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Economic Evaluation of Milk at Shrinath Mhaskoba Milk Collection and Chilling Centre in Pune District

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ABSTRACT

The Indian dairy industry is contributing significantly to the country's economy, besides improving the health standard by increasing the nutrition value of the food. Chilling of milk is part of processing and main aim is to enhance the milk shelf life and free from microorganism and contamination. Chilling help to prolong the life of milk and transport milk by long duration period by safely. And this industry has numerous scope and growth now a days. The aim of this study is to find out the profitability of Shrinath Mhaskoba Milk Collection and Chilling Centre, cost and returns of the Chilling centre, Break-even point of chilling Centre, and to study the economic losses of Shrinath Mhaskoba Milk Collection and Chilling Centre. The sample was selected from the Veer village, Purandar tahsil in Pune district. The Shrinath Mhaskoba Milk Collection and Chilling Centre was sale their milk to Corporative Dairies like Gokul and Katraj and Collected from Farmers and Milkman's. The Capital requirement of Chilling unit was found to be Rs.68,29,000. The average quantity of milk sold was 3440 litres and selling price is 41. The total cost required for unit was Rs 3,90,19,431.48. The gross returns and net returns were found to be Rs. 5,14,79,600 and Rs.1,24,60,168.52 respectively. The Benefit cost ratio (B:C) ratio was observed 1.32.

***Keyword**: Contamination, chilling, cost, returns, benefit cost ratio.*

INTRODUCTION

The importance of milk in the human diet especially for children and expectant and nursing matters is vital. Milk is the richest source of calcium and essential amino acids which is good for bone formation. Dairy technology has been defined as the branch of dairy science, which deals with the processing of milk and the manufacture of milk products on an industrial scale. As an attributive, the word dairy refers to milk-based products, derivatives and processes and the animals and workers involved in their production for example dairy cattle, dairy goat, *etc*.

World milk production is expected to increase by 1.6 per cent annually between 2020 and 2029 and reach 997 million tons in 2029. India is the world's largest milk producer, making up 23 per cent of global production in milk of all types. India is the largest milk producer and ranked 1st in milk production contributing 23 per cent of global milk production.

Milk production in the country has grown at a compound annual growth rate of about 6.2 per cent to reach 209.96 million tonnes tonnes in 2020-21 and from 146.31 million tonnes in 2014-15. The top 5 milk-producing states are: Uttar Pradesh (14.9per cent, 31.4 MMT), Rajasthan (14.6per cent, 30.7 MMT), Madhya Pradesh (8.6per cent, 18.0 MMT), Gujrat (7.6per cent, 15.9 MMT) Total milk production in the Maharashtra is 13703 tones in year 2021.

The highest milk producing district in Maharashtra is Ahmednagar at about 2073 tones. In Pune, total milk production is 1769.2 tones which is second largest in Maharashtra. Districts and regions of Maharashtra assessed through significant and higher rate of growth associated with higher index of instability of milk production. National Dairy Development Board (NDDB) has taken programmes in Maharashtra to increase milk production per cattle.

Objective of the Study

1) To Study the Profile of Srinath Mhaskoba Milk Collection and Chilling Centre.
2) To estimate Cost Returns and Profitability of Srinath Mhaskoba Milk Collection and Chilling Centre.
3) To work out Break-even Point of Srinath Mhaskoba Milk Collection and Chilling Centre.
4) To Study the economic losses of Srinath Mhaskoba Milk Collection and Chilling Centre.

Methodology

Location of Study: The present study was undertaken in Veer village of Pune district.

Period of Study: The data was collected for the period from year 2020-2021.

Method of Data Collection: Data was collected through schedule and discussion with the entrepreneur of the Shrinath Mhaskoba milk Collection and chilling centre.

Source of Data

Primary Data: The primary data was collected from Srinath Mhaskoba milk Collection and Chilling Centre through the respective personnel and discussion with entrepreneur of that unit.

Secondary Data: The secondary data was collected through annual reports of Company and accounts, records, internet etc.

Analytical tools: The collected data is analysed with the help of tabular analysis by calculating average, mean, etc. and interpret accordingly with the help of tables, graphs, pie charts, etc.

