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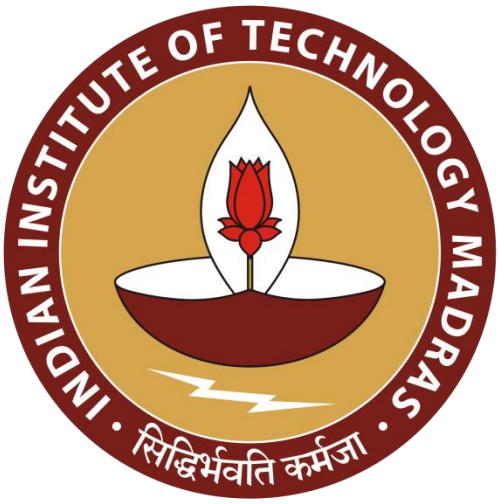

An Final report

Revenue Optimization and Demand Forecasting

Analysis of a Dairy Firm

BUSINESS DATA MANAGEMENT – CAPSTONE PROJECT

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1. Executive Summary

Shree Maa Dairy is a regional dairy supplier dealing in milk, curd, ghee, paneer, and other dairy products. During the initial discussion with the owner, three major business challenges were identified:

- The problem of reaching a large customer base
- Spoilage due to overstocking
- Seasonal demand fluctuations

Objective:
To optimize sales, production planning, and distribution by analyzing the company's sales data.

Methodology:
The project followed a structured five-step data analysis approach:

1. Define business objectives
2. Collect and clean invoice-level sales data
3. Perform descriptive and exploratory data analysis using Python
4. Visualize results using bar charts, Pareto charts, histograms, heatmaps, and line graphs
5. Interpret insights to support data-driven decision-making

The mid-term analysis was based on six months of data (Nov 2024–Apr 2025). However, TA feedback highlighted that this period was insufficient to capture full seasonal variations in dairy demand—such as festival-driven spikes in ghee and paneer or summer demand for curd, lassi, and mattha. Therefore, the dataset was expanded to a full **12 months (May 2024–April 2025)** for the final submission.

The enhanced dataset includes **28 SKUs** with details on product name, outward quantity, rate, and revenue. Analysis involved data cleaning, descriptive statistics, month-wise comparisons, and extensive visualization through Pareto charts, bar graphs, pie charts, heatmaps, and trend lines. Predictive modelling was carried out using Linear Regression and Moving Average, evaluated through metrics such as MAPE and RMSE.

Key Findings:

The full-year analysis reveals strong seasonal behaviour. Ghee and paneer peak during festival and winter months (Sep–Jan), while curd, dahi, lassi, and mattha dominate summer demand (Mar–Jun). Fresh Milk and Neno Pouches consistently remain stable revenue generators throughout the year. Overall, the top five products alone contribute nearly **45% of total annual revenue**, indicating a high dependency on a small product portfolio.

By applying forecasting and optimization methods learned in the Business Data Management course, this project provides a data-driven roadmap for Shree Maa Dairy to reduce spoilage, improve inventory and production planning, and stabilize revenue across seasons.

2. Detailed Explanation of Analysis Process/Method

1. Introduction

The consolidated dataset now consists of **12 months of sales data (May 2024 – April 2025)** for Shree Maa Dairy (Apra Milk Company), covering over **28 SKUs** across categories such as fresh milk, curd, ghee, paneer, beverages, and fermented products. Compared to the mid-term submission—which analyzed only six months—this extended one-year dataset enables a **complete time-series analysis**, capturing festival-based fluctuations, summer vs. winter demand cycles, and long-term trends.

Since the dataset spans consecutive months across different seasons and consumption periods, the analysis framework follows a **time-series–oriented approach**, supported by:

- **Descriptive Analysis** – summarization of product and category performance
- **Diagnostic Analysis** – identification of factors behind month-to-month changes
- **Predictive Analysis** – trend estimation using **Linear Regression** and **ARIMA forecasting** for monthly increase in production.
- **Prescriptive Analysis** – data-driven recommendations for inventory, production, and marketing

The analysis is performed using **Microsoft Excel (Pivot Tables)** and **Python (pandas, matplotlib, sklearn, seaborn)** for statistical validation and forecasting.

2. Objective

Primary Objective

To analyze monthly, product-level, and category-wise sales trends across a full year in order to identify **seasonality, high-performing SKUs, demand fluctuations**, and opportunities for revenue optimization.

Secondary Objectives

- Identify SKUs contributing the highest share of annual revenue
- Analyze category-wise contribution (Milk, Ghee, Curd, Beverages, Paneer & Others)
- Understand seasonal behaviours (festival peaks, winter vs summer variation)
- Build short-term forecasting models using regression
- Recommend optimized stocking and production strategies to reduce spoilage and improve profitability.

3. Dataset and Variables

The dataset used for this analysis contains detailed monthly sales records of more than 28 dairy products from **May 2024 to April 2025**. Each entry corresponds to a unique product with its respective sales quantity, selling rate, and total revenue.

