

## **A Comprehensive Analysis of Milk Procurement in Dairy Cooperative Societies in the Union Territory of Puducherry**

V. Dhanalakshmi<sup>1</sup>, Dr. C. Pitchai<sup>2</sup>, Dr.S.V. Akilandeewari<sup>3</sup>

### **Abstract**

One of the most significant economic activities in the rural areas of many countries is livestock raising, which provides additional income for most families who depend on agriculture. Livestock is frequently a key element of small-holder risk management plans, offering financial stability and resilience against economic fluctuations. This multifaceted growth in the dairy sector, driven by technological advancements and socio-economic factors, underscores the importance of sustainable practices to balance economic benefits with environmental stewardship. In Puducherry, approximately 42,450 milk producers have registered as members of Primary Milk Producers' Cooperative Societies (PMPCS), with around 7,596 actively participating. There are 106 societies at the village level, though only 101 are currently functional, with the remaining 5 being non-functional. These societies procure about 70,900 liters of milk daily from their members. The primary focus of the study is to analyze the existing milk procurement practices of dairy cooperatives in Puducherry, identify the challenges faced by these cooperatives, and suggest suitable solutions to improvements and best practices based on successful models and innovations.

**Key Words:** Dairy Cooperatives, Socio-economic factors, procurement and livestock.

### **Introduction**

The entire world faces the consequences of the overutilization of natural resources and the generation of waste from industrial operations. The dairy sector significantly contributes to the global economy besides, it plays an important role in the food and agricultural sector. The main activity involved in the dairy industry is the production, processing, and distribution of various dairy products, including milk, cheese, butter, and yogurt. In terms of global milk production, the top dairy-processing country is India. (Gyanesh Kumar Sinha & Sumit Mishra , 2023) The dairy sector continues to expand and is projected to produce 177 million tons of powdered milk by 2025,

---

<sup>1</sup> Research Scholar, The Gandhigram Rural Institute (Deemed to be University), Tamil Nadu

<sup>2</sup> Professor & Head, The Gandhigram Rural Institute (Deemed to be University), Tamil Nadu.

<sup>3</sup> Assistant Professor, Department of Business Administration, Aathoor Cooperative College

growing at a rate of 1.8% each year (The Global Dairy Sector: Facts, 2016). In the financial year 2022-23, milk production increased 4%, reaching a total of 230.58 million tonnes. Over the past nine years, India has observed a 58% surge in its milk production. (Invest India, 2024)

This rise is primarily driven by expanding urbanization and increasing incomes in developing economies. The growing influence of technology also plays a role in this expansion. Emerging trends in artificial intelligence, machine learning, and chemometrics are being applied to chemical data within the dairy sector, further enhancing production efficiency and product quality (Houhou & Bocklitz, 2021).

One of the most significant economic activities in the rural areas of many countries is livestock raising, which provides additional income for most families who depend on agriculture. Livestock is frequently a key element of small-holder risk management plans, offering financial stability and resilience against economic fluctuations (Randolph et al., 2007). This multifaceted growth in the dairy sector, driven by technological advancements and socio-economic factors, underscores the importance of sustainable practices to balance economic benefits with environmental stewardship. This paper aims to analyse milk procurement in dairy cooperative societies in Puducherry. This comprehensive examination will contribute to a broader understanding of the dairy cooperatives in Puducherry and highlight ways to support and sustain their growth. (National Dairy Development Board (NDDB), 2019-2020)

### **Objectives**

The study aims to analyze the existing milk procurement practices of dairy cooperatives in Puducherry, identify the challenges faced by these cooperatives, and suggest suitable solutions to improvements and best practices based on successful models and innovations.

### **Methodology**

This study focused on a descriptive and analytical research design to explore the milk procurement processes in dairy cooperatives. Primary data was collected through a proper interview schedule with PMPCS Staff and milk producers (members) and the secondary data was collected through audit reports, annual reports, books, government websites, cooperative websites, journals, newspapers, and other publications. Both quantitative and qualitative data analysis techniques were used to interpret the collected data. A sampling method was used to select four dairy

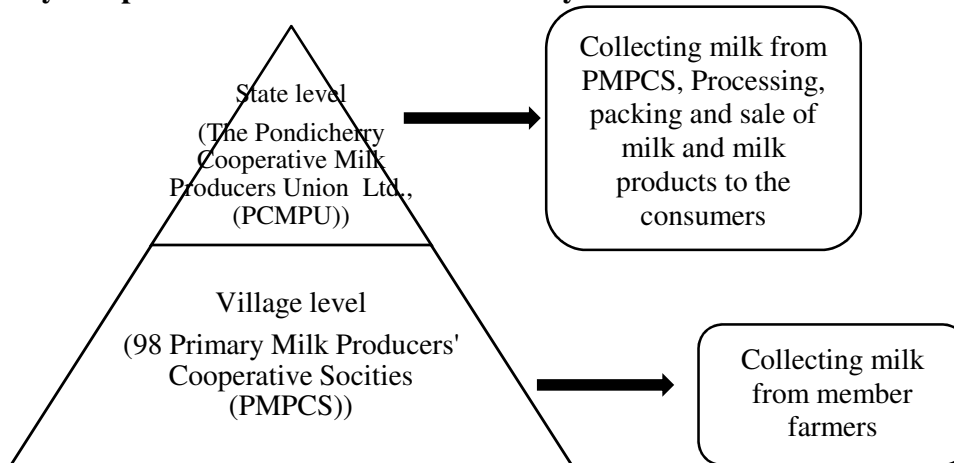
cooperatives from a total of 101 PMPCS. These included two profit-making societies and two-loss-making societies selected to analyse.

