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## A Study On The Production And Sales Performance Of Milk Producers Union In Tamil Nadu

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### Introduction

In India marketing of milk and milk products is dominated by the unorganized sector, and the organized sector handles only about 14 per cent of total milk production. The dairy cooperatives are considered as one of the vital segments in the organized sector and they play a major role in milk production, processing and marketing of dairy products at a reasonable price. After liberalization, the dairy cooperatives are facing cut-throat competition from the private players. The private dairy plants use their resources by reducing their operational costs and by utilizing resources efficiently and perform better as compared to cooperative dairy plants. Thus, the marketing components of the milk and milk products of dairy cooperative unions entails the provision of necessary procurement operations, efficient and effective transportation operations, modernization of dairy processing plant, proper processing of milk and milk products, proper marketing strategies of milk and milk products, to enable the entire milk to be obtained at reasonable price for the milk product throughout the year. In this context, this chapter is devoted to analysing the production and sales performance of selected milk producers' unions in each of the elements; suitable variables were identified and analyzed with the help of appropriate statistical tools. It was noticed that, of the six selected milk producers unions, the KCMPU has not engaged in production of milk products and hence the KCMPU was excluded from the analysis, especially on marketing of dairy products.

### Methodology

The study is both analytical and empirical. The marketing performance of CMPUs was analysed in detail with appropriate statistical tools. Data sheets and a comprehensive interview schedule were used for eliciting required information from the sample units and from the consumer respondents. There are 17 milk producers' unions functioning in Tamilnadu. Of them 6 were selected by applying the following criteria: i) feeder balancing of milk unions as identified under Operation Flood scheme. ii) Manufacturing of value

additions (milk products) iii) marketing of milk and milk products. Six unions were selected as they fulfill the above criteria for the study. They are Madurai Cooperative Milk Producers Union (MCMPU), Erode Cooperative Milk Producers Union (ECMPU), Salem Cooperative Milk Producers Union (SCMPU), Dharmapuri Cooperative Milk Producers Union (DCMPU), Nilgiris Cooperative Milk Producers Union (NCMPU), and Kanchipuram Cooperative Milk Producers Union (KCMPU). So it is purposive sampling.

**Product Function:** Marketing management deals with major areas such as product, pricing, promotion and physical distribution which are referred to as marketing mix. The product is the first consideration in marketing, which is concerned with the decisions regarding what to produce and sell in order to meet the consumers demand. The term product represents physical and tangible feature. The various product functions adopted by the marketing department includes: product improvement, product differentiation, market segmentation, demand forecasting, branding and packaging etc. The Cooperative Milk Producers Unions also produce various milk and milk products for the benefit of the consumers. The following table presents the different products produced by the Cooperative Milk Producers Unions as follows.

**Table- 1**  
**Various milk and Milk products**

S. No	Product	MCMPU	ECMPU	SCMPU	DCMPU	NCMPU	KCMPU
1.	Toned milk	✓	✓	✓	✓	✓	✓
2.	High fat milk	✓	✓	✓	✓	✓	✓
3.	Flavoured milk	✓	✓	✓	✓	✓	✓
4.	Butter milk	✓	✓	✓	✓	✓	✓
5.	Paneer	✓	✓	✓	✓	✓	✓
6.	Rose Milk	✓	✓	✓	✓	✓	✓
7.	Curd	✓	✓	✓	✓	✓	X
8.	Chocolate	✓	✓	✓	✓	✓	X
9.	Palkhoa	✓	✓	✓	✓	✓	X
10.	Ghee	✓	✓	✓	✓	✓	X
11.	Skimmed Milk Powder	✓	✓	✓	✓	✓	X
12.	Butter	✓	✓	✓	✓	✓	X
13.	Ice cream	✓	✓	✓	✓	✓	X
14.	Infant milk food	✓	✓	✓	✓	✓	X
15.	Khoa	✓	✓	✓	✓	✓	X

✓ *Produce milk product* X – *not produce milk products*

As it is indicated in the table, a variety of milk products produced by all the study unions, excepting KCMPU processed milk items alone are dealt in by the KCMPU.

