

Original Research Article

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Procurement and Processing Management of Strawberry in Mapro Foods Satara in Maharashtra, India

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ABSTRACT

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The food processing industry is experiencing rapid transformation driven by intensified market competition, evolving consumer preferences, and increasing demand for value-added products. In this context, effective procurement and processing management are critical to ensure operational efficiency and supply chain sustainability. The present study examines the procurement and processing management practices of Mapro Foods Pvt. Ltd. with specific reference to strawberry procurement and product manufacturing. The study aims to analyze procurement patterns, processing operations, and the challenges encountered in both domains. Findings indicate that procurement prices varied seasonally, with the highest price (Rs. 60/kg) recorded during October–December due to superior quality and peak season availability, followed by Rs. 55/kg in January–February and Rs. 40/kg during March–May. Month-wise procurement showed maximum collection in October (234 tonnes) and minimum in May (119 tonnes), reflecting seasonal production fluctuations influenced by climatic conditions. A progressive increase in annual procurement was observed from 1200 tonnes in 2019–20 to 1500 tonnes in 2022–23, attributed to expansion in processing capacity. The company follows a direct procurement channel, ensuring timely collection, electronic weighing, and weekly digital payment to farmers. Processing operations require approximately 1500–1550 tonnes of strawberries annually, with diversified utilization in products such as pulp, crush, jam, syrup, toppings, and candy. Key challenges identified include transportation damage, fluctuating supply, variable quality, mechanical breakdowns, and power interruptions. The study underscores the importance of just-in-time procurement, quality standardization, and robust operational planning to enhance supply chain efficiency and minimize production disruptions.

Introduction

The food processing industry is going through rapid changes; competition in the market is increasing day by day. Because of fast mode of title and limited time value of processed food people are attracted towards it. New and big players are entering in the market with the

innovative ideas. In this scenario it is very important to study the procurement and processing management of strawberry. Company should ensure that a continuous supply of raw material i.e procurement, parts, and components available to maintain manufacturing operation. It can help to maintain supply continuity with minimum inventory investment possible. This requires

balancing the cost of carrying material against the possibility of the production of a production stoppage.

The ideal, of course, is to have needed material arrive just at the moment they are scheduled to be used in the production process, in other words, just-in-time. In view of these facts, an attempt has been made to ascertain the Procurement Management and Processing Management of Mapro Foods. The aim of the present research study is to evaluate the procurement and processing management of strawberries at Mapro Foods Pvt. Ltd.. The specific objectives of the study are to examine the procurement practices adopted by the company, to analyze the processing management of strawberry-based products, and to identify the major problems encountered in both procurement and processing operations.

Research Methodology

Mapro Foods Pvt.Ltd. Company was identified for summer training located in Shendurjane, Wai, Dist. Satara (Maharashtra). The list of strawberry growers was obtained from the office record of Mapro Foods Pvt. Ltd. Purposive sampling method was used to select the strawberry growers. From the list of farmers, 10 farmers each from 5 villages were selected from study area randomly.

Primary data was collected with the help of questionnaires. In primary data the procurement process and problems during procurement and processing management of strawberry was collected from strawberry growers and company workers. The secondary data was collected from the inward registers of Raw Materials, company records, Annual reports of MAPRO Foods Pvt. Ltd. And internet sources are used as secondary data sources. The processing management was collected from processing manager and workers of company.

The collected data were analyzed by tabular and graphical method. Through these tables total raw material procured from each village in a year is analyzed.

Results and Discussion

Procurement Prices of strawberry at Mapro in Year 2022

Price of the strawberry is fixed by company and the rates given to the farmers vary according to season and on the

basis of quality.

It is observed that the highest price of Rs. 60 per kilogram was given to strawberry in the month of October to December due to quality and season of strawberry. The price was Rs. 55 per kilogram in the January and February months while in the months of March, April and May the price was Rs.40 per kilogram.

Month wise Procurement of strawberry

Procurement quantity and prices of strawberry differ month wise

Strawberries (Metric tonnes)

The maximum strawberries were procured in the month of October i.e. were 234 tonnes followed by November 223 tonnes and December 213 tonnes. The lowest quantity procured was in the May and was 119 tonne. In month of march to may because of high temperature production is decreases of strawberry.

