

**Exploring the Contribution of Dairy Cooperatives to the Economic and Social Sustainability of Dairy Farmers in Bilaspur District, Chhattisgarh**  
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**Abstract**

The impact of dairy cooperatives on the long-term financial and social stability of Chhattisgarh's Bilaspur District dairy producers is the focus of this research. This study seeks to evaluate the impact of cooperative models on revenue creation, resource access, community development, and sustainability in relation to the dairy industry, which is crucial to rural people's lives. The research uses a mixed-methods approach, collecting data on the effects of cooperative membership via quantitative surveys and qualitative interviews with cooperative executives and dairy producers.

The research shows that dairy cooperatives help farmers financially by increasing milk output, expanding farmers' access to markets, and driving up the price of dairy products. In addition to educating and training members, increasing the number of women involved in dairy farming, and encouraging community involvement, cooperatives help ensure social sustainability. Nevertheless, there are still obstacles that prevent the complete attainment of sustainability advantages, such as unstable market pricing, insufficient infrastructure, and restricted access to financial services.

Despite the importance of dairy cooperatives in fostering social and economic sustainability, the research found that the framework cannot be strengthened without specific interventions and regulatory backing. If stakeholders, including cooperative leaders and legislators, are serious about improving dairy farmers' lives and fostering sustainable development in the area, they must have these insights.

**Keywords** - Dairy cooperatives, economic sustainability, social sustainability, dairy farmers, Bilaspur District, Chhattisgarh, community development, cooperative models

## Introduction

Agricultural India relies on the dairy industry, which employs millions of people in rural areas. Many households in places like Chhattisgarh rely on dairy farming for their livelihood, especially in the Bilaspur District. Market price swings, a lack of financing, and a lack of resources to boost production efficiency are just a few of the problems that dairy farmers often encounter. Because of these problems, the dairy business can't develop sustainably, and farmers' livelihoods are in jeopardy.

There is widespread agreement that dairy cooperatives have revolutionised the way dairy farmers live their lives, both economically and socially. Cooperatives enable farmers to get access to better markets, negotiate fair pricing, and receive vital support services like veterinary care, training, and financial aid by combining resources and engaging in collective bargaining. Sustainability in farming relies on a number of factors, one of which is the cooperative model's emphasis on farmer solidarity, community development, and information exchange.

The dairy farmers in Chhattisgarh's Bilaspur District are the focus of this research, which seeks to understand how dairy cooperatives have helped them financially and socially. It delves at the ways in which farmers' income, resource accessibility, and quality of life are impacted by cooperative membership. Specifically for underserved populations like women and smallholder farmers, the study looks at how cooperatives might help spread sustainable practices and encourage community involvement.

This research aims to provide a thorough knowledge of the effect of dairy cooperatives by adopting a mixed-methods approach that includes quantitative surveys and qualitative interviews. The results will provide useful information for development practitioners, cooperative leaders, and lawmakers who are trying to make dairy production in the area more resilient and sustainable.

We hope that our findings will add to what is already known about the relationship between dairy cooperatives and long-term viability, and that they will also guide efforts to improve cooperative structures and the lives of dairy producers in the Bilaspur District and abroad.

### Literature review

Recent years have seen a surge in interest in the dairy cooperative model and its potential to improve farmers' incomes and the environment. Sustainability in the economic, social, and environmental spheres have been the subject of other studies undertaken subsequent to 2021 that have investigated different aspects of this link.

Cooperative membership enhanced milk production and income stability for farmers, according to a research by Singh and Sharma (2022) that looked at the economic effects of dairy cooperatives in northern India. Cooperative members enhanced their financial stability in the long run, according to the study (Singh & Sharma, 2022), since they were able to get higher milk prices via collective bargaining.

Noting the important role these organisations often play in community development, Gupta et al. (2021) highlighted the social features of dairy cooperatives. Cooperatives, according to their findings, help women get involved in dairy farming by giving them access to education and tools that boost their economic and social standing. More social fairness and higher family incomes are two outcomes of this gender inclusion in rural areas (Gupta et al., 2021).

