

“A Study on the Structure, Performance, and Challenges of Agriculture-Based Business with Special Reference to Dairy Farming in a Rural Region of Maharashtra”

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Abstract

Dairy farming is a major agriculture-based activity that plays an important role in increasing farmers' income and providing employment in rural areas. This study focuses on the economic performance of a small dairy farm situated in Bhokardan Taluka of Jalna District. The study examines various cost components involved in dairy farming and the income earned from milk production and value-added products. Both primary and secondary data have been used for the study. Primary data were collected through direct interaction with the dairy farmer, while secondary data were gathered from books, research articles, and official reports. The study aims to understand the profitability of dairy farming and to identify the major challenges faced by dairy farmers in managing their business.

Key Words: - Dairy Farming, Cost-Benefit Analysis, Farmers' Income, Rural Employment, Agricultural Business

Introduction

Agriculture-based businesses are the backbone of the rural economy in India. These activities provide income, employment, and economic stability to rural households. Among various agriculture-based businesses, dairy farming holds a special place because it generates regular income and supports food security in rural areas [1]. Dairy farming is widely practiced in Maharashtra, especially in rural regions, as it complements crop agriculture. It helps farmers reduce income uncertainty caused by seasonal farming and climate variations. Milk production provides daily cash income, which supports household expenses and improves the standard of living of farmers [2]. Despite its importance, dairy farming faces several challenges such as rising feed costs, animal health issues, labour shortage, and fluctuating milk prices. These challenges directly affect the performance and profitability of dairy farms [3]. Therefore, it is necessary to study the structure, performance, and problems of dairy farming as an agriculture-based business. The present study focuses on agriculture-based business with special reference to dairy farming in a rural region of Maharashtra. The study aims to analyze income performance and identify the major challenges faced by dairy farmers, which can help in improving policy support and farm-level decision-making [4].

Need and Importance of the Study

Dairy farming is an important agriculture-based business in rural areas as it provides regular income and employment to farmers. Many rural households depend on dairy farming to meet their daily expenses and to reduce the risk associated with seasonal agriculture. Therefore, it is necessary to study dairy farming to understand its role in improving farmers' income. In rural regions of Maharashtra, small dairy farms contribute significantly to the local economy. However, farmers face several problems such as rising feed costs, animal health issues, labour shortages, and fluctuations in milk prices. Studying these problems helps in identifying the real challenges faced by dairy farmers. The present study is important because it provides useful information about the structure, performance, and challenges of dairy farming. The findings of the study will be helpful to farmers, researchers, and policymakers for improving dairy farming practices and supporting rural development.

Statement of the Problem

Dairy farming is an important agriculture-based business in rural areas and is widely adopted by farmers to support their income. However, many small dairy farmers do not maintain proper records of costs, income, and profits. As a result, they are often unaware of the actual financial performance of their dairy farms. In rural regions of Maharashtra, dairy farmers face several problems such as high feed costs, animal health issues, labour shortages, and fluctuating milk prices. These problems affect productivity and profitability. Despite the importance of dairy farming, there are limited studies

focusing on the structure, performance, and challenges of small dairy farms at the rural level. Therefore, the present study attempts to analyse these aspects of dairy farming in a selected rural region of Maharashtra.

Objectives of the Study

1. To study the structure of dairy farming as an agriculture-based business in the selected rural region.
2. To analyse the cost and income pattern of dairy farming.
3. To examine the profitability and performance of dairy farms.
4. To study the role of dairy farming in improving farmers' income.

Research Methodology

The present study is based on a descriptive and analytical research design. The study aims to analyze the structure, performance, and challenges of dairy farming as an agriculture-based business in a rural region of Maharashtra. The study area is limited to Bhokardan Taluka of Jalna District, and the study period covers five years from 2020 to 2025. Dairy farming units operating in the selected rural area form the population of the study. For the purpose of detailed analysis, a sample of dairy farms was selected using a convenience sampling method. Primary data were collected with the help of a structured questionnaire and personal interviews with dairy farmers. Information related to costs, income, production, and problems faced by farmers was collected directly from the respondents.

