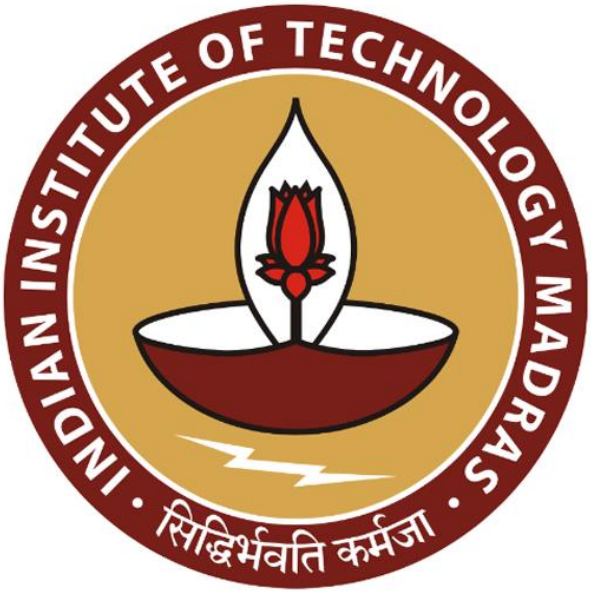
BUSINESS DATA MANAGEMENT



FINAL SUBMISSION

STRATEGIC OPTIMIZATION OF SALES AND INVENTORY AT JAI MAA KIRANA STORE

Name : Ashish Raj

Email : 22f3000982@ds.study.iitm.ac.in

Roll No. : 22f3000982

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1. **Executive Summary and Title :**

Title: "**Strategic Optimization of Sales and Inventory at Jai Maa Kirana Store**" for a unorganized B2C Grocery Store.

Jai Maa Kirana Store, a local grocery retailer, faces challenges in profitability and inventory management due to increasing competition and changing consumer behaviour. This capstone project aims to address these issues through a comprehensive analysis of sales and purchase data over a two-month period, utilizing MS Excel for data processing and visualization.

The project's primary objectives are to optimize inventory management, enhance sales performance, and improve overall profitability. Through detailed analysis of revenue trends, product performance, profit margins, and inventory levels, key findings reveal significant fluctuations in daily revenue, with an average of ₹31,698 and a standard deviation of ₹920.50. Top-performing products like Atta and Ghee contribute over 37% of total revenue, while underperforming items such as Chawal and Moong Dal are identified. Inventory analysis exposes issues of overstocking for some products and potential shortages for others.

Based on these insights, this project suggests several ways to improve business performance. These include using data-driven promotional strategies like personalized offers and seasonal discounts, cutting operational costs by managing staff efficiently and using dynamic pricing, and improving inventory management through timely restocking and setting stock limits. Additionally, enhancing store display and merchandising can attract more customers. By applying these strategies, Jai Maa Kirana Store can boost profits, manage inventory better, and strengthen its overall performance in a competitive market.

2) Detailed Explanation of Analysis Process/Method:

2.1 : Analysis of Sales and Purchase Data: As stated earlier, MS Excel is utilized as the primary tool for conducting this analysis. Initially, sales data is compiled from the bill book records, along . with the prices of each product, sourced from “Jai Maa Kirana Store” over a two-month period.

Figure-1: Shop's way to store data (Informal) click here

The collected data is then entered into Excel, where basic data pre-processing tasks are performed, including handling missing values, correcting typing errors, and sorting the data for consistency.

- After pre-processing, the sales data contains a total of 9 columns. One of these columns represents the date, the next nine columns represent the sales quantity of each SKU, and the following nine columns represent the selling price of each SKU for that particular day.
  This structure enables efficient analysis of daily sales trends and calculation of important metrics.

Date	SALES QUANTITY(kg)								
	ATTA	CHAWAL	ARHAR DAL	URAD DAL	MOONG DAL	CHOLE	RAJMA	REFINED	GHEE
1-Apr-24	11	31	10	13	8	14	6	14	7
2-Apr-24	10	30	13	14	7	15	5	17	6
3-Apr-24	9	29	11	13	8	14	4	13	8
4-Apr-24	9	30	14	15	9	12	5	18	6
5-Apr-24	11	29	15	11	8	13	6	16	7
6-Apr-24	11	32	15	10	7	14	5	15	8
7-Apr-24	10	30	13	12	10	13	3	17	6
8-Apr-24	11	30	12	14	8	12	5	16	5
9-Apr-24	10	29	11	12	9	10	3	19	7
10-Apr-24	10	28	9	11	6	11	3	15	8
11-Apr-24	9	31	10	9	7	13	6	20	9
12-Apr-24	10	32	12	10	8	14	4	17	7
13-Apr-24	12	32	13	11	9	12	3	17	6
14-Apr-24	11	31	10	10	10	13	3	18	8
15-Apr-24	10	30	15	12	9	13	4	16	6
16-Apr-24	10	31	14	14	7	14	3	15	7
17-Apr-24	10	31	13	13	8	12	4	14	8
18-Apr-24	9	29	14	12	7	10	5	14	6

Table-1: Data of Sales Quantity

Date	SELLING PRICE								
	ATTA	CHAWAL	ARHAR DAL	URAD DAL	MOONG DAL	CHOLE	RAJMA	REFINED	GHEE
1-Apr-24	₹ 328	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
2-Apr-24	₹ 328	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
3-Apr-24	₹ 328	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
4-Apr-24	₹ 328	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
5-Apr-24	₹ 328	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
6-Apr-24	₹ 328	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
7-Apr-24	₹ 329	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
8-Apr-24	₹ 329	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
9-Apr-24	₹ 329	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
10-Apr-24	₹ 329	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
11-Apr-24	₹ 329	₹ 39	₹ 165	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 460
12-Apr-24	₹ 329	₹ 39	₹ 168	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 470
13-Apr-24	₹ 330	₹ 39	₹ 168	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 470
14-Apr-24	₹ 330	₹ 39	₹ 168	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 470
15-Apr-24	₹ 330	₹ 39	₹ 168	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 470
16-Apr-24	₹ 330	₹ 39	₹ 168	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 470
17-Apr-24	₹ 330	₹ 39	₹ 168	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 470
18-Apr-24	₹ 330	₹ 40	₹ 170	₹ 125	₹ 125	₹ 150	₹ 160	₹ 115	₹ 470

Table-2: Data of Selling Price

Calculating Revenue and Averages for SKU Sales

Using the **sales quantity** and **selling price**, we can calculate key sales metrics for each SKUs on any given day. These calculations help analyze sales performance and overall revenue.