### **Overview of Dairy Cooperatives in Puducherry**

India is the world's biggest milk producer and has millions of rural milk producers as members across the country. The dairy business is the major source of livelihood for millions of rural people and they are small, marginal, and landless and rely on dairying for their livelihood. Milk is a nutritious food, and millions of people take milk and milk products regularly for their day-to-day lives not only that, dairy products are comparatively cheap and healthy also. (Hegde N G, 2019) Cooperative is one of the integrated parts of the development of the dairy sector in India. This is the only organisation that is owned, benefited, and controlled by members. A dairy cooperative is owned and controlled by dairy farmers who benefit from its service. Members take shares in the cooperative and get dividends from surplus based on the volume of milk supplied to the cooperatives. Dairy cooperatives engage in a variety of activities to provide and boost their members. (V Dhanalakshmi & et al., 2023)

The Pondicherry Cooperative Milk Producers' Union Ltd., (PCMPU) is commonly known as "Ponlait". Established in 1955, (The Pondicherry Cooperative Milk Producers Union Ltd., n.d.) The union had around 98 Primary Milk Producers Cooperative Societies with 12000 milk producers. The major activities of the dairy union include the procurement, processing, and distribution of milk and dairy products. Ponlait has significantly contributed to the region's rural economy by organizing dairy farmers and ensuring fair milk prices. (Department of Animal Husbandry and Animal Welfare, 2020) The PCMPU procures an average of 60,000 to 70,000 liters of milk daily, although demand often exceeds supply, additional milk was collected from neighboring states like Tamil Nadu and private dairies. It also operates a modern dairy plant where the collected milk is pasteurized, and converted into value-added products such as curd, ghee, butter, ice cream, chocolate, and flavored milk. Additionally, PCMPU engages in initiatives to improve dairy farmers' practices, including cattle health camps, artificial insemination services, and training programs for farmers to enhance productivity and sustainability. The Pondicherry has two tier structures one is state level and another one is village level.

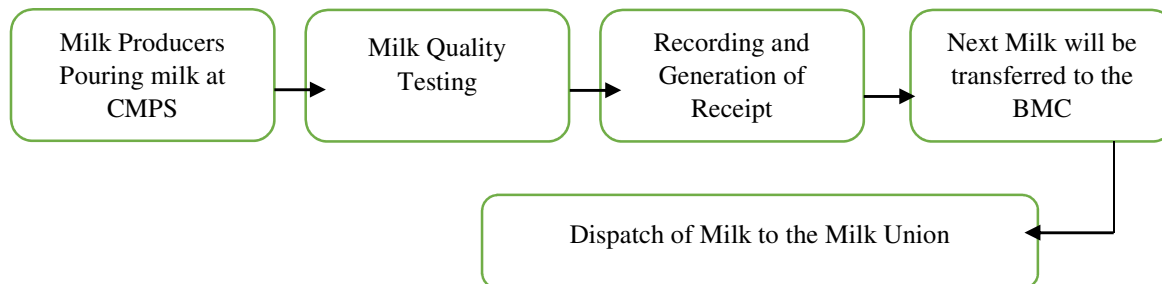
**Figure 1: Dairy Cooperative Structure in Puducherry**



**Milk Producers Cooperative Society**

In Puducherry, approximately 42,450 milk producers have registered as members of Primary Milk Producers' Cooperative Societies (PMPCS), with around 7,596 actively participating. There are 106 societies at the village level, though only 101 are currently functional, with the remaining 5 being non-functional. These societies procure about 70,900 liters of milk daily from their members. (V Dhanalakshmi & et al., 2023) After selling a portion locally, the surplus milk is sent to the milk union, and collected through 25 Bulk Milk Cooling (BMC).

**Figure 2: Milk Procurement Process**



**Table 1: Profit and Loss Status of the Selected Dairy Cooperative Societies from (2017-18 to 2021-22)**

<b>Societies</b>	<b>Profit/Loss</b>
Karikalambakkam Cooperative Milk Producers Society (KCMPS)	Profit
Embalam Cooperative Milk Producers Society (ECMPS)	Profit
Molapakkam Cooperative Milk Producers Society (MCMPS)	Loss
Sanjeevi Nagar Women Cooperative Milk Producers Society (SNWCMPS)	Loss

*Source: Collected from PCMPU*

The financial performance of the societies is indicated by their profit and loss status. This paper aims to analyse four CMPS out of four two were profit-making societies and two were loss-making societies. KCMPS and ECMPS are operating profitably and the other two, MCMPS and SNWCMPS are incurring losses. This could be due to various challenges such as lower milk yield, higher operational costs, and lack of proper management. For these stakeholders and policymakers to identify areas for intervention. Supporting loss-making cooperatives with better resources, training, and infrastructure can help enhance their productivity and sustainability, ultimately benefiting the broader agricultural community.