**Sale of Toned Milk (TM):** Toned milk refers to the milk obtained by the addition of water and skim milk powder to whole milk. In practice, whole buffalo is admixed with reconstituted spray dried skim milk for its production. The sale of toned milk product of the milk unions is furnished in the following table.

**Table-.2**  
**Sale of toned milk** (Rs.in Lakh)

Society	MCMPU	ECMPU	SCMPU	DCMPU	NCMPU	Total	GI	GR	Trend
2012-13	581	1.4	67	2	0	652	100	-	723
2013-12	546	9.8	68	1	1	626	96	-4.0	703
2014-13	554	66	68	2	1	690	106	10.0	683
2015-16	642	11	69	2	1	725	111	5.0	663
2016-17	769	12	70	2	1	853	131	18.0	643
2017-18	792	2.2	70	1	1	867	133	1.6	623
2018-19	312	9	70	1	1	393	60	-55.0	602
2019-20	282	21	70	1	0	375	58	-4.5	582
2020-21	402	24	71	1	1	499	77	33.0	562
2021-23	422	63	71	1	1	557	85	12.0	542
2022-23	486	52	72	1	0	611	94	9.8	522
Avg.	526 (84.43)	25 (4.01)	70 (11.24)	1 (0.16)	1 (0.16)	623 (100)	95	2.6	623

GI – Growth Index, GR- Growth Rate, Avg. - Average

Perusal of the above table reveals the fluctuating trend of sale of toned milk. The annual average growth rate of sale of toned milk was 2.6 percent. Among the study units, the MCMPU was found to have effected high percentage of sales and the SCMPU stood at second place. The contribution of the DCMPU and the NCMPU found to be negligible. The level of procurement of milk plays a major role with regard to toned milk.

**Sale of high fat milk (HFM):** The fatty products derived exclusively from the milk by means of processes, which result in almost total removal of water and milk solids. The study unions prepare high fat milk and sell them for the welfare of the consumers.

**Table-.3**  
**Sale of high fat milk** (Rs.in Lakh)

Unions Year	MCMPU	ECMPU	SCMPU	DCMPU	NCMPU	Total	GI	GR	Trend
2012-13	656	2212	12	10	0	2890	100	-	2093
2013-12	572	870	10	9	0	1461	51	-49.0	2015
2014-13	548	1759	14	12	0	2332	81	60.0	1936
2015-16	612	1881	18	11	0	2522	87	8.1	1858
2016-17	676	464	19	9	0	1169	40	-54.0	1780
2017-18	683	0.25	22	10	0	715	25	-39.0	1702
2018-19	712	0.36	24	21	0	756	26	5.7	1624
2019-20	768	959	24	18	0	1770	61	134.0	1546
2020-21	818	786	25	17	0	1647	57	-7.0	1467
2021-23	892	683	27	18	0	1620	56	-1.7	1389
2022-23	996	796	30	16	0	1837	64	13.0	1311

Avg.	721(42.36)	946(55.58)	21(1.23)	14(0.83)	0	1702(100)	59	7.0	1702
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GI – Growth Index, GR- Growth Rate, Avg. - Average

It is observed from the above table that the sale of high fat milk by the unions had decreased from Rs.2890 lakh in 2012-13 to Rs.1837 lakh in 2022-23 registering an average sale of Rs.1702 lakh over the years of study. It is noteworthy to mention that the ECMPU and the MCMPU are the major stake holders as to production and sale of high fat milk, since the average sale of high fat milk effected was RS.721 lakh and Rs.949 lakh respectively. The NCMPU and the KCMPU have not been dealing with processing of high fat milk.

**Sale of flavored milk (FM):** Flavoured milk is the milk to which some flavours are added. When the milk is used, it must contain a milk fat percentage at least equal to the minimum legal requirements to market milk.