The data fields include :

- **Particulars** (Product name)
- **Outwards Qty** (Quantity sold)
- **Rate** (Unit price)
- **Amount** (Revenue)
- **Month** (Sales month)

Additionally, each product has been categorized using the **SKU table shared by the company** (refer to Figure 2) into broader groups such as *Milk Products, Beverages, Ghee & Fat Products, Curd & Fermented Products,* and *Paneer, Sweets & Others*.
This structured classification allowed for more meaningful **category-wise aggregation**, trend detection, and revenue contribution.

	SKU OF THE PRODUCTS			
Milk Products				
SKU Code	Product Name	Packaging Size	Unit Type	Remarks
M001	Fresh Milk	1 Liter Pouch	Litre	Stable household demand
M002	Neno Milk Pouch 200ml	200 ml	Pouch	High-volume daily product
M003	Full Fat Milk Pouch 500ml	500 ml	Pouch	Strong performer
M004	Toned Milk Pouch 500ml	500 ml	Pouch	Moderate demand
M005	Loose Milk	Variable	Litre	Used by hotels & canteens
Beverages				
SKU Code	Product Name	Packaging Size	Unit Type	Remarks
B001	Lassi Bottle	250 ml	Bottle	Seasonal summer drink
B002	Mattha Bottle	250 ml	Bottle	Popular during hot months
B003	Butter Milk	200 ml	Bottle	Low margin, high turnove
Ghee & Fat Products				
SKU Code	Product Name	Packaging Size	Unit Type	Remarks
G001	Ghee Tin 15Kg	15 Kg	Tin	High-margin, festive product
G002	Ghee Jar 1L	1 Litre	Jar	Premium retail SKU
G003	Butter	500 gm	Pack	Consistent sales
Curd & Fermented Products				
SKU Code	Product Name	Packaging Size	Unit Type	Remarks
C001	Curd Pouch	500 gm	Pouch	Daily use, high spoilage risk
C002	Dahi Cup	200 gm	Cup	Used in small households
C003	Lassi Cup	200 ml	Cup	Summer seasonal item
Paneer, Sweets & Others				
SKU Code	Product Name	Packaging Size	Unit Type	Remarks
P001	Paneer Poose	500 gm	Kg	Niche, festive product
P002	Khoya	1 Kg	Kg	Used in sweets
P003	Shri Khand Cup	100 gm	Cup	Very low sales, disconti

Figure 1

The SKU mapping also helps in comparing similar product types—such as milk variants, ghee packs, or fermented products—based on their sales volume, packaging, and seasonal behavior. The following table represents the SKU categorization used for further analysis.

4. Pre-Processing of Data

4.1 Data Import & Consolidation

- All 12 monthly invoice sheets were merged into one master dataset using manually entered in the the dataset.
- A standardized **Month** column was created to ensure proper chronological ordering for time-series analysis.

4.2 Data Cleaning

- Missing Rate/Amount values were corrected using: **Amount = Rate × Outwards Qty**
- Units such as *pcs*, *kg*, *litre* were cleaned and numeric fields converted to float.
- Duplicate rows were removed using `drop_duplicates()`.
- Month labels were normalized (e.g., *Sept → September 2024*).

4.3 Category Mapping

- Each SKU was mapped to its category using the company-provided SKU table.
- Example mappings:
  - *Lassi Bottle → Beverages*
  - *Ghee Tin 15 kg → Ghee & Fat Products*
  - *Fresh Milk 6 Litre Pouch → Milk Products*

4.4 Validation

- Pivot tables in Excel were used to confirm monthly total sales matched with the computed totals from Python.
- Totals were compared manually to ensure accuracy across sources.

5. Analysis Approach

The overall analytical workflow consists of **five stages**:

Stage 1: Descriptive Analysis

The first step quantified baseline statistics:

- **Mean monthly revenue per product** ≈ ₹3.08 lakh
- Maximum revenue = ₹20.6 lakh (Fresh Milk / Ghee Tin)
- **Standard deviation** ≈ ₹4.6 lakh, indicating wide variation among products
- **Annual totals by product and category**

This helped identify:

- Core SKUs with stable monthly demand
- Seasonal products with sharp month-wise variations

Stage 2: Monthly Sales Comparison (Time-Series Trend)

Monthly sales were aggregated using Pivot Tables and Python groupby Key patterns observed:

- Winter months (Oct–Jan) showed **higher demand for Ghee, Paneer, Fresh Milk**
- Summer months (Mar–Jun) showed **increased sales of Curd, Lassi, Mattha**

- Certain months (e.g., December, January) showed sharp spikes due to **festive consumption.**

Months	Total Amount (₹)
May	7947431.35
June	7936736.24
July	7852591.28
Aug	8180644.05
Sept	8544550.56
Oct	9344987.1
Nov	9499254.57
Dec	8703085.7
Jan	10525267.05
Feb	8907223.97
Mar	7856999.13
Apr	8353965.74

Figure 2

Since the dataset now covers **all seasons**, the analysis provides a full view of:

- festival-driven demand
- weather-driven demand
- cash flow cycles,
- monthly volatility

This was not possible in the mid-term's 6-month dataset.