Profile of Shrinath Mhaskoba Milk Collection and Chilling Centre

Which includes the milk Chilling history and details about their products and services and this information has been obtained by personal interview method with the entrepreneur in the prepared schedule.

Cost and Returns analysis: For studying of total cost, we need to find

Fixed Cost

Fixed cost includes, building expenses, Machinery and equipment expenses, Furniture and fixtures expanses, Electrification expanses, Vehicles taken during establishment of unit, Computer taken for billing, Water supply structure develop during building construction, Fire extinguisher, Taxation and insurance, License fee, Expenditure on permanent employee and *etc*.

Fixed cost = Depreciation + Principle of EMI + Interest on fixed capital investment.
Depreciation = Cost of an asset – residual value / Useful life of an asset.

For studying of returns we need to find-

1) **Gross Returns**
   Gross Returns = Quantity of milk × Market price of milk.
2) **Net Return**
   Net returns are calculated by subtracting net cost from gross returns.
   Net returns = Gross Returns - Total Cost.
3) **Benefit Cost Ratio**
   Benefit Cost Ratio = $\frac{\text{Gross Returns}}{\text{Total Cost}}$

Break-even Point

The break-even point is that point of production where the farmers neither gains profit nor incures loss. And the point at which two curves i.e., Total cost and Total revenue curve intersect as called as Break-even point. To estimate break-even level of milk production, following formula was used

Break-Even Point = Fixed Cost / (Selling price per unit – Variable cost per unit)

Economic losses of Shrinath Mhaskoba Milk Collection and Chilling Centre: Economic losses were identified through personal interview with owner of chilling unit.

Profile of Shrinath Mhaskoba Milk Collection and Chilling Centre

Shrinath Mhaskoba Milk Collection and Chilling Centre is one of the most leading Milk Chilling Unit in area of Pune District. It is one of the small industries of chilling of fresh milk which was started in 23 June, 2012.

The unit is engaged in chilling process of fresh milk. The plant vision is to chill the bulk quantity of milk and improve their shelf life and free from microorganism and transfer to the big corporative diaries like Katraj and Gokul. Raw milk is the main product of the plant and the unit not produce any by product. Big corporative dairies are main beneficiaries of the unit.

The Shrinath Mhaskoba Milk Collection and Chilling Centre is located at Veer, Tal. Purandar, Dist. Pune. The Unit is managed by Mr. Ganesh Digambar Samgir and his other Passionate staff member (manpower) which plays a key role.

The Main Purpose of establishing of this unit was to provide additional income to the farmers (milkman's) from the surrounding villages to improve their economic, social and educational growth and to generate employment.

Also, to provide good quality chilled milk to the Consumer. The whole plant is laid on the area of 4356 sq. feet for Chilling of 3500 litres capacity and from that, unit may chill 3400-3440 litres of milk.

Cost and Returns of Shrinath Mhaskoba Milk Collection and Chilling Centre

The Cost and Returns analysis of milk production of Shrinath Mhaskoba milk collection and chilling centre was carried out on the basis of different cost concepts of all primary input

Table No. 1: Fixed Capital Investment of Shrinath Mhaskoba Milk Collection and Chilling Centre:

Sr. no.	Particular	Units	Initial Cost (Rs)	Percentage Share
A)	Land	4356 Sq. feet	10,00,000.00	14.64
B)	Civil work and Construction of Building			
	i. Office Building	1	1,00,000.00	1.46
	ii. Chilling (Processing) Plant Building	1	2,50,000.00	3.66
	iii. Storage Building	1	90,000.00	1.32
	iii. Water storage tank	2	30,000.00	0.44
	Total		**4,70,000.00**	6.88
C)	Water Supply Structure			
	a) Borewell	1	1,30,000.00	1.90
	b) Spring pipeline and fitting		80,000.00	1.17
	Total		**2,10,000.00**	3.08
D)	Machinery and Equipment		**29,90,000.00**	43.78
E)	Vehicles			
	a) Mahindra bolero pick up	2	18,00,000.00	26.36
	b) Ape axe	2	1,00,000.00	1.46
	Total		**19,00,000.00**	27.82
F)	Furniture		80,000.00	1.17
G)	Computer	2	70,000.00	1.03
H)	Fire Extinguisher	2	4,000.00	0.06
I)	License fee	2	5,000.00	0.07
J)	Electrification		1,00,000.00	1.46
	Total		**68,29,000.00**	100.00

The above table no.1 gives the information regarding all fixed assets of Shrinath Mhaskoba milk collection and chilling Centre. From the above data it has been noted that Rs. ₹ 68,29,000.00 value of total fixed assets. The share of Machinery and equipment in total fixed capital investment is highest i.e., 43.78 percent.

