A Midterm report for the BDM capstone Project

MilkyWay Insights

Submitted by

Name: Sonal Prashant Raikar

Roll number: DS22F3002469

Contents Page no.

Declaration Statement

I am working on a Project Title “MilkyWay Insights”. I extend my appreciation to **Mahalaxmi Milk Procurement** , for providing the necessary resources that enabled me to conduct my project.

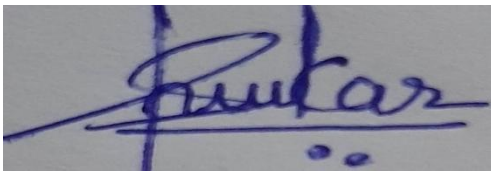
I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered through primary sources and carefully analyzed to assure its reliability.

Additionally, I affirm that all procedures employed for the purpose of data collection and analysis have been duly explained in this report. The outcomes and inferences derived from the data are an accurate depiction of the findings acquired through thorough analytical procedures.

I am dedicated to adhering to the information of academic honesty and integrity, and I am receptive to any additional examination or validation of the data contained in this project report.

I understand that the execution of this project is intended for individual completion and is not to be undertaken collectively. I thus affirm that I am not engaged in any form of collaboration with other individuals, and that all the work undertaken has been solely conducted by me. In the event that plagiarism is detected in the report at any stage of the project's completion, I am fully aware and prepared to accept disciplinary measures imposed by the relevant authority.

I agree that all the recommendations are business-specific and limited to this project exclusively, and cannot be utilized for any other purpose with an IIT Madras tag. I understand that IIT Madras does not endorse this.



Signature of Candidate: (**Digital Signature**)

Name: Sonal Prashant Raikar

Date:23.12.2024

Executive Summary and Title

Project Factory name: Mahalaxmi Milk Procurement Factory.
Title: MilkyWay Insights.

- **Location:** Gut.no.189, Maliwadgaon, Taluka Gangapur, District Aurangabad (Chh Sambhajinagar), Maharashtra.
- **Business Type:** Both B2B and B2C.
- **Products:** Milk and milk-based products by converting raw milk into various dairy products.

Major Business Issues:

✧ **Milk Procurement Challenges:**
Low collection of milk from dairy farmers.
Need for strategies to increase milk procurement.

✧ **Sales Challenges:**
Low sales of milk and milk products.
Identifying methods to boost sales and reach more customers.

✧ **Inefficient Milk Utilization:**
Current methods of using collected milk are not optimal.
Need to explore better utilization techniques.

✧ **Profitability Challenges:**
Low profit margins.
Identifying strategies to improve overall profitability.

Proposed Solutions:

- **Data-Driven Analysis:**
Data Cleaning**:** Organizing and preparing factory data for meaningful analysis.
Analysis via Excel: Identifying trends and patterns through spreadsheet analysis.
Visualization: Using charts and graphs to present data insights for better understanding.
- **Actionable Insights from Analysis:**
Strategies to increase milk collection from dairy farmers.
Methods to boost sales of milk and milk products.
Better approaches to utilize collected milk effectively.
Tactics to increase profit margins and overall profitability.

Expected Outcomes:

✧ Increased milk procurement from dairy farmers.
✧ Higher sales of milk and milk-based products.
✧ Improved methods for utilizing collected milk efficiently.
✧ Enhanced profitability for the factory, ensuring long-term business growth.

Analysis Techniques:

- **Time series analysis:**

Analyzes data over time to identify trends, seasonality, and patterns for forecasting.

- **Demand Forecast Analysis:**

Predicts future demand for products or services using historical data, trends, and market factors.