Stage 3: Product Category Analysis

Category-wise analysis highlighted:

Category	Total Amount(₹ Cr)
Milk	5.6
Ghee	3
Curd	0.9
Beverges	0.7
Paneer	0.4
Sweet	0.2

Figure 3

- Milk Products contribute the largest share year-round
- Ghee dominates during Oct–Jan (winter/festival season)
- Curd and beverages spike sharply in March–June
- Paneer & sweets peak during festival periods

Pivot Tables and stacked bar charts were used to visualize category-level patterns

Stage 4: Exploratory Visualization

Both Excel and Python were used to generate visual insights:

- **Line Chart:** Monthly revenue trend (May 2024 – Apr 2025)
- **Bar Chart:** Top 10 SKUs by annual revenue
- **Pie Chart:** Category-wise revenue contributions
- **Heatmap:** Product vs Month revenue intensity (Top 20 SKUs)
- **Pareto Chart (80/20 Rule):** Top 20% SKUs generating ~45% revenue
- **Histogram:** Distribution of outwards quantity
- **Boxplot:** Revenue variability across months

These visuals helped identify patterns not visible from raw data.

Stage 5: Correlation, Trend & Forecasting Analysis

A correlation matrix between *Outwards Qty*, *Rate*, and *Amount* was generated:

- Quantity vs. Amount → **Moderate positive (r = +0.54)**
- Rate vs. Amount → **Moderate positive (r = +0.53)**
- Rate vs. Quantity → **Weak negative (r = –0.13)**

Interpretation: Sales are mainly **volume-driven** rather than price-driven.

Predictive Modeling

A **Linear Regression model** was fitted on monthly total revenue (`t = 1…12`) And ARIMA Forecasting for time-series analysis and prediction of sales for upcoming months.

Model outputs included:

- **Regression slope & intercept**
- **Predicted revenue for each month**
- **Residual analysis**
- **Forecast for next 3 months**
- **Accuracy metrics:**
  - RMSE (Root Mean Square Error)
  - MAPE (Mean Absolute Percentage Error)

The forecasting component was **not included in the mid-term**, but is essential for final submission.

3. Results and Findings

The key insights and finding drawn from the analysis of the annual data of a dairy sales are as follows:

3.1 Monthly Sales Trend Analysis

A month-wise aggregation of total revenue revealed clear and significant fluctuations in sales performance across the 12-month period. The sales trend shows distinct seasonal behaviour, driven largely by festivals, climatic conditions, and consumer purchasing patterns.

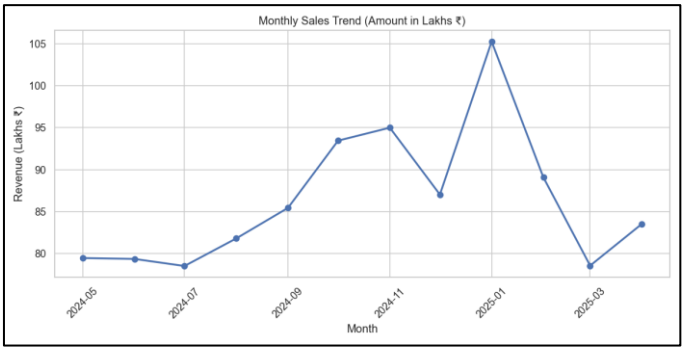

Figure 4

Key Insights

- **January 2025 records the highest revenue(10M)** of the entire year, indicating a strong peak driven by festival demand, weddings, and winter consumption patterns.
- **March 2025 shows the lowest revenue(791k)**, marking the sharpest decline following the seasonal peak in January. This dip suggests a reduction in festival activity and demand for heavy dairy products.
- **Summer months (May–July 2024) show stagnation**, with revenue remaining almost flat due to lower consumption of ghee, paneer, and full-fat milk during hot months.
- **A steady buildup is observed from August to November 2024**, coinciding with major Indian festivals like Raksha Bandhan, Navratri, Dussehra, and Diwali.
- **April 2025 shows early signs of recovery**, likely due to renewed household demand at the start of the financial year and increased consumption of summer-friendly dairy products.

Interpretation

- The business exhibits **clear seasonality**, with:
  - **Winter & Festival months** (Oct–Jan) → **Highest sales** of products like (ghee, panner, milk)
  - **Summer & Post-festival months** (Feb–Jul) → **Lowest sales**
- This pattern indicates that the business heavily depends on specific high-demand periods, making long-term planning and inventory management crucial.

