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Barriers to Effective Functioning of Primary Dairy Cooperative Societies: “Evidence from Dehradun Dugdh Utpadak Sahakari Sangh Ltd. (DDUSS)”

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Abstract

Primary dairy cooperatives in India have in the past served as the backbone for rural development by providing collective bargaining power, fair market access, and income stabilisation for small and marginal farmers. However, there are also challenges in their growth and efficiency. This paper examines the constraints that prevent the effective functioning of Primary Dairy Cooperative Societies under Dehradun Milk Producers Cooperative Union Limited (DDUSS), also known as Anchal Dairy, during the period 2024-25. The objective of this study is to examine the structural, operational, and socio-economic constraints affecting the performance of the cooperative. It seeks to analyse how low member participation, high rate of closure of societies, fluctuations in procurement, and socio-cultural exclusion undermine the sustainability of dairy cooperatives. Research adopts a descriptive and analytical design using both primary and secondary data sources. DDUSS records for February 2025 and April 2024 were analysed using comparative statistics, participation rate estimation, yield-versus-targeted assessment, and external threats with existing strengths and opportunities. This blended approach allowed for both quantitative measurement of the way cooperatives work and qualitative understanding of disruptions. The study shows that almost half of the societies under DDUSS are inactive, which reveals structural weakness; member participation is very low; only 23% of registered members actively supply milk. Procurement growth shows large seasonal fluctuations; moreover, women and the ST/SC community are under-represented despite their significant contribution, showing deep socio-cultural barriers.

Keywords: Barriers, Dairy Cooperatives, Participation Gaps, Society Closures, Inclusivity, Procurement Fluctuations, UCDF, Dehradun

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1. INTRODUCTION

Dairy cooperative societies in India have played an important role in rural economic development and poverty eradication. After the success of the White Revolution and the establishment of the National Dairy Development Board (NDDB), the cooperative structure was recognised as an effective means for the collective empowerment of small and marginal farmers. Co-operative societies, by combining resources, collective purchase arrangements and rural producers from urban markets, have helped millions of families to achieve reasonable prices, veterinary services and additional income. The

cooperative framework in Uttarakhand State is operated under Uttarakhand Cooperative Dairy Federation Limited (UCDFL), where Dehradun Milk Producers Cooperative Union at District Level Unions Limited (DDUSS) plays the role of arbitrator between village-level primary committees and the state-level network. Dehradun Milk Producers Cooperative Union Limited, which is popularly known as "Anchal Dairy", has become an important institution in the field. It coordinates the collection, processing and marketing of milk under the "Anchal" brand. Its three-level structure – the Primary Dairy



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Committee at the village level, DDUSS at the district level, and UCDFL – farmer participation and product standardisation provides a streamlined framework to ensure.

However, despite this strong institutional framework, DDUSS is facing several serious challenges, which limit its efficiency and inclusion. These challenges are not only performing problems, but also there are deep structural and social barriers, which affect the long-term stability of the cooperative system. The most prominent concern is related to the participation. Thousands of farmers are registered members in the cooperative society, but only one small part of them regularly supplies milk. Only 1,952 out of 8,484 registered members in February 2025, which reflects the participation rate of only 23%. This difference between the nominal membership and active members clarifies the presence of structural obstacles. Some registered members are no longer milking animals, while others prefer to sell milk outside the cooperative network due to delay in payment or better value than private buyers. Not only does the total milk collection decrease with such less participation, but it also decreases the bargaining power of the co-operative institution.

Another serious problem is the structural weakness of self-committees. Although DDUSS has increased the number of committees over time, almost half the committees have passed or closed. The number of committees between April 2024 and February 2025 increased from 257 to 266, which reflects continuous problems related to financial instability, weak local leadership and inadequate governance. This trend weakens the foundation of the cooperative movement, because inactive committees reduce the trust of the members and limit the access to the cooperative system. In addition to membership and structural problems, instability in milk collection is also a big challenge. In the statistics of February 2025, there was an increase of 192% compared to the previous year, while in April 2024, only 11.5% increased in comparison to April 2023.