**Table- 4**  
**Sale of flavoured milk (Rs.in Lakh)**

Unions Year	MCMPU	ECMPU	SCMPU	DCMPU	NCMPU	Total	GI	GR	Trend
2012-13	1946	3	13	10	3	1975	100	-	1221
2013-12	2434	2	16	9	3	2464	125	25.0	1860
2014-13	2102	2	18	12	3	2137	108	-13.0	2500
2015-16	2542	3	26	11	4	2586	131	21.0	3139
2016-17	2693	1	28	9	4	2735	139	5.8	3779
2017-18	2714	2	32	10	3	2762	140	1.0	4418
2018-19	5978	5	41	21	2	6045	306	119.0	5058
2019-20	6585	2	46	18	4	6655	337	10.0	5697
2020-21	6965	2	48	17	8	7040	357	5.8	6337
2021-23	7010	2	48	18	4	7083	359	0.6	6976
2022-23	7043	3	50	16	6	7118	360	0.5	7616
Avg.	4365(98.75)	2(0.04)	33(0.81)	14(0.31)	4(0.09)	4418(100)	224	18.0	4418

GI – Growth Index, GR- Growth Rate, Avg. - Average

The above table shows that the sales performance of the unions in flavored milk had increased from Rs. 1975 lakh in 2012-13 to Rs.7118 lakh during the study period, registering an average of 224 per cent for the study period. The MCMPU had registered a higher volume of sales compared to other milk unions as the educated youth as well as work force in industries and service sector preferred flavoured milk. The average growth rate of sale of flavoured milk was 18 per cent. Thus, production and marketing of flavoured milk as a business activity found to be a major activity and heavily demanded also. The reason for low sale of flavoured milk in the ECMPU and the NCMPU is due to lack of demand of flavoured milk in the district, because of the availability of other substitute products viz; i) tender coconut ii) fruits juice and iii) agricultural produces.

**Sale of butter milk (BM):** Butter milk is obtained from churning sweet. It contains not less than 80 per cent milk fat and not more than 1.5 per cent curd. The following table depicts the sale of butter milk product of the selected milk unions.

**Table-5**

**Sale of butter milk (Rs.in Lakhs)**

<b>Unions</b> <b>Year</b>	<b>MCMPU</b>	<b>ECMPU</b>	<b>SCMPU</b>	<b>DCMPU</b>	<b>NCMPU</b>	<b>Total</b>	<b>GI</b>	<b>GR</b>	<b>Trend</b>
2012-13	2.5	4.8	24.3	0.9	0.8	32.9	100	-	31
2013-12	1.4	2.5	26.5	1.9	0.9	33.4	101	1	33
2014-13	2.3	2.6	27.2	1.7	0.5	34.8	105	3	35
2015-16	1.2	2.8	29.1	1.4	0.9	35.6	108	3	37
2016-17	0.1	2.7	23.4	0.8	0.2	27.4	83	-23	39
2017-18	8.4	4.6	35.4	1.8	0.6	50.1	155	86	41
2018-19	14.6	4.4	26.8	4.2	0.9	51.1	155	0	43
2019-20	5.2	3.5	25.9	3.4	0.9	39.1	119	-24	45
2020-21	1.4	3.8	27.5	2.2	0.9	36.0	109	-8	47
2021-23	34.4	4.8	28.3	2.6	0.5	70.9	215	97	49
2022-23	3.8	4.7	29.3	1.9	0.8	40.6	123	-43	51
<b>Avg.</b>	<b>6.85(16.66)</b>	<b>3.75(9.12)</b>	<b>27.6(67.15)</b>	<b>2.1(5.37)</b>	<b>0.7(1.70)</b>	<b>41.1(100)</b>	<b>125</b>	<b>9</b>	<b>41</b>

GI – Growth Index, GR- Growth Rate, Avg. - Average

The sale performance of the butter milk shows a fluctuating trend during study period. The average growth rate was 9 per cent, year wise analysis shows that there was a high performance in 2021-23 and a low performance was witnessed in 2016-17. The average sale of butter milk stood at Rs.41.1 lakh per year. Comparative analysis shows that the average sale of butter milk was found to be high in the SCMPU as there was high demand for butter milk in the region and low performance was found in case of the NCMPU, which is basically a hilly region. Both the SCMPU and the MCMPU had a high sales performance of butter milk as these two are located in high temperature regions and the people prefer butter milk in summer seasons.