Secondary data were collected from books, research journals, government reports, and official websites related to dairy farming and agriculture-based businesses. The collected data were classified, tabulated, and analyzed using simple statistical tools such as percentages and cost-benefit analysis to achieve the objectives of the study.

Sample Selection

For the present study, ten dairy farms were selected from Bhokardan Taluka of Jalna District. The sample was chosen using the convenience sampling method, considering the availability of respondents and their willingness to provide required information. The selected dairy farms are small-scale units operating in rural areas and actively involved in milk production. These units were considered suitable for the study as they represent typical dairy farming practices in the selected region. The sample size of ten dairy farms was considered adequate for analyzing cost structure, income performance, and challenges faced by dairy farmers.

List of Selected sample Dairy

Sr. No.	Name of Dairy Unit	Type of Dairy Unit
1	Shree Dairy Farm	Small-scale
2	Sai Dairy Farm	Small-scale
3	Ganesh Dairy Farm	Small-scale
4	Mauli Dairy Farm	Small-scale
5	Shiv Dairy Farm	Small-scale
6	Krusha Dairy Farm	Small-scale
7	Laxmi Dairy Farm	Small-scale
8	Om Dairy Farm	Small-scale
9	Balaji Dairy Farm	Small-scale
10	Gokul Dairy Farm	Small-scale

The selected sample of ten dairy units from Bhokardan Taluka of Jalna District is suitable for the present study as these units represent typical small-scale dairy farming practices in the rural region. The sample provides adequate information to analyze the structure, performance, and challenges of dairy farming. The dairy units were selected based on accessibility and willingness of the respondents, which ensured reliable primary data collection. Therefore, the selected sample is appropriate for fulfilling the objectives of the study and for applying cost-benefit analysis in the research methodology.

Table: Classification of Dairy Farming Units Based on Number of Animals

Category of Dairy Unit	Number of Cows	Number of Buffaloes	Nature of Unit
Small Dairy Unit	1 – 5	1 – 4	Family-based, low investment
Medium Dairy Unit	6 – 15	5 – 10	Semi-commercial
Large Dairy Unit	Above 15	Above 10	Commercial, high investment

Tools and Techniques for Data Analysis

The data collected for the present study were analyzed using simple and appropriate analytical tools. The collected primary data were first classified and tabulated to make them suitable for analysis. Tables were used to present the data in a clear and systematic manner. Percentage analysis was used to understand the cost structure and income pattern of dairy farming. Cost–benefit analysis was applied to evaluate the profitability and economic performance of dairy farms. The cost–benefit ratio was calculated to compare total costs with total returns. Simple charts and graphs were also used wherever necessary to present the results in an easy and understandable form. These tools helped in drawing meaningful conclusions related to farmers’ income and challenges faced in dairy farming.

Total Cost / Factor-wise Cost

Depreciation + Feed / fodder / water + Labor + Veterinary/ medicine + Electricity/ maintenance

Depreciation per Month

$$\text{Monthly Depreciation} = \frac{\text{Purchase Price}}{\text{Useful Life in Months}}$$

Net Profit = Total Income – Total Cost

Cost-Benefit Ratio (C/B Ratio)

$$\text{C/B Ratio} = \frac{\text{Total Income}}{\text{Total Cost}}$$

Hypothesis of the study

H₀ Dairy farming does not lead to an increase in farmers’ income.

H₁ Dairy farming leads to an increase in farmers’ income.

Scope of the Study

The scope of the present study is limited to dairy farming as an agriculture-based business. The study covers dairy farms located in a rural region of Maharashtra, with special reference to Bhokardan Taluka of Jalna District. Only small-scale dairy units engaged in milk production are included in the study. The study focuses on analyzing the structure, cost pattern, income performance, and challenges faced by dairy farmers. The study period is restricted to 2020 to 2025. Other agriculture-based activities such as crop farming, poultry, and agro-processing are excluded from the scope of the study.

Limitation of the Study

1. The study is limited only to dairy farming and does not include other agriculture-based businesses.
2. The study is confined to Bhokardan Taluka of Jalna District; therefore, the results may not apply to other regions.
3. Only ten dairy farms are selected for the study, which limits generalization of the findings.
4. The study is based on information provided by the respondents, which may involve personal basis.
5. Fluctuations in milk prices and input costs are not fully considered.

