

# Analytical Study of Small Milk Dairies in Pune City

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## Abstract

The dairy industry plays a vital role in India's agrarian economy, with small-scale milk dairies contributing significantly to urban milk supply chains. This research paper presents an analytical study of small milk dairies in Pune City, focusing on the operational practices, economic viability, supply chain dynamics, and challenges faced in a competitive and regulated market environment. Primary data was collected through structured interviews and questionnaires from selected small dairy owners across various zones of Pune. The study also incorporates secondary data from government reports, industry publications, and academic literature. Key parameters such as procurement sources, pricing strategies, distribution networks were examined. The findings highlight the resilience of small dairies, the dependence on informal networks, and the need for building customer base. The paper concludes with recommendations to enhance the sustainability and efficiency of small dairies through policy interventions, cooperative models, and adoption of technology. This study contributes to a deeper understanding of the grassroots level of the dairy sector in urban India and provides a basis to increase its availability to a larger network and customer base.

**Keywords:** Milk, Milk Production, Milk Distribution, Logistics, Milk Operations, Small Milk Dairies

## Introduction

Milk is the most essential food needed by all ages. Milk is not just an important food during early childhood but in one form or other continues to provide benefit throughout life. As per the Statistics issued by the (National Dairy Development Board) the milk production million tonnes are 222.1 and per capital availability (gms/day) is about 444.

As per the volume of milk produced across India in the financial year 2022. Rajasthan is the first state with the

production of 33.27 million metric tons. Maharashtra is in the 6<sup>th</sup> position with 14.31 million metric tons. The top states which are producers of milk in India are Rajasthan, Uttar Pradesh, Andhra Pradesh, Gujarat and Punjab (Animal Husbandry Statistics, 2022).

Milk is one of the most essential items of every household. The choice of milk is very personal.

People buy only that brand of milk which suits their taste. There are many well-known brands of milk available in Pune City like Amul, Mother Dairy, Katraj, Chitale, Gokul which are readily available at any point of time. Most of these milk manufactures have high end technology driven plant with huge capacities of production. Their daily milk collection runs in Lakhs of litres. They are large organizations with high end capacities of machines for storing, pasteurizing, separating, preserving, chilling, testing and transporting. These companies have better management system with good logistics and supply chain management, hence are available at any point of time. They also have huge network of distributors through which the milk and other milk products are sold. These brands are not only famous in Pune but in Maharashtra and worldwide because they also have exports for the products. These companies are governed by FSSAI (Food Safety Standards). They are a part of Dairy Cooperative Societies, Milk Unions and Milk Federations.

Pune City has a number of milk manufacturers who are famous in its areas where they operate.

The present study attempts to find out the businesses of these small daily milk manufacturers by its daily production capacities, the prices, market, customers, supply chain, problems, profits, business operations.

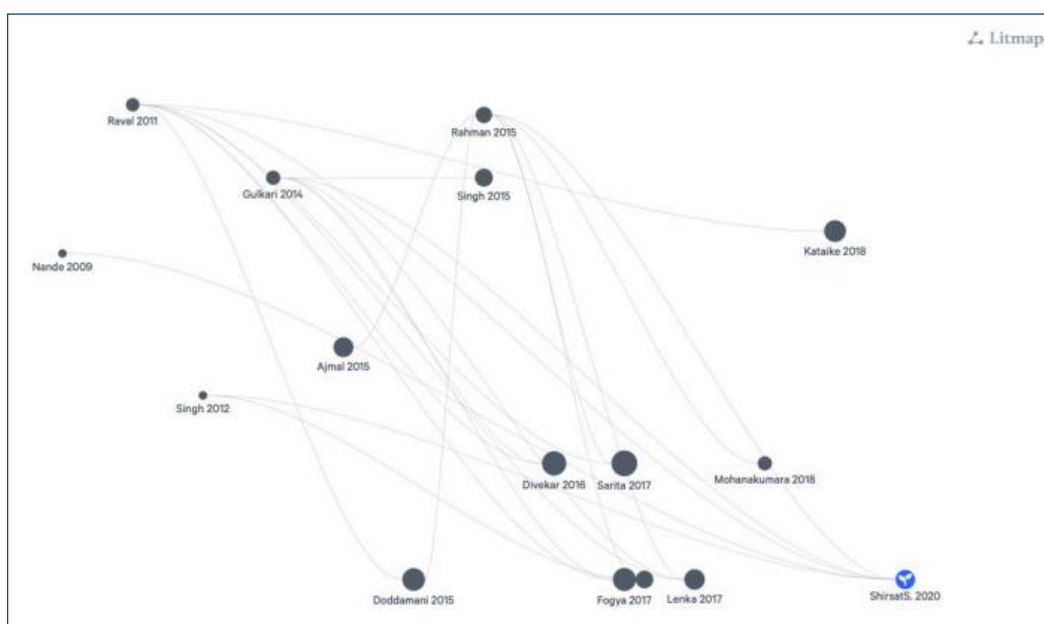
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## Objectives of the Study

- To study the operational structure of small milk dairies in Pune City, including procurement, processing, and distribution methods.
- To analyse the economic viability and profitability of small milk dairies and the contribution to the local economy.
- To examine the supply chain practices followed by small dairies and identify bottlenecks in logistics, storage, and delivery.
- To identify the major challenges faced by small milk dairy operators, including regulatory compliance, competition, and infrastructure limitations.