### **Services Provided by Cooperative Societies**

Input services play a crucial role in supporting milk producers and enhancing their productivity. These services include the supply of inputs like cattle feed, veterinary care, and Artificial Insemination (AI) which help to improve the health and yield of dairy animals. These support services dairy cooperatives contribute significantly to the sustainable development of the dairy sector, fostering economic stability, growth in rural communities, and a steady supply of quality milk, and contribute to the overall growth of the dairy cooperatives.

**Table 2: Association of Respondent with Veterinary Services Provided by the Union**

Respondent	Veterinary Services Provided by the Union		Total
	Yes	No	
Male	2	14	16
	11.8%	60.9%	40%
Female	15	9	24
	88.2%	39.1%	60%
<b>Total</b>			<b>40</b>
			<b>100%</b>

Chi-Square Tests		
Value	df	Sig.
9.821 <sup>a</sup>	1	.002

Table 2 shows the relationship between selected respondents and the veterinary services provided by the union. Among the males, 11.8% received veterinary services from the union and 88.2% of females were receiving these services from the union. Therefore, the chi-square test result ( $X^2=9.821$ ,  $p=0.002$ ) indicates that statistically significant relationship between the number of respondents and the veterinary services provided by the union. This suggests that veterinary service has not been properly provided to the milch animals therefore, the union should take the necessary steps to improve the veterinary services that will improve the health and milk quality.

**Table 3: Association of Respondent with Cattle Feed Supply to Milk Producers**

Respondent	Do you regularly received the cattle feed from PMPCS		Total
	Yes	No	
Male	0	16	16
	0.0%	53.3%	40%
Female	10	14	24
	100%	46.7%	60%

<b>Total</b>	<b>40</b>
	<b>100%</b>

<b>Chi-Square Tests</b>		
<b>Value</b>	<b>df</b>	<b>Sig.</b>
8.889 <sup>a</sup>	1	.003

Table 3 highlights the relationship between respondents and the cattle feed provided to milk producers. Among the 40 respondents, only 10 respondents were receive the cattle feed from the society. The chi-square test ( $\chi^2=8.889$ ,  $p=0.003$ ) reveals a statistically significant between the number of respondents and cattle feed received by milk producers. This finding suggests that cattle feed is not consistently supplied to members. The result shows that cattle feed plays an important role in enhancing milk procurement and fostering the growth and development of milch animals.

**Table 4: Input Services Obtained from the Societies**

<b>Input Services Obtained from the Societies (N=40)</b>	<b>Frequency</b>	<b>Percentage</b>	
What method is used to milch the cow?	AI	40	100
	Natural method	-	-
	Both	-	-
Veterinary service is regularly provided by the Union	Yes	17	42.5
	No	23	57.5
Does the Union Conduct a training Programme regularly	Yes	-	-
	No	40	100
Does the union provide the Cattle Feed regularly	Yes	10	25
	No	30	75

Table 4 reveals that all surveyed members 100% exclusively use Artificial Insemination (AI) for milking their cows, with no respondents using natural method. However, when it comes to veterinary services, only 42.5% of the members said veterinary services were regularly provided by the union, while the majority 57.5% of the members said no, suggesting that potential shortfall in essential animal health services, Additionally, the union did not conduct the training program regularly. Furthermore, only 25% of the members receive the cattle feed regularly, and 75% of the

members don't receive the cattle feed regularly. The findings highlight critical gaps in the input services provided by the Union, which could be impacting the overall productivity and welfare of the dairy farmers.

**Table 5: Milk Procurement over the Past Five Years**

Milk Procurement (N=4)		Frequency	Percentage
Over past five years, milk procurement has increased	Yes	3	75
	No	1	25
If yes, it is due to	Animal health care	1	25
	Animal maintenance	2	50

**Fig 3: Milk Procurement over Past Five Years**

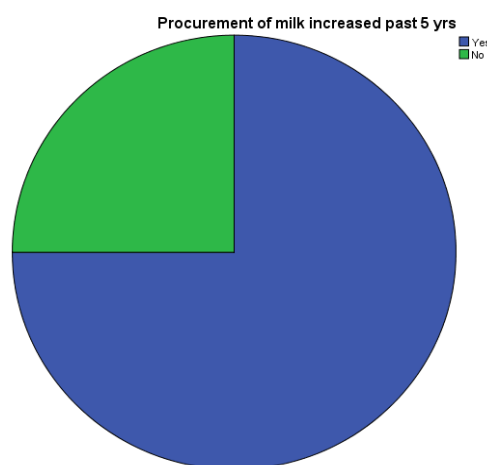


Table 5 indicates that out of the four PMPCS (N=4), a majority of the respondents reported a 75% increase in milk procurement over the last five years. 25% of respondents attributed it to improvements in animal health care, while 50% of the respondents cited better animal maintenance as the primary reason. This suggests that animal maintenance plays a significant role in enhancing milk procurement.

**Table 6: Membership of Selected Dairy Cooperative Societies from 2017-18 to 2021-22**



The membership of dairy cooperative societies plays a crucial role in understanding the growth and sustainability of the dairy sector. This study examines the membership trends of selected dairy cooperative societies over five years, from 2017-18 to 2021-22.