Proof of Originality

Board of the Factory

Milk Pouch of the factory

Entrance of the factory

Milk collection truck of the factory

SNF and FAT Measuring machine

Milk collecting jars and machines

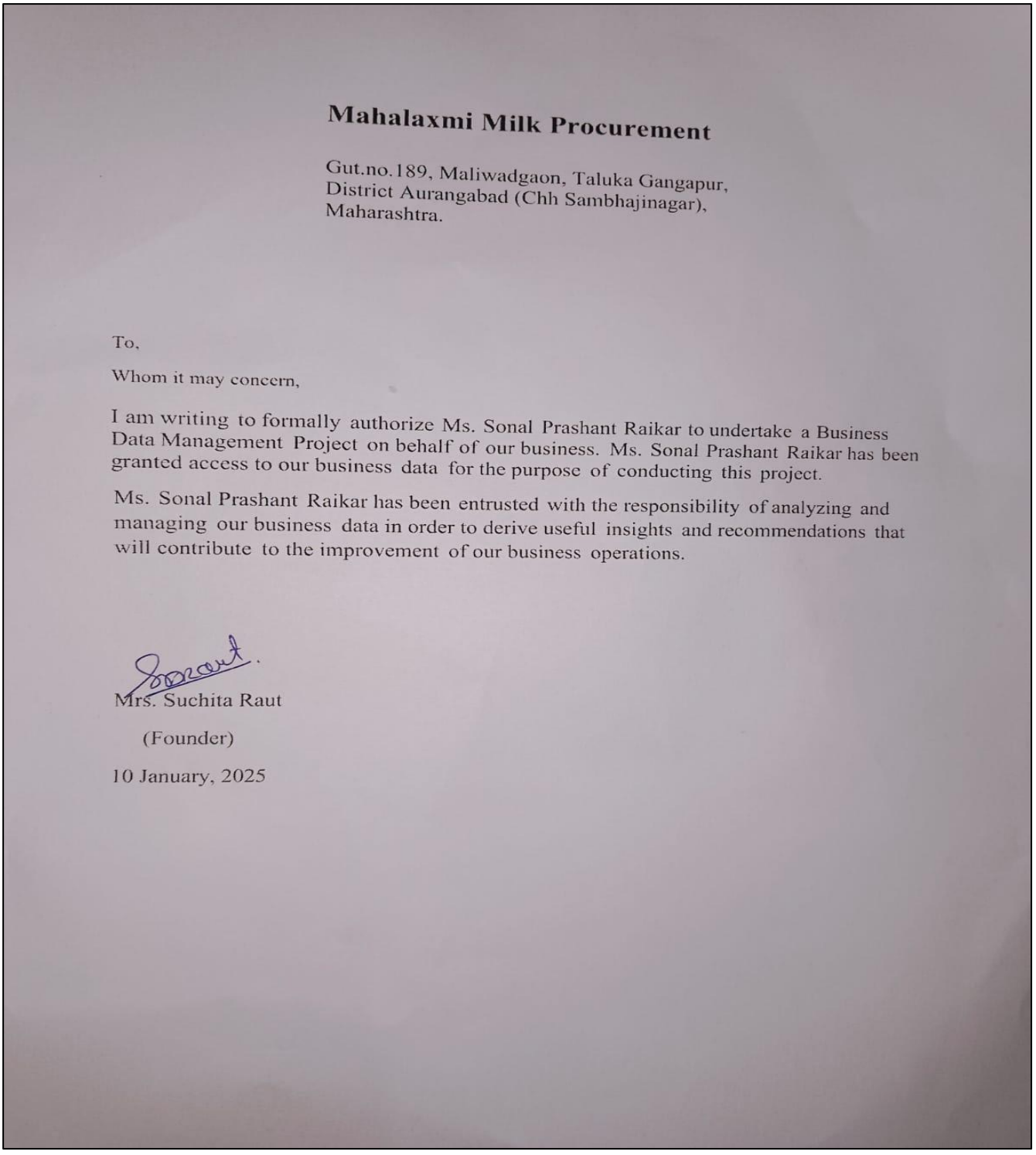
Video link of interaction with the owner:

https://drive.google.com/file/d/1lVHH4kADBcYeNzTIvy_YIKPt3na-VhVa/view?usp=drive_link

Link to data :

https://docs.google.com/spreadsheets/d/1vldZMRS3IbWj8zoOIjpBFSbJll2QyRoV/edit?usp=drive_link&ouid=111337919617660594596&rtpof=true&sd=true

Letter From Factory Owner



Mahalaxmi Milk Procurement

Gut.no.189, Maliwadgaon, Taluka Gangapur,
District Aurangabad (Chh Sambhajinagar),
Maharashtra.

To,

Whom it may concern,

I am writing to formally authorize Ms. Sonal Prashant Raikar to undertake a Business Data Management Project on behalf of our business. Ms. Sonal Prashant Raikar has been granted access to our business data for the purpose of conducting this project.

Ms. Sonal Prashant Raikar has been entrusted with the responsibility of analyzing and managing our business data in order to derive useful insights and recommendations that will contribute to the improvement of our business operations.

Mrs. Suchita Raut

(Founder)

10 January, 2025

Metadata

In workbook there are seven sheets as:

collection_data1(march even)	collection_data1(apr-oct even)	collection_data2(march morn)
collection_data2(apr-oct morn)	sales_data	descriptive_statics	production_data

The collection data sheets has the data of the collection of milk that the factory gets everyday for each month, its fat quantity,snf,etc.

Collection data sheets:
The collection data sheets are used to solve two problems that is of 1) lesser milk collection and the 2) not so good ways to use the milk .
1) lesser milk collection
For solving this problem the collection data is analyzed with the following data:

Shift	TotalLtr
1-Mar-24	

In this data sheet shift shows the morning and evening milk collection data along with the dates collected and the TotalLtr shows the total amount of milk collected.