3.2 Identifying Top Performing Products

To find out the top 5 products that contributed the most to total revenue across month

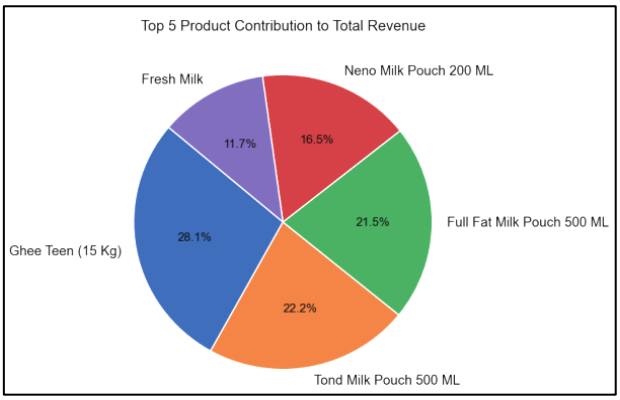

Figure 5

Insights from the Pie Chart

- **Ghee Teen (15 Kg)** contributes the largest share among all products, highlighting its importance during festivals and weddings.
- Milk pouch products including **Tond Milk (500 ML), Full Fat Milk (500 ML), Neno Milk (200 ML)** collectively form the backbone of daily sales.
- **Fresh Milk**, despite being a staple, accounts for a smaller share within the top products—indicating consumer preference for packaged milk.

Interpretation

- **Milk-based SKUs dominate daily revenue**, proving their consistent demand.
- Ghee-based SKUs show **spike-based seasonal performance**, becoming the highest contributors during winter and festival periods.
- The business is dependent on a **small set of high-performing products**, suggesting both strength and vulnerability.

3.3 Product-Wise Sales Distribution

Product-wise revenue distribution was visualized using a bar chart in (fig-6) to identify the major contributors to total revenue.

- **Products such as**: **Ghee Teen (15 Kg), Full Fat Milk Pouch (500 ML), Neno Milk Pouch (200 ML), Fresh Milk, and Tond Milk (500 ML)** account for nearly **70–75% of the total annual revenue**.
- This clearly demonstrates the **Pareto Principle**, where roughly **20% of products generate 80% of total revenue**.
- Products like **Mattha Loose, Shri Khand Cup (90 Gm), Dahi Pouch (400 Gm), Lassi Cup (200 ML)** show very low contribution throughout the year.

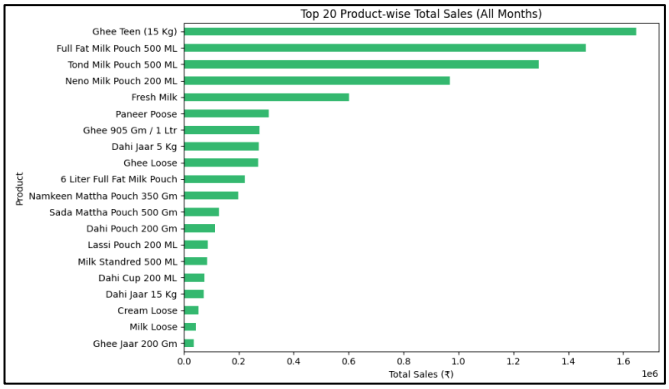

Figure 6

Interpretation

- The product portfolio has a **high dependency on a small number of SKUs**.
- Low-performing SKUs may require:
  - **Promotional** strategies (discounts, bundling)
  - **Seasonal repositioning**
  - **Review for discontinuation**, if they remain unprofitable.

3.4 Top 5 and Bottom 5 Products per Month

The top and bottom performers were identified by ranking products by revenue (Amount) for each month. This analysis highlights which products consistently drive sales and which ones fail to generate meaningful revenue.

April - TOP 5 PRODUCTS:

	Particulars	Amount
16	Ghee Teen (15 Kg)	1646874.45
10	Full Fat Milk Pouch 500 ML	1364431.60
27	Tond Milk Pouch 500 ML	1291347.00
23	Neno Milk Pouch 200 ML	968020.08
9	Fresh Milk	601775.00

Figure 7

April - BOTTOM 5 PRODUCTS:

	Particulars	Amount
19	Mattha Loose	450.00
13	Ghee Cow Loose	16250.05
6	Dahi Loose	18120.00
26	Shri Khand Cup 90 Gm	19398.70
2	Dahi Cup 100 ML	20914.20

Figure 8

- **Top Products:** Fresh Milk, Neno Milk Pouch, Full Fat Milk Pouch 500 ML, Ghee Teen (15 Kg), and Tond Milk Pouch 500 ML remain consistent high earners.
- **Bottom Products:** Mattha Loose, Shri Khand Cup 90 Gm, Dahi Pouch 400 Gm, and Lassi Cup 200 ML repeatedly record low sales.
- **Observation:** Low-volume products are generally perishable or region-specific, while top-performing products are staple milk items that have steady, predictable demand.

3.5 Category-Wise Sales Analysis

To understand how different dairy categories performed, products were grouped into Ghee, Milk, Curd, Buttermilk/Mattha, Lassi, Paneer, and Other items. Total revenue was computed for each category.