(Rs.in .000)

Year	Members			
	KCMPS	ECMPS	MCMPS	SNWCMPS
2017-2018	263	1206	405	111
2018-2019	263	1206	409	112
2019-2020	263	1206	409	112
2020-2021	264	1215	410	115
2021-2022	264	1215	410	115
<b>Mean</b>	<b>263.4</b>	<b>1209.6</b>	<b>408.6</b>	<b>113</b>
<b>SD</b>	<b>0.55</b>	<b>4.93</b>	<b>2.07</b>	<b>1.87</b>
<b>CV</b>	<b>0.24</b>	<b>19.44</b>	<b>3.44</b>	<b>2.8</b>
<b>CAGR</b>	<b>0.08</b>	<b>0.15</b>	<b>0.25</b>	<b>0.71</b>

Source: Compiled from the audit report of respective CMPS

**Fig 4: Trends in the Membership of Selected Dairy Cooperative Societies from (2017-18 to 2021-22)**

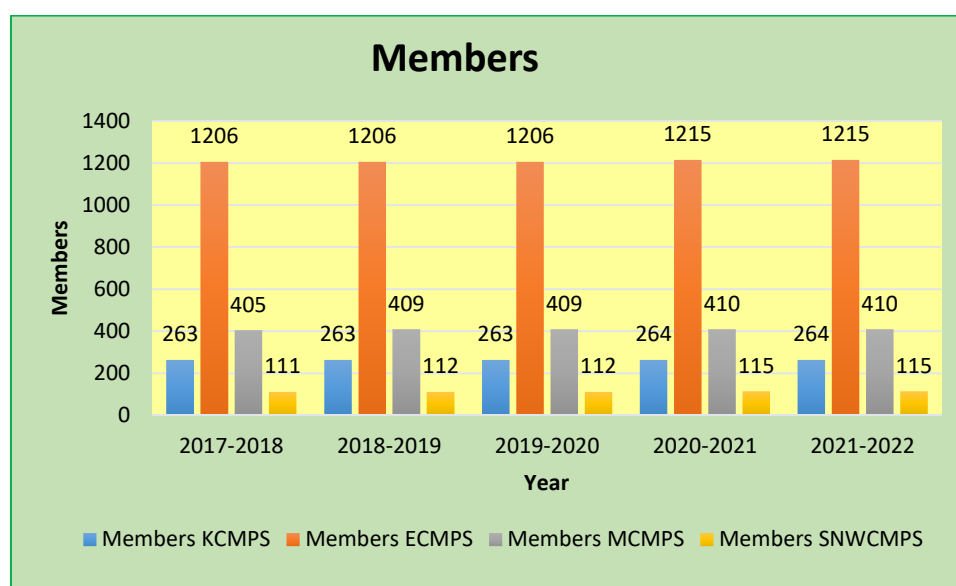


Table 6 and Fig 4 depict the trends in the membership position of the selected Primary Milk Producers Cooperative Society, KCMPS, ECMPS, MCMPS, and SNWCMPS from 2017 to 2022.

The total membership of KCMPS has increased to 264 in 2021-2022 with a CAGR of 0.08. ECMPS showed a consistent membership of 1206 from 2017 to 2020, followed by a marginal rise to 1215 in the final two years with a CAGR of 0.15. MCMPS had a minor increase from 405 to 409 members in the year 2017-2019 and the remaining were stable, with a slight rise to 410 in 2020-2021 with a CAGR of 0.25. SNWCMPS had 111 members in the year 2017-2018 and reached 115 by 2021-2022 with a CAGR of 0.71. Therefore, KCMPS and ECMPS have stable membership, with modest growth for MCMPS and SNWCMPS.

**Table 7: Non-members**

(In Numbers)

Year	Non-members			
	KCMPS	ECMPS	MCMPS	SNWCMPS
2017-2018	39	67	-	12
2018-2019	40	70	-	12
2019-2020	42	75	-	12
2020-2021	42	77	-	12
2021-2022	42	77	-	12
<b>Mean</b>	<b>41.00</b>	<b>73.20</b>	-	<b>12.00</b>
<b>SD</b>	<b>1.26</b>	<b>4.02</b>	-	<b>0.00</b>
<b>CV</b>	<b>1.6</b>	<b>16.16</b>	-	<b>0</b>
<b>CAGR</b>	<b>1.49</b>	<b>2.82</b>	-	<b>0.00</b>

*Source: Compiled from the audit report of respective CMPS*

Table 7 shows the number of non-members in selected CMPS (KCMPS, ECMPS, MCMPS, and SNWCMPS) from 2017-2018 to 2021-2022. The KCMPS and ECMPS societies have increased membership over the years, with KCMPS rising from 39 to 42 and ECMPS from 67 to 77. Following this, SNWCMPS maintained a constant number of 12 non-members throughout the period. The MCMPS society did not have any non-members throughout the year.

**Table 8: Share Capital of the Selected Dairy Cooperative Societies from (2017-18 to 2021-22)**

The share capital of the dairy cooperative societies indicates the financial stability and capacity to support their members. This analysis focuses on the share capital trends of selected dairy cooperative societies over the period from 2017-18 to 2021-22.