It is followed by Vehicle i.e., 27.82 per cent. The lowest cost incurred by Furniture, License fee, Computer, Fire Extinguisher and Electrification. Overall, the Machinery and Equipment, Vehicles, Land and Water supply structure are major cost contributing in total fixed capital investment for establishment of Shrinath Mhaskoba milk collection and chilling Centre.

Fixed Cost of Shrinath Mhaskoba Milk Collection and Chilling Centre

Fixed cost includes depreciation on value of Budling, Machinery and Equipment, Furniture and Fixtures, Electrification, Vehicles, Computer, Water supply structure, Fire Extinguisher. Capital Investment and Equipment, Machineries, Rental Value of land and Interest on fixed capital.

The depreciation charges worked out by the Straight-Line Method. Interest on fixed capital was worked out based on average loans rate of 10 per cent. Rental value of land was derived by per square feet value of rent.

Table No. 2: Fixed Cost of Shrinath Mhaskoba Milk Collection and Chilling Centre

S.no.	Particulars	Depreciation (Rs)	Interest on Fixed Capital (Rs)	Principal of EMI (Rs)	Fixed Cost (Rs/Year)	Percentage share
1	Building	9,922.22	9,862.45	18,800.00	38584.67	2.53
2	Machinery and Equipment	1,27,075.00	71,652.97	1,49,500.00	348227.97	22.86
3	Furniture	3,600.00	1,917.14	4,000.00	9517.14	0.62
4	Electrification	2,125.00	2,098.39	4,000.00	8223.39	0.54
5	Vehicles	1,07,666.67	53,322.34	1,26,666.67	287655.67	18.88
6	Computer	6,300.00	2,403.84	7,000.00	15703.84	1.03
7	Water supply structure	4,725.00	4,406.63	8,400.00	17531.63	1.15
8	Fire Extinguisher	300.00	125.83	333.33	759.16	0.05
9	Taxation and Insurance				60,000.00	3.94
10	License				5,000.00	0.33
11	Expenditure on permanent employee				7,32,000.00	48.06
	Total cost				**15,23,203.48**	100
12	Rental Value of land				56,628.00	3.72
	Total fixed cost				**15,79,831.48**	103.72
13	Total Quantity of Chilled Milk				12,55,600	
14	Fixed Cost per litre				1.26	

The above table indicates total fixed cost of Shrinath Mhaskoba milk collection and chilling Centre. The total fixed cost is Rs. 15,79,831.48. The share of Expenditure on permanent employee is highest i.e., 48.06 per cent. The lowest cost incurred on Fire Extinguisher, License, Electrification, Furniture, Computer, Water supply structure, and Taxation and Insurance whose share is between 0.05 to 3.94 per cent.

Variable Cost of Shrinath Mhaskoba Milk Collection and Chilling Centre

The variable cost comprises of expenses on Raw milk cost, casual Labour charges, Repair and Maintenance, Water charges, Transportation charges, Electricity charges, Office expanses, Commission charges (Intermediary).

Table No. 3: Variable Cost of Shrinath Mhaskoba Milk Collection and Chilling Centre

Sr. no.	Particulars	Units	Quantity Year	Value (RS)	Percentage Share
1	Raw Milk Cost	(Rs.29/litre)	12,55,600	3,64,12,400.00	97.26
2	Casual labour charges	Nos	4	4,68,000.00	1.25
3	Repair and maintenance	Rs		35,000.00	0.09
4	Water charges	Rs		1,000.00	0.003
5	Transportation charges/Fuel charges	Rs		3,60,000.00	0.96
6	Electricity charges	Rs		42,000.00	0.11
7	Office Expanses charges/Stationary charges	Rs		1,200.00	0.003
8	Commission charge (Intermediary)	Rs		1,20,000.00	0.32
	Total			3,74,39,600	100
	Total variable Cost	Rs		3,74,39,600	100
9	Total Quantity of Chilled Milk	Rs		12,55,600	
10	Variable Cost per litre	Rs		**29.82**	

