

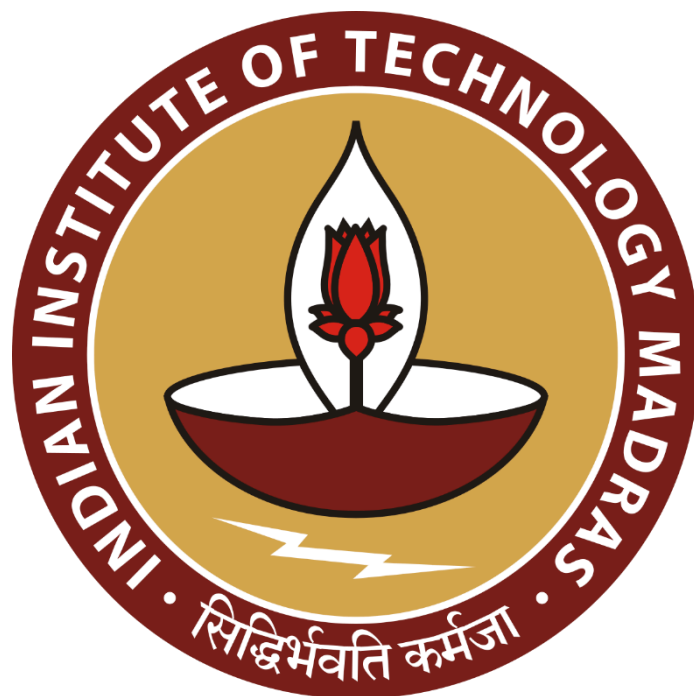
Enhancing Sales, Profits & Analyzing Shopping Trends at Sri MahaLakshmi General Store

A Proposal report for the BDM capstone Project

Submitted by

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1 Executive Summary and Title

Sri MahaLakshmi General stores established 2 years ago, specializes in retail trade, focusing on food, dairy, beverages, and other products in ShivaSai Ram Nagar colony, Munganoor, Telangana. Like many retail businesses, it faces challenges such as high inventory levels and market demand unpredictability, hindering revenue growth. To address these issues, I engaged the owner, highlighting the benefits of data-driven insights. Recognizing the potential, the owner graciously provided 3 months of data, enabling a comprehensive analysis aimed at optimizing income and profitability.

The initiative began with a rigorous process of data collection and validation, ensuring the integrity and reliability of the dataset. Noteworthy findings include the identification of strategic sales peaks and the recognition of high-performing product categories.

Our analysis encompassed diverse statistical methodologies and user-friendly visualizations, presenting stakeholders with a comprehensive understanding of the grocery store's data landscape. The project emphasizes clarity and professionalism in conveying facts and ideas, with a primary focus on practical recommendations to drive operational excellence and strategic growth.

Key recommendations include targeted strategies to optimize sales and profit margins, with a specific emphasis on marketing collaborations with maximum customers, enhancing the in-store shopping experience, and tailoring product offerings to align with shopping trends. Furthermore, the project highlights the importance of adopting solutions to streamline the shopping process, personalized customer preferences according to seasons and many more.

In conclusion, the insights derived from the project provide Sri MahaLakshmi General Store with a roadmap for making informed decisions, improving operational efficiency, and developing a growth strategy aligned with current market trends. The information serves as a valuable tool for optimizing sales, maximizing profit margins, and understanding and responding to evolving shopping behaviors in the grocery retail sector.

2 Detailed Explanation of Analysis Process/Method

2.1 Data Collection

After extensive discussions with the store owner, it became apparent that analyzing sales data was critical to understanding business performance. Subsequently, data spanning three months—April, May, and June—was gathered in Excel sheets directly provided by the shop owner. Given that the data for each month was semi-structured, meticulous data cleaning was essential to ensure accuracy and consistency throughout the analysis process. This involved removing duplicates, standardizing formats, and correcting errors to prepare the data for meaningful insights and reliable decision-making.

2.2 Data Cleaning

The sales data for all three months was aggregated into a single spreadsheet for further processing. Initially, columns that were not relevant to the analysis were removed from the raw data. Following this, additional necessary columns were added to the dataset to facilitate comprehensive analysis. This process ensured that the data was both clean and structured, ready for in-depth examination.