**Sale of other milk products:** The other milk products of the unions include Paneer, Rose milk, Curd, Chocolate, Palkhoa. These are mostly seasonal in nature and whenever there is a demand the unions manufactured such products.

**Table-6**  
**Sale of other milk products (Rs.in Lakh)**

<b>Banks</b> <b>Year</b>	<b>MCMPU</b>	<b>ECMPU</b>	<b>SCMPU</b>	<b>DCMPU</b>	<b>NCMPU</b>	<b>Total</b>	<b>GI</b>	<b>GR</b>	<b>Trend</b>
2012-13	34	87	25	12	24	183	100	-	209
2013-12	25	99	35	14	13	186	102	1.5	203
2014-13	24	57	12	13	13	231	126	24.0	198
2015-16	25	65	25	14	52	183	100	-21.0	192
2016-17	72	58	34	13	54	232	127	27.0	187
2017-18	64	43	52	10	65	235	128	1.2	182
2018-19	52	25	13	11	25	128	70	-46.0	176
2019-20	34	62	24	12	20	153	83	20.0	171
2020-21	54	13	26	14	19	127	69	-17	166
2021-23	65	25	31	10	30	162	88	28.0	160
2022-23	72	24	41	10	32	179	98	11.0	155
<b>Avg.</b>	<b>47(25.82)</b>	<b>51(28.60)</b>	<b>29(15.93)</b>	<b>12(6.59)</b>	<b>42(23.07)</b>	<b>182(100)</b>	<b>99</b>	<b>2.9</b>	<b>182</b>

GI – Growth Index, GR- Growth Rate, Avg. - Average

The above table reveals that the other milk products sold by the selected milk unions indicate a fluctuating trend during the study period. The sales proceed varied from Rs.127 to Rs.235 lakh. The average total sales of the unions stood at Rs.182 lakh per year. Among the study unions the ECMPU had the highest

average sale of (28.60 per cent) volume followed by the MCMPU (25.82 per cent) and the NCMPU (23.07 per cent). The DCMPU registered with low volume with Rs.12 lakhs.

The SCMPU and the MCMPU effected a high sale performance of value added milk products due to its urbanized nature and DCMPU shows the low performance of value added milk products due to the lack of urbanization.

Analysis was also made further for the purpose of proving the null hypothesis viz. “**there is no significant relationship between milk procurement and increase in milk products**” with the help of Linear Multiple Regression model. As such, milk procurement by the unions was taken as dependent variable and milk products such as Ghee, Butter and Skimmed Milk Powder and Other products were considered as independent variables. The following table depicts the relationship between milk procurement and milk products.

**Table-7**

**Linear Multiple Regression (LMR) Model– Effect of milk procurement on milk products**

S. NO	Unions	Variable	Level of Correlation	Regression Coefficient	‘t’ value	Significant level	Hypothesis Accepted/ Rejected
1	MCMPU	Ghee	No Correlation	0.0001651	0.003	Not significant	Accepted
		Butter	No correlation	0.02515	2.447*	Significant	Rejected
		SMP	Low level	0.300	2.798*	Significant	Rejected
		Other by products	No correlation	0.01685	1.769	Not significant	Accepted
2	ECMPU	Ghee	No Correlation	0.202	0.707*	Significant	Rejected
		Butter	Low level	0.008904	0.198	Not significant	Accepted
		SMP	Low level	0.262	2.247*	Significant	Rejected
		Other by products	No correlation	0.03579	2.901	significant	Rejected
3	SCMPU	Ghee	Negative	-0.399	2.596*	significant	Rejected
		Butter	Negative	-0.0400	1.818	Not significant	Accepted
		SMP	Negative	-1.066	4.778**	Significant	Rejected
		Other by products	No correlation	3.584	1.663	Not significant	Accepted
4	DCMPU	Ghee	High level	0.002339	4.374**	Significant	Rejected
		Butter	Low level	0.02685	3.027*	Significant	Rejected
		SMP	No Correlation	0.0009886	2.015	Not Significant	Accepted
		Other by products	Negative	-0.001436	1.493	Not significant	Accepted



