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Marketing of milk and milk products at GANGMUL dairy plant in Rajasthan

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Abstract

Rajasthan ranks second among the milk producing states in India, achieving 18500 thousand MT in 2015-16, which has increased from the 4146 thousand MT during 1985-86. The numbers of initiatives were taken by the government which could help in improving the milk productivity over the period. GANGMUL dairy of Hanumangarh was selected purposively as it rank second both in number of DCS and PDCS in the state and collecting about 1.56 lacs liters milk per day. Sriganganagar milk cooperative union Ltd. cover 628 villages and 526 primary cooperative milk societies spread over two districts (Sriganganagar and Hanumangarh). Among the various products obtained at GANGMUL dairy plant, Chhach, Ghee, SMP and Paneer were the main milk products which manufacturing cost was estimated about Rs.72362.47 thousand. Among the all products highest manufacturing cost was estimated for the ghee which is Rs 34507.19. Among all the products the highest (25.78 percent) margin was received by GANGMUL dairy plant from sale of Ghee. The annual margin received by GANGMUL dairy plant from sale of various products was workout to be Rs.96890.64 thousand. However the additional income was generated for the dairy from tender fee sale of scrape materials was obtained Rs. 2500 thousand in year 2014-15. Thus the total net income by GANGMUL dairy was obtained Rs.99890.64 thousand in a year 2014-15.

Keywords: Milk, GANGMUL, dairy,

Introduction

The Indian dairy sector contributes a large share in the agricultural Gross Domestic Product (GDP). The contribution of agriculture and allied sectors to the national GDP has declined during the last few decades (from 34.72 per cent in 1980-81 to 11.84 per cent in 2012-13 at constant price of 2004-05), the livestock sector alone has contributed to 29.20 per cent of the total value of agriculture gross domestic product in 2012-13. India ranks first in milk production, accounting for 18.5 per cent of world production, achieving an annual output of 146.3 million tonnes during 2014-15 as compared to 137.69 million tonnes during 2013-14 recording a growth of 6.26 per cent. Whereas, the Food and Agriculture Organization (FAO) has reported a 3.1 per cent increase in world milk production from 765 million tonnes in 2013 to 789 million tonnes in 2014 (Economic Survey 2015-16). Milk is a major source of nutritious food to millions of people and only acceptable sources of animal protein for large vegetarian segment of population in Rajasthan. Rajasthan ranks second among the milk producing states in India, achieving 18500 thousand MT in 2015-16, which has increased from the 4146 thousand MT during 1985-86. The numbers of initiatives were taken by the government which could help in improving the milk productivity over the period (GoR (2015), Economic Survey of Rajasthan). During the year 2015-16, per capita milk availability was very high 704 gm/day against 337 gm/day of national availability and 208 grams of milk requirement per head per day as per ICMR norms. Milk contributes to around 28 per cent to the agricultural GDP of Rajasthan and is one of the biggest sectors for supporting livelihood in the state. Livestock output at constant prices was reported at Rs. 239 billion in 2010-11 (at constant prices), of which milk contributes about 74 per cent or Rs. 177 billion (GoR, Annual Report 2014-15). Dairy sector is the major source of income for an estimate 27.6 million people. Among these 65 to 70 percent are small, marginal farmer and landless labour (Subharama Naidu and Kondaiah, 2004). At present in Rajasthan 21 milk unions are in operation covering a total of 13614 registered dairy co-operative societies in the State with a total member of membership of 749901. A package of technical input services was provided with distribution of cattle feed, fodder seed, animal health care and training of DCSs personnel. Rajasthan cooperative Dairy Federation (RCDF) is the apex body in the state and consists of 21 milk unions. These milk unions cover all the 33 districts of the state. The outcome of the proposed study would help to understand the dairy products marketing and will improve the marketing system of dairy co-operatives of Rajasthan. The study is also important