(Rs. in .000)

Year	Share Capital			
	KCMPS	ECMPS	MCMPS	SNWCMPS
2017-2018	26120	96100	20600	1110
2018-2019	26120	96100	21280	1120
2019-2020	26120	96100	21280	1120
2020-2021	26220	98280	21380	1150
2021-2022	26220	98280	21380	1150
<b>Mean</b>	<b>26160</b>	<b>96972</b>	<b>21184</b>	<b>1130</b>
<b>SD</b>	<b>54.77</b>	<b>1194.04</b>	<b>330.27</b>	<b>18.71</b>
<b>CV</b>	<b>2400</b>	<b>1140576</b>	<b>87264</b>	<b>280</b>
<b>CAGR</b>	<b>0.08</b>	<b>0.45</b>	<b>0.75</b>	<b>0.71</b>

Source: Compiled from the audit report of respective CMPS

Fig 5: Share Capital of the Selected Dairy Cooperative Societies from (2017-18 to 2021-22)

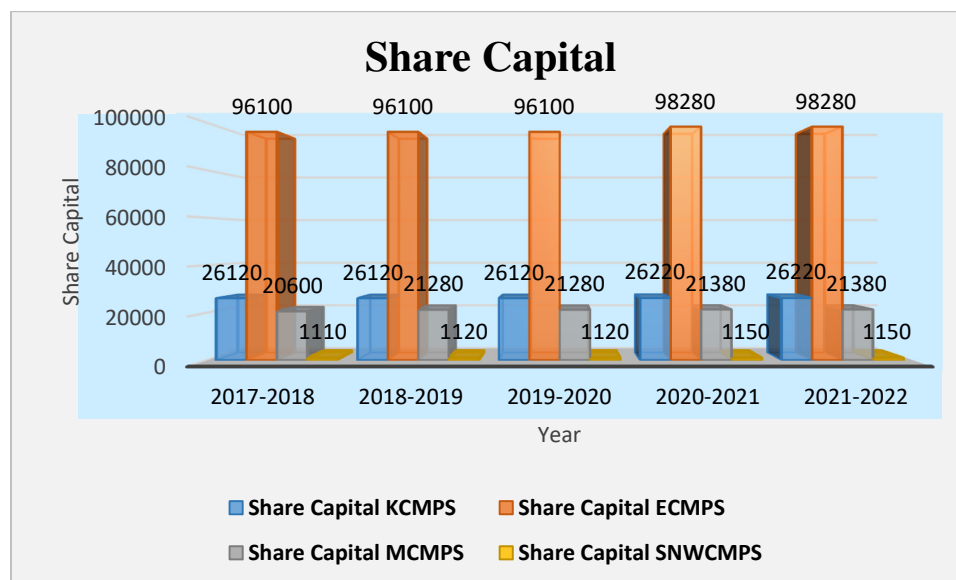


Table 8 and Fig 5 exhibit the share capital details of the selected dairy cooperative societies from 2017-18 to 2021-22. The share capital for all cooperatives demonstrated stability with modest

increases, indicating steady financial participation from their members. The CAGR was higher for MCMPS and SNCMPS and lowest for ECMPS and KCMPS.

**Table 9: Milk Procurement Details of the Selected Dairy Cooperative Societies from (2017-18 to 2021-22)**

This analysis focuses on the milk procurement trends from 2017-18 to 2021-22 across selected dairy cooperative societies and examines the volume of milk procured each year. The societies procure milk from member farmers in both morning and evening and all the members bring milk directly to the societies. The amount of procured milk will vary based on its tested quality.

(Rs. in lakhs)

Year	Milk Procurement Details			
	KCMPS	ECMPS	MCMPS	SNWCMPS
2017-2018	255.64	276.1	17.47	53.21
2018-2019	274.63	267.13	16.34	52.28
2019-2020	283.65	273.05	14.95	54.11
2020-2021	331.51	272.75	14.12	54.56
2021-2022	309.1	312.57	15.78	36.41
<b>Mean</b>	<b>290.91</b>	<b>280.32</b>	<b>15.73</b>	<b>50.11</b>
<b>SD</b>	<b>29.75</b>	<b>18.32</b>	<b>1.28</b>	<b>7.71</b>
<b>CV</b>	<b>708.19</b>	<b>268.40</b>	<b>1.32</b>	<b>47.56</b>
<b>CAGR</b>	<b>3.87</b>	<b>2.51</b>	<b>-2.01</b>	<b>-7.31</b>