## Literature Review

The trajectory of milk production in Pune has been considerably impacted by the policies and interventions implemented by the government. Operation Flood and the National Dairy Plan are two examples of initiatives that have been undertaken with the intention of increasing milk production, improving quality standards, and fostering the creation of dairy products that are market oriented. Smallholder farmers have been provided with support through the provision of extension services, loan facilities, and subsidies, which have been crucial in enabling inclusive growth in the dairy industry.



Source: Author's own research.

**Fig. 1: Litmaps Bibliometric Analysis**

Nande (2009) According to the study, the information-seeking behavior of dairy farmers in Nagpur District, Maharashtra, was examined. Raval (2011) study which was conducted in the Matar taluka of the Kheda district in the center of Gujarat, the particular aims were to investigate the knowledge and socio-economic position of dairy farmers in the adoption of some enhanced animal husbandry techniques. Singh (2012) studied the level of acceptance of dairy management methods Gulkari (2014) studied women make a living from dairy farming. Ajmal (2015) examined Punjab's dairy sector in selected districts. The study informed dairy industry improvement plans. Doddamani (2015) studied about the training

programs. Rahman (www.i.scholar.in, n.d.) (2015) As per the study, dairy farming is a key SHG activity. This study was conducted in Kamrup district (Metro and Rural) of Assam to determine the socioeconomic and communication profile of SHG members and non-members, appraise and compare knowledge and adoption of improved dairy farming practices (IDFPs), and identify the factors affecting knowledge and adoption. Singh (2015) A research was done to determine dairy producers' awareness and implementation of clean milk production procedures. Divekar (2016) The research was to determine why dairy producers embrace enhanced animal husbandry practices. Sarita (2017) The research

was to evaluate the knowledge, adoption, training needs, and perceived obstacles regarding suggested buffalo husbandry techniques. Lenka (2017) talks about dairy as sustainable livelihood for different sectors of people. Kataike (2018) This research study examines a larger Rwenzori dairy value chain agribusiness Mohanakumara (2018) This study examined farmers' symbolic adoption of year-round green fodder producing technology owing to e-training tools. Shirsat S. (2020) conducted research on 120 Western Maharashtra dairy producers. Studying socioeconomic position and dairy producers' adoption of Animal Husbandry Practices (AHPs). Salokhe (2019) had studied 72 villages. The objective of her study was to study the problems faced by dairy farmers in Pune district. Yashodhan (2022) in his paper aims to know about the business model functions and day-to day activities carried out in Goa dairy and attempt was also made to find out the supply chain network including primary dairy societies, dairy farmers, transport routes and others. Sawikar (2022) made a study on members of Primary Dairy Co-operatives, the paper closely inspected the factors influencing membership of farmers in primary dairy co-operations in Goa. It also examined the farmer's satisfaction with the services provided by the primary dairy co-operatives. Shefali Pardeshi (2022) in her research paper has presented case study on The Pune Zilla Dudh Utpadak Sang- The Katraj dairy. She presented facts and figures of the same. Ksheersagar (2022) presented his views about livestock, risks involved with livestock, rearing livestock and health care. Chari (2022) tried to study the problems faced by the milk dairy co-operative societies. Pitchai (2022) studied the level of acceptance of young farmers in dairy cooperatives and the contribution of youth and development. This study was done in Puduchery village. Pratiksh (2022) studied the problems of dairy farmers in Panda taluka, Goa.

## Research Problem

Small milk dairies play a crucial role in meeting the daily dairy needs of urban populations in cities like Pune. Despite the importance, these small-scale units often operate in an unorganized manner, facing numerous challenges such as limited access to infrastructure, fluctuating milk prices, lack of modern technology, regulatory burdens, and competition from large dairy corporations. There is limited empirical research focusing specifically on the functioning, challenges, and

sustainability of small milk dairies in urban settings. Thus, it becomes very difficult for small milk dairies to reach a larger section of customers, and the operations remain limited in size. It is essential to understand that the practical problems and design an effective strategy which will help them grow better. Hence this analytical study is undertaken to know and understand the status, economic viability, operational issues, and support mechanisms required for small milk dairies in Pune City.

## Research Gaps

Despite its fast expansion, the dairy industry in Pune is confronted with a number of obstacles. These issues include variations in input costs, limits on infrastructure, and market uncertainty. On the other hand, these difficulties also create chances for innovation, diversity, and the addition of value. To overcome these problems and realize the full potential of the dairy industry in Pune, it is possible to make use of technical improvements, encourage entrepreneurialism, and strengthen institutional support structures.

The previous research that was examined sheds light on the complex nature of milk production in the Pune region, which is impacted by a variety of factors including historical, economic, technological, and policy considerations. Developing strategies that aim to improve productivity, sustainability, and resilience in the dairy industry requires a full understanding of these dynamics. This understanding is necessary for the development of these strategies. It is necessary to do further empirical research in order to fill in the knowledge gaps that currently exist and to inform the development and execution of evidence-based policy.