1. Revenue for Each SKU:

Revenue = Sales Quantity × Selling Price

This represents the total earnings from selling a particular SKU on a specific day.

2. Total Daily Revenue

Total Revenue = Σ (Sales Quantity × Selling Price)

This is the sum of the revenue generated from all SKUs sold on that day.

3. Average Sales Quantity

Avg Sales Quantity = (Σ Sales Quantity) ÷ (Total SKUs Sold)

This helps in understanding the average number of units sold per SKU.

❖ Similarly, Purchase data has been recorded for each SKU, including the purchase quantity and purchase price. This data is used to calculate the cost for each SKU. Additionally, analyzing this information helps in tracking expenses and optimizing procurement decisions.

Date	PURCHASE QUANTITY(Kg)								
	ATTA	CHAWAL	ARHAR DAL	URAD DAL	MOONG DAL	CHOLE	RAJMA	REFINED	GHEE
1-Apr-24	0	0	0	0	0	0	0	0	60
2-Apr-24	0	220	0	0	0	0	0	0	0
3-Apr-24	35	0	0	0	0	100	35	0	0
4-Apr-24	0	0	100	85	80	0	0	0	0
5-Apr-24	0	0	0	0	0	0	0	0	0
6-Apr-24	0	0	0	0	0	0	0	145	0
7-Apr-24	0	0	0	0	0	0	0	0	0
8-Apr-24	40	0	0	0	0	0	0	0	60
9-Apr-24	0	210	0	0	0	0	0	0	0
10-Apr-24	0	0	0	0	0	100	35	0	0
11-Apr-24	0	0	90	70	60	0	0	0	0
12-Apr-24	40	0	0	0	0	0	0	0	0
13-Apr-24	0	0	0	0	0	0	0	125	0

Table-3: Data of Purchase Quantity

Date	PURCHASE PRICE								
01-Apr-24	ATTA	CHAWAL	ARHAR DA	URAD DAL	MOONG D	CHOLE	RAJMA	REFINED	GHEE
02-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
03-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
04-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
05-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
06-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
07-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
08-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
09-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
10-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
11-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
12-Apr-24	₹ 318	₹ 37	₹ 155	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 430
13-Apr-24	₹ 318	₹ 37	₹ 158	₹ 110	₹ 110	₹ 138	₹ 140	₹ 109	₹ 440

Table-4: Data of Purchase Price

- The cost, total daily cost, total cost, and the average purchase price for each SKU have been calculated for a period of two months using the following formulas:

1. **Cost** = Purchase Quantity × Purchase Price
2. **Total Daily Cost** = ∑ (Cost of all SKUs on a given day)
3. **Average Purchase Price** = Sum of purchase prices for each SKU ÷ Number of days

These calculations help in understanding the overall expenditure and price trends over the given period. By analyzing this data, better decisions can be made regarding purchasing patterns, cost control, and inventory management. Additionally, tracking the total daily cost provides insights into fluctuations in expenses, which can be useful for budgeting and financial planning.

2.2: Enhancing Overall Business Profitability:

- During a conversation with the owner of Jai Maa Kirana Store, we discussed a few important reasons for the store's declining profits. These included rising competition from new local shops and the increasing popularity of online shopping platforms. As more customers are drawn to online sales due to convenience and lower prices, it has become harder for the store to maintain consistent financial stability. The fluctuating profits have also made it difficult for the store to stay financially stable.
- For better understanding of these challenges, our first step was to analyze the daily profitability of each SKU By using detailed sales and purchase data, I calculated profit/loss, profit/loss (%) and revenue (%) for each SKU on a daily basis using the following formulas:

Profit/Loss = Revenue – Cost

Total Profit/Loss (%) = (Profit(sku) / Total Profit) * 100

Total Revenue (%) = (Revenue

Product	Profit/Loss	Revenue	% of Total Profit/Loss	% of Total Revenue	Profit Margin %
ATTA	₹ 452	₹ 2,09,146	0.6%	21%	6%
CHAWAL	₹ 5,188	₹ 74,314	7%	8%	5%
ARHAR DAL	₹ 9,246	₹ 1,13,118	13%	11%	5%
URAD DAL	₹ 10,230	₹ 91,095	14%	9%	10%
MOONG DAL	₹ 8,335	₹ 62,000	11%	6%	12%
CHOLE	₹ 11,194	₹ 1,11,380	15%	11%	10%
RAJMA	₹ 5,700	₹ 40,480	8%	4%	13%
REFINED	₹ 7,954	₹ 1,24,005	11%	13%	5%
GHEE	₹ 15,040	₹ 1,62,100	21%	16%	6%
	₹ 73,339	₹ 9,87,638			8%

Table-5: Profitability Analysis for each SKU's

- The cumulative profit was calculated for the Pareto chart:

Sort the profits of each SKU in descending order. ($P_1 >= P_2 >= P_3 >= \dots >= P_n$)

Calculate the cumulative profit as go down the sorted list. ($CP_i = P_1 + P_2 + \dots + P_i$

Product	% of Total Profit	Cumulative Profit %
GHEE	20.54%	20.54%
CHOLE	15.28%	35.82%
URAD DAL	13.97%	49.79%
ARHAR DAL	12.62%	62.41%
MOONG DAL	11.38%	73.79%
REFINED	10.86%	84.65%
RAJMA	7.78%	92.44%
CHAWAL	6.95%	99.38%
ATTA	0.62%	100.00%

Table-6: Profit Analysis of each SKU for Pareto Chart

2.3: Inventory Optimization:

- After talking to the owner of Jai Maa Kirana Store, we realized that inventory management was the main issue. The owner mentioned that at the end of each month, there was too much inventory, which made it hard to buy new stock. This problem was made worse by inflation and decreasing profits.
- To solve this, we started collecting inventory data for each product (SKU) from the very first day (1st April 2024). After that, we calculated the inventory for each day using the sales, purchases, and the initial inventory. The formula for this is:

Ending Inventory = Initial Inventory + Purchases (Qty) – Sales (Qty)

(This means that the ending inventory from the previous day becomes the initial inventory for the next day.)