Year wise procurement from 2019 to 2023 at Mapro

Table 3 shows the total quantity of strawberry procured in last four years. It was found that the quantity procured by company was increasing. It may be due to expansion in the processing activity of the company. In 2019-20, strawberry procurement was 1200 tonnes and in 2022-23 it was 1500 tonnes.

Procurement Channel adopted by Mapro Foods Pvt. Ltd.

For procurement of the strawberries direct procurement channel is used by the company. In this channel strawberries are harvested in the farm, collected in the crates and then sold to the company at Shendurjane. It is weighted by using electronic weighting machine then the collected strawberry transferred in the processing unit.

Collection

Collection of strawberry was done every day from 2 pm to 6 pm daily. The farmers who have supplied strawberries to MFPL they was receive a unique code number. Billing machine is used by MFPL through which the receipt of daily procure is provided to farmers.

Direct transfer of payment is done every Monday on weekly basis

Requirement of raw material

The annual requirement of strawberry is 1500 to 1550 tonnes. The required quantity of strawberry is received from farmers. Storage capacity of the company is about 90 tonnes.

The strawberry is stored in barrels prior that sulphidation of the strawberry is carried by adding KMS (500gm), citric acid (500gm) and calcium chloride (75gm) in 130 kg of strawberry.

Processing management of strawberry at Mapro Foods Pvt. Ltd.

Processing management is the ensemble of activities of planning and monitoring the performance of a process. It is the application of knowledge, skills, tools, techniques and systems to define, visualize, measure, control, report and improve processes with the goal to meet customer requirements profitably.

Collection of commodity for processing purpose

The Mapro Foods Pvt. Ltd. collects the raw material directly from farmers. They collect raw Materials from the nearby villages viz Pasarni, Karandi, Shete, Gureghar, Tapola, Godoli, Karar, and Sanpane.

Other raw material required

Citric acid, Sugar, KMS, Sodium Benzoate, Pectin, Acetic acid and colour and flavour are procured from different chemical industries.

Processing Departments

Mapro Foods Pvt. Ltd. has four major departments for producing finished as well as intermediate products which are as follow

Pulping Line

In this section all primary inspections and processing operations are performed from selection of raw material to pasteurization of final pulp. The variety of fruits are processed by the unit itself like strawberry, mango, pineapple, papaya, apple, grapes, kokum in the different seasons of harvest.

Sugar Syrup Line

Basically in this line the Syrup of required °Bx is prepared which is varied with the product. Citric acid is added as per requirement of inversion. The sodium benzoate is added to the solution used for jam processing. The prepared syrup is filtered and then transfer to production lines except confectionery as per the requirement.

Jam Line

This line is not only manufactures the jam but also the Dessert Topping, ketchup, pizza souce, jain ketchup, Thandai, Orange marmalade, crushes with pieces/whole. The pectin used in jams is MRS (Medium repeat setting) which is rapid setting pectin, helps to set the jam within 25-30 min.

SCS (Squash Crush Sharbat) Line

Basically in this line the different types of fruit beverages like squashes, cordial, Sharbat, and crush are manufactured.

Processed products of strawberry at Mapro

Disposal of Strawberry for processing purpose

Table 4 indicates the distribution of strawberries according to requirement of strawberries for different products. Out of the total quantity procured in year 70 tonnes of strawberry loss. The 490 tonnes quantity of strawberry kept in whole strawberry form for whole strawberry jam purpose while 940 tonnes of the procured strawberry was converted into pulp

Disposal of Strawberry pulp for different strawberry products

Different products viz; Falero, strawberry jam, crush, syrups are made from strawberry pulp the quantity of pulp required for each product is given in below table 5

The Table 5 indicates the disposal of strawberry pulp for different strawberry products. Of the total strawberry pulp produced in the year 2022-23, 615 tonnes was used for Falero a candy product followed by 165 tonnes of pulp as the raw material for preparation of strawberry crush. The quantity of pulp used in jam was 80 tonnes

and 55 tonnes in syrup and the least of 25 tonnes was used for topping.

Product wise schedule of processing plant

As strawberry is a seasonal fruit it converted into pulp and used for different product preparation year round as per demand. The company has schedule for different fruit product of which strawberry is processed for two weeks

in a month. Company had a weekly schedule also for the different strawberry products. Maximum production of 11000 liters of strawberry syrup was done once in a week i.e. on Thursday. Strawberry crush is processed twice in a week viz; on Wednesday and on Sunday with total quantity of 5250 liters per day Monday was confined to 5250 kg strawberry jam. 3750 liters of strawberry crush was schedule on Saturday.