## Research Methodology

### Sample and Sampling Technique

Database or Sampling frame for this research was taken from FSSAI which provides details about Food Business Operator where in Milk production is also included. Also, it is important to note that there was an order issued by Ministry of Health and Family Welfare, New Delhi, File No. 04-05/2012Enf-I/FSSAI that All small dairy business operators working from establishment (shops etc) or operating form Mandis/designated places are required

to obtain license/registration. Taking into consideration of the above 19 Milk Dairies were registered as per the list provided by FSSAI. So, considering 19 as population. 14 milk dairies as chosen as sample with 5% level of significance. Random sampling method has been used for collection of data and following sample has been selected for study.

### Methodology Used for the Study

Tools used for the research work were structured interviews and interview schedules with the small milk

dairy owners, both primary and secondary data was used for data collection.

Primary data was collected through structured questionnaires with the owner and managers of milk dairies and secondary data was collected through research papers in the relevant topic and some government reports like Animal Husbandry Reports, Reports of National Dairy Development Board, Milk Federation of India FSSAI.

SPSS for data entry was used and analysed.

### Variable Used for the Study

Independent variables	<ul style="list-style-type: none"> <li>• Maximum Production</li> <li>• Local area of operations</li> <li>• Radius of business operations</li> <li>• Different types of customers</li> </ul>
Dependent Variables	<ul style="list-style-type: none"> <li>• Customer satisfaction</li> <li>• Satisfaction with production</li> <li>• Area customers belong to</li> </ul>

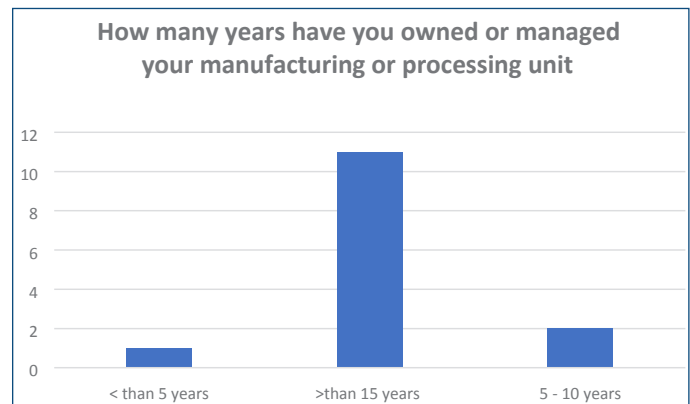
### Data Analysis and Interpretation

The dairy from where the data is collected are spread over Pune City covering areas like Talawade, Bhandarkar Road, Kothrud, Ganesh Nagar, Raviwar Peth, Shukrawar Peth, Pune Camp, Kasba Peth and Shaniwar Wada.

Almost all dairies are self-operated with a total number of around 5 staff members.

The dairies are registered under the Food Safety and Standards Authority of India and one of the dairies amongst the sample is also registered with Co-operative Milk Societies. They usually sell Cow Milk, Buffalo Milk and some dairies also sell Toned Milk.

### Years of Owning the Dairy



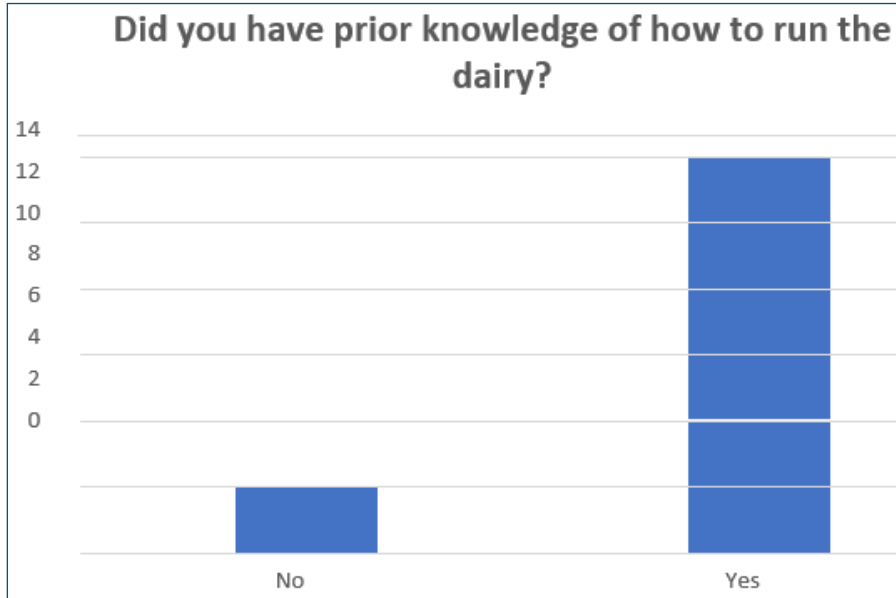
Source: Primary data.