2) not so good ways to use the milk .
For solving this problem the collection data is analyzed with the following data:

Shift	Type	FAT	SNF	TotalLtr
	1-Apr-24			

In this data sheet shift shows the morning and evening milk collection data along with the dates collected, fat shows the amount of fat present in the milk , SNF (solids not fat)shows the components of milk other than fat and the TotalLtr shows the total amount of milk collected.

month	milk	jamun	paneer	pure ghee	pedha

The production data sheet contains the data about the items produced in each month in the factory and their quantity.This data sheet is used to see the distribution of milk fat in production of various other items and hence using milk in a good way.

Sales data sheet:
3) lesser sales and less profit

month	Outwards	
	Quantity	Value

The sales data sheet shows the sales of the factory for each day of each month.
The sales data is used to solve the issue of lesser sales and increase in profit.
There are two main columns in the Sales data sheet :

- The date column shows the date when the products were sold by the factory.
- The outwards column shows two things namely the quantity in ltr or kg of the product sold and value shows the price of the product sold .

Production data sheet:

The production data sheet contains the data about the items produced in each month in the factory and their quantity.This data sheet is used to see the distribution of milk fat in production of various other items and hence using milk in a good way.

month	milk	jamun	paneer	pure ghee	pedha

In this ,the month has the value from April to December.
The jamun contains the amount of jamun produced .
The paneer contains the amount of paneer produced.
The pure ghee contains the amount of pure ghee produced.
The pedha contains the amount of pedha produced.

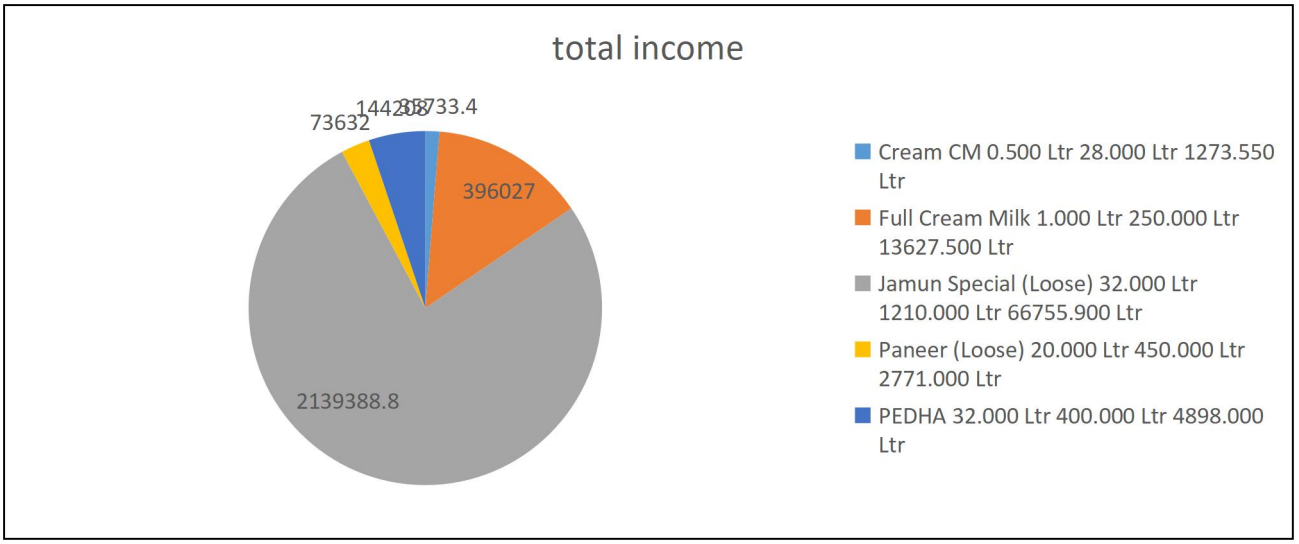
Descriptive Statistics:

	Descriptive	Statistics		
Name of item	min sale	max sale	total sale	total income

This datasheet shows the name of item,min sale that is minimum sale of that product, max sale that is the maximum sale of that product, total sale and total income generated by that product.

Descriptive Statistics

	Descriptive	Statistics		
Name of item	**min sale**	**max sale**	**total sale**	**total income**
Cream CM	0.500 Ltr	28.000 Ltr	1273.550 Ltr	35733.4
Full Cream Milk	1.000 Ltr	250.000 Ltr	13627.500 Ltr	396027
Jamun Special (Loose)	32.000 Ltr	1210.000 Ltr	66755.900 Ltr	2139388.8
Paneer (Loose)	20.000 Ltr	450.000 Ltr	2771.000 Ltr	73632
PEDHA	32.000 Ltr	400.000 Ltr	4898.000 Ltr	144208



- The above table shows the descriptive statistics in terms of min sale, max sale, sum or total sale and total income.
- The factory sales 5 major products namely Cream, Full cream milk, Jamun , Paneer and Pedha.
- This is the summary of sales of the factory from April 24 to October 24.
- It is seen that the maximum sale is of Jamun and the least sale is of Cream and similar is the income generated by both of them.
- It can clearly be seen that less focus to be given to the production of cream and more to the production of Jamun.