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For formulation and implementation of an appropriate policy, improving efficiency of various factors in marketing system for reducing cost and in planning strategies for future development. Moreover, very few systematic and comparative research works has been carried out on 3 this important aspect of dairy products manufacturing and marketing in cooperative and private sector dairy plants of Rajasthan and in the whole country so far. The results of the study would be useful to improve the efficiency of dairy products manufacturing and marketing in co-operative dairy sector of Rajasthan. With the above aspects, the present study on "Marketing of Milk and Milk Products at GANGMUL Dairy Plant in Rajasthan" was undertaken with the following specific objectives:

1. To estimate the cost of collection and processing of milk and milk products at GANGMUL dairy plant.
2. To analyze the marketing cost and margin in marketing of milk and major milk products by GANGMUL dairy.

Selection of Dairy Plant

GANGMUL dairy of Hanumangarh was selected purposively as it rank Second both in number of DCS and PDCS in the state. Sriganganagar milk cooperative union Ltd. cover 628 villages and 526 primary cooperative milk societies spread over two districts (Sriganganagar and Hanumangarh). The GANGMUL dairy covers Sriganganagar and Hanumangarh district of Rajasthan state. GANGMUL started its business with an average milk procurement of 300 liters a day. Now there are 1561(1065 DCS&496 PDCS) milk societies collecting about 1.56 lacs liters milk per day. It has its own Dairy plant handling capacity of 1.56 lacs liters per day with the facility to pack milk, Ghee etc, Its main products are Ghee, Liquid milk, Paneer, Chhach, Lassi and Dahi. Milk union is having three milk chilling plants at Nohar, Suratgarh and Padampur and three out-sourced chilling plants at Gharsana, Bhadara and Pallu.

Data and Methodology

To achieve selected objectives of the study, the data was obtained from the GANGMUL official record for milk and milk products pertaining to the cost of procurement, transportation, chilling, processing and marketing of milk and milk products. The data was collected to the year 2014-15. The data were analyzed by using simple tabular analysis, averages, percentages and ratios were calculated wherever necessary. The processing cost per unit of milk and milk products were worked out by dividing the total processing cost by the total quantity of milk and milk products processed.

Calculation of Absolute Margin

Absolute margin per unit of a product (Pi) = Ps - (P_p + P_c + M_c) Where:

- Ps = sale price of product
- P_p = purchase price of raw material
- P_c = processing cost
- M_c = marketing cost

Percentage margin per unit of the product was worked out by dividing the absolute margin by the sale price of the product multiplied by hundred.

Result and Discussion

The month wise milk collections by GANGMUL dairy plant in Hanumangarh are given table 1. It can be seen in the table that milk collection increased in winter season and average milk collection is 156.293 thousand liters.

Table 1. Month wise milk collection by GANGMUL Dairy Hanumangarh during 2014-15

Month	Quantity(000'litre)
April(2014)	180.598
May(2014)	151.949
June(2014)	138.456
July(2014)	136.523
August(2014)	141.165
September(2014)	149.345
October(2014)	139.386
November(2014)	155.019
December (2014)	153.537
January(2015)	164.576
February(2015)	182.548
March(2015)	182.410
Total	187.512
Average	156.293

<http://sarasmilkfed.rajasthan.gov.in/index.aspx>

Cost of Milk Collection

Cost of collection of milk varies according to quantity of milk procured, its mode of collection and transportation, number and distribution of milk producers in milk shed area, frequency of milk collection etc. In computing the cost of collection, transportation charges, chilling charges at collection centre and amount of commission paid to dairy cooperative societies engaged in milk collection at various milk collection centres were included. The per litre cost was computed by dividing the total costs incurred by the quantity of milk handled and the same is presented in table 1. It can be seen in the table that the average monthly per litre total cost of milk collection at GANGMUL dairy during the financial year 2014-15. It is obvious from the table that the annual average purchase price of milk was estimated at Rs 28.33 per litre. Average monthly purchase price of milk during the period Dec. to March was lower than the annual average price of Rs. 28.33 per litre. The average monthly transportation cost of milk was Rs 1.94 per litre. Average monthly transportation cost of milk during the period of May to Oct. was higher than the average transportation cost of Rs 1.94 per litre. The average chilling charges of milk were Rs 0.23 per litre. Chilling charges of milk from the month of April to the month of March were same because the chilling of milk was done on three years contract basis through private chilling centres. Commission charges were paid on the basis of fat and Solid Not Fat (S.N.F.) contents. The annual average commission to milk collection societies was estimated at Rs. 0.69 per litre.