**Fig. 2:** Years of Owning the Dairy

*Interpretation:* Only one dairy amongst the sample is less than 5 years old, 2 dairies are between 5 to 10

years and 13 dairies are managing manufacturing or processing unit

**Prior Knowledge on How to Run the Dairy**



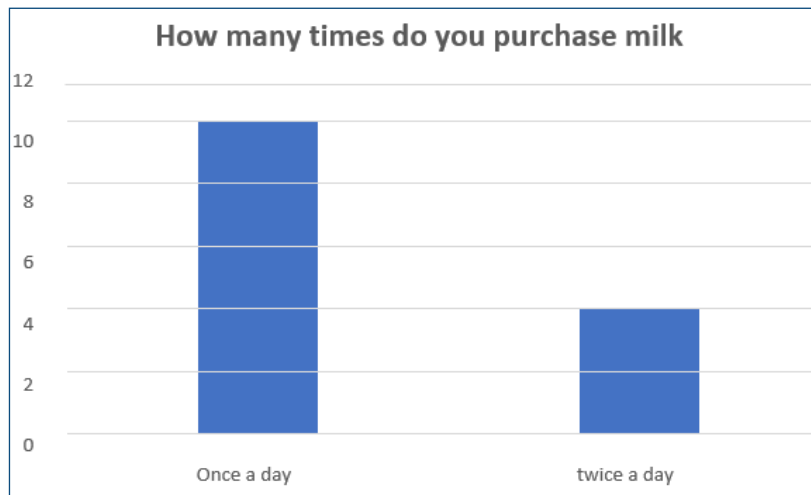
Source: Primary data.

**Fig. 3: Prior Knowledge on How to Run the Dairy**

*Interpretation:* Out of 14 respondents only 2 didn't have prior knowledge but 12 respondent had prior knowledge

of dairy farm. Some dairy farm owner also had required qualification related to dairy farming.

**Times of Purchasing Milk Per Day**



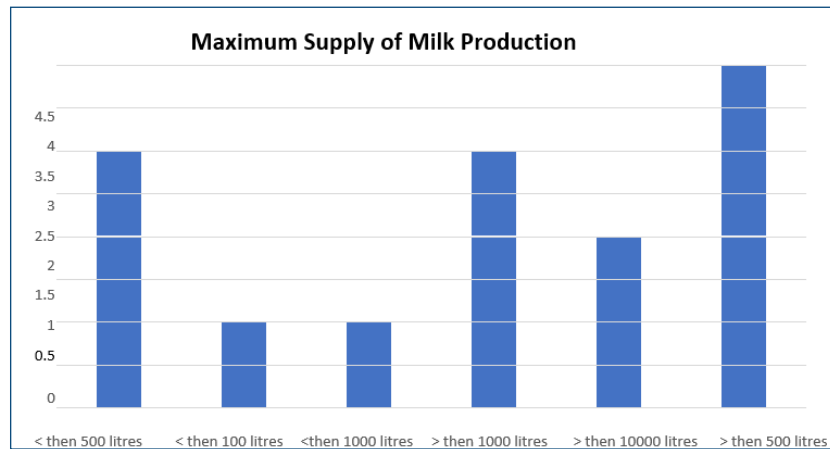
Source: Primary data.

**Fig. 4: Times of Purchasing Milk Per Day**

*Interpretation:* All the Small Milk dairies in the study own cattle. The business is to buy milk from farmer and sell it through Small farmers & dairies owners dairies. 10

dairy purchase milk once and day and 4 dairy purchase milk twice a day.

### Maximum Supply of Milk Production



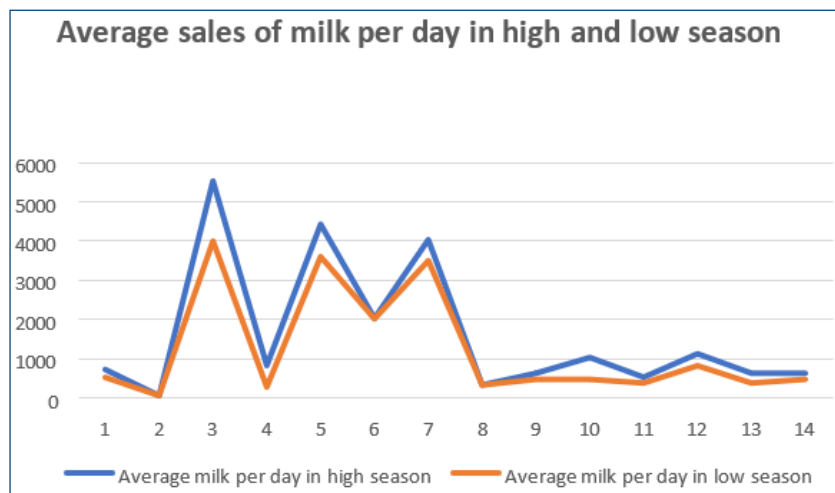
Source: Primary data.

**Fig. 5: Maximum Supply of Milk Production**

*Interpretation:* 3 dairies have maximum milk production of less than 500 litres, 1 dairy has maximum milk production of less than 100 litres, 1 dairy has maximum milk production of less than 1000 litres, 3 dairies have

maximum milk production of more than 1000 litres, 2 dairies have maximum milk production of more than 10000 litres and 4 dairies have maximum milk production of more than 500 litres.