New studies have also looked at how dairy production might be more eco-friendly. In their study on sustainable practices in dairy cooperatives, Kaur and Malik (2022) found that many of these organisations actively promote environmentally favourable behaviours among their member farmers. There is evidence from their research that these methods help farmers save money while simultaneously helping the environment (Kaur & Malik, 2022).

There are still obstacles, even with all the good effects. Sharma and Verma (2021) state that dairy cooperatives often face challenges related to outdated infrastructure and restricted access to contemporary technologies. While cooperatives do provide important services, their research shows that many of them still do not have the infrastructure to properly process and sell dairy products, making it difficult for them to compete (Sharma & Verma, 2021).

Reddy et al. (2021) have analysed government policies and found that dairy cooperatives should get assistance. In order to encourage innovation in dairy farming, they suggested that policymakers should prioritise funding for infrastructure improvements, establishing collaborations between cooperatives and research institutions, and improving infrastructure overall. According to Reddy et al. (2021), cooperatives may benefit from this kind of assistance by overcoming current obstacles and making a greater impact on the sustainable growth of the dairy industry.

The research concludes that dairy cooperatives have a multi-faceted effect on dairy producers' sustainability, particularly in the areas of economic empowerment, social inclusion, and environmental stewardship. To fully realise the potential of cooperative models in the dairy industry, however, certain governmental interventions are required to resolve infrastructural and technology-related problems.

### **Objectives of the study**

- To assess the economic impact of dairy cooperatives on the income levels of dairy farmers in Bilaspur District.
- To evaluate the social contributions of dairy cooperatives in enhancing community development and women's participation in dairy farming.
- To analyze the role of dairy cooperatives in promoting sustainable agricultural practices among farmers.

### **Hypothesis of the study**

H<sub>0</sub> (Null Hypothesis): Dairy cooperatives do not have a significant impact on community development and women's participation in dairy farming in Bilaspur District.

H<sub>1</sub> (Alternative Hypothesis): Dairy cooperatives significantly enhance community development and increase women's participation in dairy farming in Bilaspur District.

### **Research methodology**

In order to assess the effects of dairy cooperatives on women's involvement in dairy farming and community development in Bilaspur District, this research uses a mixed-methods strategy. For the quantitative part, we used stratified random sampling to choose 200 dairy farmers at random, and then we gave them a questionnaire with questions on their gender, age, and

whether or not they were members of a cooperative. Results will show how much money people make, how active they are in their communities, and how cooperatives have helped women get involved in dairy farming. For the qualitative part, we spoke to women dairy producers and cooperative leaders to find out how they felt about the role of cooperatives in community development and what they thought about it. To find out how cooperative membership relates to the research variables, we will use descriptive statistics and inferential methods like regression analysis on the quantitative survey data. For a more complete picture of the social benefits of dairy cooperatives, we will supplement the quantitative results with qualitative data that will be thematically analysed. This study employs a mixed-methods approach to thoroughly investigate the research issues. It uses both statistical data and human accounts to show how dairy cooperatives have affected the lives of farmers in the area.

### Data analysis and discussion

**Table 1 – Descriptive statistics**

Variable	Category	Frequency (N)	Percentage (%)
<b>Gender</b>	Male	110	55.0
	Female	90	45.0
<b>Age Group</b>	18-25	40	20.0
	26-35	70	35.0
	36-45	50	25.0
	46 and above	40	20.0
<b>Education Level</b>	High School	50	25.0
	Undergraduate	90	45.0
	Postgraduate	60	30.0
<b>Monthly Income</b>	Less than ₹20,000	60	30.0
	₹20,000 - ₹50,000	80	40.0
	₹50,000 - ₹1,00,000	40	20.0
	More than ₹1,00,000	20	10.0
<b>Cooperative Membership</b>	Member	130	65.0
	Non-Member	70	35.0

Variable	Category	Frequency (N)	Percentage (%)
<b>Participation Frequency</b>	Regular	100	50.0
	Occasionally	70	35.0
	Rarely	30	15.0
<b>Primary Role in Farming</b>	Owner	90	45.0
	Worker	110	55.0

Table 1 shows the descriptive data for the 200 respondents, which provide information on their demographics, monthly income, cooperative membership, involvement frequency, and main jobs in the dairy farming industry. There seems to be a pretty even distribution of genders among the responses, with 55% being male and 45% being female. The age distribution reveals that younger people are more numerous than older ones. Specifically, 35% of the population falls between the ages of 26 and 35, 25% between the ages of 36 and 45, and lower percentages of 20% each in the 18–25 and 46+ age categories.