Cost of processing of milk

Milk received from chilling centres or directly from milk collection centers was processed at dairy plant before manufacturing of the products. The various cost components were involved in the processing of milk are discussed and presented in Table 4.3. The share of water, electricity, generator and chilling charges per litre of milk processed is higher due to shortage of electricity supply and utilization of generator. The annual average charges of water, electricity, generator and chilling charges of milk were estimated at Rs. 0.78 per litre. The cost of furnace oil is higher during Sept. (Rs 1.26 per litre) to April (Rs 1.70 per litre) due to increase in the supply of milk and increase in the price of coal during this period. The annual average cost of furnace oil and coal was estimated at Rs 1.24 per litre. The cost of chemicals used in the processing of milk per litre for the period running from June, Sept., Nov.& Dec. was higher than the annual average cost (Rs 0.06 litre). Thereafter, it steadily decreased in the

other period. The annual average labour charges was estimated at (Rs. 0.55 per litre). The increase in milk supply which resulted in to employing more of temporary (casual) labour to meet the requirement of milk processing. The average maintenance cost was worked out to be Rs 0.09 per litre. The higher maintenance cost was obtained due to decrease in supply of milk. The annual monthly average charges for depreciation were estimated at Rs 1.35. Lowest trend was observed in depreciation charge in the month of March (Rs 1.0 per litre) due to increase in the procurement of milk. The

annual monthly average interest on working capital per litre charge (Rs 1.31 per litre) is higher than the month of May to December during the financial year 2014-15. Thus it can be concluded that the average processing cost of a month for per litre milk was Rs. 5.38 The furnace oil and coal was the major cost component which contributed 24.04 percent of the total cost. However, other major cost component were water, electricity and chilling charge, Depreciation and the interest on working capital. These Four cost component together contributed about 87 percent of the total processing cost

Table 2: Month wise average Cost of milk collection (Rs/ litre) at dairy plant, Hanumangarh during 2014-15

Cost item	Months												Overall average cost
	April-14	May-14	June-14	July-14	Aug.-14	Sept.-14	Oct.-14	Nov.-14	Dec.-14	Jan.-15	Feb.-15	March-15	
Purchase price of milk from DCS	30.29 (91.53)	30.00 (90.96)	30.34 (91.13)	30.18 (90.65)	30.28 (90.79)	29.87 (90.84)	29.53 (90.77)	28.47 (90.90)	26.05 (90.82)	25.32 (90.81)	25.08 (90.57)	24.59 (89.90)	28.33 (90.83)
Transportation cost	1.87 (5.65)	2.04 (6.18)	2.13 (6.39)	2.18 (6.54)	2.14 (6.41)	2.1 (6.38)	2.1 (6.45)	1.93 (6.17)	1.71 (5.96)	1.64 (5.88)	1.68 (6.06)	1.82 (6.65)	1.94 (6.21)
Chilling charges	00.23 (0.70)	00.23 (0.70)	00.23 (0.69)	00.23 (0.69)	00.23 (0.69)	00.23 (0.69)	00.23 (0.70)	00.23 (0.71)	00.23 (0.80)	00.23 (0.82)	00.23 (0.83)	00.23 (0.84)	0.23 (0.73)
Commission to milk collection societies	0.70 (2.11)	0.71 (2.15)	0.71 (2.13)	0.70 (2.10)	0.70 (2.09)	0.68 (2.03)	0.67 (2.05)	0.69 (2.20)	0.69 (2.40)	0.69 (2.47)	0.70 (2.52)	0.71 (2.59)	0.69 (2.21)
Total cost of raw milk	33.09 (100)	32.98 (100)	33.29 (100)	33.29 (100)	33.35 (100)	32.88 (100)	32.53 (100)	31.32 (100)	28.68 (100)	27.88 (100)	27.69 (100)	27.35 (100)	31.19 (100)