Detailed Explanation of Analysis Process/Method

- The first step to start the project was to have a conversation with the owner and find out the problems that the business is facing and convince the owner to give the data for the purpose of analysis.
- Next step was to collect the data from the factory.
- For this we had to visit the factory and collect the information about the entire process of milk procurement right from milk collection to milk and milk products selling.
- I have been following up with the factory since its start and started collecting the data from a long time since march 2024.

- We performed **SWOT Analysis** for the factory and found :
  Strengths: Good machinery facility (more capacity than intake),Cleanliness, environment friendly teachinques used and high quality of production.
  Weaknesses: Weaknesses were the problems that the factory faced.
  Problems identified:
  1) lesser milk collection
  2) lesser sales and less profit
  3) not so good ways to use the milk.
  Opportunities: The opportunities for the company to develop are by solving the problems that the company faced.
  Threats: The threats for the company were caused by the problems not being solved leading to loss for the company.

- I performed **Market research** by observing needs of people and visiting other diary businesses near my home.

- Then I read **Case studies** about some successful diary factory and got to know more information to solve the problems. The **Competitive analysis** was used here on preliminary basis.

- I later discussed about the **gap** that is there in the current situation of the factory and the future where the owner sees the factory.

- The owner said that the std quality of milk as suggested by the govt is 3.5 value of SNF and milk of SNF more than 3.5 was too collected , so I studied the point and came to a suggestion to use the extra cream for production of other products.
- This gave a **good way to use the extra milk fat**.

- Then I **Cleaned** and **filtered** data properly to get idea of the milk collection,production and sales.This was done using various excel tools like max,min,sum,charts,etc.
- Then I analyzed the data properly using excel tools to find out insights.

The main strategies used for analysis are :

➔ Descriptive analysis : Explains **what happened** using past data (e.g., increase of sales of some products during festive season).

➔ Diagnostic analysis : Explains **why it happened** by finding causes.(eg: lesser milk collection due to distance for the farmers).

➔ Predictive analysis : Predicts **what might happen** using trends .(Sales of certain products might increase during festive season if produced then in more quantity)

➔ Prescriptive analysis : Suggests **what to do next** for the best outcome.(eg: set up BMC's)

- Meanwhile, I did a survey and gave a gave a thought on to how to increase the milk collection and talking to the owner I found that the farmers were not able to travel so far to the factory to deliver milk for collection.
- Hence I suggested them to set up some BMC's nearby so that farmers will be able to collect their milk there in BMC's and this will thereby increase the milk collection.

- Then I **analyzed** the data and **predicted** that the sales of jamun could be more in festive season so suggested the owner to increase the production of jamun in festive season .
- Same strategy we applied with other products like pedha production.

The Results and Findings

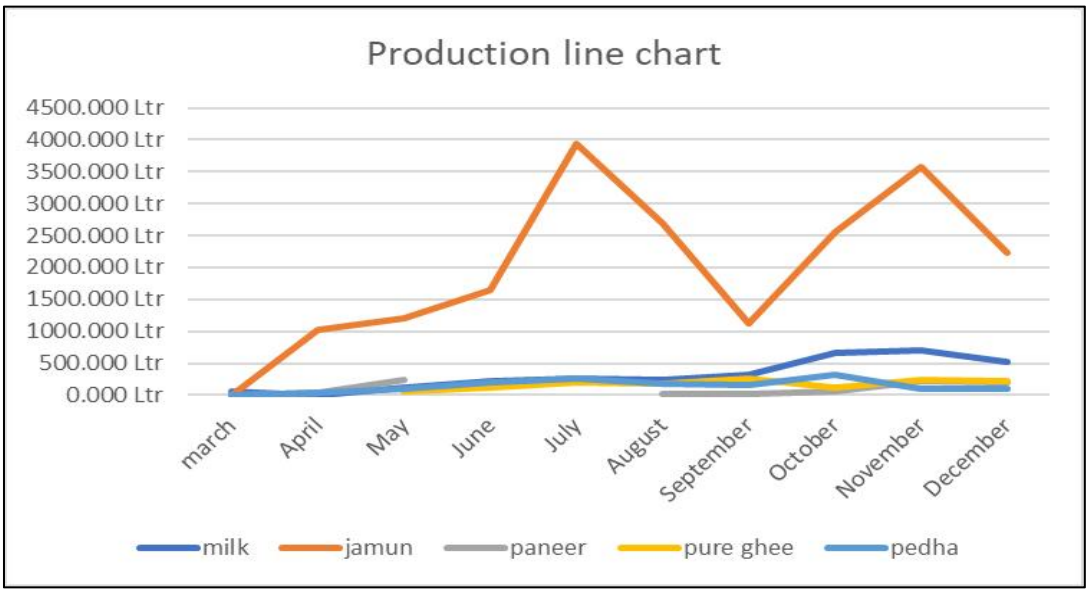
The analysis of the data led to various results and findings as follows :