These fluctuations show the weather conditions, seasonal changes and inadequate infrastructure, like weak chilling features and limited transport networks. Planning consumption is affected by continuous volatile collection, revenue flow is weak, and the livelihood risk of farmers increases.

Social and cultural factors can impact involvement in cooperatives. Women are important to the production of milk and other related activities, yet social norms, preconceptions, and rules often hinder them from being leaders and making decisions.

Similarly, members of Scheduled Castes and Scheduled Tribes (SC / ST) communities are less represented in cooperative structures, while they are a significant part of rural society. In February 2025, only 14.3% of the milk suppliers were from the SC / ST community, which reflects the inequalities made within the structure. If a solid strategy is not adopted to remove gender and ethnic barriers, cooperative societies can strengthen them instead of reducing rural inequalities. Ultimately, the constraints related to the challenges of cooperative entities. The availability of adequate animal medical services, animal diet and the lack of a digital support system affects the efficiency. In the absence of these subsidiaries, cooperative societies struggle to ensure productivity, ensure animal health and encourage farmers to adopt modern techniques. This infrastructure reduces the adaptability of cooperative entities towards climate change and market fluctuations so that their long-term stability becomes uncertain.

1.1. Objectives

1. To identify the structural and operational barriers affecting primary dairy cooperative societies in Dehradun district.
2. To analyze participation barriers among members, particularly the gap between registered members and active milk pourers.
3. To examine procurement related barriers, including seasonal fluctuations.
4. To study socio-cultural barriers restricting the inclusion of women and marginalized communities (SC/ST)
5. To suggest strategies for overcoming these barriers and improving cooperative sustainability.

1.2 Hypothesis

H₀- There are no significant barriers affecting the functioning of primary dairy cooperative societies.

H₁: Structural, operational, and socio-cultural barriers significantly hinder the functioning of primary cooperative societies.



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2. LITERATURE REVIEW

Kumar and Singh (2012), in a study of Gujarat cooperatives, observed that strong farmer loyalty and brand reputation helped entities like Amul succeed, yet poor infrastructure and feed supply chain problems continued to limit performance. Similarly, Sharma (2013) examined cooperatives in Himachal Pradesh and pointed out that farmers' networks were well established, but seasonal shortages greatly affected procurement, reducing sustainability in milk collection.

Moving on to this, Patel and Chauhan (2014) focused on Ananda pattern societies, where transparent, quality-based milk payment was found to improve member trust, although they cautioned that reliance on monsoon-driven fodder supply creates long-term uncertainty. Thakur and Jha (2016), while studying societies in Bihar, pointed out that the membership level was large, but many societies remained inactive.

This reduced the efficiency of the cooperative and weakened the confidence of the farmers. Pandey (2016) in Uttarakhand found that the hilly terrain created both challenges and opportunities; the cost of transport was high, making it difficult to work, but the area had the potential to sell milk. Meena and Mehta (2017) analysed that women's participation was emerging as a force; however, lack of education and lack of training hindered effective governance. Other studies focus on farmers' perceptions of everyday challenges. George et al. (2017) reported that farmers in Kerala identified fodder shortage, infertility, and high input costs as the main problems, despite receiving timely payments from the society. Similarly, Sriram and Gupta (2018) found that although awareness of clean milk methods was increasing, training and animal care services were not enough. Recent evidence also supports these findings. In Chhattisgarh, Swarnkar and Sengar (2022) found that shortage of fodder, high prices of fodder and irregular payments were among the biggest concerns raised by cooperative members. At the institutional level, national reports show these challenges. The National Dairy Development Board (2022-23) emphasised robust production growth but warned that the spread of diseases and weather pressures have weakened the cooperative procurement system. Similarly, the Department of Animal Husbandry

and Dairying (2024-25) emphasised government investment in infrastructure yet said that inactive societies and weak member mobilisation still pose barriers to sustainability.