Production, Marketing Costs and Margins in Marketing of Milk Products by GANGMUL Dairy

The production and marketing of Milk by GANGMUL dairy during the year 2014-2015 are given Table 4.4. The dairy produced 849.82 thousand liters of milk was sale during the year by incurring a total cost of Rs. 1657.13 thousand. Out of the total cost, Rs. 1359.71 thousand were incurred for the transportation of milk, Rs152.96 thousand for its advertisement and Rs. 144.46 thousand for chilling charge at dairy plant. The total margin received by dairy Rs. 31791.37 thousand during the year. As regards the average monthly marketing of milk was 70.81 thousand liters at the cost of Rs. 138.07 thousand. The average monthly margin received by dairy Rs. 2511.21 thousand from the marketing of milk.

Ghee: The dairy produced 1265.49 thousand kilograms of ghee at its plant during the year by incurring a total cost of Rs. 415326.20 thousand. Out of the total cost, Rs. 414086.33 thousand were incurred for the manufacture of ghee, Rs 948.90 thousand for its transportation and Rs. 291.00 thousand for advertisement. The total margin was of the order of Rs. 90749.48 thousand of which dairy received Rs. 24983.08 thousand, distributors received Rs. 34136.95 thousand and retailers received Rs. 31629.75 thousand.

Paneer: The dairy produced 130.91 thousand kilograms of paneer during the year by incurring a total cost of Rs. 34893.46 thousand. The average monthly manufacturing cost, transportation cost and advertisement cost amounted to Rs. 2883.95 thousand, Rs. 12.51 thousand and Rs. 11.32 thousand, respectively. As regards marketing margins, GANGMUL dairy earned on an average Rs.131.08 thousand from the sale of paneer. Retailers received 41.66 per cent of the total margins.

Solid Milk Powder (SMP): The dairy produced 1584.39 thousand kilogram of solid milk powder during the year by incurring a total cost of Rs. 334565.69 thousand. Out of the total cost, Rs. 331790.3 thousand were incurred for the manufacture of solid milk powder, Rs. 2376.58 thousand for transportation and Rs.398.80 thousand for advertisement. As regards total sale proceeds, the dairy received Rs. 355317.3 thousand from the retailers and the retailers received Rs.

371161.2 thousand from the consumers as sale proceeds during the year. The total margins were of the order of Rs. 20751.61 thousand.

Dahi: The dairy produced 584.13 thousand kilograms of dahi during the year by incurring a total cost of Rs. 28885.22 thousand. Out of the total cost Rs. 27454.11 thousand were incurred for manufacturing of dahi, Rs. 876.19 thousand for transportation and Rs. 554.92 thousand for advertisement. As regards sale proceeds, the dairy received Rs. 35047.8 thousand from the distributors and distributors received Rs. 40889.1 thousand from the retailers and retailers received Rs.45562.14 thousand from the consumers as sale proceeds during the year. The total margins were of the order of Rs. 16676.91 thousand of which dairy received Rs. 6162.57 thousand, distributors received Rs. 5841.3 thousand and retailers received Rs. 4673.04 thousand as margins.

Chaach: As regards the average monthly production of Chaach, the dairy manufactured 277.001 thousand litres of Chaach during in the year 2014-2015. The average monthly cost of manufacturing 277.001 thousand litres of Chaach was estimated at Rs. 4847.50 thousand. Transportation cost amounted to Rs. 180.01 thousand. Advertisement cost was observed on to be 1.25 per cent of total costs of Chaach production. As regards marketing margins, GANGMUL Dairy earned on an average Rs. 1141.24 thousand from the sale of Chaach. The share of distributors and retailers in the marketing margins were Rs.969.50 and Rs. 135.99 thousand.

