk production.

Table 5.2: Component wise cost of production of paneer in private and cooperative sectors with their significant differences(Rs./kg)

Cost component		Paneer Production		
		Cooperative	Private	Difference
I.	Procurement cost	107.45	110.45	3
II.	Processing costs	3.06	4.08	1.02
III.	Marketing costs	2.45	.494	1.95*
IV.	Administrative cost	13.14	2.188	10.82*
V.	Total cost	126.1	117.212	10.95*
VI.	Average price	130	151.11	
VII.	Gross returns	3.9	33.898	29.998*
VIII.	Net returns	1.45	33.404	31.95*

* Significant at 5% level of significance

Efficiency of milk and milk products marketing: Four different marketing channels existed under private system of milk marketing as indicated in table 6. Whereas only one marketing channel was adopted by cooperative marketing system. It was found that Channel II was most prevalent in the study area in case of private milk marketing.

Table 6 : Channels present in milk marketing system

Private marketing Channel		No. of milk producers
I	Producer → Consumer	9 (30)
II	Producer → Dudhia → consumer	13 (44)
III	Producer → Dudhia → Halwai → consumer	4 (13)
IV	Producer → Halwai → consumer	4 (13)
Total		30
Cooperative marketing channel		
I	Producer → DUSS → distributor → consumer	30

*Figure in parenthesis indicates percentage of milk producers adopting each channel

Table 6.1 :Marketing costs, margins, price-spread and efficiency among different channels of milk. (Rs./litre)

Particulars	I	II	III	IV
Net price to the producer	18.27 (100)	16.78 (83.9)	14.04 (80.8)	17.04 (85.2)
Cost incurred by the producer	-	-	-	1
Purchase price of Dudhia		16.78	14.04	
Cost incurred by the Dudhia	-	1.22	0.98	-
Net Margin of Dudhia	-	2.00	1.25	-
Per cent Net margin of Dudhia	-	16.1	13.7	-
Net Mark up of Dudhia	-	19.19	15.8	-
Purchase price of halwai		-	16.27	18.04
Cost incurred by halwai	-	-	0.35	0.46
Net margin of halwai	-	-	0.75	1.50
Per cent Net margin of halwai	-	-	6.33	9.80
Net mark up of halwai	-	-	6.76	10.86
Price spread	-	3.22	3.33	2.96
Purchase price of consumer	18.27	20	17.37	20
Marketing efficiency	-	2.64	2.5	2.02

Figure in parentheses indicate percentage of net price to the producer

Net price received by the milk producer's was highest in channel I (Rs.18.27) followed by channel IV (Rs.17.04), channel II (Rs.16.78) and channel III (Rs.14.04). Price-spread was highest in channel III because of the presence of two intermediaries i.e. dudhia, halwai. Consumer is paying lowest price in channel III (Rs.17.37) as compared to other milk marketing channels. The observed difference in price of milk paid by the consumers is on an account of difference in composition of milk, mixed cow and buffalo milk was sold in the study area. For instance in channel I price paid was Rs.18.27 as in this channel majority of milk producers were having buffaloes while in channel III where consumer is paying lowest price, most of the milk producers were rearing cows (68.39 per cent). However the average price received by the milk producers is affected by both the composition of milk and the number of intermediaries in the channel and their margins. Table 6.1 also indicates that Channel I was found to be most efficient, when analysed from the view point of producer's share in consumer's rupee. The producers enjoy 100 per cent share in consumer's rupee in this channel followed by Channel IV (85.2%), Channel II (83.9%). However the scope of adopting this channel is limited because the consumer located at far distant places cannot be served by this channel as producer cannot move to far located places. Based on marketing efficiency index channel II appeared to be most efficient channel for milk marketing followed by channel III and channel IV respectively. The marketing efficiency indices for these channels were 2.64, 2.5, 2.02 respectively.

Marketing of milk products in private and cooperative sectors

The table 6.2 reveals that two different marketing channels existed under private system of ghee marketing, whereas only one marketing channel was prevalent under cooperative marketing system

Table 6.2: Channels present in marketing of ghee and paneer

Channels		Number of producers	
		Ghee	Paneer
(A) Private marketing system			
Channel I	Private Producer → Consumers	9(90)	10(100)
Channel II	Private Producer → Wholesalers/ Distributor → Retailer → Consumer	1(10)	-
Total		10	10
(B) Cooperative marketing System			
Channel III.	Cooperative Producer(DUSS)- Distributor/retailer- Consumer	1	1

*Figure in parenthesis indicates percentage of milk producers adopting each channel

In private ghee marketing system, it was found that channel I was most prevalent in the study area and was followed by Channel II. This was because of higher margins received by the producer in selling their product directly to consumer. Channel I was found to be most efficient channel, However when private and cooperative indirect ghee marketing channels (channel II and III) were analysed from the view point of producers share in consumers rupee, Channel III was found to be more efficient. This is because the net margin of the wholesaler is relatively low in channel III (Rs.8.5) as compared to channel II (Rs.9) .

Table 6.3 : Marketing efficiency among different channels of Ghee.
(Rs./kg)

Particulars	I	II	III
Net price to the producer	232.2	200 (80)	190 (95)
Purchase price of wholesaler/ distributor/agent	-	200	190
Cost incurred by wholesaler	-	1	1.5
Net Margin of wholesaler	-	9	8.5
Percent net margin of wholesaler	-	4.76	5
Net Mark up of wholesaler	-	5	5.26
Purchase price of retailer	-	210	-
Cost incurred by retailer	-	0.05	-
Net Margin of retailer	-	39.95	-
Percent net margin of retailer	-	16	-
Net Mark up of retailer	-	19	-
Price spread	-	50	10
Purchase price of consumer	232.20	250	200

Figures in parenthesis indicate percentage share of producer in consumer rupee

Moreover price spread was relatively low in channel III (Rs.10) and also cooperative producer is getting 95 percent share in consumer rupee as compared to channel II(80%). Based on marketing efficiency index, efficiency of marketing channels could not be compared because the scale of production and area of operation is limited in case of private marketing system. Therefore it was concluded that cooperative ghee marketing system was more efficient and consumer friendly.