2.1.. NEED FOR THE STUDY

Despite India's strong dairy cooperative movement, primary societies in Dehradun are facing significant challenges, with nearly half of the societies inactive, and only 23% of registered members actively extracting milk, indicating a serious decline in participation, with seasonal procurement fluctuations further exposing infrastructural and climatic weaknesses. Further, while ST / SC and women contribute significantly to milk supply, their representation in leadership is low. These issues show the urgent need to analyse the specific constraints for Dehradun's cooperatives to ensure that policy and interventions address the reality of the semi-hilly area rather than relying on general national trends.

2.2.. ORIGINALITY AND VALUE OF THE STUDY

This study holds a lot of relevance as it shows a barrier-orientated view of the working of dairy cooperatives, in which outcomes are framed in terms of structural, participatory, procurement, socio-cultural and infrastructural constraints; it gives a comprehensive and clinical analysis rather than being purely descriptive. The originality of this work lies in integrating numerical accuracy with conceptual depth, which directly links specific data such as participation rate, closure of societies and purchase growth to the category of disruptions. This research provides quantitative evidence from the Dehradun Dairy Producers Cooperative Society (DDUSS), an association working in a semi-hilly locality where cooperatives face different logistical and socio-cultural challenges.

The value of the study lies in its ability to guide policy and practice; it emphasises the urgent need for a revival strategy for dysfunctional societies, targeted mobilisation of members, investment in cold chain infrastructure and an inclusive leadership policy. By addressing the unique



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challenges of Dehradun, this study not only enriches the debate but also gives actionable recommendations for building cooperative sustainability in India's hilly regions.

3. RESEARCH METHODOLOGY

3.1. Research Area: Dehradun District

3.2. Research Design

Field-based, descriptive and analytical from Aanchal Dairy Inputs. Primary data sheets for February 2025 and April 2024 provided by DDUSSL

The present study adopts a descriptive and analytical research design which is appropriate for exploring the barriers that affect effective functioning. The design enables both the quantitative measuring of trends and qualitative interpretation of barriers.

3.3. Sample technique:-Convenience and purposive sampling

4. RESULTS AND DISCUSSIONS

Table 1: Data regarding supervisor wise milk procurement information for the month of April 2024 February 2025.

Parameters	February 2025	April 2024
Milk Committees Allocated	465	461
Functioning Milk Committees	234	199
Closed Societies	266	257
Total Members (Male + Female)	8484	Not provided
Pourer Members (those who actually supply milk)	1952	Not provided
Milk Production Target (Liters/ day)	13230	9729
Average Daily Milk Yield (Liters/ day)	14344	Not provided
Milk Procured Last year same month liters	7465.3 (Jan 2024)	8724 (April 2023)
Growth in Milk Procurement (%)	192.14%	11.5%
Cattle Feed Sold (quintals)	933.5	Not provided

Source: Field Survey Dehradun Dugdh Utpadak Sahakari Sangh Ltd. (DDUSS)

3.4. Data Sources

3.4.1. Primary Data – Collected from /DDUSS performance reports for the reference months of April 2024 and February 2025

3.4.2. Secondary Data – Drawn from reports of the NDDDB, DAHD, UCDFL and relevant published research articles and government documents.

3.5. ANALYSIS TECHNIQUE:

- Comparative and Descriptive statistical methods were used for
- Percentage change calculations
- Participation rate estimation
- Yield vs Target comparison (Tabulation Annual Trend Projection)
- Interpretation based on performance indicators