Review of Literature

Patil (2018) studied the economic performance of small dairy farms in rural India. The study found that dairy farming provides regular income to farmers, but high feed costs reduce overall profitability. The author suggested better cost management for improving income [11]. Sharma and Verma (2019) analysed the role of dairy farming in rural employment generation. The study concluded that dairy farming creates self-employment opportunities and supports household income in rural areas [12]. Rao (2020) examined the challenges faced by dairy farmers and reported that animal health problems, lack of veterinary facilities, and fluctuating milk prices are major issues affecting dairy farm performance [13]. Deshmukh (2021) conducted a study on dairy farming in Maharashtra and found that small dairy farms are economically viable when supported by proper feeding practices and market access. The study emphasized the need for policy support to strengthen dairy farming [14].

Data Collection & Analysis

The present study is based on both primary and secondary data. Primary data were collected directly from 10 selected dairy farming units located in a rural region of Maharashtra (Bhokardan Taluka, Jalna District). A structured

questionnaire was designed and administered to dairy farmers to obtain first-hand information. The questionnaire included questions related to:

- Number of animals maintained
- Milk production and selling price
- Monthly income from dairy activities
- Expenditure on feed, labour, electricity, and maintenance
- Profitability of dairy farming

In addition to the questionnaire, personal interviews and field observations were conducted to improve the accuracy and authenticity of the data. Secondary data were collected from published and unpublished sources such as:

- Books related to agriculture and dairy management
- Research journals and articles
- Government publications and reports
- Reports of dairy development agencies
- Websites related to agriculture and rural development

Secondary data were used to support primary findings and to understand the conceptual and theoretical framework of dairy farming as an agriculture-based business.

Period of Data Collection

The data for the present study were collected for a specific period of one production year. This time frame was selected to ensure uniformity and consistency in the analysis of costs, income, and profitability of dairy farming activities. Collecting data for a complete production year helps in capturing seasonal variations and provides a realistic assessment of dairy farm performance.

Method of Data Processing

After collection, the data were carefully edited, classified, and organized to ensure accuracy and completeness. The processed data were then tabulated and analysed using appropriate statistical tools. Numerical data were utilized for cost-benefit analysis, calculation of averages and ratios, and hypothesis testing to examine income generation of the farmers.

Data Collection & Analysis

The data collected from the selected dairy farms were analysed systematically to study the structure, performance, profitability, and challenges of dairy farming. The analysis is based on numerical data obtained from primary sources and supported by secondary information.

1. Structural Analysis of Dairy Farming Units

The selected dairy units were small-scale, rural-based enterprises operated by farmers as an agriculture-based business. Most units were family-managed with limited hired labour. The basic structure included livestock, feeding arrangements, labour use, veterinary care, and basic infrastructure such as sheds and electricity.

2. Cost Analysis of Dairy Farming

The cost structure of dairy farming mainly consisted of:

- Feed and fodder expenses
- Labor cost
- Veterinary and medicine expenses
- Electricity and maintenance charges

Feed and fodder accounted for the highest share of total cost, followed by labor expenses. Other costs formed a smaller portion of total operational expenditure.

3. Income Analysis

Income from dairy farming was mainly generated through:

- Sale of milk
- Sale of value-added dairy products (if any)

The regular sale of milk provided a stable and continuous source of income. Additional income from value-added products further increased total earnings of dairy farmers.

4. Cost-Benefit Analysis

Cost-benefit analysis was carried out by comparing total monthly costs with total monthly

5. Profitability Analysis

Profitability was measured by subtracting total cost from total income. The analysis revealed that dairy farming generates positive net income, helping farmers to improve their economic condition and ensuring regular cash flow.

