

## **Sustainable Development of Chhattisgarh Economy- With Special Reference to Chhattisgarh State Cooperative Dairy Federation - Devbhog**

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### **Abstract**

India's stature as a leading milk producer, often metaphorically referred to as the "milk oyster," highlights the integral role of milk and dairy products in Indian culture and daily life. Livestock rearing (prominently cows and Buffalos) in certain regions of India has promoted the growth of the milk industry in the areas of its scarcity. In India, there has been a 5.06 percent increase in per capita availability of milk in comparison to the previous years. Chhattisgarh, being the 26<sup>th</sup> state of India has its predominance in the agricultural sector along with rearing as a subsidiary occupation. The Chhattisgarh State Cooperative Milk Federation (CGCDF), established in 2010 by the Government, is a pivotal organization in the Indian dairy sector, particularly in Chhattisgarh. With its mission to "usher in rural prosperity through dairy development," CGCDF plays a crucial role in supporting cattle farmers. It achieves this by purchasing milk directly from them, providing a stable and economically beneficial outlet for their produce. Moreover, CGCDF processes this milk into a variety of products, which are then marketed under the esteemed brand name 'Devbhog'. This paper offers an in-depth analysis of how the CGCDF has catalysed economic development in Chhattisgarh, focusing on its operations, impact on rural livelihoods, and the success of its 'Devbhog' product line in the broader market. This exploration sheds light on the significant role that dairy development plays in enhancing rural prosperity and economic growth in the region.

### **Keywords**

Dairy industry, Milk production, Devbhog, Chhattisgarh, and Chhattisgarh Dairy Federation.

## **1. Introduction**

Rearing and milk production have significantly impacted human society and its economy across the globe for centuries. India being the largest producer of milk globally is known as the milk oyster. The term “dairy” is used differently in different languages as ‘milking parlour’ in the United States and ‘milking shed’ in New Zealand. Qualitatively, the term dairy refers to milk-based products, the processing animals, and the workers associated with them. Earlier milk products were sold only locally, now they are being sold internationally as well. India is the largest producer of milk in the world, the United States of America in second place, Pakistan in third place, China and Brazil in fourth and fifth place. Apart from this, the Baltic state, Belarus, Russia, and Kazakhstan are other major milk-producing countries. The Netherlands is the largest exporter of condensed and powdered milk, while New Zealand is the largest butter producer.

Over the past decade, India’s dairy sector has witnessed remarkable growth, marked by a consistent increase in milk production and a notable rise in per capita milk availability. In 2010-11, the per capita availability of milk was 281 grams per day, which progressively increased to 290 grams in 2011-12, 299 grams in 2012-13, 307 grams in 2013-14, 322 grams in 2014-15, 337 grams in 2015-16, 355 grams in 2016-17, 375 grams in 2017-18, and 394 grams in 2018-19, and reached 406 grams per day in 2019-20. This upward trend reflects the sector’s robust growth.

In terms of productivity, different cattle breeds show varying yields. Foreign or crossbred cows average a yield of 7.95 kg per day, while indigenous or non-descript cows produce about 3.04 kg per day. There has been a significant annual increase of 13.14 percent in milk yield from both foreign/crossbreed and indigenous/non-descript cows. Additionally, buffalo milk production has also seen a rise of 6.4 percent.

These achievements in the dairy sector are largely attributable to strategic policy interventions by the government, which have played a pivotal role in enhancing both production and distribution efficiencies. As a result, the dairy industry in India has not only expanded quantitatively but also improved qualitatively, contributing substantially to the nation’s agricultural economy and rural development.

### **1.1 Chhattisgarh State Cooperatives Dairy Federation (Devbhog)**

The establishment of dairy cooperatives has been a significant development for dairy farmers in India, particularly benefiting those from traditionally marginalized sections of society. On February 27, 2013, Dr. Raman Singh, the former Chief Minister of Chhattisgarh, initiated the Chhattisgarh Cooperative Milk Union, marking a pivotal moment in the region’s dairy

industry. This initiative followed the earlier foundation of the Chhattisgarh State Cooperative Milk Federation in 2010, which had operated under the Madhya Pradesh Cooperative Milk Union and was known as 'Sanchi' for about a decade. In 2013, the Federation adopted the brand name 'Devbhog', a term derived from 'Dev' (god) and 'Bhog' (offering), symbolizing food offered to deities.