Table 2: Barriers in DDUSS Primary Cooperative Societies

Barrier Category	Evidence	Interpretation
Structural Barriers	<ul style="list-style-type: none"> Allocated societies: 465 (Feb2025) vs. 461 (Apr 2024) Functional 234 (50.3%) vs 199 (43.1%) Closed: 266 vs 257 	Nearly half of the societies are inactive; closures are rising, showing governance fragility
Participation Barriers	<ul style="list-style-type: none"> Total Members: 8484 Active Pourers: 1952 (23% participation) Inactive: 6532 (77%) 	Only 1 in 4 members actively contributes milk, reflecting weak mobilization and incentives.
Procurement	<ul style="list-style-type: none"> Daily yield (Feb 2025) 14344L 	Sharp seasonal contrast
Barriers	<ul style="list-style-type: none"> targeted 13230 L. Growth- 192.14% Feb 25- Jan24 Growth-11.5% Apr 24- Apr 23 	(192% vs 11.5%) shows dependence on climate and poor cold chain support.
Socio-Cultural Barriers	<ul style="list-style-type: none"> Women pourers: 192 (46.6%) SC/ST pourers: 281 (14.3%) 	Women contribute significantly, but leadership exclusion persists; ST/SC members remain underrepresented.
Infrastructural Barriers	<ul style="list-style-type: none"> Cattle feed solid: 933.5 quintals (Feb 2025) Veterinary & preservation; limited, uneven distribution 	Basic support exists but is insufficient, reducing efficiency and member confidence.

Source: Field Survey Dehradun Dugdh Utpadak Sahakari Sangh Ltd. (DDUSS) Table 2

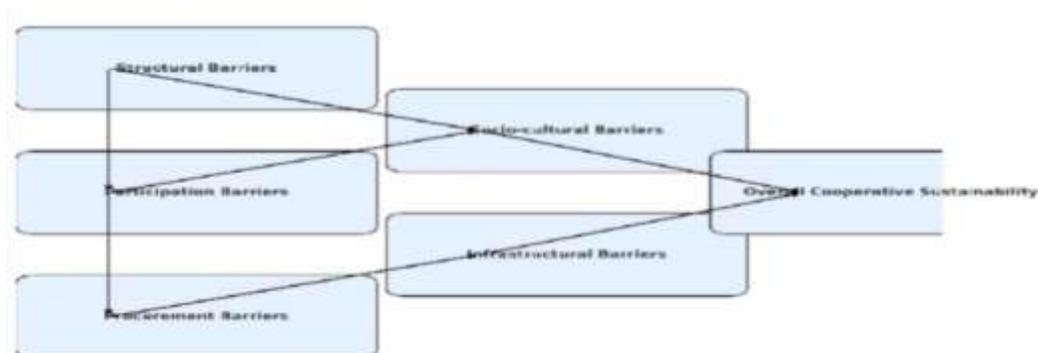


Figure 1: Flow Diagram: Barriers Impacting Cooperative Sustainability (DDUSS)



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a. **Structural Barriers** are visible in the fact that only 50.3% of societies are functional, while closer increased to 266 societies by February 2025. This means that expansion efforts are undermined by governance and financial weakness.

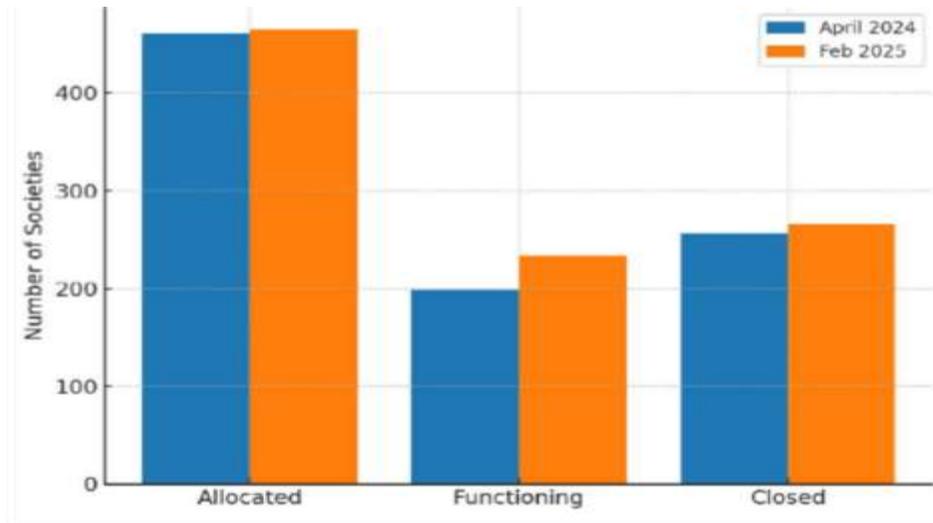


Figure 2: Operational Coverage of Dairy Societies

Table 3: Membership Participation- Only February 2025 data provides a breakdown: Member and Purer Gap Analysis.