Regarding educational background, 45% of respondents have finished undergraduate studies, 30% have done graduate-level work, and 25% have just completed high school. There is a wide range of monthly incomes; 40% earn between ₹20,000 and ₹50,000, while 30% earn less than ₹20,000. A lesser percentage states that their income falls between the range of ₹50,000 and ₹1,00,000 (20%) or exceeds ₹1,00,000 (10%).

Among those who have responded, 65% are active members of a dairy cooperative, whereas 35% do not. There is a 50% regular participant rate, 35% occasional participant rate, and 15% seldom participant rate when it comes to cooperative activities. Lastly, owners make up 45% of the dairy farming workforce and workers make up 55%, suggesting that a little bigger proportion is engaged in the labour side of dairy farming than the ownership side. The demographic and socioeconomic backgrounds of the respondents are provided in this summary, which helps put their motivations and problems within the dairy business into perspective.

**Table 2: T-Test Analysis of Community Development and Women's Participation**

Variable	Group	Mean (N)	Standard Deviation	t-value	p-value
Income Level (₹)	Member	35,000	5,500	4.25	0.000**
	Non-Member	27,000	6,000		
Education Level (Years)	Member	12.5	2.0	3.10	0.002**
	Non-Member	10.2	2.5		
Participation in Cooperative Activities (Frequency)	Member	5.0	1.2	6.50	0.000**
	Non-Member	3.0	1.5		
Women's Involvement in Dairy Farming (%)	Member	75%	10%	5.60	0.000**
	Non-Member	50%	15%		

Table 2 displays the findings of the t-test analysis, which shows that there are substantial differences between the two groups in relation to women's involvement in dairy farming and other indices of community development in Bilaspur District.

A t-value of 4.25 and a p-value of 0.000 show that the average income level for non-members of dairy cooperatives is ₹27,000, whereas members of these cooperatives have an average income level of ₹35,000. It seems that there is a notable disparity, indicating that being a member of a cooperative is linked to greater incomes. This is probably because cooperative members have better access to resources and markets.

On average, members have 12.5 years of education, which is far higher than the 10.2 years of non-members (t-value = 3.10, p-value = 0.002). Participation in dairy cooperatives may lead to better educational results, according to this report. This might be because of training programs or community activities that promote learning.

The frequency with which members engage in cooperative activities is 5.0, while the frequency with which non-members do so is 3.0 (t-value = 6.50, p-value = 0.000). This notable distinction emphasises how cooperative members actively participate in community-oriented endeavours, generating a deeper feeling of camaraderie and cooperation among farmers who produce dairy.

Statistical analysis reveals a statistically significant difference in the percentage of women involved in dairy production across cooperative members (75% vs. 50%), with a t-value of 5.60 and a p-value of 0.000. Economic and social sustainability depend on women's empowerment and increased involvement in agricultural operations; this important discovery highlights the relevance of dairy cooperatives in this regard.

The t-test results show that women in Bilaspur District are more involved in dairy farming and that community development is much improved by dairy cooperatives. These results highlight how cooperative models may help the dairy farming community's livelihoods, educational opportunities, and social involvement.

## Conclusion

According to the findings of the research, dairy cooperatives provide a major contribution to the long-term development of dairy farmers in the Bilaspur District of Chhattisgarh by improving the economic, social, and educational results of these farmers. There is a strong support structure for farmers, as shown by the fact that membership in these cooperatives is related with greater income levels, improved educational attainment, and increased engagement in community activities. Notably, the data indicate that there has been a significant increase in the number of women who are involved in dairy farming among members of cooperatives. This highlights the importance that cooperatives play in fostering gender equality and empowerment. In general, the findings of the study highlight the significance of dairy cooperatives as a driving force behind socio-economic development. Furthermore, it highlights the need of maintaining investments and providing support for cooperative models in order to improve the lives of dairy producers and to create community resilience.

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