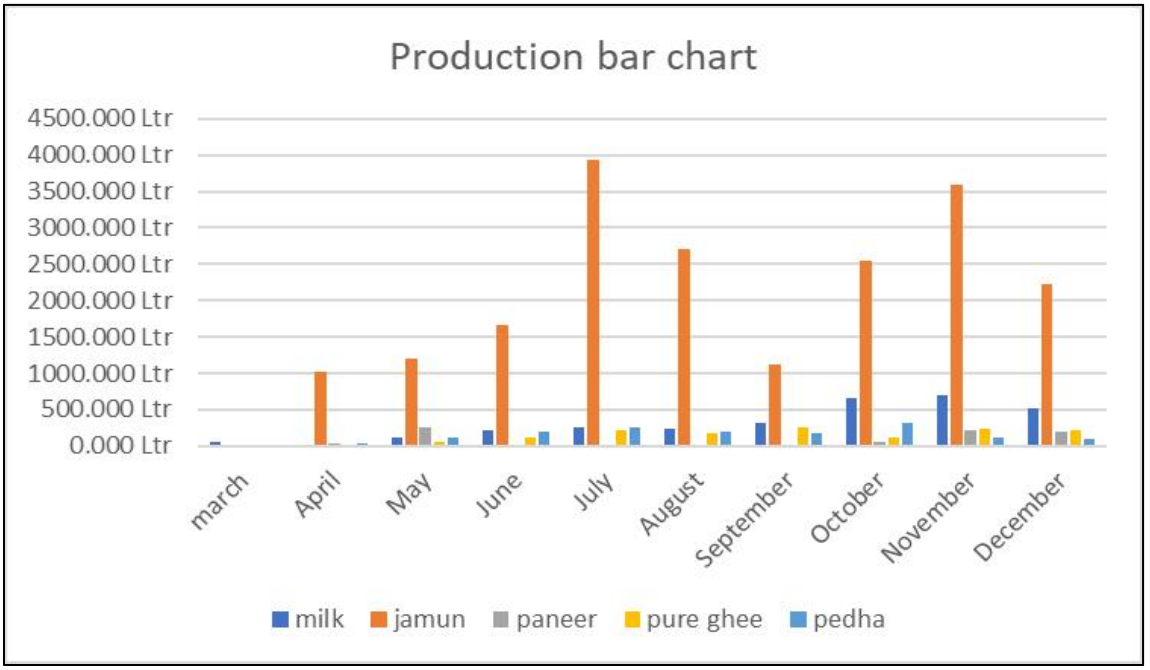
- This led to an increase in milk collection in later months as seen from the data .
- ➢ After implementing the BMC idea **milk collection began to rise slowly**.
- ➢ This increased sales and solved 2nd problem **of less sales and less profit**.
- ➢ in turn increased the sales for the pedha too thereby increasing the sales.
- ➢ This increased sales and solved 2nd problem **of less sales and less profit**.