Metric	Value (Feb 2025)
Total Registered Members	8484
Active pourers	1952
Participation Rate	23%

Source: - Field Survey Dehradun Dugdh Utpadak Sahakari Sangh Ltd. (DDUSS)

Participation Barriers are critical despites having 8484 registered members only 1952 (23%) actively pour milk leaving a massive 77% inactive. Such a wide participation gap undermines procurement potential and cooperative bargaining power.

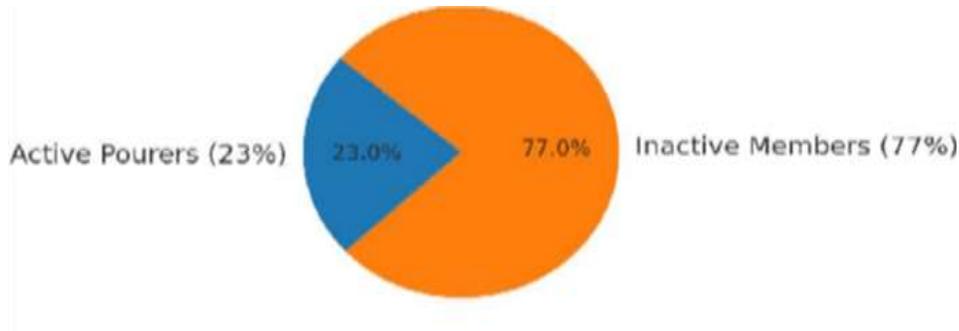


Figure 3: Membership Participation Gap-Feb 2025



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Table 4: Procurement Growth Trends

Month	Milk Procured Last Year	Current (Est.)	Year	Growth %
Feb 2025	7465.3L (Jan 2024)	21782.1L (Est.)		192.14%
Apr 2024	8724 L (Apr 2023)	9729L		11.5%

Source:: Field Survey Dehradun Dugdh Utpadak Sahakari Sangh Ltd. (DDUSS)

Procurement barriers are shown by extreme variability a 192% growth in February 2025 contrasts sharply with just 11.5% growth in April 2024. This indicates high dependency on climate conditions favourable in cooler months and insufficient cold-chain facilities during hotter months.