### Average Milk Sales in High and Low Seasons

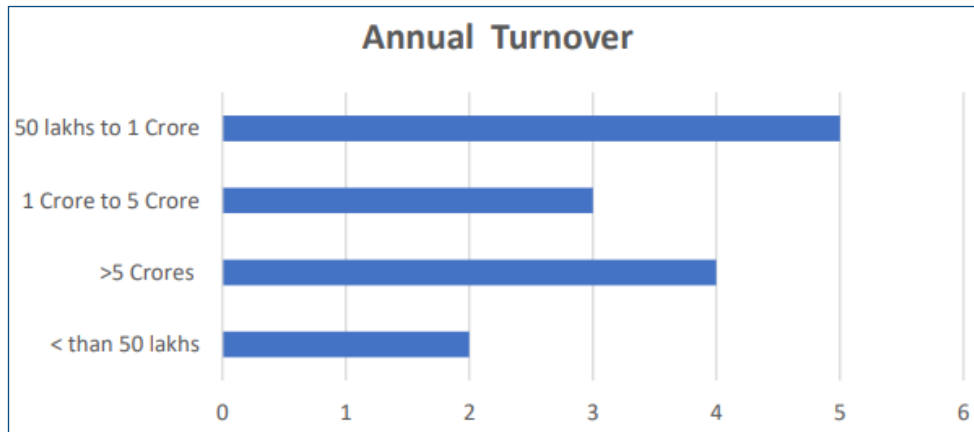


Source: Primary data.

**Fig. 6: Average Milk Sales in High and Low seasons**

*Interpretation:* The sales of average milk per day in high season around 5000 tonnes of milk and in low season it is less than 1000 tonnes.

## Annual Turnover

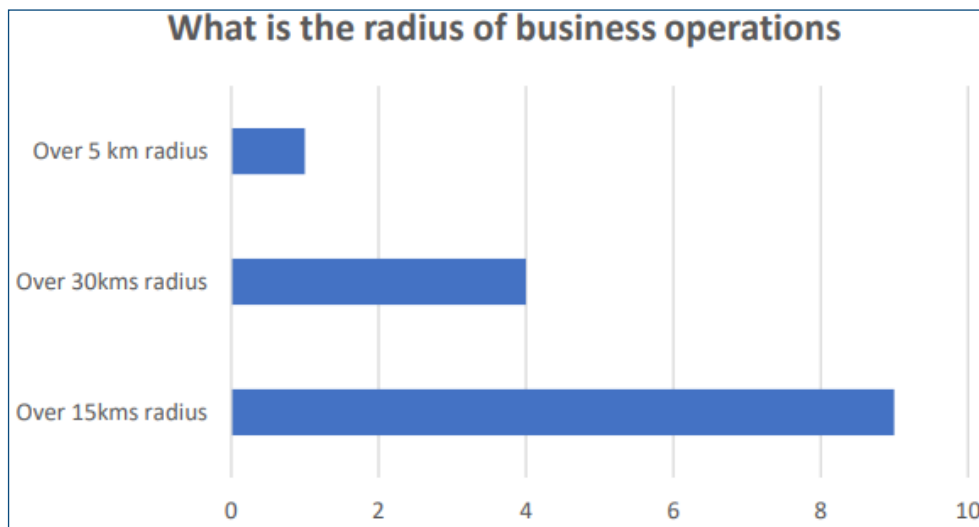


Source: Primary data.

**Fig. 7: Annual Turnover**

*Interpretation:* 5 dairies have annual turnover in between 50 lakhs to 1 crore, 3 dairies have annual turnover in between 1 crore to 5 crores, 4 dairies have annual turnover or more than 5 crores and 2 dairies have annual turnover of less than 50 lakhs.

## Radius of Business Operations

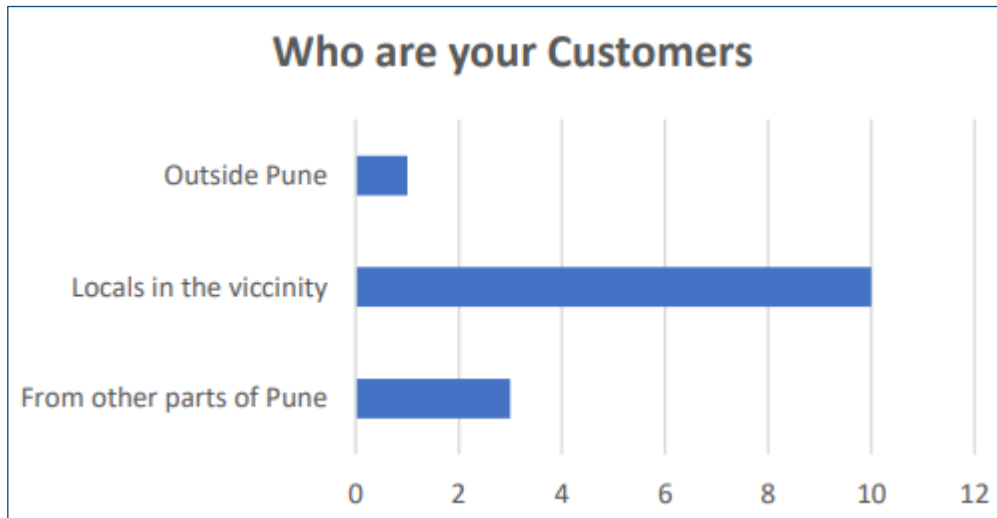


Source: Primary data.