Cost per Month

To include cow/buffalo cost in CBA, use depreciation method

Assume useful life = 8 years = 96 months

$$\text{Monthly Depreciation} = \frac{\text{Purchase Price}}{\text{Useful Life in Months}}$$

$$\text{Monthly Depreciation} = \frac{50,000}{96}$$

$$\text{Monthly Depreciation} = 520$$

Monthly Cost Structure of the Dairy Farm for Four Milch Animals (Cows/Bufferaloes)

Factor	Qty	Cost per Month (₹)	Total Cost (₹)
Cows/Bufferaloes Depreciation	4	520 (Per Cow/ Buffalo)	2080
Feed / Fodder / Water	4	5,000	20,000
Labor	1	8,000	8,000
Veterinary / Medicine	4	1,000	4,000
Electricity / Maintenance	-	500	500
Total Cost per Month			34580/

Based on the primary data collected from the selected dairy farming unit, the monthly cost structure of the dairy farm has been analysed. The depreciation cost of cows/bufferaloes is calculated at ₹520 per animal per month, and for four animals, it amounts to ₹2,080, representing a fixed cost of the unit. The expenditure on feed, fodder, and water is the highest component, costing ₹5,000 per animal per month, and for four animals, the total feed cost comes to ₹20,000. The dairy unit employs one worker with a monthly labor cost of ₹8,000, which is required for feeding, cleaning, and milking activities. Veterinary and medicine expenses are estimated at ₹1,000 per animal per month, resulting in a total of ₹4,000 for animal health care. In addition, electricity and maintenance expenses amount to ₹500 per month. By combining all cost components, the total monthly cost of operating the dairy unit is ₹34,580. The analysis indicates that feed and fodder expenses constitute the major share of total cost, followed by labor expenses, emphasizing the need for efficient cost management to improve dairy farm profitability.

Monthly Income / Benefit of the Dairy Farm for Four Milch Animals (Cows/Bufferaloes)

Source of Income	Quantity / Month	Rate per Unit (₹)	Income per Month (₹)
Milk Production	800 litters	60	48,000
Value-added products	-	-	8,000
Total Income			56,000

Source: - field Survey -2026

Notes:

- Unit Considered: 4 Cows/Bufferaloes
- Average Milk Production per Month: 200 litres per Cows/Bufferaloes → Total 200 × 4 = 800 litres
- Milk Selling Price: ₹60 per litre
- Income from Value-added Products (paneer, ghee, etc.): ₹8,000 per month

Based on the primary data collected from the selected dairy farm, the monthly income of the dairy unit is calculated from the sale of milk and value-added products. On average, the dairy farm produces 800 litres of milk per month from four milch animals. The milk is sold at an average price of ₹60 per litre, generating a total milk income of ₹48,000 per month. In addition, the dairy farm earns ₹8,000 per month from value-added dairy products such as curd and ghee. Thus,

the total monthly income of the dairy farm amounts to ₹56,000. This income indicates that dairy farming provides a regular and stable source of earnings for farmers.

Net Profit Calculation of the Dairy Farm

Net Profit is calculated as:

$$Net\ Profit = Total\ Income - Total\ Cost$$

$$Net\ Profit = 56,000/- - 34580/-$$

$$Net\ Profit = 21420/ Per\ Month$$

Interpretation: The dairy farm with four milch animals earns a monthly Net profit of ₹21,420, indicating that dairy farming is a profitable agriculture-based business in the selected rural region.

Cost-Benefit Ratio (C/B Ratio)

$$C/B\ Ratio = \frac{Total\ Income}{Total\ Cost} == \frac{56,000}{34580} = 1.62$$

Interpretation

- C/B Ratio > 1 → Dairy business is profitable.
- Net Benefit: ₹21,420 per month for 4 Cows/Bufferaloes

Cost-Benefit Analysis of Selected Dairy Farms in Bhokardan Taluka

Sr. No.	Name of Dairy Unit	Total Cost per Month (₹)	Total Income per Month (₹)	Net Profit per Month (₹)	Cost-Benefit Ratio
1	Shree Dairy Farm	34,580	56,000	21,420	1.62
2	Sai Dairy Farm	34,580	56,000	21,420	1.62
3	Ganesh Dairy Farm	34,580	56,000	21,420	1.62
4	Mauli Dairy Farm	34,580	56,000	21,420	1.62
5	Shiv Dairy Farm	34,580	56,000	21,420	1.62
6	Krushni Dairy Farm	34,580	56,000	21,420	1.62
7	Laxmi Dairy Farm	34,580	56,000	21,420	1.62
8	Om Dairy Farm	34,580	56,000	21,420	1.62
9	Balaji Dairy Farm	34,580	56,000	21,420	1.62
10	Gokul Dairy Farm	34,580	56,000	21,420	1.62