5	NCMPU	Ghee	Negative	-0.0194	-0.523	Not significant	Accepted
		Butter	Negative	-0.01388	-0.550	Not Significant	Accepted
		SMP	Low level	0.114	1.206	Not Significant	Accepted
		Other by products	No correlation	0.0572	0.919	Not significant	Accepted

The LMR model in the case of MCMPU shows that there is no significant positive relationship between the ghee and the other milk products and the milk procurement since the calculated t- value (0.003) and 1.769 is not significant at 5 % level respectively. However, there exists significant positive relationship between the milk procurement and the milk products of butter and skimmed milk powder since the calculated t value (2.447) and (2.798) is significant at 5 % level respectively. Thus, it is clear from the analysis that increase in milk procurement helps to increase in milk products of only skimmed milk powder and butter. Further, milk procurement did not exert great influence on the manufacture of ghee and other milk products. So, the null hypothesis mentioned above is accepted in the case of ghee and other milk products whereas, it was rejected in the case of skimmed milk powder and butter.

Similar model employed for the ECMPU reveals that there is no significant positive relationship between the butter and the milk procurement, since the calculated t- value (0.198) is not significant at 5 % level. However, there exists significant positive relationship between the milk procurement and the milk products of ghee, skimmed milk powder and the other milk products, since the calculated t value (2.996), (2.247) and (2.901) is significant at 5 % level respectively. Hence, it is clear from the analysis that the increase in milk procurement helps an increase in the milk products of skimmed milk powder, ghee and other milk products. Further, milk procurement as an independent variable did not exert great influence on manufacture of butter. Thus, the null hypothesis mentioned above is accepted in the case of butter, whereas it is rejected in the case of skimmed milk powder, ghee and other products.

As to the SCMPU, the model reveals that there is no significant positive relationship between the other milk products, the butter and the milk procurement since the calculated t- value (1.663) and (1.818), is not significant at 5 % level respectively. However, there exists significant negative relationship between the milk procurement and the milk products of ghee, skimmed milk powder, since the calculated t value (2.596) and (4.778) is significant at 5 % and 1% level respectively. Hence, it is clear from the analysis that increase in milk procurement helps to increase in the milk products of skimmed milk powder and the ghee. Further, the milk procurement as an independent variable did not exert great influence on the manufacture of butter and the other milk products. So, the null hypothesis mentioned above is accepted in the case of butter and other products, whereas it is rejected in the case of skimmed milk powder and ghee.

As far as the DCMPU is concerned, the model reveals that there is no significant positive relationship between the skimmed milk powder, the other milk products and the milk procurement since the calculated t-value (2.015) and (1.493) is not significant at 5 % level respectively. However, there exists significant positive relationship between the milk procurement and the milk products of butter and the ghee, since the calculated t value (4.374) and (3.027) is significant at 1% and 5 % level respectively. So, it is clear from the analysis that the increase in milk procurement helps an increase in milk products of ghee and butter. Further, the milk procurement did not exert great influence on manufacture of SMP and the other milk products. So, the null hypothesis mentioned above is accepted in the case of ghee and the butter, whereas it is rejected in the case of other milk products and skimmed milk powder.

As to the NCMPU, the model shows that there is no significant positive relationship between all the milk products and milk procurement since the calculated t- value is not significant at 5 % level. So, the null hypothesis mentioned above is accepted.

### Summary up

To sum up this part of the analysis, the selected milk producers' unions dealt with the four major functions namely production, pricing, promotion and physical distribution the milk products. As for product function, the unions dealt with raw milk, processed milk such as toned milk, flavoured milk, butter milk, high fat milk and milk products. Excepting the KCMPU, all other study units dealt with marketing milk and milk products namely ghee, butter, skimmed milk powder, khova and other milk products. With regard to pricing, the units followed the price being fixed by the government in consultation with Commissioner of Milk and Dairy Federation, both the procurement price as well as selling price fixed by them. As regards to channels of distribution, all the unions employ commission agents, own booth, retailers and parlours. Among these channels, the commission agents play a vital role in marketing of milk and milk products in all the unions.

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