Table.1 Procurement Price of strawberry at Mapro in Year 2022

Sr. No	Months	Price (Rs.) /kg
1	October-December	60
2	January-February	55
3	March-May	40

Table. 2 Month wise Procurement of strawberry Year -2022-23

Sr.no.	Months	Quantity(MT)
1	October	234
2	November	223
3	December	213
4	January	203
5	February	193
6	March	172
7	April	143
8	May	119
Total		1500

Table.3 Year wise procurement from 2012 to 2016 at Mapro.

Year	Quantity(MT)
2019-20	1200
2020-21	1350
2021-22	1400
2022-23	1500

Table.4 Processed products of strawberry at Mapro.

Sr. No.	Product of strawberry
1	Strawberry Jam
2	Strawberry Syrup
3	Strawberry Crush
4	Whole Strawberry Crush
5	Strawberry Topping
6	Strawberry Squash
7	Strawberry Falero

Table.5 Disposal of Strawberry for processing purpose (Year: 2022-23)

Sr. sNo.	Particulars	Quantity(T)	Percentage (%)
1	Whole Strawberry	490	32
2	Pulp	940	63
3	Loss	70	5
Total		1500	100

Table.6 Disposal of Strawberry pulp for different strawberry products

Sr. No.	Product	Quantity (tonnes)
1	Falero	615
2	Jam	80
3	Crush	165
4	Syrup	55
5	Topping	25
6	Total	940

Table.7 Weekly schedule of processed products

Day	Product name	Quantity processed
Monday	Strawberry Jam	(35lots)(150kg)=5250kg
Tuesday	Holiday	-
Wednesday	Strawberry Crush	(35lots)(150kg)=5250 lit
Thursday	Strawberry Syrup	(5tanks)(2200lit)=11000 lit
Friday	Strawberry Topping	(2tank)(100lit)=200 lit
Saturday	Whole Strawberry Crush	(25lots)(150kg)=3750 lit
Sunday	Strawberry Crush	(35lots)(150kg)=5250 lit

While Tuesday was weekly off. Strawberry jam and crush 35 lots per day were prepared with 150 kilogram each. Syrups and toppings per day production was of 5 tanks and 2 tanks each of capacity 2200 liters and 100 liters. In whole strawberry crush a lot was of 150 kilogram and 25 lots were produced on Saturday.

Problems faced in procurement of strawberry by Mapro Foods Pvt. Ltd.

In procurement management the manager need to consider and overcome the problems that occur during the procurement of raw material. Therefore an attempt was made to enlist the problems viz; Damage of strawberry during transportation, High rate of hired vehicles for transportation of strawberry, Fluctuating supply of strawberry and Supply of varied quality of strawberries from farmers.

Problems faced in Processing of strawberry by Mapro Foods Pvt. Ltd.

In processing management the manager need to consider and overcome the problems that occur. Therefore an attempt was made to enlist the problems viz; Unexpected mechanical breakdown in processing machinery, Power cut leading production delay.

Technical disturbances in production process lead to wastage of bottles and finished products

Problems faced by farmers

Damage of strawberry during transportation and High rate of hired vehicles for transportation of strawberry.

Problems faced by company

Fluctuating supply of strawberry and Supply of varied quality of strawberries from farmers.

In Conclusion, The highest procurement price of Rs. 60 per kilogram was offered for strawberries during the months of October to December due to superior quality and favorable seasonal conditions. The price declined to Rs. 55 per kilogram in January and February and further reduced to Rs. 40 per kilogram during March, April, and May. In terms of quantity, the maximum procurement was recorded in October (234 tonnes), followed by November (223 tonnes) and December (213 tonnes), while the lowest quantity was procured in May (119 tonnes), primarily due to reduced production caused by high temperatures during the March–May period. Regarding utilization, of the total strawberry pulp produced in 2022–23, 615 tonnes were used for Falero (a candy product), 165 tonnes for strawberry crush, 80 tonnes for jam, 55 tonnes for syrup, and 25 tonnes for topping. In processing management, several operational challenges were identified, including unexpected mechanical breakdowns in machinery, power interruptions leading to production delays, and technical disturbances in the production process that resulted in wastage of bottles and finished products.

Author Contributions

Y. C. Sale: Investigation, formal analysis, writing—original draft. M. B. Nikam: Validation, methodology,

writing—reviewing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

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