Table 6.4: Marketing efficiency in different marketing channels of paneer(Rs./kg)

Particulars	Channel I	Channel III
Net price to producer	151	130
Purchase price of wholesaler	-	130
Cost incurred by wholesaler	-	1.5
Net Margin of wholesaler	-	8.5
Percent net margin of wholesaler	-	7.14
Net Mark up of wholesaler	-	7.69
Price spread		10
Purchase price of consumer	151	140
Marketing efficiency	-	6.6

In private system of paneer marketing, the product is directly sold to the consumer from the producer, a result producer realizes 100 percent share in consumers rupee. On the other hand in cooperative marketing system, paneer is distributed through wholesaler who earns a margin of Rs.10 per kg. The cooperative system generates value addition of Rs.6.6 per rupee of marketing cost. Thus cooperative marketing system seems to be more efficient and consumer friendly as consumer has to pay lower price for assured quality products.

Strengths and weaknesses of milk and milk product marketing in cooperative as well as private sectors

As indicated in Table 7 the major strength of cooperatives as viewed by the respondents was surity of prices and receiving payment in lumpsum amount for the milk .

Table 7: Strengths of cooperative marketing

S. No.	Strengths	Marks allotted
(a)	Surety of price	8.5
(b)	Payment of lump sum amount	8.0
(c)	Transportation of milk and milk products	6.5
(d)	Assured market round the year to milk producers	5.5
(e)	Quality maintenances facilities provided at booths and parlors	5.0
(f)	Autonomy to milk unions in fixing milk prices	3.0

Lack of quality control measures at milk collection centres and sales outlets was the most severe weaknesses and accordingly milk and milk product producers allotted 8.5 marks out of 10 to this constraint as indicated in Table 7.1.

Table 7.1: Weaknesses of cooperative marketing

S. No.	Weaknesses	Marks allotted
1.	Lack of quality control measures	8.5
2.	Old machinery and equipment	8.0
3.	Spoilage of milk and milk product due to late arrival or breakdown of vehicle and due to poor keeping quality in sales outlets	7.5
4.	Lack of advertisement	7.0
5.	Lack of funds	6.5
6.	Negligence and dishonesty of employees	6.0
7.	Low incentives and salaries to marketing staff	3.0

The current payment facilities was the most favourable strength in private marketing system.

Table 7.2 : Strengths of private system

S. No.	Strengths	Marks allotted
1.	Current payment facility	9.50
2.	High price for milk	8.00
3.	No transportation problem	6.75

Table 7.3 depicts that the milk and milk product producers under private system faced acute problem of highly personal competitive market condition. So in order to improve the efficiency of milk and milk products marketing in cooperative and private sectors .Improvement in raw milk by its chilling and refrigerated transport is vital for making quality products. The old machinery and equipments should be replaced to reduce cost on repair and maintenance. Emphasis should be made on advertisement and public awareness about the product. Quality control of dairy products should also be evolved by providing better maintenance facilities at booths and parlors. Qualified and technical staff should be recruited.

Table 7.3 : Weaknesses of private system

S. No.	Weaknesses	Marks allotted
1.	Highly personal competitive market condition	7.5
2.	Localized distribution of dairy products	6.0
3.	High packaging cost	5.5
4.	Poor keeping quality in the sales outlets	5.0
5.	Un-assured marketing	3.0

CONCLUSION

Based on the insight provided by the study, the following policy implications have emerged to make cooperative and private milk and milk product producers more skilled at milk procurement, processing and manufacturing levels.

a) Milk procurement level

- Imparting training/creating awareness to dairy farmers at milk producers cooperative societies/collection centres about hygiene in milk production will improve the quality of procured milk and thus help in enhancing fat and SNF % of milk so that farmers can get better price.
- Steps may be taken by dairy cooperatives to consider the cost of milk production besides fat and SNF % in fixing the procurement price of milk. As private producer fetch more net returns as they get

better price for milk from the market. Thus to encourage cooperative milk production incentives or bonus should be given to the producers.

- The officials and staff of cooperative societies should follow a friendly customer relationship with the member farmers. This will also help to attract more number of new cooperative members.

b) Processing and manufacturing level.

- Proper maintenance of equipments and machineries is required to reduce breakdowns and malfunctioning during operations. Modernization of processing plant is the need of the hour.
- The number of milk products produced in the private units are comparatively less than the cooperative unit. Therefore there is scope to increase product mix. Milk producers should also focus on flavoured milk, yoghurt etc
- The private milk product producers should enhance their scale of production in order to reduce manufacturing cost. As it was found that most of the private producers were working at small level which can't be compared with Aanchal production at large scale.
- Further they should economise on procurement cost of milk by developing their own procurement network instead of depending upon dudhia, and should also focus on adequate planning and increased market sales.

c) Marketing level

- Pricing policy of cooperative milk producers is based only upon fat and SNF percentage rather it should also consider cost of production.
- The private milk product producers should enhance their scale of production in order to reduce manufacturing cost. Further they should economise on procurement cost of milk by developing their own procurement network, and should also focus on adequate planning and increased market sales.
- Competition is being tough in the market. So emphasis should be made on products like shrikhand, Infant foods, designer milk or milk products for a niche market like low calorie, low fat, cholesterol free, sugar free etc. should also be taken care of.

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