Source: Compiled from the audit report of respective CMPS

**Fig 6: Milk Procurement Details of the Selected Dairy Cooperative Societies from (2017-18 to 2021-22)**

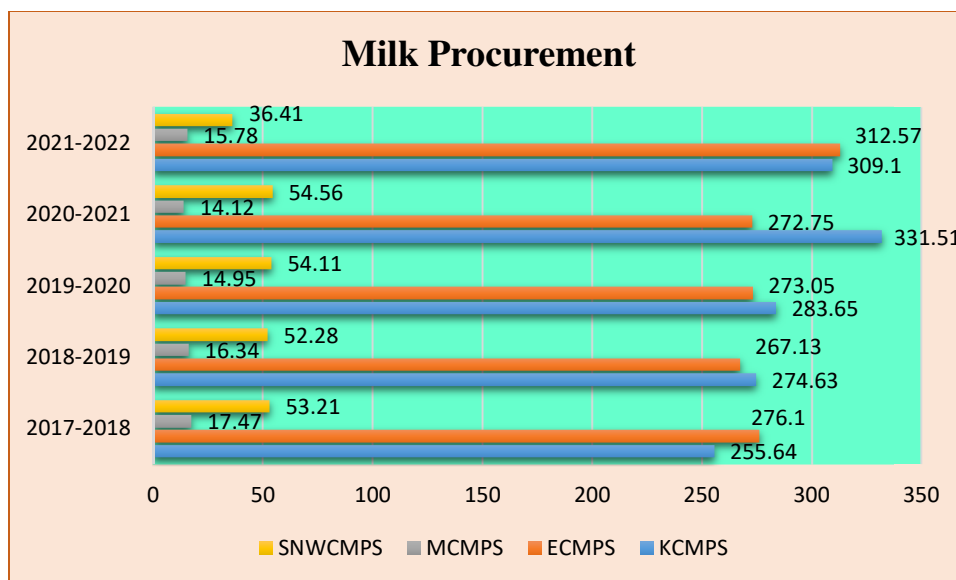


Table 9 and Fig 6 show the Compound Annual Growth Rate of the Selected CMPS from 2017-18 to 2021-22. KCMPS and ECMPS recorded positive growth with CAGR of 3.8% and 2.51% respectively, indicating that steady increase in milk procurement. MCMPS had a slight decline with a negative CAGR of -2.01%, while SNWCMPS had a significant drop in milk purchases with a negative CAGR of -7.31%. These figures suggest that KCMPS and ECMPS successfully expanded their procurement capabilities. MCMPS and SNWCMPS needed to improve their procurement quantity.

**Table 10: Milk Sales Details of the Selected Dairy Cooperative Societies from (2017-18 to 2021-22)**

Local sales were targeted to the households near the selected dairy cooperative societies.

(Rs. in lakhs)

Year	Milk Sales Details (Local)			
	KCMPS	ECMPS	MCMPS	SNWCMPS
2017-2018	45.02	48.23	9.76	4.3
2018-2019	51.35	56.19	10.95	4.3
2019-2020	59.17	64.75	7.85	4.6
2020-2021	65.37	77.28	5.86	4.7
2021-2022	60.11	79.34	5.98	5.9
<b>Mean</b>	<b>56.20</b>	<b>65.16</b>	<b>8.08</b>	<b>4.76</b>

<b>SD</b>	<b>8.01</b>	<b>13.37</b>	<b>2.26</b>	<b>0.66</b>
<b>CV</b>	<b>51.34</b>	<b>1.43</b>	<b>4.09</b>	<b>0.35</b>
<b>CAGR</b>	<b>5.95</b>	<b>10.47</b>	<b>-9.33</b>	<b>6.53</b>

Source: Compiled from the audit report of respective CMPS

**Fig 7: Milk Sales Details of the Selected Dairy Cooperative Societies from (2017-18 to 2021-22)**

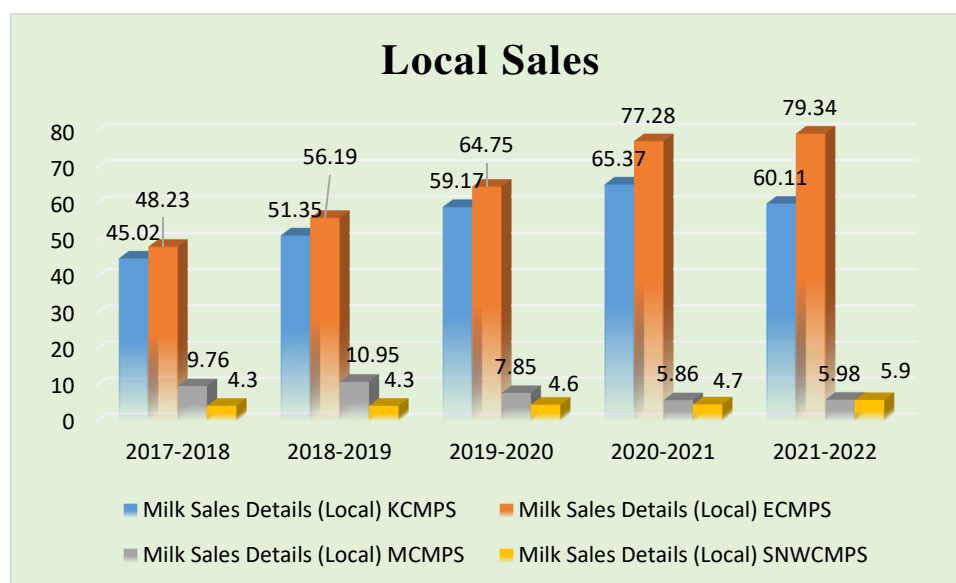


Table 10 and Fig 7 display the details regarding the local sales of the selected dairy cooperative societies in the year 2017-18 to 2021-22. ECMPS has the most significant growth with a strong CAGR of 10.47%, indicating substantial increases in its local milk sales. KCMPS and SNWCMPS also exhibited positive growth with CAGR of 5.95% and 6.53% reflecting steady sales performance. MCMPS was a significant decline in local sales with a CAGR of -9.33%. Overall, the data reveals varied performance among the cooperatives with ECMPS leading in sales growth and MCMPS decline in local sales.

**Table 11: PCMPU Sales of the Selected Dairy Cooperative Societies from (2017-18 to 2021-22)**

After the local sales, procured milk were directly supplied to the dairy plants of Pondicherry Cooperative Milk Producers Union (PCMPU).