Date	INVENTORY								
	ATTA	CHAWAL	ARHAR DAL	URAD DAL	MOONG DAL	CHOLE	RAJMA	REFINED	GHEE
1-Apr-24	69	34	60	60	38	72	25	87	3
2-Apr-24	58	3	50	47	30	58	19	73	56
3-Apr-24	48	193	37	33	23	43	14	56	50
4-Apr-24	74	164	26	20	15	129	45	43	42
5-Apr-24	65	134	112	90	86	117	40	25	36
6-Apr-24	54	105	97	79	78	104	34	9	29
7-Apr-24	43	73	82	69	71	90	29	139	21
8-Apr-24	33	43	69	57	61	77	26	122	15
9-Apr-24	62	13	57	43	53	65	21	106	70
10-Apr-24	52	194	46	31	44	55	18	87	63
11-Apr-24	42	166	37	20	38	144	50	72	55
12-Apr-24	33	135	117	81	91	131	44	52	46
13-Apr-24	63	103	105	71	83	117	40	35	39

Table-7: Data of Inventory

Using inventory data, we calculate the total daily inventory, average daily inventory, and average inventory for each SKU using the following formulas:

Cost = Purchase Quantity * Purchase Price

Total Daily Cost = ∑ (Cost of SKU on any given day)

Average = Sum of values for each SKU / Number of days

Date	TOTAL DAILY INVENTORY	AVERAGE DAILY INVENTORY
1-Apr-24	448	50
2-Apr-24	394	44
3-Apr-24	497	55
4-Apr-24	558	62
5-Apr-24	705	78
6-Apr-24	589	65
7-Apr-24	617	69
8-Apr-24	503	56
9-Apr-24	490	54
10-Apr-24	590	66
11-Apr-24	624	69
12-Apr-24	730	81

Table-8: Total & Average Inventory Analysis on any given day

2.3: Analysis of Fixed Costs:

- For the analysis, the costs of Furniture, Storage Containers, and other long-term assets were calculated for a period of 2 months based on the available expenditure data. Depreciation rates were applied as per the guidelines defined in Accounting Standards (AS).
- The total fixed cost (Net Book Value) was determined using the following formulas:

Net Book Value = Original Cost of Asset – Depreciation Expense

Depreciation Expense = (Original Cost of Asset * Depreciation Rate)/100

Total Fixed Cost = ∑ (Net Book Value)

	Cost	Rate of Depreciation	Depreciation	Net Book Value
Furniture	₹ 1,32,000	15%	₹ 19,800	₹ 1,12,200
Storage Containers	₹ 12,000	40%	₹ 4,800	₹ 7,200
Salary Paid	₹ 10,000	100%	₹ 10,000	₹ 0
Electricity Paid	₹ 1,750	100%	₹ 1,750	₹ 0
Carry Bags	₹ 900	100%	₹ 900	₹ 0
Total Fixed Cost	₹ 1,56,650	**Total Normalized Fixed Cost**	₹ 37,250	₹ 1,19,400

Table-9: Normalized Fixed Cost Analysis

3) Results and Findings:

3.1: Analysis (Sales and Purchases):

The following graph shows the revenue generated on any given day over a period of 2 months from April to May.

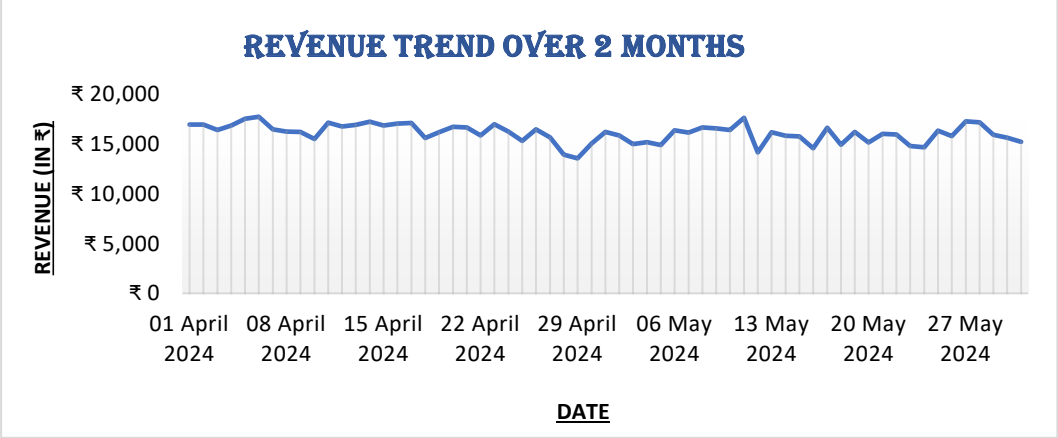


Chart-1: Revenue Trend over 2 months

- The revenue fluctuates significantly from day to day, reflecting unpredictable variations in the sales pattern. These fluctuations could be attributed to several factors, such as changes in demand cycles, the impact of promotional activities, or variations in stock availability.
- Towards the end of May, there is a slight dip in revenue, indicating a potential decrease in sales or customer activity.
- The analysis indicates that the Average Daily Revenue stands at ₹ 31698.6129, with a standard deviation of ₹920.50. This high standard deviation suggests moderate revenue fluctuation around the average.
- Maximum revenue generated: ₹17,761
- Manimum revenue generated: ₹13,575
- Range = ₹4,186 which can be find by using formula: **Range = Max – Min**

The following graph illustrates the revenue generated by each SKU over a two-month period, spanning from April to May.

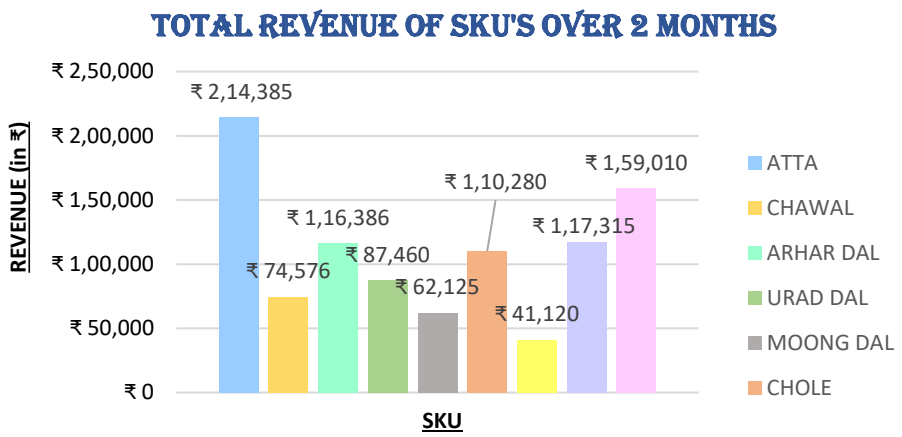


Chart-2: Total Revenue of SKU's of 2 months

- **Atta and Chole Dominate:** These two SKUs generate significantly higher revenue compared to other products, indicating strong demand for staple foods.
- Moong Dal (₹62,125) and Chawal (₹74,576) have relatively lower revenues compared to other items. Chawal has a lower revenue than Atta, suggesting that wheat-based products are in higher demand.