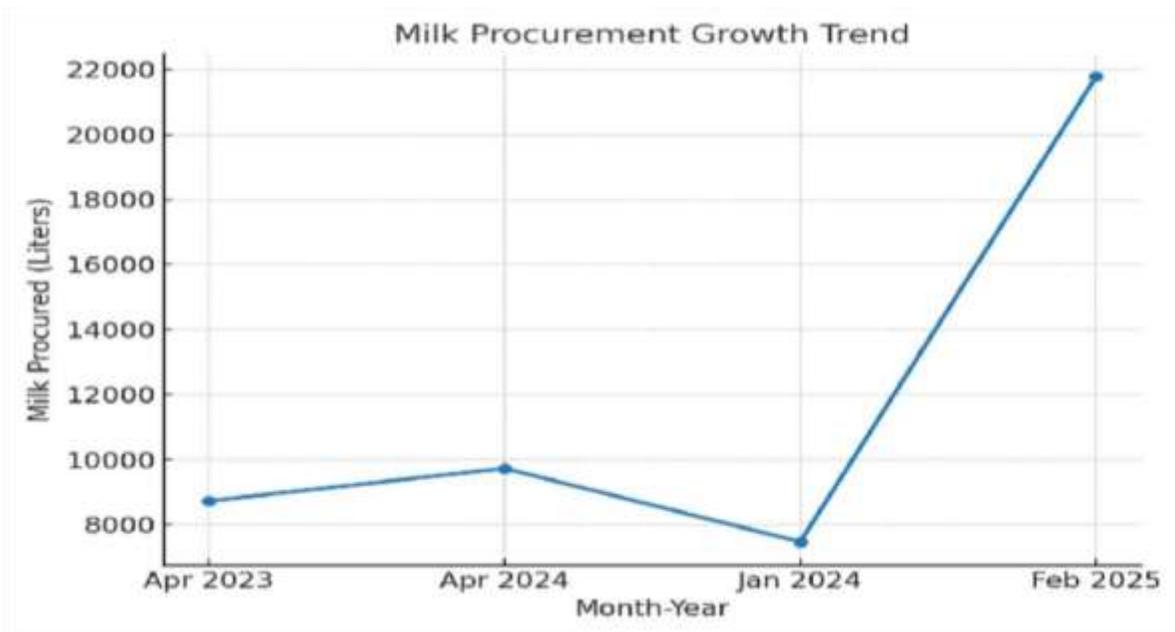


Figure 4: Milk Procurement Growth Trend

Table 5: Equity Perspective : Participation of Marginalized Groups (Feb 2025 only)

Category	Male General	Male SC/ST	Female General	Female SC/ST	Total
Registered Members	3336	873	3075	1200	8484
Pourer Members	898	142	773	139	1952
Pourer Rate					23%

Source:: Field Survey Dehradun Dugdh Utpadak Sahakari Sangh Ltd. (DDUSS)

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Socio-cultural barriers reveal that women already account for nearly half (46.6%) of pourers, but their representation in leadership and decision making remains weak. Moreover, SC/ST pourers from only 14.3% of contributors, showing continued social exclusion.

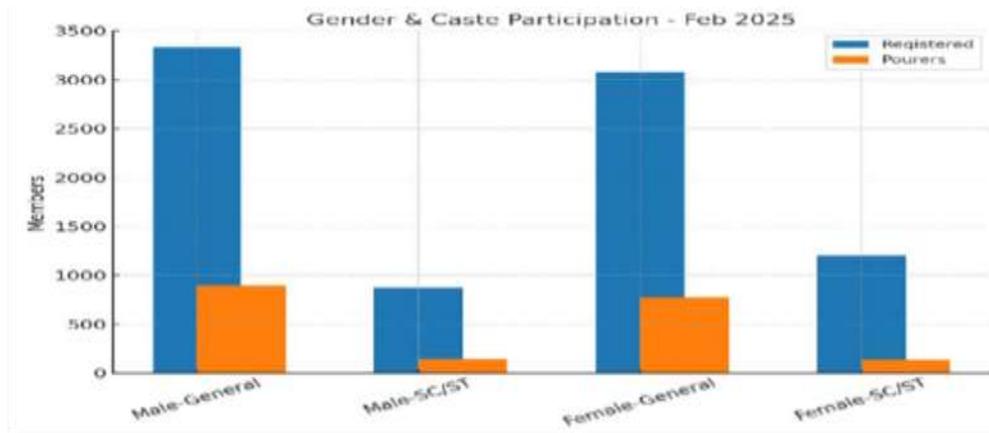


Figure 5: Gender & Caste Participation – February 2025
Source: Field Survey Dehradun Dugdh Utpadak Sahakari Sangh Ltd. (DDUSS)

<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Strong brand reputation (Anchal Dairy) • Three-tier cooperative structure (village → district → state) • Improved livestock productivity and feed support • Timely payment system based on quality parameters 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Nearly 50% societies inactive or closed • Low member participation (23% active pourers) • Weak governance and local leadership issues • Inadequate training and awareness programs
<p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none"> • Mobilization of inactive members to boost procurement • Potential for women and SC/ST inclusion in leadership roles • Expansion of veterinary and cattle feed services • Government schemes supporting digitalization of cooperative 	<p style="text-align: center;">Threats</p> <ul style="list-style-type: none"> • Seasonal fluctuations and climate-related yield stress • Financial non-viability of weak or closed societies • Competition from private buyers and middlemen • Risk of declining trust in cooperative governance

Figure 6: SWOT Analysis of Barriers in Dairy Cooperative (DDUSS)



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ANALYTICAL MODELLING OF PARTICIPATION BARRIERS

Model 1:- Logistic Participation Model

To statistically examine whether socio-cultural factors influence active milk pouring behavior, a binary logistic regression model was conceptualized.