(Rs. in lakhs)

Year	Milk Sales Details (PCMPU)			
	KCMPS	ECMPS	MCMPS	SNWCMPS
2017-2018	213.85	255.03	11.16	49.86
2018-2019	228.59	237.46	8.94	49.97
2019-2020	233.68	235.94	10.22	50.21
2020-2021	293.35	224.39	11.76	50.63
2021-2022	274.04	269.46	13.02	31.94
<b>Mean</b>	<b>248.70</b>	<b>244.46</b>	<b>11.02</b>	<b>46.52</b>
<b>SD</b>	<b>33.47</b>	<b>17.76</b>	<b>1.54</b>	<b>8.16</b>
<b>CV</b>	<b>896.05</b>	<b>252.22</b>	<b>1.91</b>	<b>53.23</b>
<b>CAGR</b>	<b>5.09</b>	<b>1.11</b>	<b>3.14</b>	<b>-8.52</b>

Source: Compiled from the audit report of respective CMPS

**Fig 8: PCMPU Sales of the Selected Dairy Cooperative Societies from (2017-18 to 2021-22)**

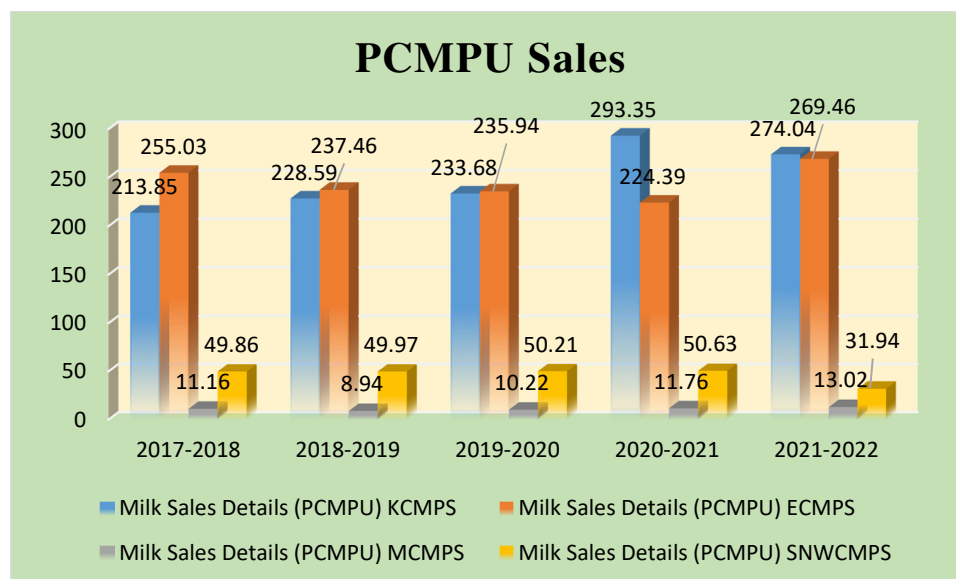


Table 11 and Fig 8 from 2017-18 to 2021-22 describe the Compound Annual Growth Rate (CAGR) of milk sales for the selected MPCs. KCMPS showed the highest growth with a CAGR of 5.09%, indicating that steady expansion in sales. MCMPS also experienced growth, though at a moderate rate of 3.14%. ECMPS saw minimal growth with a CAGR of 1.11% in this SNWCMPS faced a significant decline in sales, with a negative CAGR of -8.52%. This reflects the negative CMPS to improve their performance in the future.

**Table 12: Total Sales Details of the Selected Dairy Cooperatives in the year (2017-18 to 2021-22)**

Total sales are combining both local sales and PCMPU sales for the selected Primary Milk Producers Cooperative Societies from 2017-18 to 2021-22.

(Rs. in lakhs)

Year	Total Sales			
	KCMPS	ECMPS	MCMPS	SNWCMPS
2017-2018	258.87	303.25	20.92	54.19
2018-2019	279.94	293.65	19.89	54.32
2019-2020	292.85	300.70	18.07	54.84
2020-2021	358.72	301.67	17.62	55.35
2021-2022	334.14	348.80	19.01	37.82
<b>Mean</b>	<b>304.90</b>	<b>309.61</b>	<b>19.10</b>	<b>51.30</b>
<b>SD</b>	<b>40.74</b>	<b>22.21</b>	<b>1.34</b>	<b>7.55</b>
<b>CV</b>	<b>1327.71</b>	<b>394.69</b>	<b>1.44</b>	<b>45.62</b>
<b>CAGR</b>	<b>5.24</b>	<b>2.84</b>	<b>-1.90</b>	<b>-6.94</b>