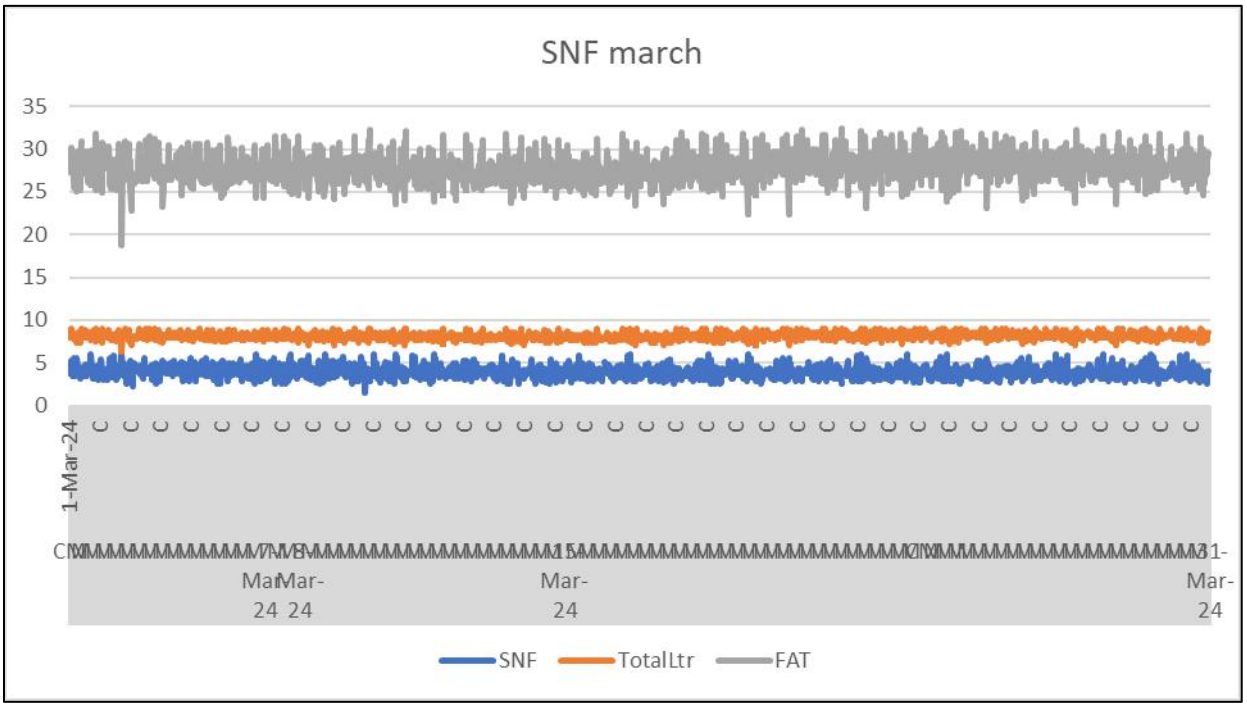
Problem 1 :not so good ways to use the milk.

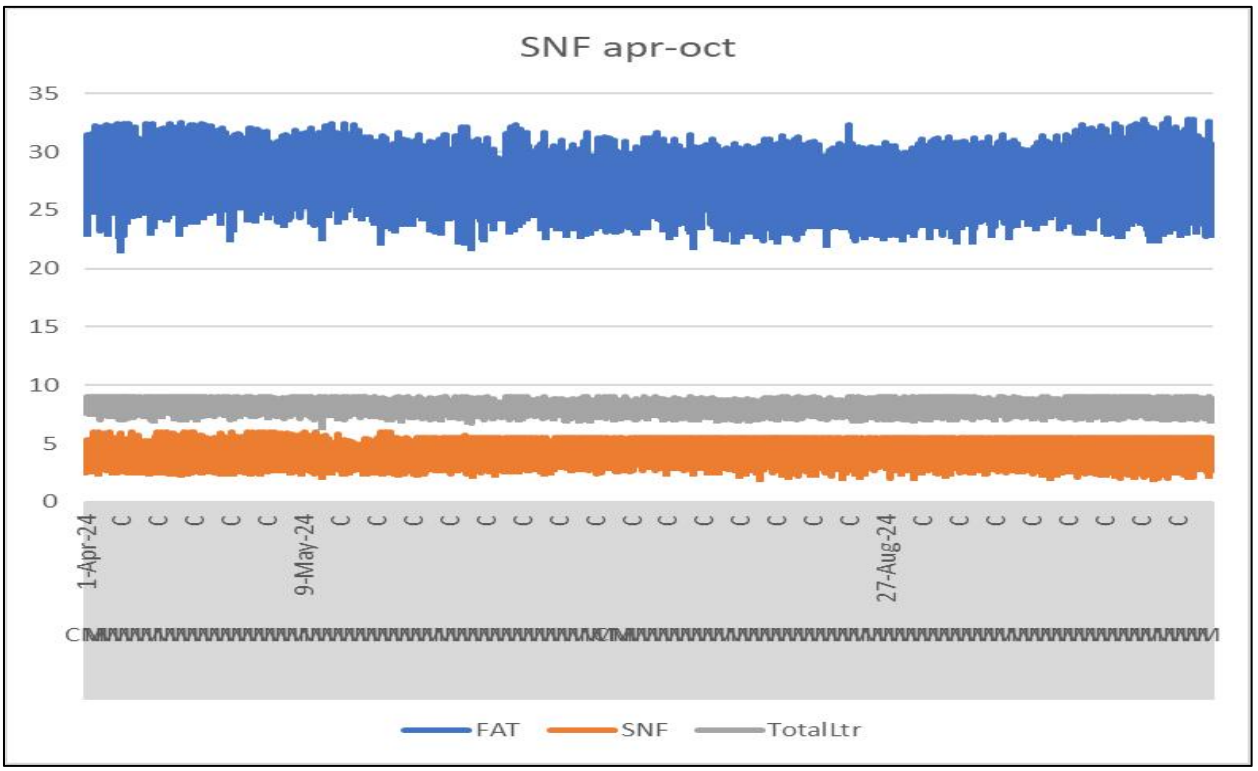
- ➢ The owner said that the std quality of milk as suggested by the govt is 3.5 value of SNF and milk of SNF more than 3.5 like 3.7 or 4 was too collected , so I studied this point and came to a suggestion to use the extra cream for production of other products.