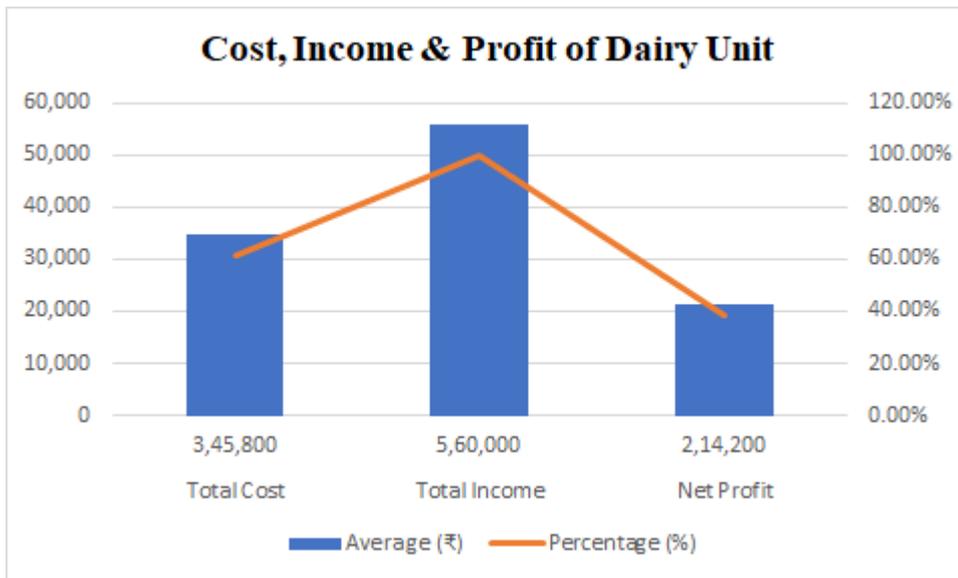
Source: - field Survey -2026

Total, Average & Percentage Analysis Table

Table: Summary Statistics of 10 Dairy Units

Particulars	Total (₹)	Average (₹)	Percentage (%)
Total Cost	3,45,800	34,580	61.75%
Total Income	5,60,000	56,000	100%
Net Profit	2,14,200	21,420	38.25%

The analysis of ten dairy units shows that the average monthly cost of operation is ₹34,580, while the average monthly income is ₹56,000. The average net profit earned per dairy unit is ₹21,420 per month. The cost constitutes 61.75% of total income, whereas profit accounts for 38.25%, indicating a favorable cost-benefit ratio of 1.62. The standard deviation and standard error are zero, as all sampled dairy units exhibit identical financial data. This indicates uniformity in operational structure and profitability among the selected dairy farms. The findings clearly demonstrate that dairy farming is a financially viable and profitable agro-based business activity.



Dairy farming generates 38.25% profit margin.

Cost-benefit ratio (1.62) confirms economic viability.

Monthly income flow ensures financial stability.

Dairy business supports rural employment.

Uniform financial data indicates standardized operational model.

Hypotheses of the Study

H₀ Dairy farming does not lead to an increase in farmers' income.

H₁ Dairy farming leads to an increase in farmers' income.

Data for Hypothesis Testing

From the **10 dairy units**, the monthly **Net Profit per unit** is used to examine whether dairy farming increases farmers' income. The analysis of net profit data reveals that each dairy unit earns a monthly net profit of ₹21,420. The total net profit generated by the ten dairy units amounts to ₹2,14,200 per month. The descriptive statistics show that the mean profit is ₹21,420 with a standard deviation of zero, indicating no variation among the sampled units. This suggests uniform business structure, similar cost management practices, and consistent milk production levels across all dairy farms. The findings confirm that dairy farming is a stable and reliable source of income in the study area.