2.3 Data Description

The sales data can be accessed through the provided link ([Project Data](#)). This dataset comprises daily sales information of various products from various categories in the Sri MahaLakshmi General Store over a period of three months.

- The dataset utilized for this analysis is sourced from sales records spanning the last three months, covering the period from April 1, 2024, to June 30, 2024.
- The primary objective of utilizing this dataset is to analyze daily sales trends and assess profitability. The insights gained from this analysis are essential for informed decision-making, focusing on optimizing both sales and profits.
- This metadata paragraph offers a comprehensive overview of key details associated with the sales data used in this project. This clarification enhances understanding, accessibility, and efficient utilization of the dataset.

2.4 Data Analysis

1. Top-Selling Product and Category Analysis:

This analysis focuses on identifying and understanding the top-selling products and categories based on sales volume and revenue generation. Key aspects include:

- ❖ **Sales Volume Analysis:** Determining which products have consistently high sales volumes over the observed period.
- ❖ **Revenue Generation:** Analyzing which products contribute the most to overall revenue, highlighting potential areas for profit maximization.
- ❖ **Strategic Focus:** Recommending strategies to capitalize on top-selling products, such as optimizing inventory levels, pricing strategies, and targeted marketing efforts.

2. Revenue-Based ABC analysis:

The Revenue-Based ABC analysis categorizes inventory items based on their revenue contribution to the business. It involves:

- **Categorization:** Segregating products into categories (A, B, C) based on their revenue contribution percentages.
- **Profitability Insights:** Identifying high-revenue items (Category A) that significantly impact profitability, moderate-revenue items (Category B), and low-revenue items (Category C).
- **Strategic Prioritization:** Advising on resource allocation and management strategies to prioritize high-revenue items for enhanced profitability.

3. Quantity-Based ABC analysis:

The Quantity-Based ABC analysis categorizes inventory items based on the quantity sold or stocked, providing insights into operational priorities and inventory management. Key elements include:

- **Quantity Distribution:** Analyzing which items constitute the majority of inventory based on quantity sold.

- Operational Impact: Understanding the operational implications of high-quantity (Category A), moderate-quantity (Category B), and low-quantity (Category C) items.
- Inventory Optimization: Recommending inventory management strategies tailored to each category to balance stock levels and operational efficiency.

4. Monthly Sales Trends analysis:

The Monthly Sales Trends analysis focuses on examining the timeline of sales for different product categories over a three-month period. This analysis provides insights into sales patterns and helps identify trends that can inform strategic decisions. Key elements include:

- Timeline Analysis: Reviewing the line graphs depicting sales trends for each product category month-by-month.
- Identifying Peaks and Troughs: Noting any recurring patterns of peak sales or dips in sales at specific times within each month.
- Category-Specific Insights: Observing how sales fluctuate within each category, highlighting which categories consistently show higher sales at the beginning, middle, or end of each month.
- Operational Implications: Understanding the operational impact of these sales trends on inventory management, stocking levels, and resource allocation.

3 Results and Findings

3.1 Revenue-Based ABC Classification of Inventory Items

			Total Revenue	142011.75			
ABC_Analysis_by_Revenue			No of Items	45			
Rank	Item Name	Category	Revenue	Cum Reve	% of Items	% of Cumf	ABC
1	Curd	Dairy	26600	26600	2.22	18.73	A
2	Milk 500ml	Dairy	16590	43190	4.44	30.41	A
3	Cooking Oil	Food	14310	57500	6.67	40.49	B
4	Urad Dal	Food	10276.5	67776.5	8.89	47.73	B
5	Milk 250ml	Dairy	9090	76866.5	11.11	54.13	B
6	Sprite 750ml	Beverage	7260	84126.5	13.33	59.24	B
7	Idly Ravva	Food	5208.75	89335.25	15.56	62.91	B
8	Sugar	Food	4730	94065.25	17.78	66.24	B
9	Rice	Food	4200	98265.25	20	69.2	B
10	Corn Flour	Food	3547.5	101812.75	22.22	71.69	C
11	Wheat Flour	Food	3300	105112.75	24.44	74.02	C
12	Water bottle 1	Beverage	3120	108232.75	26.67	76.21	C
13	XXX detergent	Toiletries	3120	111352.75	28.89	78.41	C
14	Sprite 250ml	Beverage	2820	114172.75	31.11	80.4	C
15	Tea Powder	Food	2510	116682.75	33.33	82.16	C
16	String	Beverage	2400	119082.75	35.56	83.85	C
17	Multani mitti	Beautv	2160	121242.75	37.78	85.38	C