Lassi: The dairy produced 117.97 thousand litres of lassi during the year by incurring a total cost of Rs. 2345.24 thousand. Out of the total cost of Rs. 2345.24 thousand, Rs. 2241.43 thousand were incurred for manufacturing of lassi, Rs. 76.68 thousand for its transportation and Rs. 27.13 thousand advertisements. As regards total sale proceeds, the dairy received Rs. 3185.19 thousand from the distributors, the distributors received Rs 3893.01 from retailers and the retailers received Rs. 4718.8 thousand from the consumers as sale proceeds during the year. The total margins were of the order of Rs. 2373.55 thousand of which dairy received Rs. 839.94 thousand, distributors received Rs 707.82 thousand and the retailers received Rs. 825.79 thousand which were 35.38 per cent and 29.82 per cent and 34.79 percent respectively.

Table 3 average production and costs of different dairy products produced by GANGMUL dairy and margins received by different marketing agencies (2014-15)

S. N.	Products	Average production ('000 kg/litres)	Average manufacturing cost (Rs' 000)	Average Transportation cost (Rs' 000)	Average Advertisement cost (Rs' 000)	Average production cost (Rs' 000)	Average sale proceeds received in Rs' 000 by			Average margins received in Rs' 000 by			Total Average margins
							Dairy from Distributors	Distributors from Retailers	Retailers from Consumers	Dairy	Distributors	Retailers	
1	Ghee *	105.45	34507.19	79.07	24.25	34610.52	36692.44	39537.19	42173	2081.92	2844.74	2635.81	7562.68
2	Dahi *	48.67	2287.84	73.01	46.24	2407.1	2920.65	3407.42	3796.8	513.54	486.77	389.42	1389.74
3	Chachh#	277.001	4847.52	180.05	63.71	5091.29	6232.53	7202.04	8864.05	1141.24	969.5	1662.01	3772.76
4	Lassi #	9.83	186.78	6.39	2.26	195.43	265.43	324.41	393.23	69.99	58.98	68.81	197.78
5	SMP*	132.32	27649.19	198.04	33.23	27880.47	29609.78	30930.1	-	1729.31	1320.32	-	3049.63
6	Panneer*	10.91	2883.95	12.51	11.32	2907.78	3038.87	3158.04	3336.8	390.5	119.17	178.75	429.01
	Total	584.18	72362.47	549.07	181.01	73092.59	78759.7	84559.2	58563.88	5926.5	5799.48	4934.8	16401.6
	percentage		99.00	0.75	0.25	100				36.14	35.36	30.09	100

Summary and Conclusion

The summarized the average production costs and margins from different products at GANGMUL dairy during the year 2014-15. It can be concluded from the table that among the various products obtained at GANGMUL dairy plant, Chhachh, Ghee, SMP and Paneer were the main milk products which manufacturing cost was estimated about Rs.72362.47 thousand. Among the all products highest manufacturing cost was estimated for the ghee which is Rs 34507.19. Among all the products the highest (25.78 percent) margin was received by GANGMUL dairy plant from sale of Ghee. The annual margin received by GANGMUL dairy plant from sale of various products was workout to be Rs.96890.64 thousand. However the additional income was generated for the dairy from tender fee sale of scrape materials was obtained Rs. 2500 thousand in year 2014-15. Thus the total net income by GANGMUL dairy was obtained Rs.99890.64 thousand in a year 2014-15. GANGMUL dairy utilized their processing capacity only 70 percent due to the shortage of milk specially in summer season therefore, attention should be given to collection in sufficient milk quantity as per the available processing capacity of plant. To increase the sale of milk and milk products, facilities of dairy booth to be established outside the city.

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