Business Implications: To maintain consistent sales, it is essential to ensure adequate stock availability for top-performing items like Atta and Chole. Additionally, introducing promotions or bundled offers for low-revenue items such as Chawal and Moong Dal can help boost their sales.

The following graph is to identify the most significant contributors to the Total revenue:

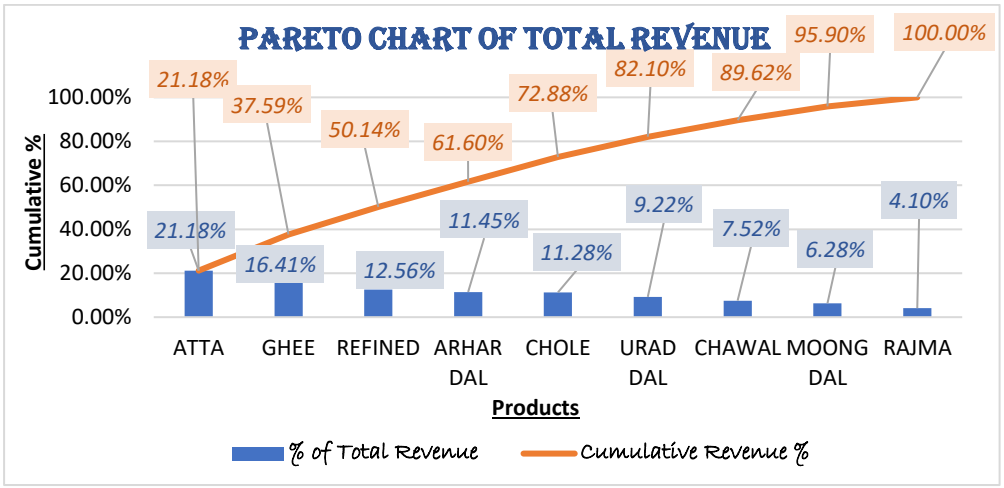


Chart-3: Pareto Chart of Total Revenue

- **Atta**, **Ghee**, and **Refined** are the top three contributors, accounting for **50.14%** of the total revenue. This aligns with the Pareto Principle (80-20 rule), where a small number of products contribute to a significant portion of revenue.

  The cumulative revenue percentage reaches **82.10%** with just five products, emphasizing the importance of focusing on these for strategic decisions like inventory management and marketing.

The following graph illustrates the proportion of each SKU's contribution to the total revenue generated, as well as to the total sales volume of the shop over a period of 2 months from April to May.

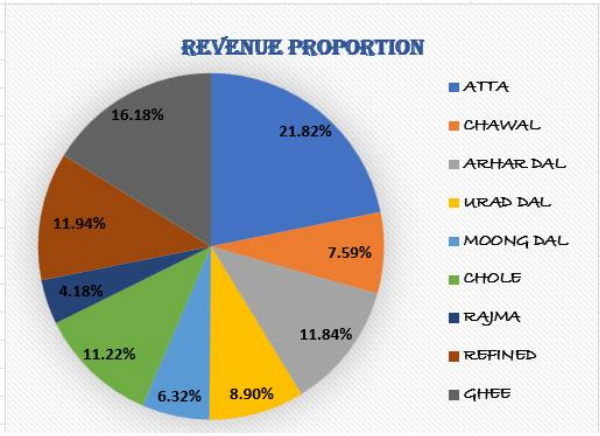


Chart-4: Revenue Proportion

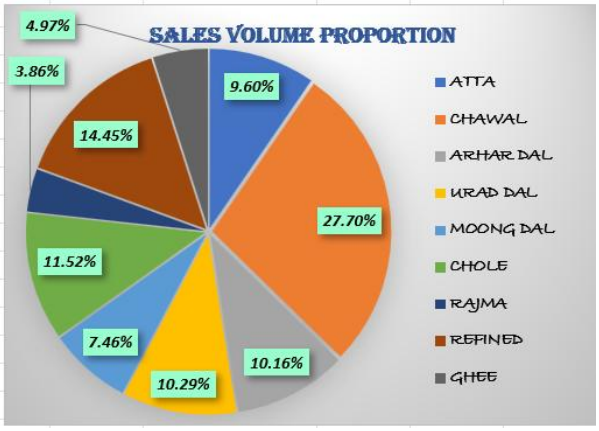


Chart-5: Sales Volume Proportion

- Atta (21.82%) and Ghee (16.18%) are the largest contributors to revenue. These two products alone contribute to over 37% of the total revenue.
- Ghee is a very high-margin product. Its low sales volume still translates to high revenue, indicating customers are willing to pay a premium price.
- Chawal is a low-margin product. Despite being the most sold item in terms of volume, it contributes poorly to revenue.
- Refine and Chole is a well-performing product, with a consistent contribution to both metrics.
- Rajma (3.86%) and Urad Dal (7.46%) contribute the least in both sales volume and revenue. These products might need aggressive marketing or discounts to boost performance.

To effectively analyze the fluctuation or trend in purchase prices over two months for each SKU, we would follow these steps based on the graph:

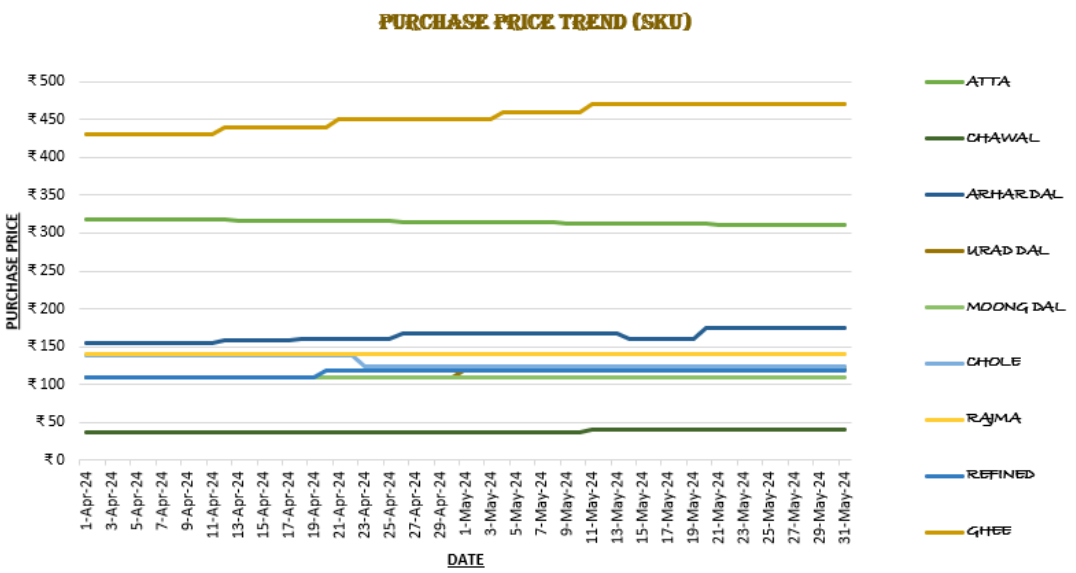


Chart-6: Purchase Price Trend

- SKUs like **Atta**, **Chole**, and **Moong Dal** exhibit consistent purchase prices throughout the two months, indicating stable supplier costs or contracts.
- The purchase price of **Ghee** shows a clear upward trend over the two months, potentially due to increased demand or supply constraints.
- The purchase price of **Arhar Dal** decreases during the observed period, which may suggest better supply availability or reduced procurement costs.
- **Ghee** and **Rajma** have the highest purchase prices among the SKUs, indicating these are premium products.Their high cost might require special pricing strategies to maintain profitability.
- **Chawal** and **Urad Dal** prices remain flat, reflecting steady market conditions for these commodities, making them less risky for inventory management.

Based on above analysis, the below graph is plotted for Ghee Purchase quantity v/s Ghee Purchase price to analyze the buying decision made by the owner for this SKU.

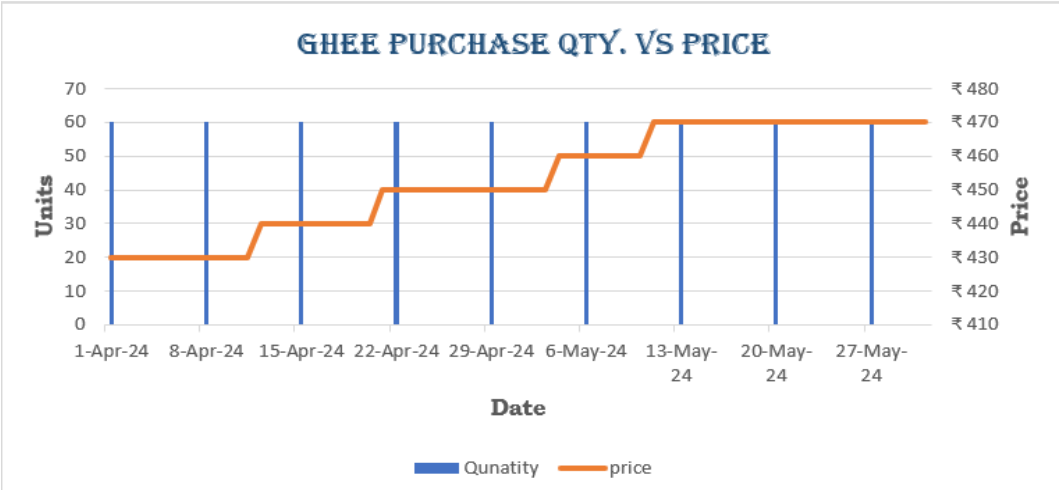
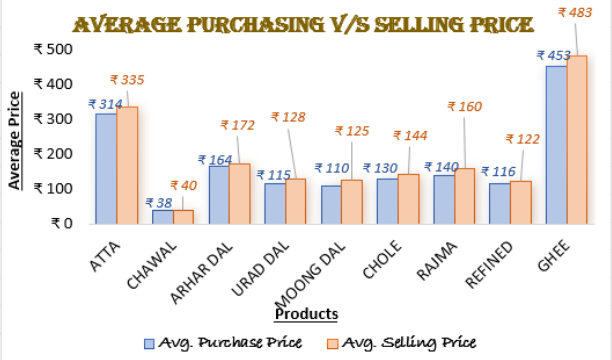


Chart-7: Ghee Purchase Quantity v/s Ghee Purchase Price

- The purchase volume remains consistent at 60 units throughout the observed period, despite the increase in purchase price from ₹420 to ₹470, the quantity purchased has not declined, indicating that ghee is an essential commodity with inelastic demand.
- The price adjustments happened in steps rather than a smooth increase, possibly due to periodic supplier revisions or market-driven changes.
- If prices continue to rise, it will be important to monitor whether the demand remains stable or if customers start reducing their purchases, as further price increases could eventually reach a tipping point where even essential goods face reduced demand.

3.2: Profit/Loss Analysis:

The comparison of the average purchasing and selling prices for different products shows the profit margins for each item. Some products have a big price difference between the buying and selling prices, while others have a smaller margin. The second graph shows the average profit for each product, helping us understand which items make the most money overall.



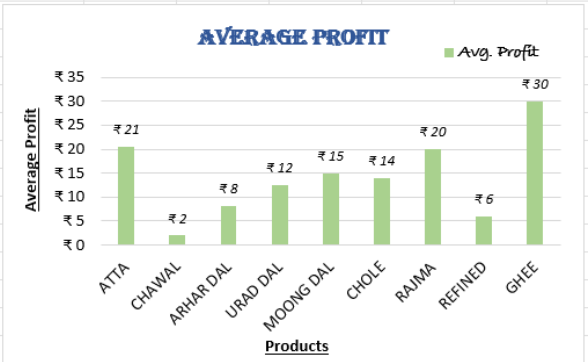


Chart-8: Average Purchase v/s Selling Price

Chart-9: Average Profit

- The comparison of average purchasing and selling prices shows that Ghee has the highest profit margin at ₹30, followed by Atta with ₹21. Chawal, however, has the lowest profit of just ₹2, indicating tight margins. Urad Dal, Moong Dal, and Chole have moderate profits between ₹12 to ₹15, ensuring steady earnings. Refined oil has a lower profit of ₹6, possibly due to high procurement costs. Products like Rajma and Arhar Dal also contribute to earnings but with varied margins.This analysis highlights the importance of pricing strategies to maximize profit across different products.