The ABC classification method categorizes inventory items based on their contribution to total revenue, helping in effective inventory management and strategic decision-making. This method divides items into three categories: A, B, and C.

Category A: High-Value Items

- Items in this category are the most significant contributors to revenue.
- They account for a small percentage of the total inventory but generate the highest revenue.
- Examples from this dataset include Curd and Milk 500ml, which together contribute approximately 30.41% of the cumulative revenue, despite being only 4.44% of the total items.

- Effective management of A items is crucial as they are high-priority products. This involves ensuring their availability, preventing stockouts, and maintaining optimal inventory levels.

Category B: Moderate-Value Items

- Items in this category have a moderate impact on revenue.
- They make up a larger portion of the inventory compared to A items but contribute moderately to the total revenue.
- Examples include Cooking Oil, Urad Dal, Milk 250ml, Sprite 750ml, Idly Ravva, Sugar, and Rice. These items collectively contribute to 69.2% of the cumulative revenue.
- B items require balanced inventory control strategies, focusing on efficient stock management to minimize holding costs while ensuring availability.

Category C: Low-Value Items

- Items in this category have the least impact on revenue.
- They make up the majority of the inventory but contribute the least to the total revenue.
- Examples include Corn Flour, Wheat Flour, Water bottle 1L, XXX detergent, Sprite 250ml, Tea Powder, and many others.
- Despite being the largest in number, C items contribute only 30.8% of the cumulative revenue.
- Managing C items involves cost-effective strategies, such as bulk ordering and minimizing handling efforts to reduce overall costs.

This classification aids in identifying the most and least profitable inventory items, thereby enabling better inventory management and strategic decision-making.

3.2 Quantity-Based ABC Classification of Inventory Items

			Total Quantity	4370.5			
			No of Items	45			
ABC_Analysis_by_Quantity							
Rank	Item Nam	Category	Quantity	Cum Qunt	% of Itemt	% of Cuml	ABC
1	Sprite 250ml	Beverage	532	532	2.22	12.17	A
2	Milk 500ml	Dairy	553	1085	4.44	24.83	A
3	Milk 250ml	Dairy	119.25	1204.25	6.67	27.55	A
4	Sugar	Food	100.75	1305	8.89	29.86	A
5	Kurkure	Snacks	606	1911	11.11	43.72	B
6	Urad Dal	Food	121	2032	13.33	46.49	B
7	Tea Powder	Food	115.75	2147.75	15.56	49.14	B
8	Rice	Food	110	2257.75	17.78	51.66	B
9	Curd	Dairy	84	2341.75	20	53.58	B
10	Corn Flour	Food	118.25	2460	22.22	56.29	B
11	Sprite 750ml	Beverage	110	2570	24.44	58.8	B
12	String	Beverage	156	2726	26.67	62.37	B
13	Idly Ravva	Food	26	2752	28.89	62.97	B
14	Zero light	Household	141	2893	31.11	66.19	B
15	Water bottle 1	Beverage	125.5	3018.5	33.33	69.07	B
16	Cooking Oil	Food	120	3138.5	35.56	71.81	C
17	Ponds	Beauty	72	3210.5	37.78	73.46	C
18	Happy Happy	Snacks	32	3242.5	40	74.19	C
19	Bingo	Snacks	80	3322.5	42.22	76.02	C
20	Dabour red	Toiletries	78	3400.5	44.44	77.81	C

The Quantity-based ABC classification categorizes inventory items based on the quantity of units sold or stocked, providing insights into inventory management strategies and operational priorities.

Category A: High-Quantity Items

- Items in this category represent a significant portion of the total quantity stocked or sold.
- While they may not contribute as much to revenue individually, their high volume makes them critical for operational efficiency.