The above table no. 3 indicates that total variable cost of Srinath Mhaskoba milk collection and chilling Centre is Rs. 3,74,39,600 ₹. The cost of Raw milk procured in Total variable cost is highest i.e., 97.26 per cent. It is followed by Casual Labour charges and Transportation charges. The lowest cost incurred on Office expanses, Water Charges, Electricity, Repair and Maintenance charges whose share is between 0.003 to 0.11 per cent. Maintenance charges whose share is between 0.003 to 0.11 per cent.

Total Cost: Total cost is sum of expanses a company needs to manufacture a specific level of output.

Table No. 4: Total Cost of Shrinath Mhaskoba Milk Collection and Chilling Centre

Sr. No.	Particular	Value (Rs)	Percentage share
1	Total Fixed Cost	15,79,831.48	4.05
2	Total Variable Cost	3,74,39,600.00	95.95
	Total Cost	3,90,19,431.48	100.00

From the above table no. 4. Total cost of Srinath Mhaskoba Milk Collection and Chilling Centre is Rs. 3,90,19,431.48. The share of Fixed cost and Variable cost is 4.05 per cent and 95.95 per cent respectively.

Profitability of Shrinath Mhaskoba Milk Collection and Chilling Centre

Gross returns were obtained by multiplying milk yield of an annual year of particular unit with respective prevailing prices in the area. The market price of one liter of milk is Rs.41. The total quantity per day is 3440 litres. Therefore, it is revealed that total gross return evaluated by working out the income generated from milk of Srinath Mhaskoba milk collection and chilling centre during complete year as Rs. 5,14,79,600.00. Whereas, the total expenditure on Srinath Mhaskoba Milk Collection and Chilling Centre during the same year was. Rs. 68,29,000.00. Thus, the Net returns of Srinath Mhaskoba Milk Collection and Chilling Centre was Rs. 1,24,60,168.52.

Table No. 5: Profitability of Shrinath Mhaskoba Milk Collection and Chilling Centre

Sr.no.	Particulars	Unit	Quantity	Value (Rs.)
1	Chilled Milk	litres	12,55,600	5,14,79,600.00
	Total			5,14,79,600.00
2	Gross Returns			5,14,79,600.00
3	Total Cost			3,90,19,431.48
4	Net Return			**1,24,60,168.52**
5	B:C Ratio (1:)			1.32

From the above table B:C ratio of Srinath Mhaskoba milk collection and chilling Centre is greater than 1.1 i.e., 1.32.

Break-Even Point of Milk production of Shrinath Mhaskoba Milk Collection and Chilling Centre

Break-even point indicates the level of business that produces neither profit nor loss. If the business operates at a level above the BEP, it indicates that the firm making a profit. For calculating break-even point, we need to calculate contribution margin. The contribution margin is a chilling unit sale less its variable expenses. Then divide the fixed cost by the contribution margin.

Table No. 6: Break-Even Point of Shrinath Mhaskoba Milk Collection and Chilling Centre

Sr. no.	Particulars	Value (Rs.)
1	Total Fixed Cost	15,79,831.48
2	Selling Price per litre	41.00
3	Variable Cost per litre	29.82
4	Break Even Point (in litres)	1,41,284.64

From the above table no 5 and 6 it is indicates that the B:C Ratio of milk remains above 1:1 (>1:1) and the BEP of milk lies below the actual units sold thus the given data revealed that, the mentioned Srinath Mhaskoba milk collection and chilling Centre is having a profitable business.

Economic losses of Shrinath Mhaskoba Milk Collection and Chilling Centre.

Economic loss is a term of art which refers to financial loss and damage suffered by a unit, which is seen only on a balance sheet not seen physically by a person. There are few Economical losses observed at the chilling unit of Shrinath Mhaskoba milk collection by various ways are given below.