The following graph provides a comparison of each SKU's share in overall profit relative to its share in total revenue:

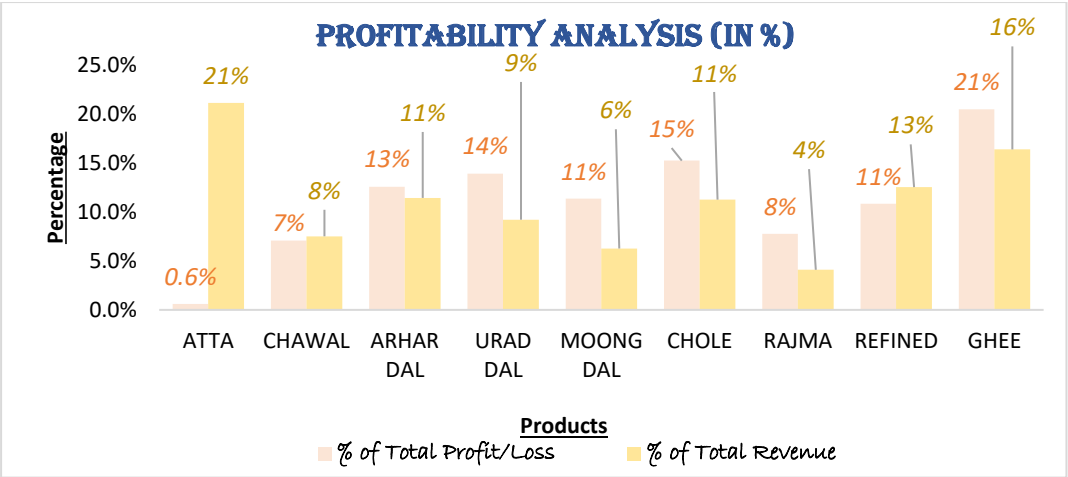


Chart-10: Profitability Analysis

- Ghee, Chole, and Urad Dal are the top three profit-generating products, contributing a combined 50% of total profits, Products like Urad Dal (14%) and Chole (15%) show identical percentages for both revenue and profit contribution, suggesting efficient cost management and pricing strategies. While Atta generates 21% of total revenue (highest among all products) but it only contributes 0.6% to profits, indicating extremely thin.

To confirm our previous findings, the following Pareto chart is plotted for total profit:

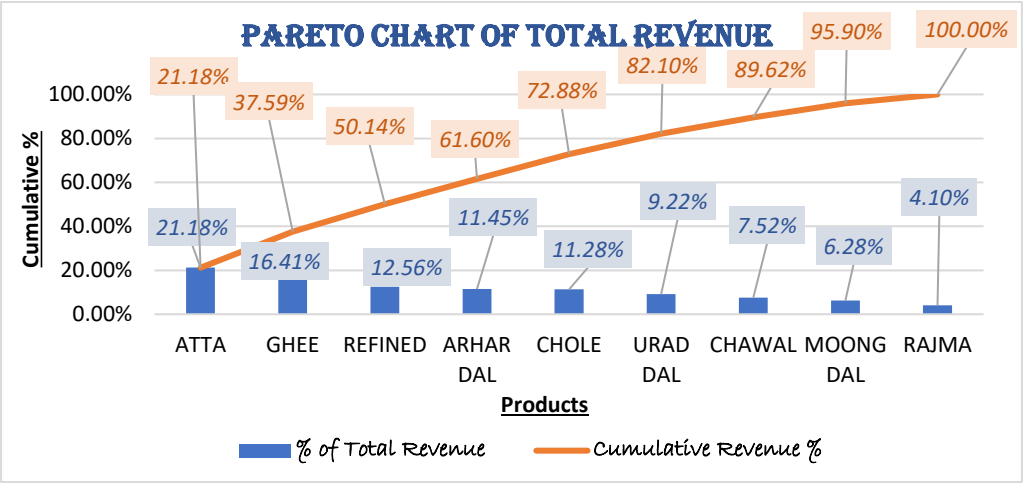


Chart-11: Pareto Chart of Total Profit

- The cumulative revenue percentage indicates that just five products (Atta, Ghee, Refined, Arhar Dal, and Chole) make up more than 70% of total revenue, highlighting their critical role in business performance.

Additionally, the graph below is created to examine the Gross Profit/Loss over a two-month period:

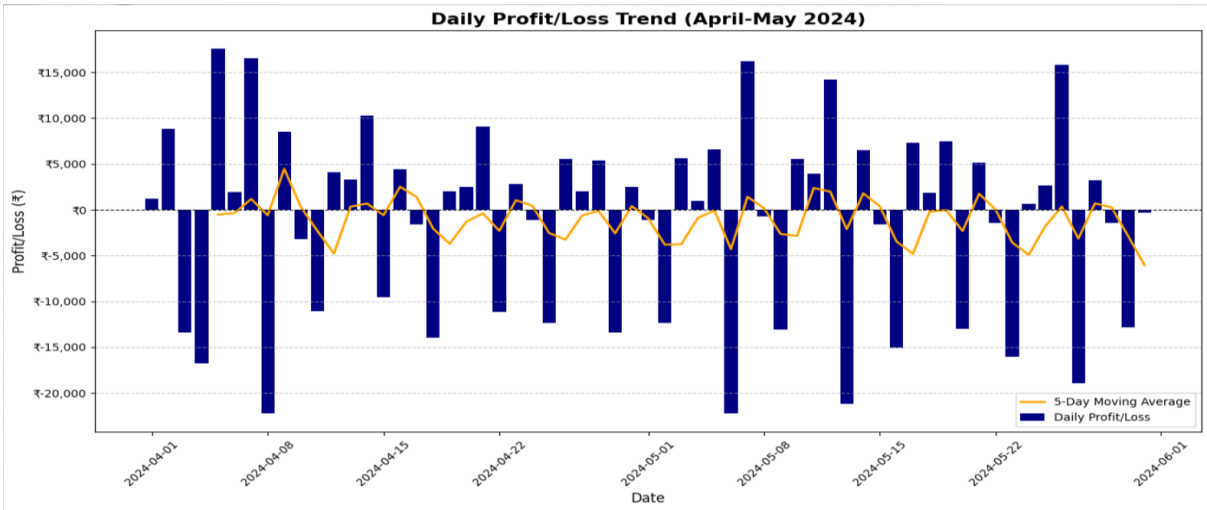


Chart-12: Profit/ Loss Trend

- There are frequent alternation between profits and losses, with sharp swings occurring regularly throughout the period. These sharp declines likely indicate periodic large expenses.
- The downward spikes occurring around the 8th, 15th, and 22nd of each month, appear to coincide with predictable business expenditures like salary and scheduled inventory replenishment costs.
- The trading activity seems to follow a repeating cycle, with times of consecutive profits followed by periods of losses. On the most profitable days, there is a noticeable pattern where they tend to occur in clusters, indicating that these periods are likely linked to favorable market conditions.