- Examples include Sprite 250ml, Milk 500ml, Milk 250ml, and Sugar, which collectively account for approximately 27.55% of the total quantity while comprising only 6.67% of the items.
- Efficient management of Category A items involves ensuring adequate stock levels to meet demand without overstocking, thereby optimizing storage and handling costs.

Category B: Moderate-Quantity Items

- Items in this category have a moderate impact on quantity but still contribute significantly to overall operations.
- They strike a balance between volume and importance, making them integral to daily operations.
- Examples include Kurkure, Urad Dal, Tea Powder, Rice, and Curd. These items collectively account for 53.58% of the total quantity, highlighting their operational importance.
- Category B items require consistent monitoring and replenishment strategies to maintain availability and prevent stockouts.

Category C: Low-Quantity Items

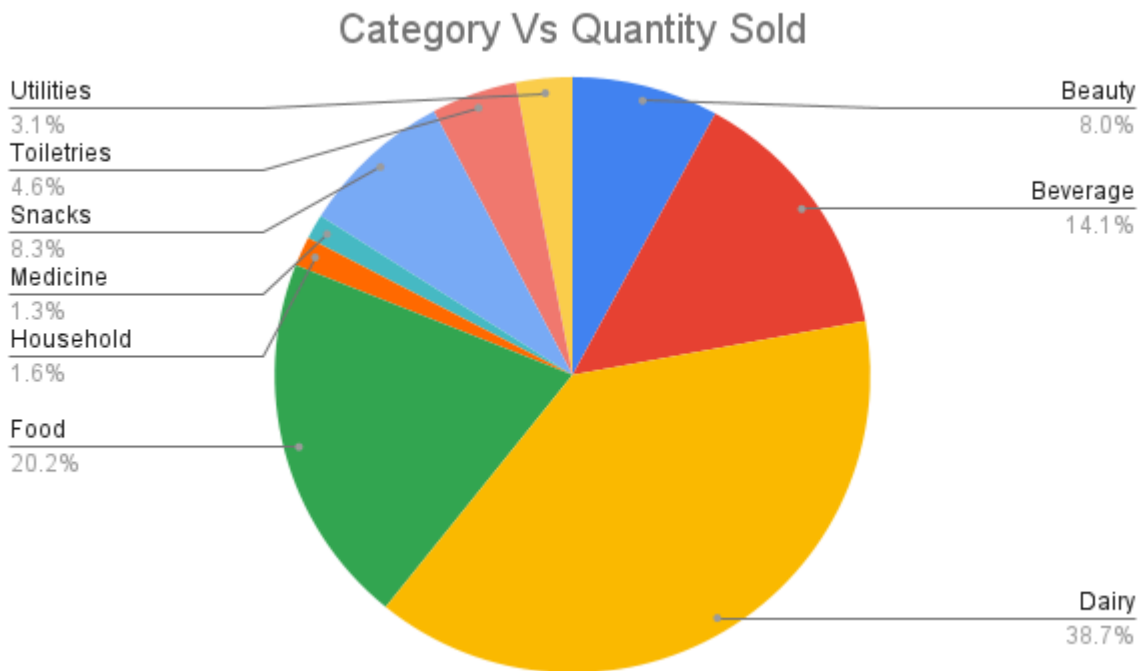
- Items in this category have the lowest impact in terms of quantity stocked or sold.
- While they make up the majority of the inventory in terms of variety, they contribute less to overall operational needs.
- Examples include items like Cooking Oil, Ponds, Happy Happy, and Bingo. These items collectively account for 46.42% of the items but only 28.42% of the total quantity.
- Managing Category C items involves cost-effective inventory strategies such as batch ordering or periodic reviews to minimize handling costs.

Insights and Observations:

- Operational Efficiency: Category A items are crucial for maintaining operational efficiency due to their high volume, requiring robust inventory management practices to meet demand fluctuations.
- Inventory Optimization: Category B items strike a balance between volume and importance, requiring proactive inventory control to ensure adequate stock levels without excessive holding costs.
- Resource Allocation: Allocating resources such as warehouse space and manpower based on ABC classification ensures efficient handling of high-quantity items (Category A), while optimizing resources for moderate-quantity (Category B) and low-quantity (Category C) items based on operational needs.
- Risk Management: Understanding the quantity contribution of each category aids in risk management by prioritizing the replenishment of high-quantity items to minimize stockouts and ensure customer satisfaction.
- Operational Prioritization: Category A and B items typically require more frequent monitoring and replenishment to maintain operational flow, while Category C items can be managed with less frequent reviews due to their lower impact on daily operations.