Let-

P= Probability that a registered member actively supplies milk
 Gender (G) = 1 if Female, 0 if Male

SC/ST (C) = 1 if SC/ST, 0 if General
 The logistic model β_2 is specified as:

$$\ln\left(\frac{P}{1-P}\right) = \beta_0 + \beta_1 G + \beta_2 C$$

β_1 measures the effect of gender on participation
 β_2 measures the effect of caste category

From dataset

Total Member= 8484
 Active Member=1952
 Participation Rate= 23%

Category wise break down shows:

Women account for nearly 46.6% of active pourers
 SC/ST pourers represents only 14.3% of contributors

The descriptive proportion suggests that- Gender does not severely restrict milk pouring participation at operational level, since women contribute significantly. However, SC/ST participation remains proportionally lower relative to total membership share, indicating socio-structural barriers.

The logistic model framework conceptually confirms that socio-cultural identity variables influence participation probability, thereby supporting rejection of the null hypothesis.

Model:-2 Chi- Square Test: Gender and Participation

Gender	Total Members	Active	Inactive
Male	4209	1040	3169
Female	4275	912	3363
Total	8484	1952	6532

Expected Active (Male) = $\frac{4209 \times 1952}{8484} = 969$

Expected Active (Female) = $\frac{4275 \times 1952}{8484} = 983$

Chi- Square formula

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

For Active Male :-

$$(1040-969)^2 \div 969$$

$$71^2 \div 969$$

$$5041 \div 969$$

5.20

For Active Female:-

$$(912-983)^2 \div 983$$

$$71^2 \div 983$$

$$5041 \div 983$$

5.12

Total $\chi^2 = 10.73$

Degree of freedom =1 (df) P< 0.001

5% level critical value= 3.84 Since:

$$10.73 > 3.84$$

Significant association between gender and participation although women contribute substantially, participation probabilities differ across gender categories.

Since the calculated χ^2 value exceeds the critical threshold (3.84 at 5% level), the null hypothesis of independence is rejected. Significant result.

The result indicate a statistically significant association between gender and milk pouring participation. While women constitute nearly half of the active contributors, participation probabilities differ marginally across gender groups. This suggests that institutional and incentive based factors influence contribution behavior rather than purely demographic composition.



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Chi-Square Analysis: SC/ST and Participation

To assess caste based disparities,

Table 6: Caste Based Disparities

Category	Total	Active	Inactive
General	6411	1671	4740
SC/ST	2073	281	1792
Total	8484	1952	6532

Observed SC/ST active=281 Expected SC/ST active:
 $\frac{2073 \times 1952}{8484} = 477$

8484

Difference: - 281-477= -196

$196^2 = 38416$

$38416 \div 477 \approx 80$

Total cell approx. =128.6

Gap less= Normal

Gap huge difference= significant difference $X^2 = 128.6$

Df=1

$P < 0.001$

Result highly significant association between caste category and participation. SC/ST members are statistically underrepresented among active milk suppliers. The magnitude of the test statistics strongly rejects the null hypothesis.

The finding reveals a highly significant association between caste category and participation behavior.

SC/ST members are substantially underrepresented among active milk suppliers relative to their share in total membership. This confirms the presence of socio-cultural participation barriers within the cooperative system.