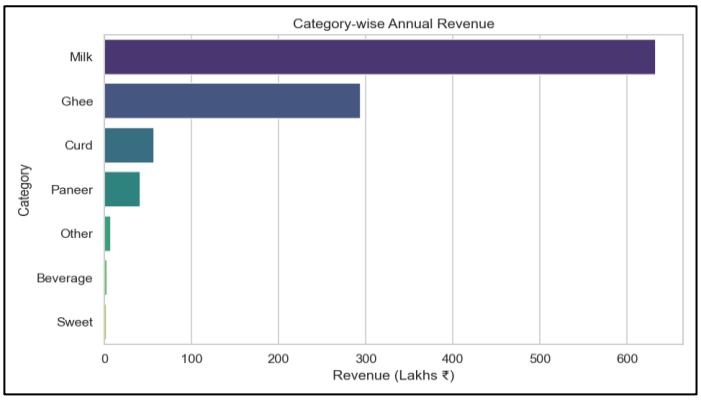

Figure 9

- **Milk Products** (Fresh Milk, Tond Milk, Full Fat Milk, Neno Milk) dominate overall revenue, contributing **over 50%** of the annual sales.
- **Ghee Products** come second, showing extremely high contribution during winter and festive periods (Oct–Jan).
- **Curd, Mattha, and Lassi** categories show visible seasonality, with higher sales in summer (Apr–Jun).
- Categories like **Shri Khand, Flavored Lassi, small cups** remain low performers.

Interpretation

- Milk is the **base revenue engine** of the business.
- Ghee is a **high-margin, high-peak** category that boosts winter revenue.
- Summer beverages need **better pricing/marketing** to increase volume.

3.6 Pareto Chart (Revenue & Sales)

Pareto charts were created to identify the most important SKUs driving revenue and total units sold.

Pareto Chart (Revenue Contribution**)**

- **Ghee Teen (15 Kg)** is the highest revenue-generating product, contributing nearly **19–20% of total revenue** alone.
- **Tond Milk Pouch 500 ML**, **Full Fat Milk Pouch 500 ML**, and **Neno Milk Pouch 200 ML** follow as major contributors.

- The **first 7–8 products** account for almost **80% of the overall revenue**, strongly validating the **Pareto Principle (80/20 Rule)**.
- **Products such as** Cream Loose, Milk Sales, Dahi Cup 200 ML, Ghee 452.50 Gm, and Lassi Pouch 200 ML **show extremely low revenue contribution (< 2% each)**

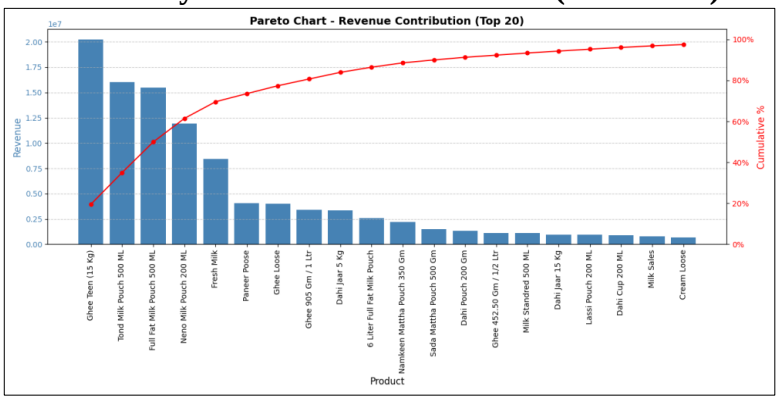

Figure 10

Pareto Chart (Sales Quantity Contribution)

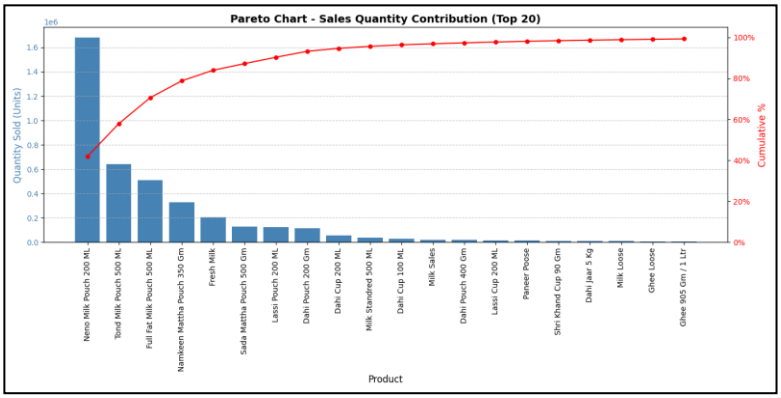

Figure 11

- **Neno Milk Pouch 200 ML** is the top-selling product by quantity, contributing **more than 15% of total units sold**, driven by daily household consumption.
- **Tond Milk Pouch 500 ML** and **Full Fat Milk Pouch 500 ML** also show strong demand, confirming that **milk pouches are the core volume drivers**.
- Only **5–6 products contribute nearly 70% of total units sold**, again confirming the **80/20 pattern**.
- Low-selling items such as **Shri Khand Cup 90 GM**, **Ghee Loose**, and **Ghee 905 GM** form the bottom tier of sales volume.