This classification framework facilitates informed decision-making in inventory management, enabling businesses to optimize stock levels, reduce costs, and enhance overall operational efficiency.

3.3 Percentage Distribution of Quantity Sold by Category



The pie chart illustrates the percentage distribution of quantity sold across different categories of inventory items. This analysis provides insights into the relative contribution of each category to the total quantity sold.

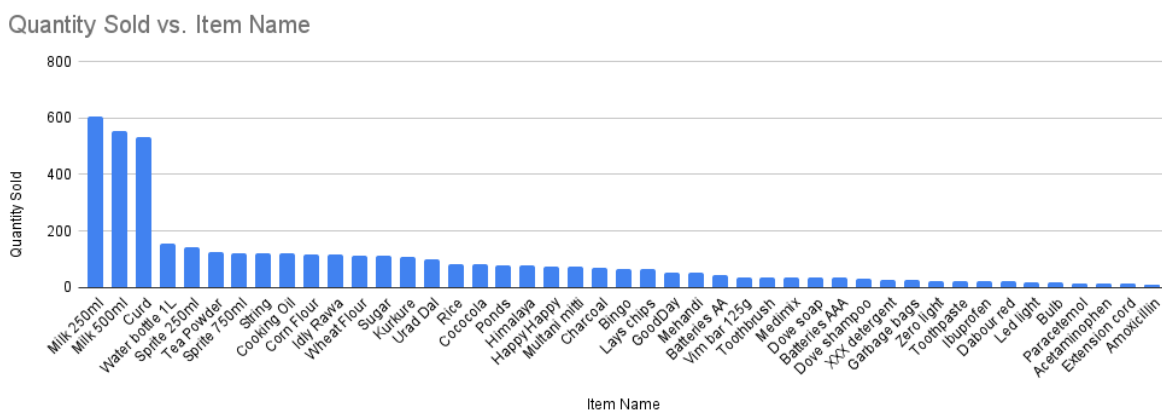
Insights and Observations:

- **Dairy Dominance:** Dairy products constitute the largest share of quantity sold, accounting for approximately 41.81% of the total. This highlights the significant consumer demand for dairy items within the inventory.
- **Food and Beverage:** Food items and beverages follow closely, with food contributing 21.89% and beverages contributing 19.15% to the total quantity sold. These categories collectively represent a substantial portion of consumer preferences.
- **Varied Contributions:** Other categories such as Snacks, Toiletries, and Utilities contribute modestly to the overall quantity sold, each making up smaller yet notable percentages of the total.
- **Strategic Insights:** Understanding the distribution of quantity sold by category helps in prioritizing inventory management strategies. Categories with higher quantities sold may require more frequent restocking and closer monitoring to meet consumer demand effectively.

- **Market Trends:** This distribution reflects current market trends and consumer preferences, guiding decisions on product assortment, marketing strategies, and resource allocation within the business.

This analysis of quantity sold by category provides valuable insights into consumer behavior and market dynamics, facilitating informed business decisions aimed at maximizing sales and operational efficiency.

3.4 Quantity Sold per Item



The bar chart below visualizes the quantity sold for each individual inventory item within the specified period, providing a detailed overview of sales distribution across different products.

Insights and Observations:

- **High-Volume Sellers:** Milk 250ml, Milk 500ml, and Curd emerge as the top-selling items, with Milk 250ml leading with 606 units sold, followed closely by Milk 500ml and Curd.
- **Beverage Dominance:** Products like Water bottle 1L, Sprite 250ml, and Cococola 250ml also show significant sales figures, reflecting consumer preferences towards beverages.
- **Staple Foods:** Essential food items such as Rice, Urad Dal, and Wheat Flour maintain steady sales, catering to ongoing consumer demand for staple products.
- **Toiletries and Household Items:** Toiletries and household products like Himalaya face wash, Vim bar 125g, and Garbage bags demonstrate consistent sales, indicating their utility and market demand.