**Fig. 8: Radius of Business Operations**

*Interpretation:* 9 dairies have business operations over 15 kms radius, 4 dairies have business operations over 30 kms radius, and 1 dairy has its business operations over 5 km radius.

### Who are Your Customers?

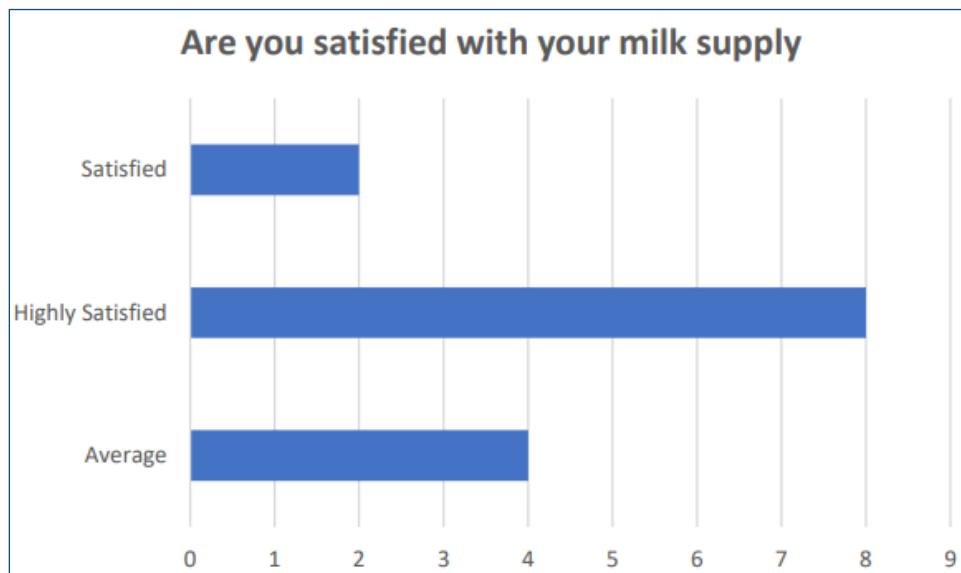


Source: Primary data.

**Fig. 9: Who are Your Customers?**

*Interpretation:* 3 milk dairies have customers from other parts of Pune; 10 dairies have customers from local vicinity and only one dairy says that they have customers outside Pune.

### Satisfaction from Milk Supply

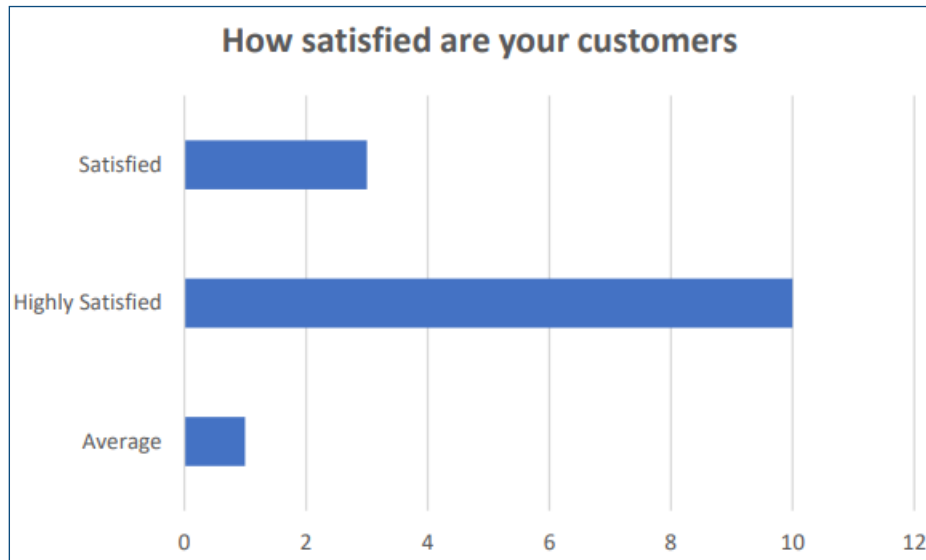


Source: Primary data.

**Fig. 10: Satisfaction from Milk Supply**

*Interpretation:* 2 milk dairies have satisfied with milk supply, 8 are highly satisfied by the milk supply and 4 are neither satisfied nor dissatisfied with the milk supply.

## Satisfaction of Customers



Source: Primary data.

**Fig. 11: Satisfaction of Customers**

*Interpretation:* 10 dairies say that customers are Highly satisfied with small farmers & dairies owner's products and service, 3 dairies say that the customers are satisfied

with the products and services and one dairy say that the customers are neither satisfied not dissatisfied.