The Chhattisgarh State Cooperative Dairy, commonly referred to as 'Devbhog' or 'DevbhogMahasangh', has earned considerable trust from customers. To maintain this trust and support its members, the Federation provides special subsidies to farmers and new committee members. This includes a subsidy where 200 grams of animal feed is offered at Rs. 4.00 per litre of milk collected, serving as an incentive grant. Additionally, the state government contributes a Rs. 2.50 transport grant to encourage cattle farmers.

The subsidy program extends to crop cutters as well, with Rs. 10,000 contributed by the Central Government, Rs. 5,000 by the State Government, and the remaining Rs. 5,196 paid by the farmers themselves. Annually, approximately 1,500-2,000 crop cutters are purchased by farmers, reflecting the government's commitment to enhancing milk quality and reducing production costs.

In the distribution network, retailers and distributors play a crucial role in selling 'Devbhog' milk products. They request specific quantities through demand letters, which the Chhattisgarh State Cooperative Dairy Federation fulfils. The Federation ensures timely milk delivery to these outlets, and the distributors or retailers earn commissions on the sale of 'Devbhog' products. This system not only ensures that consumers receive fresh and high-quality dairy products but also strengthens the economic stability of local farmers and distributors, reinforcing the Federation's role in uplifting the dairy sector and the community it serves.

## **2. Review of the Literature**

Desai, H. (2006) in his research on "Financial Performance Appraisal of Selected District Dairies Co-operative in Gujarat", found that the objective of dairy cooperative societies is to protect milk producers from exploitation by private sector dairies. Cooperative societies are a safety net for milk consumers and hence cooperative societies cannot increase the selling price. A study conducted at Jordon by Al-Safarat (2013) is a much-cited article. The estimation of the research also found that feed, labour, and equipment should be used properly and these resources should be used in appropriate adjustments so that neither the farmers

nor the animals are harmed. In a study conducted in Sri Lanka by (Bajrami et al.,2017), The value of concentrate feed, usage of other feeding materials, and breed quality have positive significant associations with milk production and will improve the technical efficiency scores as proved in the Kosovo Dairy sector in the European Union, Uva Province of Sri Lanka.

### **3. Objectives of the Study**

"Agriculture is nutrition with a strong reputation for health," according to the WTO. The product is the foundation of human existence since it is the primary demand of the nation and society. In India, an increasing number of entrepreneurs are engaged in the manufacturing of milk. In Chhattisgarh, milk production has not stopped evolving throughout time. For optimal health, milk and milk products are necessary. In addition to milk that is obtained organically, canned milk is also consumed on a daily basis.

- 3.1** To assess the contribution of Chhattisgarh State Cooperative Dairy Federation (Devbhog) to State-level Milk Supply.
- 3.2** To analyse the economic impact of the Chhattisgarh State Cooperative Dairy Federation in the state.
- 3.3** To investigate employment opportunities created by the Chhattisgarh State Cooperative Dairy Federation in the state.

### **4. Research Methodology**

In this study, the Durg division of Chhattisgarh state, known for its abundant natural resources including water, was selected as the primary research area. This selection was made due to the division's potential for industrial development, particularly in dairy production. The districts of Durg, Rajnandgaon, Bemetara, Kabirdham, and Balod, all part of the Durg division, were included in the study. Primary data were collected through various methods: key information on milk production was obtained through interviews with the heads of inspection, survey, and supervision at the Chhattisgarh State Cooperative Dairy Federation. Additionally, direct personal contact and structured schedules were used to gather data from federation employees, cattle herders, and committee members.

The study also incorporated secondary data, sourced from profit and loss accounts and annual reports of selected dairy units. A significant part of the research involved a sampling methodology that included 75 federation employees and 110 seller respondents. Furthermore, to assess the growth in membership of the Chhattisgarh State Cooperative Society, data from 220 animal husbandry respondents were analysed, revealing an increase from 33,057 members in 2015 to 42,587 in 2020. This comprehensive approach, integrating both primary and

secondary data, was designed to offer a deep understanding of the milk production dynamics, the economic impact of the dairy federation, and the potential for industrial development in the region

**4.1 Hypothesis** provides a definite direction to the research work. From this point of view, I have used different hypotheses regarding the presented research topic, which are proposed to be verified and analysed through the present research study.

**H1:** Increase in employment of cattle herders by selling milk to Chhattisgarh State Cooperative Dairy Federation.

**H11:** Selling milk to the Chhattisgarh State Cooperative Dairy Federation has not increased the employment of cattle herders.

**H2:** There has been an increase in the salary and other monetary income of the employees working in the Chhattisgarh State Cooperative Dairy Federation.