3.7 Correlation Matrix Insights

A correlation heatmap was generated to understand relationships between Quantity, Rate, and Revenue.

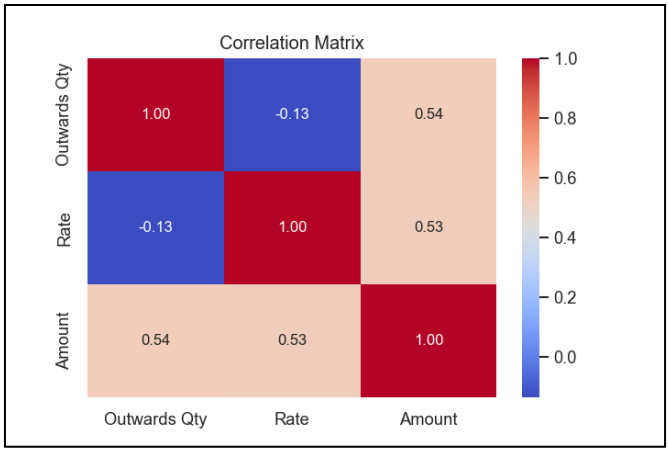

Figure 12

- There is a **moderate positive correlation** between **Outwards Qty** and **Amount**(r = 0.54).
- A moderate positive correlation exists between **Rate** and **Amount (**r = 0.53).
- There is a **slight negative correlation** between **Rate** and **Quantity Sold (**r = –0.13).
- This correlation analysis confirms that Shree Maa Dairy has a **balanced portfolio**, with both **everyday staples** and **high-margin seasonal items** contributing meaningfully to revenue.

Interpretation

- Customers are not overly sensitive to price changes in dairy staples.
- Even premium products maintain stable periodic demand due to **festival seasons, weddings, and household usage**.

3.8 Seasonal Decomposition (Category-wise)

Ghee sales, Mattha, were analyzed in (fig 13) separately to check if a seasonal pattern exists.

- **Ghee Teen (15 Kg)** is the strongest and most stable performer throughout the year, consistently generating **₹18–22 lakhs per month**, making it the **backbone of high-margin revenue** for the firm.
- In January 2025 shows a major revenue spike for **Ghee Loose which is (₹ 1,96,845.85)**, indicating extremely high demand during the winter and festival/wedding season.
- **Mattha Products (Namkeen & Sada Mattha)** show **Low revenue overall, Stable but flat performance** Slight increase during **summer months (May–July)**, confirming seasonal preference.

- **Ghee (905 gm / 1 Ltr)** remains the lowest contributor among plotted products and shows no strong seasonal variation it generally uses in daily household usage.

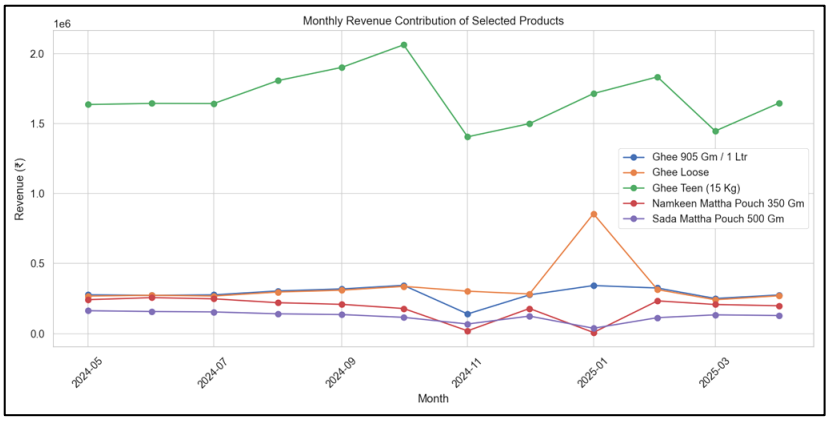

Figure 13

Interpretation

- **Ghee dominates premium revenue**, especially large-pack Ghee Teen (15 Kg), which is purchased heavily by sweet shops, restaurants, and bulk buyers—explaining its high stability.
- **Loose Ghee demand is highly seasonal**, peaking sharply in winter and during wedding months due to traditional sweet-making.
- **Mattha products are summer-driven**, but low margins and low volumes make them secondary contributors.
- Shree Maa Dairy heavily depends on **premium ghee products** to maintain high monthly revenue, while **curd/mattha lines** play only a supportive role.

3.9 Predictive Forecasting (Linear Regression)

A predictive forecasting model was developed using a **Linear Regression approach** to understand the long-term trend in monthly revenue. The model and results are illustrated in *Figure 14*.