3.3: Inventory Analysis:

To begin the inventory analysis, the following graph illustrates the average stock (in units) for each item:

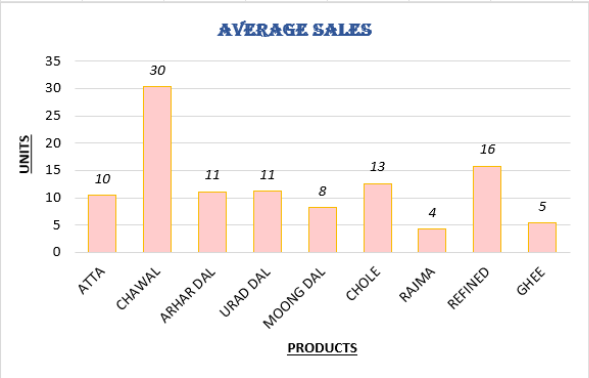


Chart-13: Average Stock in Store Average

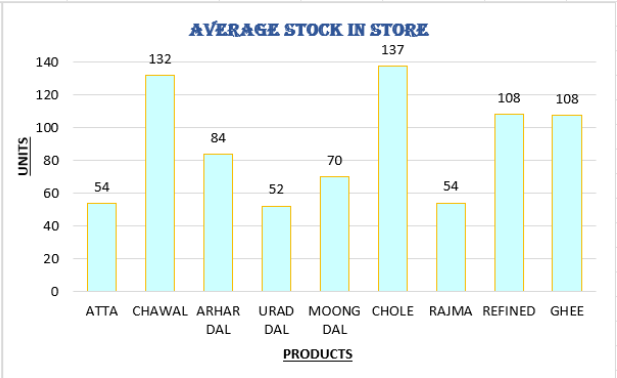


Chart-14: Average Sales

- Based on the analysis of the graphs, Chawal stands out as the top performer with the highest sales (30 units) and stock (132 units), showing strong customer demand and good inventory management. On the other hand, products like Chole and Ghee seem to be overstocked when compared to their sales, which could lead to wastage. Meanwhile, items such as Atta and Urad Dal have decent sales but limited stock, which might result in shortages. Adjusting stock levels and running promotions for products with lower sales could help improve inventory management and overall performance.
-

The following graph shows the inventory fluctuation over 2 months, highlighting potential issues with stock management:

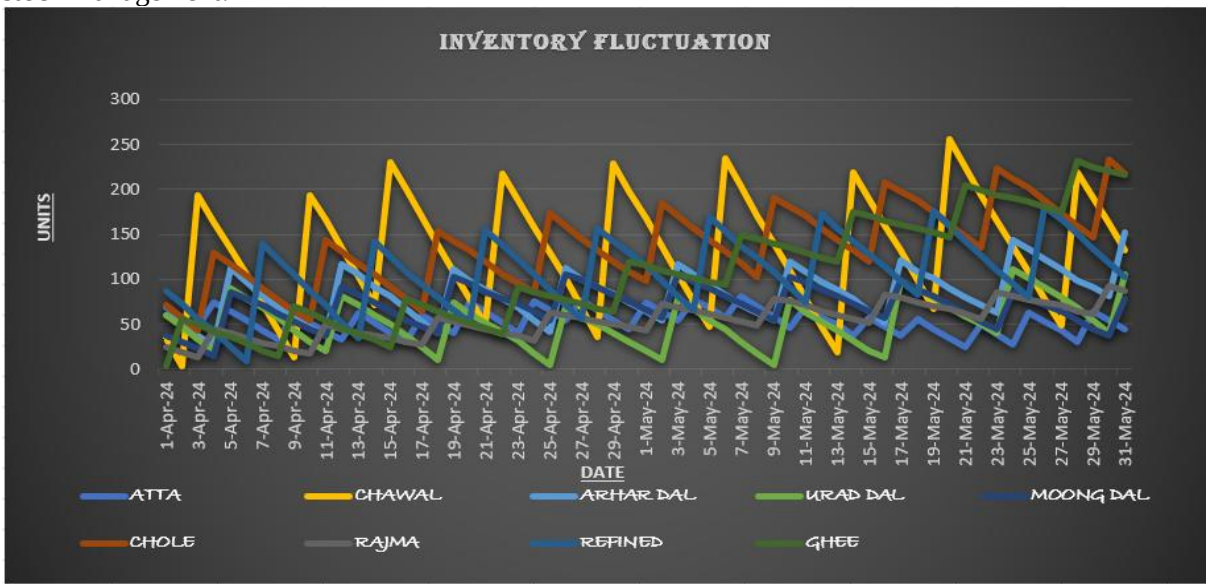


Chart-15: Inventory Fluctuation

- Above chart shows the fluctuation in inventory levels over time. Chawal consistently has the highest stock, indicating it's a high-demand product and is well-managed. However, products like Chole and Ghee seem to be overstocked for most of the period, which may lead to wastage if not sold in time. On the other hand, items such as Atta and Urad Dal have lower inventory levels, which could risk shortages, especially during high-demand periods.
- To address these issues stock levels for overstocked items should be reduced, while replacement for items with lower inventory should be given priority.

3.4: Profit/Loss Insights:

FIXED COST ANALYSIS				
	Cost	Rate of Depreciation	Depreciation	Net Book Value
Furniture	₹ 1,32,000	15%	₹ 19,800	₹ 1,12,200
Storage Containers	₹ 12,000	40%	₹ 4,800	₹ 7,200
Salary Paid	₹ 10,000	100%	₹ 10,000	₹ 0
Electricity Paid	₹ 1,750	100%	₹ 1,750	₹ 0
Carry Bags	₹ 900	100%	₹ 900	₹ 0
Total Fixed Cost	₹ 1,56,650	Total Normalized Fixed Cost	₹ 37,250	₹ 1,19,400

Chart-16: Fixed Cost Analysis

- The items in the above table can primarily be categorized into two segments: Fixed Assets and Monthly Expenses.
- From the above table, following calculations can be made:
    - Total Fixed Cost: ₹1,56,650
    - Total Normalized Fixed Cost: ₹37,250, which can be used to calculate "Net Profit" by using formula:

Net Profit = Gross Profit – Total Normalized Fixed Cost

Net Profit = ₹73,339 - ₹37,250

Net Profit = ₹36,089

Further, the below graph is plotted to analyze Fixed Cost proportion:

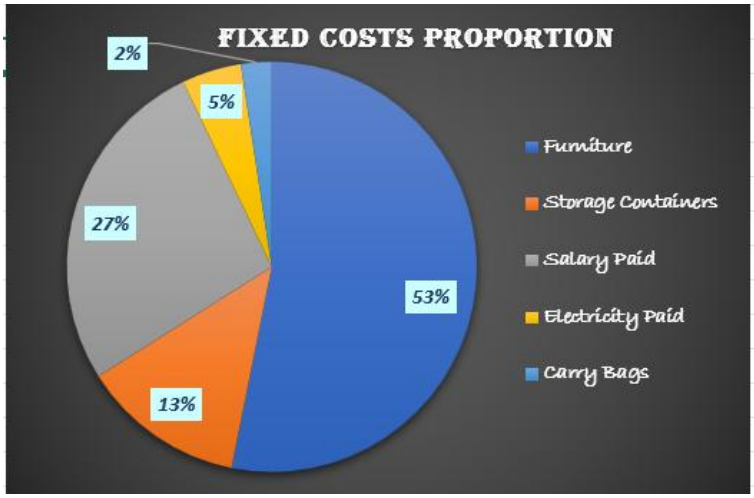


Chart-17: Fixed Cost Proportion

- Salary and storage are the major contributors to costs, and further reduction isn't feasible as both are essential for the shop's operations.