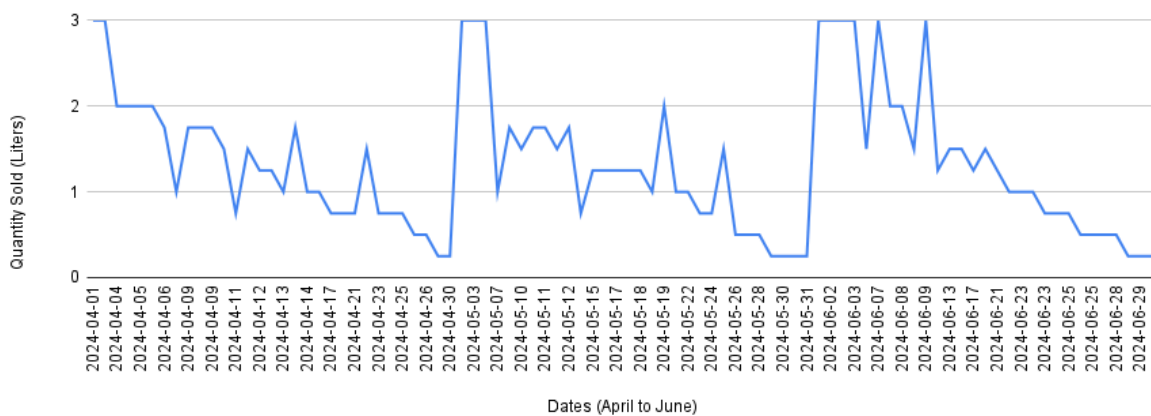
- **Sales Distribution:** The chart highlights a diverse range of products with varying sales volumes, underscoring the importance of product mix and inventory management in meeting customer needs effectively.

This detailed analysis of quantity sold per item aids in understanding product performance, identifying top sellers, and informing inventory stocking strategies to optimize sales and customer satisfaction.