Table No. 7: Economic losses of Shrinath Mhaskoba Milk Collection and Chilling Centre in Pune District as Follows

Sr.no.	Particular	Loss/day (litres in avg)	Percentage share	Economic losses/year	Percentage Share
1	Loss due to Improper Handling	18.00	30.00	6,570.00	30.00
2	Loss due to Contamination	10.00	16.67	3,650.00	16.67
3	Loss during Transportation	12.00	20.00	4,380.00	20.00
4	Loss due to Spoilage of milk	15.00	25.00	5,475.00	25.00
5	Loss due to Leakage	5.00	8.33	1,825.00	8.33
	Total	60.00	100		
	Total annual loss			21,900.00	100.00

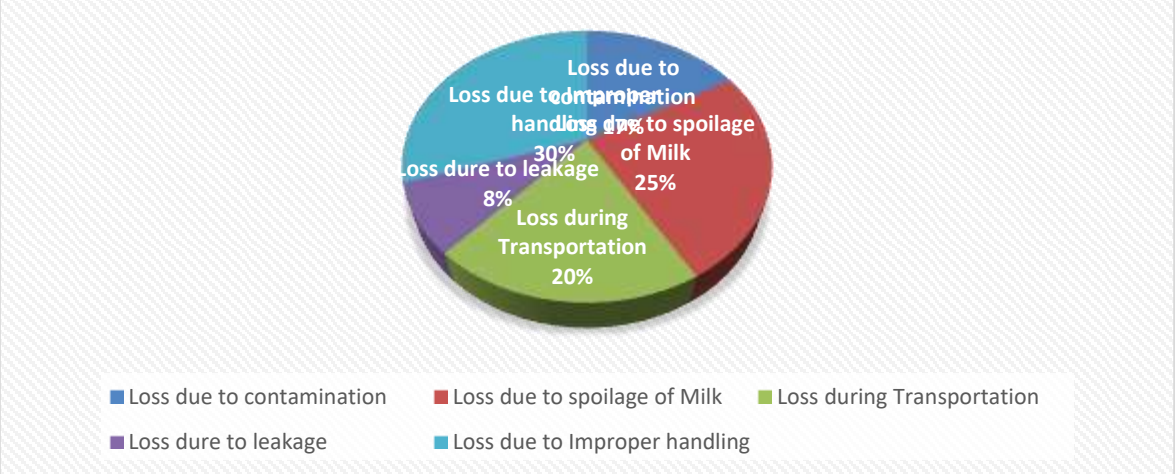

Fig.1. Economic losses of Shrinath Mhaskoba Milk Collection and Chilling Centre.

In an average the daily loss of milk is 60 litres per day at Shrinath Mhaskoba Milk Collection and Chilling Centre. from the above table the losses are ranked on the basis of the percentage of loss during chilling process the major loss is observed by Improper handling of milk while pouring milk in tank, while dragging cans in harsh manner (30per cent) followed

by loss of milk due to Spoilage as milk is perishable and can easily get spoiled in high temperature (25per cent). The loss of milk during Transportation of milk from cattle shed to processing unit (20per cent). There are some minor losses due to Contamination of milk by foreign materials like hairs of animal, using unhygienic utensils (16.67per cent) and loss due to Leakage in storage tanks and Pipe lines and taps etc. (8.33per cent). The total annual economic loss was 21900 litre out of these the major loss due to the Improper handling was about 6570 litres.

CONCLUSIONS

On the basis of the study, findings and results of the given project on Srinath Mhaskoba Milk Collection and Chilling Centre following conclusions are drawn. The capital investment for establishment of Shrinath Mhaskoba Milk Collection and Chilling Centre is worked out to Rs. 6829000 indicating that chilling centre is highly capital-intensive business. The study revealed that purchase of expenditure on permanent Laboure, Machineries and equipment, vehicles for transportation have largely contributed to investment under fixed costs. On the other hand, raw milk cost, casual Laboure charges formed major portion of variable costs. Thus, minimizing this cost effectively can have significant gains in chilling unit. The result indicates that the B:C Ratio of chilling unit of Srinath Mhaskoba Milk Collection and Chilling Centre is 1:1.32 and the total quantity of Chilled milk is higher than its break even output thus from the given data it was concluded that, the mentioned of Srinath Mhaskoba Milk Collection and Chilling Centre having a profitable venture. From the study, it was concluded that economic losses are done in Srinath Mhaskoba Milk Collection and Chilling Centre and owners should be taking action against them and try to deal with those losses, which can help the proprietor to minimize them and expand their business profit.

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