4) Interpretation of Results and Recommendations:

4.1: Recommendation-1: Implement Data-Driven Promotional Strategies

1. Personalized Promotions:
    - Analyse customer purchase history to design customized offers that match their preferences.
    - Introduce a loyalty program with different reward levels to encourage repeat purchases and boost customer retention.
2. Timely & Seasonal Deals:
    - Plan promotions around holidays, seasons, and local events to attract more customers.
    - Use flash sales and limited-time offers to create urgency and drive quick purchases.
3. Multichannel Marketing Approach:

- Promote products and interact with customers through social media platforms like Instagram and Facebook. Sending regular updates and can boost brand awareness.
- Use email marketing to send personalized offers and updates based on customer preferences.
- Run retargeting campaigns to re-engage potential buyers who have shown interest but haven't made a purchase. This increases conversion rates by reminding them of their previous interests.

4. Improve Customer Experience:
    - Train staff to provide excellent service and product knowledge for a better shopping experience.
    - Establish a feedback system to gather insights and improve services based on customer input.
5. Community Building:
    - Organize in-store events and workshops to built a strong community and enhance brand loyalty.
    - Collaborate with local influencers or businesses for cross-promotional opportunities.

4.2 : Recommendation-2: Reduce Operational Costs

1. Optimize Workforce Management:
    - Cross-train employees to enhance flexibility and reduce labour costs by allowing them to handle multiple roles.
    - Use workforce management software to optimize staffs scheduling according to foot traffic and sales patterns.
2. Dynamic Pricing:
    - Utilize AI-powered pricing tools to adjust prices based on demand, competition, and inventory levels. Some popular AI-powered pricing tools include Pricefx, Wiser, or Omnia Retail. These tools analyze various factors like competition, market demand, and inventory.
    - Apply price skimming for new or unique products to capture maximum profit during the initial launch phase.
3. Competitive Analysis:
    - Offer a price match guarantee to gain customer trust and avoid losing sales to competitors.
    - Keep an eye on monitor competitor pricing and adjust strategies to maintain market competitiveness.
4. Clearance Strategies:

- Organize well planned clearance sales to efficiently sell slow moving inventory and free up storage space.
- Tie up with discount stores or online platforms to sell off extra stock and reduce losses.

4.3 **: Recommendation-3: Improving Inventory Management**

The shop owner made some poor purchasing choices, leading to excess stock. To prevent this from happening again and to improve inventory management, the following suggestions can be put into action:

1. Time-based Restocking:
    - Restock inventory at fixed intervals to avoid last-minute purchasing decisions.
2. Implement Minimum and Maximum Stock Levels:
    - Set minimum and maximum stock levels for each SKU to maintain the right amount of inventory. This will help avoid both stockouts and overstocking, ensuring smooth inventory management.
3. Timing Restock with High Sales Periods:
    - Restocking inventory just before high sales periods helps to better manage demand. It ensures that products are available when customers need them most, preventing stockouts. This approach also avoids the risks of overstocking, as it balances inventory levels without unnecessary excess.
4. Vendor-Managed Inventory (VMI):
    - Partner with key suppliers to implement Vendor-Managed Inventory (VMI) programs, enabling vendors to oversee part of the inventory management process. Establish clear performance metrics and effective communication systems to ensure seamless VMI execution.

4.4 : Recommendation-4: Additional Measures

Optimize Store Display and Merchandising:

- Strategic Product Placement: Keep high-demand products prominently near the entrance or in high-traffic areas of the shop to capture customers' attention.
- Interactive Demonstrations: Organize interactive demonstrations or workshops to educate customers about the effectiveness and usage of various products. This hands-on approach allows customers to experience the products firsthand and increases their confidence in making purchases.

By implementing these comprehensive strategies, retailers can create a synergistic effect that drives sales growth, enhances profitability, and optimizes inventory management simultaneously. Regular monitoring and adjustments will ensure sustained success in a dynamic retail environment.

5) Conclusion:

The comprehensive analysis of Jai Maa Kirana Store's sales and purchase data has yielded valuable insights and actionable recommendations to enhance profitability and optimize inventory management in the face of increasing competition and changing consumer behaviour.

The analysis identified key products such as Atta and Ghee as significant contributors to revenue, accounting for over 37% of total sales. These items represent prime opportunities for increasing profitability through targeted marketing strategies. Implementing data-driven promotional tactics, including personalized offers, seasonal deals, and a multichannel marketing approach, can help capitalize on these high-performing products while also boosting sales of underperforming items like Chawal and Moong Dal.

Inventory management emerged as a critical area for improvement. The study revealed issues of overstocking for some products and potential shortages for others. By implementing time-based restocking, setting minimum and maximum stock levels, and timing restocks with high sales periods, the store can ensure optimal inventory levels, reduce carrying costs, and prevent stockouts.The analysis of fixed costs highlighted areas where operational efficiency could be improved. Optimizing workforce management and implementing dynamic pricing strategies can help reduce costs and increase profitability. Additionally, the study emphasized the importance of making informed purchasing decisions, particularly for products like Ghee, where price fluctuations were observed.

Furthermore, recommendations to enhance store display and merchandising, such as strategic product placement and interactive demonstrations, can contribute to increased customer engagement and sales. These strategies, combined with improved inventory management and targeted promotions, create a synergistic effect that can drive sales growth and enhance overall business performance.

By implementing these recommendations and continuously monitoring their effectiveness, Jai Maa Kirana Store can improve its financial performance, increase profitability, and strengthen its competitive position in the local retail market. Regular evaluation and adjustment of these strategies will be crucial for ensuring long-term growth and sustainability in an evolving retail landscape.

6) Important Links:

- Spreadsheet: Link-1: click here