3.5 Monthly Sales Trends of Key Products in Food Category

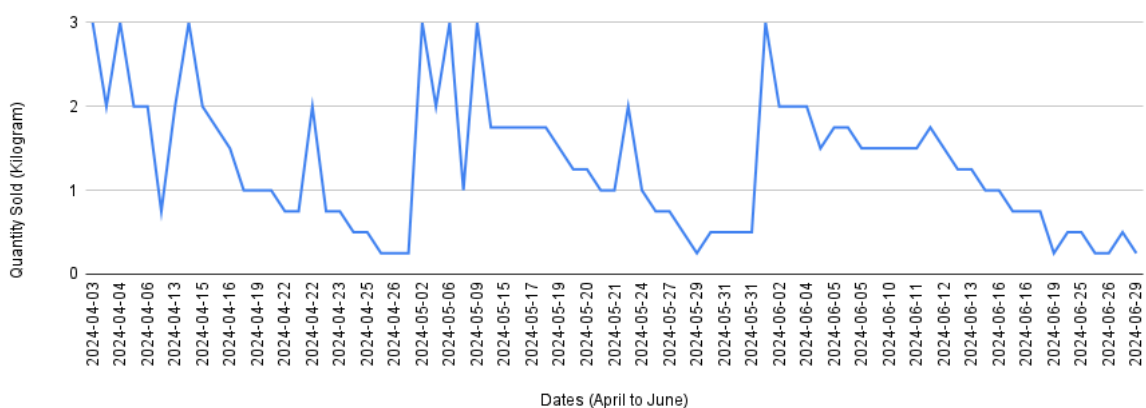
- **Daily sales of cooking oil**

Daily Sales of Cooking Oil



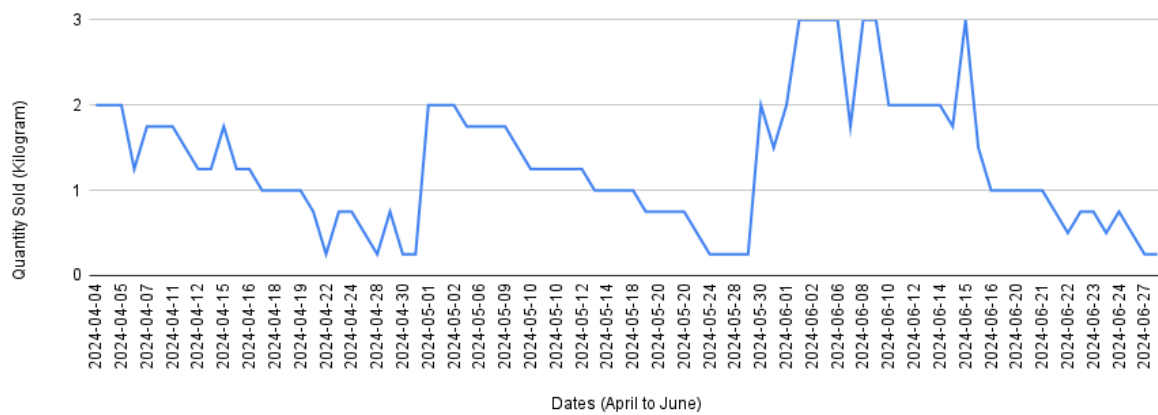
- **Daily sales of Urad Dal**

Daily Sales of Urad Dal



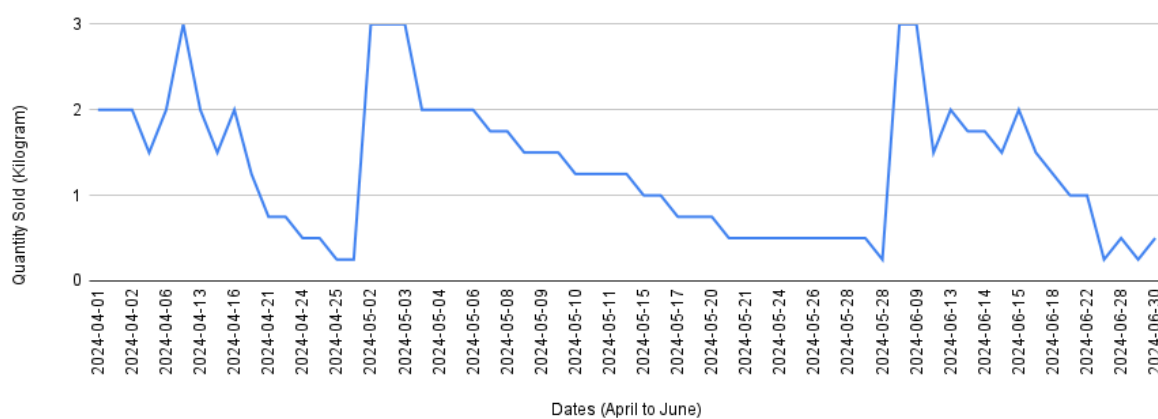
- **Daily sales of Sugar**

Daily Sales of Sugar



- **Daily sales of Rice**

Daily Sales of Rice



Upon analyzing the sales data for the Food category, particularly focusing on products such as Cooking Oil, Urad Dal, Sugar, and Rice, a notable trend emerged. A line graph representation revealed that these products consistently experience a peak in sales at the beginning of each month over the observed three-month period.

Insights and Observations:

- **Peak Sales at Month Start:** Cooking Oil, Urad Dal, Sugar, and Rice exhibit a recurring pattern where sales surge noticeably at the onset of each month. This trend suggests a consistent consumer behavior, possibly linked to shopping patterns or household budget cycles.

- **Differential Trends:** Interestingly, not all items within the Food category demonstrate this peak sales pattern. Some products may show more stable sales trends or variations influenced by factors such as seasonal demand, promotions, or supply chain dynamics.
- **Implications for Inventory Management:** Understanding these monthly sales trends is crucial for optimizing inventory management strategies. For products with predictable peak sales, ensuring adequate stock levels at the beginning of each month can prevent stockouts and capitalize on heightened demand periods.
- **Marketing and Promotional Opportunities:** Recognizing the timing of peak sales allows for targeted marketing campaigns or promotions to further enhance sales during these periods. Strategic pricing or bundling offers can capitalize on consumer buying patterns effectively.
- **Data-Driven Decision Making:** These insights underscore the importance of data-driven decision-making in adapting inventory strategies and marketing initiatives to align with consumer behavior and maximize sales potential.