This gave a **good way to use the extra milk fat**.




Production bar chart
4500.000 Ltr
4000.000 Ltr
3500.000 Ltr
3000.000 Ltr
2500.000 Ltr
2000.000 Ltr
1500.000 Ltr
1000.000 Ltr
500.000 Ltr
0.000 Ltr
march
April
May
June
July
August
September
October
November
December
milk
jamun
paneer
pure ghee
pedha

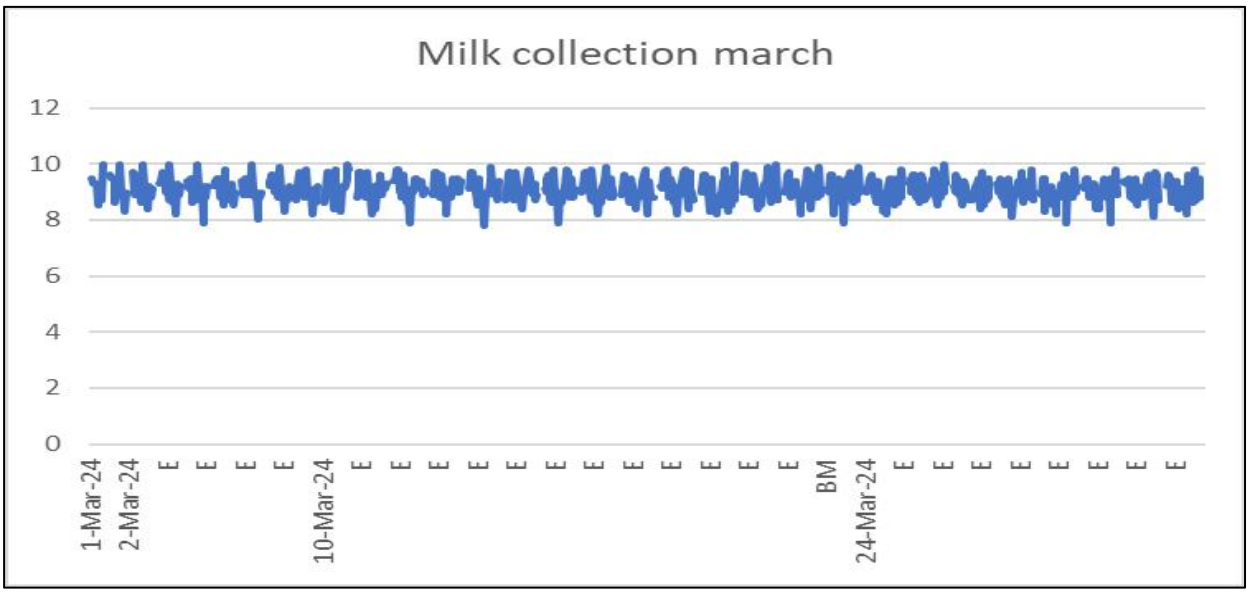

SNF march
35
30
25
20
15
10
5
0
1-Mar-24
Mar-24
Mar-24
Mar-24
31-Mar-24
SNF
TotalLtr
FAT