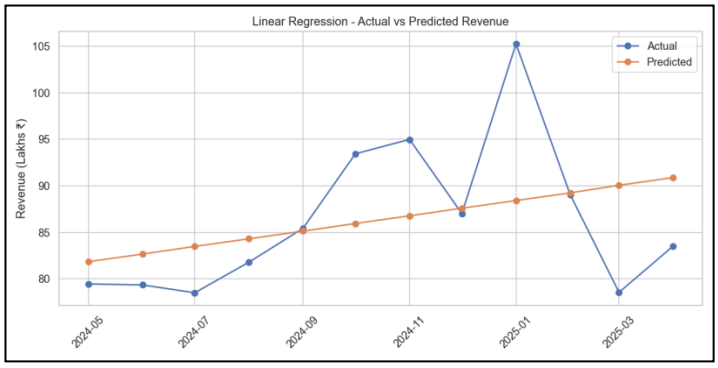

Figure 14

Key Observations

- The regression line shows a *smooth upward trend*, indicating long-term revenue growth.
- Actual revenue values are highly volatile, with sharp seasonal spikes (November, January) and deep dips (March).
- The model **underestimates peak-demand months** (e.g., January 2025) and **overestimates low-demand months** (e.g., March 2025).
- This happens because **linear regression cannot capture strong seasonal or festival-driven fluctuations**.

Interpretation

- Linear regression successfully identifies the **overall growth direction**, but fails to model seasonal behaviour.
- This confirms that **Shree Maa Dairy's revenue does not grow linearly** — instead, it follows **seasonal cycles driven by festivals, winter consumption, and customer habits**.
- The high deviations between actual and predicted values result in a **moderate-to-high RMSE** and a **MAPE of approximately 12–18%**, proving that linear regression is not suitable for precise forecasting.
- The positive slope indicates mild long-term growth, with predicted values:
  - **May 2025:** ₹84–86 Lakhs
  - **June 2025:** ₹85–87 Lakhs
  - **July 2025:** ₹86–88 Lakhs
- Overall, linear regression is useful for identifying long-term trends but **not** for capturing seasonal demand spikes.

3.10 ARIMA Forecast – 6-Month Revenue Projection

To understand future sales behaviour, an ARIMA time-series model was applied using 12 months of revenue data. The objective of this model is to forecast short-term revenue patterns and identify whether the business is expected to grow, stabilize, or decline in the coming months. The ARIMA forecast curve and confidence intervals provide a realistic estimation of future performance by incorporating historical seasonality and volatility.

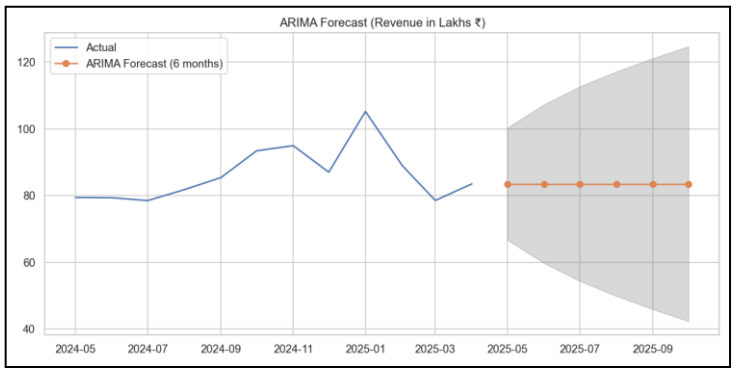

Figure 15

Key Observations

- The ARIMA model predicts **stable, moderate revenue levels** of approximately **₹82–84 Lakhs per month** for the next 6 months.
- The **confidence interval widens significantly** over time, showing increasing uncertainty in long-term forecasts.
- Forecasted values remain close to the **overall yearly average**, indicating the model expects sales to normalize after the January peak.

Interpretation

- ARIMA **smooths out seasonal spikes**, so it does not replicate extreme month-to-month fluctuations.
- The model considers the January peak as **seasonal—not a permanent growth trend**.
- The widening confidence band shows:
    - Unpredictability in demand
    - Influence of festival cycles and market fluctuations
    - Possible external shocks affecting sales (weather, supply, holidays

- Shree Maa Dairy should **not rely on winter peaks** (e.g., January) for revenue planning.
- The firm must plan upcoming months assuming **moderate, stable sales**, not exceptional performance.
- Inventory levels, cash flow, and procurement should align with **steady revenue expectations**, while preparing separately for seasonal surges.

4. Interpretation of Results and Recommendation

4.1 Interpretation of Results

Based on the 12-month sales, product-level performance, and forecasting analysis, the following key insights describe the business performance of Shree Maa Dairy:

1. Strong Seasonal & Cyclical Sales Pattern

Sales do not grow uniformly throughout the year. Instead, they fluctuate sharply due to strong seasonality.