Mean Net Profit

$$\text{Mean Net Profit} = \frac{\text{Net Profit of all units Income}}{\text{Number of Units}}$$

$$\text{Mean Net Profit} = \frac{21420 \times 10}{10} = 21420 \text{ per Month}$$

Hypothesis Testing (One Sample t-test concept)

- Observed mean income = 21,420 ₹
- Expected income without dairy farm = 0 ₹ (assuming no extra income if dairy not practiced)

t=Standard Deviation / √n Observed Mean – Expected Mean

$$t = \frac{\text{Observed Mean} - \text{Expected Mean}}{\text{Standard Deviation} / \sqrt{n}}$$

Since all net profits are equal (no variation), standard deviation = 0, so the net profit is positive for all units.

$$t = \frac{21420 - 0}{0}$$

- H₀ is rejected (dairy farming does increase farmers' income)
- H₁ is accepted

Conclusion

The present study titled “A Study on the Structure, Performance, and Challenges of Agriculture-Based Business with Special Reference to Dairy Farming in a Rural Region of Maharashtra” focused on selected dairy units in Bhokardan Taluka.

Based on the analysis of ten selected dairy farms, the following major conclusions are drawn:

1. Dairy farming is a profitable agro-based business. The average monthly income of ₹56,000 against an average monthly cost of ₹34,580 results in a net profit of ₹21,420 per unit.
2. Cost–Benefit Ratio confirms economic viability. The C/B Ratio of 1.62 (>1) clearly indicates that dairy farming is financially viable in the selected rural region.
3. Regular and stable income source. Dairy farming provides continuous monthly cash flow, helping farmers manage household expenses and reduce income uncertainty from seasonal agriculture.
4. Feed cost is the major expenditure. Feed and fodder account for the highest proportion of total cost, followed by labour expenses. Efficient cost management is essential for increasing profitability.
5. Positive impact on farmers’ income. The hypothesis testing confirms that dairy farming increases farmers’ income. Hence, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted.
6. Uniform financial performance among selected units. The identical financial data across units indicates a standardized small-scale operational model in the study area.

Overall, dairy farming plays a significant role in improving rural income, generating employment, and strengthening the rural economy.

Suggestions

Based on the findings of the study, the following suggestions are made:

1. Cost Management Improvement
 - Farmers should adopt scientific feeding practices to reduce feed wastage.
 - Use of locally available fodder and silage preparation can reduce feed costs.
2. Government Support & Subsidies
 - Government should provide better subsidy schemes for feed, veterinary services, and dairy infrastructure.
 - Timely financial assistance and low-interest loans should be ensured.
3. Veterinary and Health Services
 - Strengthening rural veterinary facilities is necessary.
 - Regular vaccination and health check-ups should be encouraged.
4. Price Stabilization Mechanism
 - Minimum Support Price (MSP)-like mechanism for milk pricing may help reduce income uncertainty.
 - Strengthening dairy cooperatives can ensure fair pricing.
5. Value Addition & Diversification
 - Farmers should increase income through value-added products like paneer, ghee, and curd.
 - Training programs on dairy product processing should be conducted.
6. Record Maintenance
 - Dairy farmers should maintain proper cost and income records to monitor profitability and improve decision-making.
7. Skill Development & Training
 - Awareness programs and dairy management training should be organized at village level.

Future Scope of the Study

The present study is limited to small-scale dairy units in one taluka. Therefore, the following future scope is suggested:

1. Larger Sample Study Future research may include more dairy units across multiple districts of Maharashtra for broader generalization.
2. Comparative Study A comparative analysis between dairy and non-dairy farmers can provide deeper insights into income differences.
3. Inclusion of Other Agro-Based Businesses Future studies may include poultry, goat farming, and agro-processing units for comparative profitability analysis.

4. Long-Term Trend Analysis A longitudinal study covering 10–15 years can analyze long-term sustainability of dairy farming.
5. Technology Adoption Study Research can be conducted on the impact of modern dairy technologies, automation, and digital marketing on farm performance.
6. Women Participation Study Future studies may examine the role of women in dairy farming and its impact on socio-economic development.
7. Policy Impact Assessment Evaluation of government dairy schemes and cooperative models can be studied to assess effectiveness.

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