By highlighting these monthly sales trends in key products within the Food category, businesses can proactively adjust their operational and marketing strategies to optimize sales performance and enhance overall profitability.

4 Interpretation of Results and Recommendation

4.1 Interpretation of Results

- **Lack of Understanding in Customer Preferences:**
 - **Implication:** This indicates that the store may not have a clear picture of what its customers want, leading to potential mismatches between product offerings and customer needs.
 - **Result:** From the Pie chart we can see that the customers are mostly preferring Dairy products from the shop and least Medicines.
- **Overstocking and Understocking:**
 - **Implication:** Overstocking ties up capital in unsold inventory, while understocking leads to missed sales and unhappy customers.
 - **Result:** From ABC analysis, it's clear that the store should avoid stock outs of A category products and not overstock the category C products.
- **Inaccurate Demand Forecasting:**
 - **Implication:** Poor forecasting methods can result in overproduction or underproduction of products.
 - **Result:** From the daily quantity sales of food items we can clearly see that in the month beginning there's high demand for the food products.

4.2 Recommendations to the business

- **Maintain Data Properly in an organized manner:**
 - Ensuring accurate and timely data entry will help in maintaining reliable records. This will facilitate better analysis and decision-making.
- **Open Shop Regularly:**

- Maintain consistent shop hours to build customer trust and ensure they know when they can rely on the business being open.
- **Provide customers with discounts and offers:**
 - Implement promotional strategies to attract customers, clear out old stock, and increase sales volume.
- **Utilize cost-effective marketing strategies:**
 - **Social Media Promotion:** Leverage platforms like Facebook, Instagram, and WhatsApp Business to reach a broader audience in the area at a lower cost.
 - **Local Advertising:** Use community newsletters, local newspapers, and word-of-mouth to target nearby customers.
- **Actively Record Customer Feedback:**
 - **Face-to-Face Interactions:** Engage directly with customers to gather their opinions.
 - **Suggestion Boxes and Surveys:** Implement these tools to collect valuable feedback regularly.
 - **Demonstrate Value of Feedback:** Show customers that their opinions matter by making visible changes based on their suggestions, providing them with what they demand based on feedback.

These recommendations are designed to comprehensively address the identified challenges and elevate the operational efficiency of general stores. By implementing these strategies, stores can expect to see significant improvements in customer satisfaction through better alignment with customer preferences, more accurate demand forecasting, and a reduction in both overstocking and understocking issues.

Furthermore, these enhancements will drive increased profitability by optimizing inventory management, leveraging cost-effective marketing tactics, and establishing a robust online presence. Collectively, these efforts will not only strengthen customer loyalty but also position general stores for sustainable growth and success in a competitive market.

Conclusion:

Implementing these recommendations cohesively will strike a balance between profitability and customer satisfaction. Continuous monitoring and adaptation to market dynamics will be key to navigating the evolving landscape for the “Sri MahaLakshmi General Store”. Cost optimization, employee satisfaction, e-commerce optimization, and customer-centric features are integral components for building a resilient and successful grocery store and our analysis provides the owner with all such components.

Moreover, fostering a culture of continuous improvement and innovation is crucial as this involves regularly seeking feedback from customers to identify areas for enhancement and implementing changes promptly. Investing in staff development and adding on more SKUs can further enhance service quality and operational efficiency, ensuring that the store is well-equipped to meet customer needs and contribute to the store's success.

Utilizing advanced tools to analyze customer behavior, predict trends, and optimize inventory can lead to more informed decision-making and better resource allocation. Additionally, integrating e-commerce platforms with physical stores can offer a seamless shopping experience, catering to the increasing demand for convenience and online shopping options.

Ultimately, by prioritizing customer satisfaction, leveraging technology, and maintaining a flexible and adaptive approach, the store can build a strong foundation for long-term success. This holistic strategy will not only enhance the shopping experience but also foster customer loyalty, drive sales, and ensure sustainable growth in an ever-changing market environment.