## Results of Test of Reliability

**Table 1: Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.749	.688	10

If the Cronbach's Alpha is .74 that means the data is Reliable.

## Results of Test of Normality

Kolmogorov-Smirnov Test of Normality was performed on SPSS software.

**Table 2: Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Area of Operation	.388	14	.000	.730	14	.001

a. Lilliefors Significance Correction

The result of Ks is 0.388 which is more than the  $\alpha$  value of 0.05, this proves that the data is Normal.

## Hypothesized Model for the Study

### Testing of Hypothesis

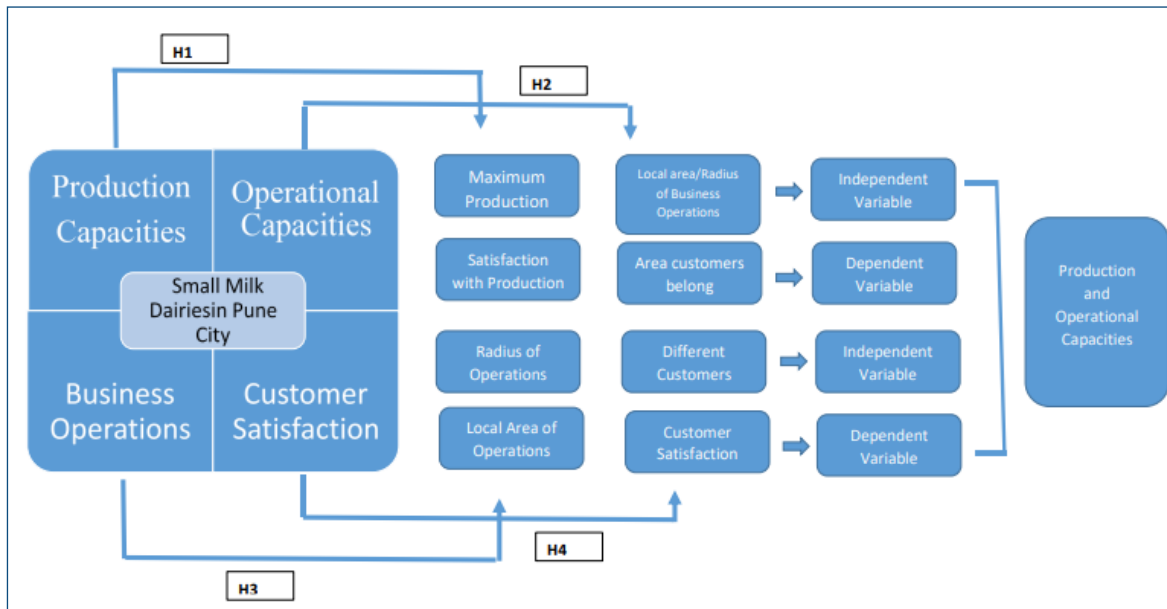


Fig. 12

## Implications of the Study

The study will have economic, social, technological, operational and research implications. The study highlights how these dairies contribute to the local economy, employment and income generation as far as social implication is concerned with will create a livelihood for small farmers and for small dairies owners, it explores the role of modern technology in improving milk, production, processing and distribution of small dairies. Such studies are very specific in nature hence is an addition to academics and information and thus has academic implication.

## Findings

Following are the findings of the study:

- Most of the dairies are in Pune City, who purchase milk from farmers and usually are engaged in selling Cow Milk, Buffalo Milk, Toned Milk and Milk Products.
- The Units under study are not very old players. Small farmers & dairies owners are in business only for the past 10 years. Small farmers & dairies

owners have to understand the business of milk production and move towards growth for better business development.

- Small farmers & dairies owners are only selling milk which small farmers & dairies owners purchase from farmers. Small farmers & dairies owners can also think of owning the cattle which obviously is a very big challenge for them as it requires capital and knowledge which is limited with them.
- Small farmers & dairies owners Max Milk production is far less than the established brands and hence have limited production capacities.
- Small farmers & dairies owners have limited storage capacities to store small farmers & dairies owners' milk and hence purchase milk twice a day
- Out of the units under study only 4 dairies have an annual turnover of around 1 to 5 crores which is not at all comparable with the established players supplying milk in the market.
- Small farmers & dairies owners radius of operations is maximum round 15-20 kms which shows that small farmers & dairies owners have limited operational capacities.