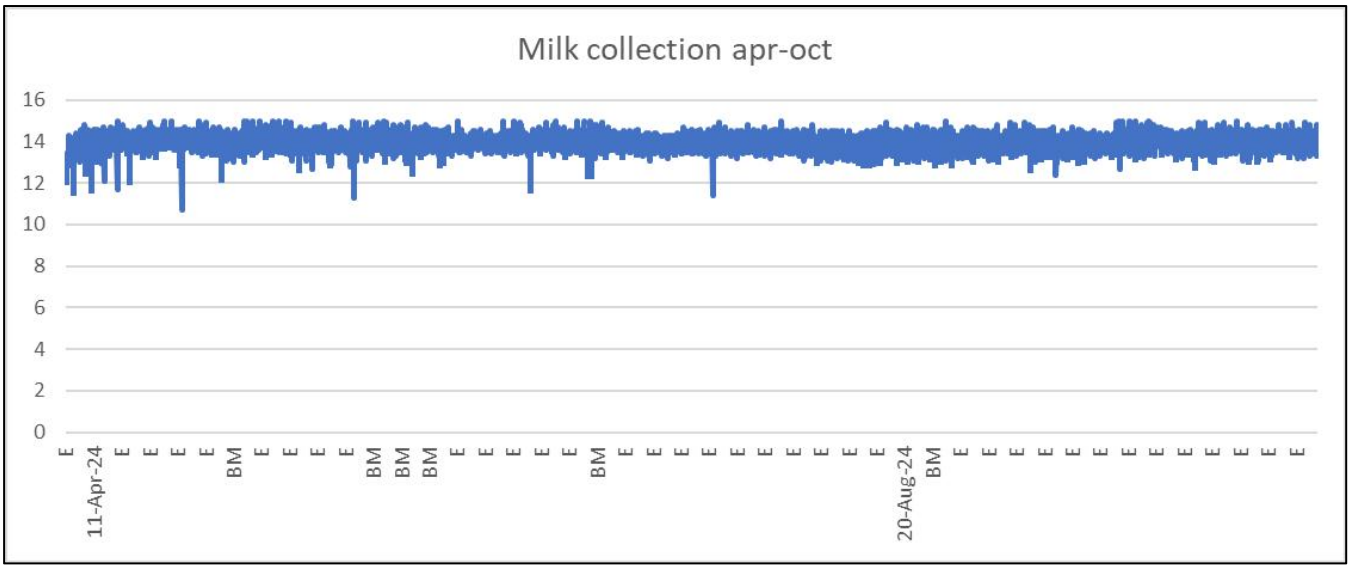


This plan was implemented from April as seen from the graph and hence the production of other products from the excess milk has been continued and made the milk used in a proper way.

Problem 2 : lesser milk collection

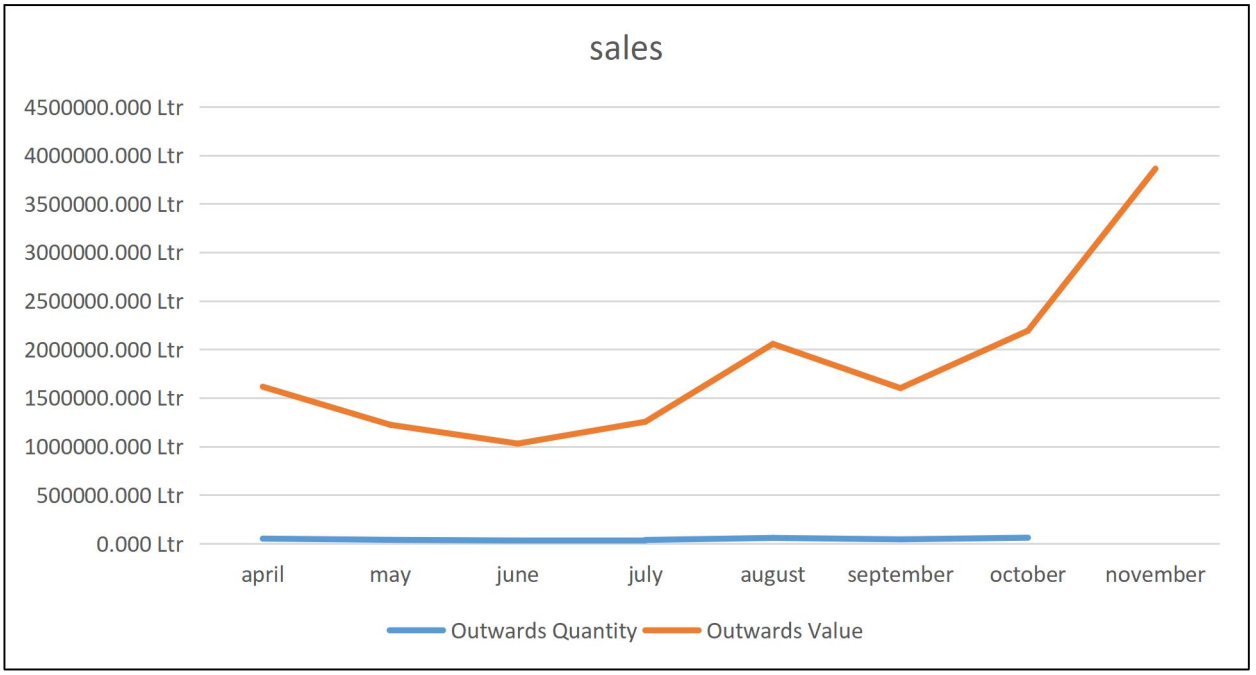
The introduction and set up of the BMC's increased the amount of milk collected to the factory as the farmers were now able to deliver milk close to their farms.
This can be seen from the following data trend pattern:





Problem 3 : lesser sales and less profit

The implementation of more production of particular items when festive season is nearing led to an increase in overall sales in that period. This was the analysis results of the Sales dataset .
This can be seen from the following graphs:


sales
4500000.000 Ltr
4000000.000 Ltr
3500000.000 Ltr
3000000.000 Ltr
2500000.000 Ltr
2000000.000 Ltr
1500000.000 Ltr
1000000.000 Ltr
500000.000 Ltr
0.000 Ltr
april
may
june
july
august
september
october
november
Outwards Quantity
Outwards Value