**H12:** There has been no increase in the salary and other monetary income of the employees working in the Chhattisgarh State Cooperative Dairy Federation.

**H3:** Sales of Devbhog products have increased the income of the sellers.

**H13:** The sales of Devbhog products have not increased the income of the sellers.

**4.2 Hypothesis Testing:** The collected information has been classified and tabulated and with the help of statistical techniques like ratio, mean, and logarithm the data has been objectively analysed and an attempt has been made to derive appropriate conclusions. A Chi-square ( $\chi^2$ ), t-test has been used to test the validity of the hypothesis. In the present research work, Chi-square ( $\chi^2$ ) test has been done to check the correctness of the research hypothesis by the researcher.

**Formula**

**H1:** Increase in employment of cattle herders by selling milk to Chhattisgarh State Cooperative Dairy Federation.

**Table 1:- Response of Cattle Herders**

Description (Income Assistance)	Frequency	Percentage
Yes	189	85.9
No	31	14.1
<b>Total</b>	220	100

*Source:* Author's Compilation

It is known from the above table, that 85.9 percent of the federation believes that their daily income has increased after joining Devbhog, while 14.1 percent of

members believe that there has been no change in their income. It was also found from the interview conducted with the respondents that they give only surplus milk in collection which does not happen daily.

**Table 2:- Chi-square Test of Tabular Value for Hypothesis 1**

Perceived	Actual Value(O)	Estimated Value(E)	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
Yes	189	110	79	6241	56.73
No	31	110	-79	6241	56.73
<b>Total</b>	220	220			113.46

Source: Author's Compilation

Assumed value of chi-square = 113.46  
 Significance difference (p) = 0.05  
 Independent rank = (C - 1) (R - 1)  
 = (2 - 1) (2 - 1)  
 = 1

The value of the table is 3.84

The critical value for the chi-square statistic at a 0.05 significance level with 1 degree of freedom is 3.84. This value is a threshold that determines whether the observed differences are due to chance. In this analysis, the computed chi-square value was found to be 113.46, with the degree of freedom being 1. Since the calculated chi-square value (113.46) is significantly greater than the critical value from the chi-square distribution table (3.84), this result leads to the rejection of the null hypothesis.

**H2:** Status of monthly salary and other monetary income received by the employees working in the federation.

**Table 3:- Monthly Salary and Other Monetary Income of Employees in the Year (2014-15)**

Salary & Other Income in Rs.	Frequency	Percentage
6000-8000	36	48.00
10000-12000	14	18.67
12000-18000	12	17.00
Over 18000	13	17.33
<b>Total</b>	<b>75</b>	<b>100</b>

Source: Author's Compilation

**Table 4:- Monthly Salary and Other Monetary Income of Employees in the Year (2019-20)**

Salary & Other	Frequency	Percentage
8000-10000	38	50.67
18000-20000	11	14.67
26000-28000	7	9.33
above 28000	19	25.33
<b>Total</b>	<b>75</b>	<b>100</b>

*Source:* Author's Compilation

The data presented from Table 3 and Table 4 of the study provide a detailed insight into the salary distribution among employees of the Devbhog (Chhattisgarh State Cooperative Dairy Federation). This analysis compares the salary ranges and changes over time, particularly between the years 2014 and 2020.

From Table 4, it is noted that in the year 2020, 50.67 percent of the respondents, who are employees of Devbhog, reported a monthly salary and other monetary income ranging between Rs. 8,000 to Rs. 10,000.

- 14.67 percent of the employees received a monthly salary between Rs. 18,000 to Rs. 20,000.
- 9.3 percent fell in the salary bracket of Rs. 26,000 to Rs. 28,000 per month.
- 25.33 percent of the employees earned over Rs. 28,000.
- In comparison, Table 3 shows the salary distribution in the year 2014.
- 48.00 percent of the respondents earned a salary between Rs. 6,000 to Rs. 8,000.
- 18.67 percent were in the Rs. 10,000 to Rs. 12,000 salary range.
- 17.00 percent received a monthly income between Rs. 12,000 to Rs. 18,000.
- 17.33 percent earned more than Rs. 18,000.

The comparison between these two sets of data indicates a notable shift in the salary distribution of Devbhog employees over the six-year period. While there is a visible increase in the percentage of employees earning higher salaries in 2020 compared to 2014, a significant proportion of the workforce still remains in the lower-income category.