Source: Compiled from the audit report of respective CMPS

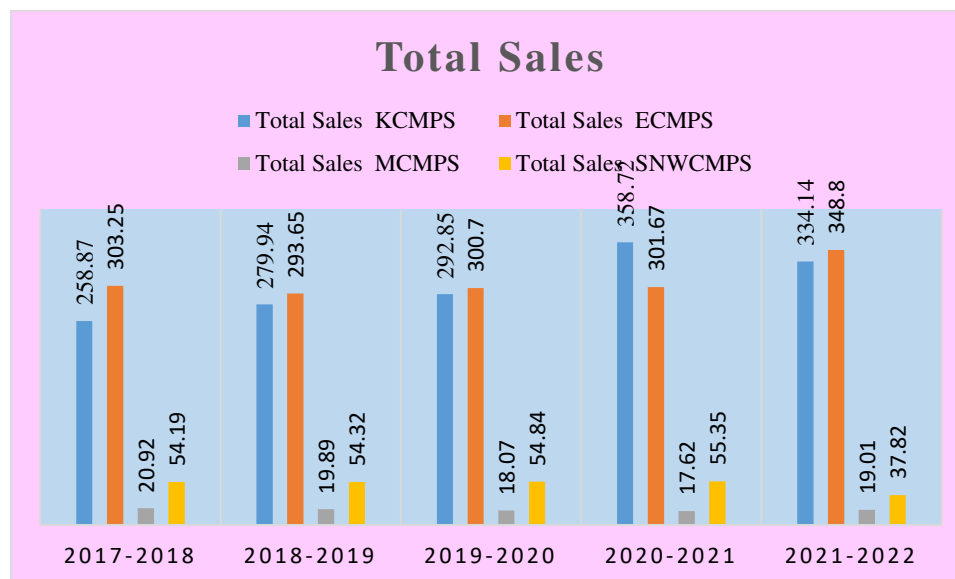
**Fig 9: Total Sales Details of the Selected Dairy Cooperatives in the year (2017-18 to 2021-22)**



Table 12 and Fig 9 illustrate the trends in the quantity of dairy plant sales in the selected dairy cooperative societies from 2017-18 to 2021-22, the Compound Annual Growth Rate (CAGR). KCMPS with a CAGR of 5.24%, shows strong sales performance. ECMPS with a modest CAGR of 2.84%. MCMPS decline in milk sales with a negative CAGR of -1.90%, and SNWCMPS substantial drop with a CAGR of -6.94%. These highlight MCMPS and SNWCMPS to increase their sales volume.

### **Findings**

The analysis has identified the challenges as its findings and traced the solutions. Firstly, the well-being of supply chain management is challenged by the lack of mutual benefit plans/practices between the milk producers and the society. For example, among 40 people, 30 people have responded that input services (esp. cattle feeds) aren't provided properly. Secondly, postponing the embracement of mechanical and technological advancements. The other challenge is the lack of infrastructure which fails to meet the necessities during the milk procurement. The next challenge is to update the members and staff with development skills by providing proper training. Prevailing over these challenges will bring overall productivity and sustainability to dairy societies.

### **Suggestion**

- ✓ Providing mutually beneficial Plans/Practices, especially in terms of input services such as providing feeds, insurance, and veterinary services to the cattle. This leads to the well-being of supply chain management.
- ✓ Implementing effective supply chain management practices for improving milk procurement.
- ✓ Regular training programs should be organized for cooperative members and staff to enhance their developmental skills in managing dairy operations.
- ✓ Embracing technological advancements, such as chemometrics, can significantly improve operational efficiency. Cooperatives should explore these technologies to enhance milk quality.

- ✓ Government financially supports the societies including grants for infrastructure development, low-interest loans, and financial incentives for meeting production targets.
- ✓ Societies should focus on increasing member participation by offering incentives, such as higher dividends, better access to resources, and enhanced support services.
- ✓ Regular monitoring and evaluation of the cooperatives' performance are essential to identify areas for improvement.

## Conclusion

By comprehending operational, socio-economic, and regulatory challenges, and adopting best practices, dairy cooperatives can enhance their contributions to the local economy and improve the livelihoods of their members. Continued support from stakeholders and policymakers will be essential in sustaining and expanding the growth of cooperatives. The analysis found that the process of milk procurement sustains with the mutual beneficiary Schemes/Plans, especially in terms of input services such as providing feeds, insurance, and veterinary services to the cattle. This aids as an investment in the livestock as well as in the milk producers. This leads to the well-being of supply chain management. Hence, dairy cooperatives and the support strategy will be crucial for ensuring the success and positive influence of dairy cooperatives on their communities.

## Reference

- (2016). *The Global Dairy Sector: Facts*. Food and Agriculture Organisation of the United Nations. Retrieved from <https://www.fil-idf.org/wp-content/uploads/2016/12/FAO-Global-Facts-1.pdf>
- Hegde N G. (2019). Livestock Development for Sustainable Livelihood of Small Faemrs. *Asian Journal of Research in Animal and Veterinary Sciences*, pp. 1-17.
- National Dairy Development Board (NDDB). (2019-2020). *Annual Report*. NDDB.
- Department of Animal Husbandry and Animal Welfare. (2020). *Annual Report 2019-2020*. Government of Puducherry. Retrieved from Department of Animal Husbandry and Animal Welfare, Government of Puducherry: <https://ponlait.coop/dev/>
- Gyanesh Kumar Sinha, & Sumit Mishra . (2023). Sustainable Supply Chain Mangement Practices inthe Dairy Industry: A Comparative Study of Leading Dairy Firms and Future Research Directives . *Asian Journal of Dairy and Food Research* , pp. 435-446.

V Dhanalakshmi, & et al. (2023). *Livelihood Development of Members: A Study on Dairy Cooperatives in Puducherry*. Indian Society for Studies in Cooperation, Pune.

*Invest India*. (2024). Retrieved from Invest India Web site:  
<https://www.investindia.gov.in/sector/animal-husbandry-and-dairying/dairy#:~:text=India%20is%20the%20highest%20milk,in%20the%20year%202022%2D23>.

*The Pondicherry Cooperative Milk Producers Union Ltd.,*. (n.d.). Retrieved from PONLAIT Web site: <https://ponlait.coop/dev/>