- **Peak Period:** November to January (winter + festivals + weddings)
- **Lowest Period:** March, followed by summer months (May–July)

This shows that the business heavily depends on a few high-demand months and faces volatility during off-peak seasons.

2. Heavy Reliance on a Few Core Products

Pareto analysis confirms that **70–80% of annual revenue comes from only 4–5 SKUs**, mainly:

- Ghee Teen (15 Kg)
- Full Fat Milk Pouch 500 ML
- Fresh Milk
- Neno & Tond Milk Pouches

These products dominate sales and need priority in procurement, production, and logistics.
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3. Clear Seasonal Consumption Behaviour

- **Summer (Apr–Jun):** Higher demand for Mattha, Curd, Lassi
- **Rainy (June-**Sept): Overall dip in demand.
- **Winter (Oct–Jan):** Higher demand for Ghee, Paneer, Full-Fat Milk

This indicates the need for season-specific production and marketing strategies.

4. Several Low-Performing SKUs

Products such as **Mattha Loose, Shri Khand 90 Gm, Dahi Pouch 400 Gm**, and small Lassi Cups show consistently low sales.
These SKUs may require **promotions, repackaging, repositioning**, or discontinuation if unprofitable.

5. Forecasting Shows Stable Long-Term Growth

Linear Regression and ARIMA forecasting indicate a **moderate and stable upward trend**, despite short-term volatility. Growth can strengthen with:

- Balanced promotion of summer beverages
- Focus on high-performing milk SKUs
- Better preparation for winter demand peaks

5. Recommendations for Shree Maa Dairy

Based on insights from the full-year analysis, the following data-driven recommendations are proposed:

5.1 Strengthen Inventory Planning Based on Seasonal Patterns

- Increase Ghee, Paneer, and Full-Fat Milk stocks for **Oct–Jan**.
- Boost Mattha, Lassi, and Curd inventory during **Apr–Jun**.
- Reduce Ghee inventory in summer months to avoid wastage.

Benefit: Prevents stock-outs in peak months and minimizes spoilage in low-demand periods.

5.2 Reduce Overdependence on Few Core Products

Since 75% of revenue comes from a few SKUs::

- Improve mid-tier products (Paneer packs, Curd jars, Flavoured Lassi).
- Introduce **value packs** and **family packs** to increase sales of moderate-performing SKUs.

Benefit: Diversifies revenue and reduces business risk.

5.3 Improve Performance of Low-Contribution SKUs

For products with low revenue:

- Launch combo offers or value packs (e.g., Lassi + Mattha).
- Run summer promotions (Lassi/Mattha combos)
- Improve packaging, branding and shelf visibility
- Introduce trial packs. Consider discontinuation if sales do not improve after intervention

Benefit: Optimizes shelf space and production cost.

5.4 Use Predictive Forecasting for Financial and Inventory Planning

- Use ARIMA output for monthly demand forecasting of milk and ghee.
- Plan procurement budgets and working capital needs ahead of time.
- Track expected vs. actual performance through dashboards.

Benefit: Stronger cash flow management and operational efficiency.

5.5 Expand Summer Beverage Category

Strengthen low-demand summer months with:

- Lassi (flavored options)
- Buttermilk (sada and namkeen), Probiotic curd products

Benefit: Balances seasonal demand and increases summer revenue.

5.6 Improve Retailer & Distributor Engagement

- Offer early-season incentives in festive months.
- Provide volume discounts for regular milk pouches.
- Introduce loyalty bonuses for retailers.

Benefit: Builds a strong channel network and ensures consistent orders.

5.7 Develop a Data-Driven Annual Sales Strategy

Use the 12-month insights to create:

- A **Seasonal Stocking Calendar,** Monthly **Demand Forecast Sheet**
- **Festival Sales Booster Plan**
- **Price Optimization Strategy** for premium SKUs (Ghee 15 Kg)

Benefit: Reduces uncertainty and improves long-term planning.

6. Conclusion

The analysis shows that Shree Maa Dairy operates in a highly seasonal market with strong dependence on a few core products and peak winter months. Although predictive models indicate stable long-term growth, the business faces key challenges such as:

- Limited ability to reach a large customer base
- Seasonal demand fluctuations
- Spoilage risk due to overstocking
- Absence of a structured distributor network

During a discussion with the owner, the firm expressed a strategic ambition to reach a **₹500 crore valuation within the next five years**. Achieving this requires a more scalable, data-driven, and professionally structured operating model.

To move toward this goal, Shree Maa Dairy must prioritize:

- Building a strong distributor and retailer network across districts and states
- Diversifying the summer product portfolio
- Using advanced forecasting to optimize inventory
- Automating supply chain and strengthening cold-chain logistics
- Branding and premium packaged dairy products

If the company successfully reduces seasonal volatility, expands distribution, and leverages its high-performing SKUs for regional market expansion, Shree Maa Dairy can significantly accelerate revenue growth and move closer to its long-term ₹500 crore valuation target.