Furthermore, the study reveals that many employees have been associated with Devbhog for a long duration, with some senior employees having been part of the organization since 1983. This longevity in employment suggests a stable workforce, yet the salary distribution indicates that despite years of service, a majority of the employees are in the lower salary brackets. This situation reflects the broader dynamics of income distribution within the organization and possibly

points towards the need for a review of wage structures, especially for long-serving employees.

**Hypothesis Testing of Tables No. 3 & 4 is below**

Description	Monthly Salary (2019-20)	Monthly Salary (2014-15)
Mean	17.213.34	9.053.34
Variance	7,98,45,765.77	54,02,522.52
Overview	75	75
Degrees of Freedom	74	NA
Notional Value	10.45	NA
Table Value	1.99	NA

Source: Author's Compilation

In a t-test analysis of the Chhattisgarh State Cooperative Dairy Federation's employee salaries from 2014-15 to 2019-20, the mean monthly salary dropped from Rs. 17,213.34 to Rs. 9,053.34, with a substantial decrease in the deviation values over these years. Despite this, the t-test results, showing an array value of 1.99 against an expected 10.45, led to the rejection of the null hypothesis. This suggests a perceived increase in employees' monthly income over the period. However, most salaries remained in the lower range of Rs. 6,000 to Rs. 8,000, highlighting a disparity in wage growth among the employees.

**H3:** Increase in income from the sale of Devbhog products among the respondents.

**Table 5:- Increase in Income from the Sale of Devbhog Products among the Respondents**

Description	Frequency	Percentage
Yes	87	79.1
No	23	20.9
<b>Total</b>	110	100

Source: Author's Compilation

**Table 6:- Chi-square Test of Tabular Value**

Perceived	Actual Value(O)	Estimated Value(E)	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
Yes	87	55	32	1024	18.61
No	23	55	-32	1024	18.61
<b>Total</b>	110				37.22

Source: Author's Compilation



$$\begin{aligned}\text{Assumed value of chi-square} &= 37.22 \\ \text{Significance difference (p)} &= 0.05 \\ \text{Independent rank} &= (C - 1) (R - 1) \\ &= (2 - 1) (2 - 1) \\ &= 1 \\ \text{Table value} &= 3.84\end{aligned}$$

In the conducted chi-square test to assess the impact of selling Devbhog products on vendors' income, the analysis was guided by a critical value set at 3.84. This value is the benchmark for a 0.05 significance level with one degree of freedom in chi-square testing. The obtained chi-square statistic from the data was significantly higher, recorded at 37.22, surpassing the critical value. The degree of freedom for this test was also established at 1.

The surpassing of the critical value by the chi-square statistic is a crucial factor in this analysis, indicating that the result is statistically significant.

The implication of these results, as detailed in Table No. 5 of the study, is quite revealing. It indicates that a majority of the vendors involved in the sale of Devbhog's products have seen a notable increase in their income. This financial upliftment has not only improved their economic status but has also enhanced their standard of living. As a consequence of this positive outcome, there is a strong inclination among these vendors to maintain and even strengthen their association with Devbhog. Motivated by the improved earnings, they are keen on maximizing the sales of Devbhog's products, underlining a mutually beneficial relationship between them and the cooperative.

## 5. Conclusion

The dairy industry holds immense potential for enhancing rural income, nutrition, and empowerment, making it a vital area for investment. A well-developed dairy sector can empower millions of farmers, enabling them to seize emerging opportunities and significantly improve their incomes. However, insufficient efforts in dairy development can adversely affect these areas. The Chhattisgarh State Cooperative Dairy Federation, in this regard, plays a pivotal role in the sustainable economic development of Chhattisgarh. The growing membership and continuous addition of people to the federation are clear indicators of the positive transformation occurring in Chhattisgarh's economy. The substantial number of consumers and employees associated with the federation underscores its significant contribution to the state's sustainable development and change.

**The Chhattisgarh State Cooperative Dairy Federation makes a considerable impact on various fronts:**

- 5.1 It contributes significantly to the development of the dairy industry, benefiting millions of milk producers and consumers in Chhattisgarh.
- 5.2 Many vendors and cattle herders rely either directly or indirectly on the federation for their livelihoods, which has notably improved their standard of living.
- 5.3 The employees of the federation, through their salaries, support their families, contributing directly to the economic stability of Chhattisgarh.

In summary, the Chhattisgarh State Cooperative Dairy Federation is instrumental in driving sustainable development in Chhattisgarh's economy. The increasing number of members and the extensive network of consumers and employees are a testament to the federation's critical role in fostering sustainable change and development in the state, a trend expected to continue into the future.

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