- Since these small milk dairies are like small farmers & dairies owners' business small farmers & dairies owners are quite satisfied with small farmers & dairies owners' turnover; Small farmers & dairies owners are earning. Small farmers & dairies owners are happy to run small farmers & dairies owners' business and are satisfied with small farmers & dairies owners' production, operation and customers.
- The units under study are small milk dairies which has small business operations and production capacities.
- Small farmers & dairies owners are registered under the Food Safety and Standards Authority India. Small farmers & dairies owners' basic product is Milk which is cow and buffalo and some sell toned milk too. Small farmers & dairies owners also sell Milk Products along with Milk and some sell bakery products along with Panner, Khava, Yogurt, Buttermilk, Butter, Ghee.
- The price for milk is decided based on the rules laid down by the government but the prices can also be decided based on the demand of mil and based on the quality of milk sold.
- Most of small farmers & dairies owners' customer are local customer who reside in the vicinity where small farmers & dairies owners business is established.
- The reasons for not being able to sell over a wider or larger area is:
  - Production is limited.
  - Operations are limited.
  - Limited storage capacities.
  - Insufficient transport facilities.
  - Lack of potential to compete and face competition.
  - Limited Space.
  - Less Workforce.
  - Lack of Capital.
  - Low Marketing Strategies.
  - No Promotion or Advertising.
  - Limited capacity to bear production, operational and marketing expenditures.
  - Small farmers & dairies owners lack a large number of customer base, as small farmers

& dairies owners have limited milk supply capabilities and hence cannot supply small farmers & dairies owners' milk to different parts of Pune City. Small farmers & dairies owners lack logistics and transportation which is difficult for them to manage.

### Challenges of These Small Milk Dairies

- *Economic Pressures:* Small farmers & dairies owners struggle to compete with larger industrial dairy operators who have large production/operational capacities and hence fall back in terms of economics of scale and production costs.
- *Market Access:* Small dairies may find it difficult to access large markets or compete with established brands existing in the market.
- *Regulatory Compliance:* These small milk dairies are not even registered in co-operative to get advantage from them. Due to Small farmers & dairies owners limited production and operational capacities, small farmers & dairies owners are not in a position to fulfill the regulations and compliances.
- *Problems of Logistics and Distributional Challenges:* Small farmers & dairies owners have limited production and operational capacities which does not enable them to reach to a wider area and a large base of customers. These small dairies may face difficulties in establishing a distribution network that can efficiently deliver products to customers or retailers.
- *Price Fluctuation:* The small milk dairies want to increase small farmers & dairies owners' prices, but it is subject to the demand and the conditions of market and small farmers & dairies owners supplies, but small farmers & dairies owners' prices are strongly influenced by the price volatility which effects small farmers & dairies owners' profitability.

### Suggestions

- Small farmers & dairies owners have to focus on building strong relationship with small farmers & dairies owners' customers, small farmers & dairies owners present customers are happy, but small farmers & dairies owners need to grow small farmers & dairies owners business using the profit in the right way.

- Since, Small farmers & dairies owners' customers are happy small farmers & dairies owners should be able to supply high quality m and dairy products so that small farmers & dairies owners have a good recognition and gain a better scope to move towards being a good brand.
- Small farmers & dairies owners can engage themselves in community events and partnership to expand small farmers & dairies owners' business.
- Small farmers & dairies owners can emphasize on freshness and authenticity of small farmers & dairies owner's products which can be clearly differentiated from other milk businesses and also from large competitors.
- Small farmers & dairies owners stand a better chance to promote themselves to the local area and hence need to start promoting the products.
- Small farmers & dairies owners should start thinking about business expansion and inclusion of those products which will attract the customers.
- Small farmers & dairies owners can explore different opportunities for direct sales through farmer's market, on-line platform, or farm to table initiative this can help them increase small farmers & dairies owners' visibility and reach.
- Small farmers & dairies owners require innovative strategies, collaboration with other local producers, improve leverage technology for marketing and distribution efficiencies.
- Small farmers & dairies owners should try creating niche markets for themselves and create an image in the minds of the customers which could differentiate them from large players.
- Small farmers & dairies owners can personalize small farmers & dairies owner's products and bring uniqueness in small farmers & dairies owners' products.

## Conclusion

The study of small milk dairies in Pune City reveals that these units play a significant role in ensuring the daily supply of fresh milk to urban consumers. Despite Small farmers & dairies owners' contribution, most of these dairies operate in an informal and resource-constrained

environment. The findings indicate that small dairies face several challenges such as inadequate infrastructure, rising operational costs, limited access to modern technology, regulatory hurdles, and stiff competition from organized dairy brands.

However, these dairies also exhibit resilience through strong community networks, flexible operations, and a loyal customer base. The economic viability of these dairies depends on factors like efficient procurement, hygiene practices, and access to financial and government support.

To enhance small farmers & dairies owners' sustainability and growth, there is a need for targeted policy interventions, awareness programs on hygiene and quality standards, access to low-interest credit, and training in modern dairy practices. Encouraging cooperative models and digital integration can also improve efficiency and transparency.

This study contributes to understanding the micro-level dynamics of the urban dairy sector and provides actionable insights for policymakers, dairy entrepreneurs, and support organizations to strengthen small milk dairies in growing urban centers like Pune.

## Acknowledgement

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## Conflict of Interest

The authors declare that there is no known conflict of interest associated with this research titled "Analytical Study of Small Milk Dairies in Pune City." The study has been conducted independently and without influence from any dairy businesses, suppliers, or related stakeholders. No funding or support was received from organizations that may benefit from the findings. The researchers affirm that small farmers & dairies owners have no personal

or financial relationships with any of the small milk dairies included in the study that could be perceived as influencing the results or interpretations presented. If future affiliations or financial interests arise related to this research, small farmers & dairies owners will be fully disclosed.

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