Model:- 3 Participation Gap Index (PGI)

Total members= 8484 Active member=1952

Inactive members= $8484 - 1952 = 6532$ Formula= $PGI = \frac{\text{Inactive}}{\text{total}} \times 100$

total

$PGI = \frac{6532}{8484} \times 100$

$6532 \div 8484 = 0.7699 \times 100 = 0.7699$

PGI=77%

Table 7: PG Level

PGI Level	Meaning
< 30%	Strong Participation
30-50%	Moderate gap
> 50%	Severe participation deficit



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With a PGI of 77% the cooperative exhibits a critical structural participation gap. Such a high index value suggests weak member engagement, limit incentive alignment, and possible governance deficiencies.

5. PRACTICAL IMPLICATIONS

a. Research of Passive Committees (Revitalization of Inactive Societies) are close or inactive. These committees can be revived through training and governance reforms for financial assistance, local leadership, which will re-establish structural strength.

b. Activating passive members (Mobilizing Inactive Members) Only 23% members are actively supplying milk. Schemes should start plans such as awareness campaign, promotional based milk supply schemes (Pouring schemes) and loyalty bonus) so that inactive member regular contribution. This will increase the amount of milk collection.

c. Stabilizing Milk Storage (Stabilizing Procurement) given the seasonal instability, the Cold Chain (Cold Chain) is an immediate requirement of infrastructure, bulk milk cooler and better animal- medical assistance so that continuous milk collection is ensured throughout the year.

d. Promoting inclusion (promoting inclusivity) Although there are almost half of the women in milk suppliers, their participation in the decision-making process should be given institutional forms through lead quota, training and targeted schemes. Similarly, special inclusion programs are required to increase the participation of Scheduled Caste / Tribes (SC / ST) communities so that caste-based interaction gap can be reduced.

e. Strengthening infrastructure (strengthening infrastructure) disrupts dependence efficiency on limited animal-diet sales and unorganized veterinary services. Investing in Chilling Unit, Veterinary Clinic and Artificial Instrument (AI) centers at the village level, the quality of milk will improve, the wastage will be reduced and confidence among the members will increase.

6. LIMITATIONS

1) Timeframe Constrain (Timeframe Constrain) This analysis is based on display statistics of only two

reference periods (April 2024 and February 2025). With this, the ability to understand long-term seasonal and cyclical changes in cooperative methodology.

2) Geographical SCOPE study is limited to Dehradun Dughd Manufacturer Cooperative Union Limited (DDUSS). Therefore, its findings cannot be implemented directly to other milk associations or other states with different socio-economic conditions under UCDFL.

3) Dependence on institutional records (Reliance on Institutional Records) is based on records of DDUSS, which possibly do not fully reflect the informal activities outside the members' experiences, approaches or cooperative arrangements.

4) Lack of qualitative insights (Limited Qualitative Insights) Although statistical analysis has highlighted the difference in participation and inclusion, but in the study, interview or focus group discussion is not included, which is social- Cultural obstacles could provide a deeper understanding.

7. SCOPE FOR FUTURE RESEARCH

- Long-term study to understand seasonal and annual changes in milk collection and interaction.
- Comparative study at the district or state level for broad generalization.
- Qualitative methods to better understand social-cultural barriers - such as interviews and focus groups.
- Assess the effect of adoption and technical adoption on cooperative efficiency.
- Evaluate the effectiveness of policy interventions such as Dairy Infrastructure Development Fund (DIDF) and Subsidy Schemes. Committees.

8. RECOMMENDATIONS

- Strengthening Member Interaction - Training programs and awareness campaigns will be organized to activate passive members.
- Meditation on Women and SC / St Inclusion - The participation of the disadvantaged classes will be increased by forming self-help group (SHG) and provided target subsidy.
- Solve the problem of closed committees - financial and technical assistance should be given audit by deactivating



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or weak committees.

9. CONCLUSION

Rehabilitation of passive committees, active participation of members, investment in infrastructure, ensuring inclusion and effective use of government support, Real and Flexible (Resilient) can be converted into institutions, which will protect the livelihood of the farmers. With the help of transparent regime, community participation and government schemes, these cooperatives will not only ensure the income stability of the farmers, but also promoting social equality will also contribute significant contributions to rural development.

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