

# **Inventory Management and Sales Revenue Maximization**

**A final report for the BDM capstone Project**

Submitted by

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# 1 Executive Summary

The data collected from Mahesh Kirana Store has been thoroughly analysed with the help of Google sheets. The objective of this report is to find various insights of the data and provide useful recommendations to the shop owner so that his revenue and Sales is maximised and inventory is managed efficiently.

For this I have used sales Analysis techniques like computing average sales on a daily basis and analysis of sales trends on a weekly basis. Comparison between Revenue Pareto chart and Sales Pareto chart has been made to know products which contribute equally well in revenue and profit. For Inventory management techniques like Inventory turnover ratio and average days of inventory is used to calculate how effectively inventory is managed by the shopkeeper.

In results and findings, I have used graphs as a tool to address findings and results. After thorough going through data several observations have been made and these are:

- Ghee is the most revenue generating and profit generating product.
- Toothbrush has the highest profit margin.
- Rusk is in the problem of stockout while toothbrushes are overstocked.
- Overall revenue generated for the shop for the given month is Rs 156,202 and profit made out of that is Rs 17,591.
- Parle Biscuits and Chocolate are the most sold products in the month,

Some recommendations from my side is to focus on improving sales of products like Ghee, Detergent and Hair Oil to improve revenue. Focus must be made on improving sales of ToothBrush as it has the highest profit margin. The shopkeeper must try for multiple suppliers, especially for Rusk as it is most likely to stockout.

## 2 Analysis Process

The data is collected from 5th August to 6th September. Google sheets are used for my calculations. After thorough analysis of data the following are the methods used for my analysis:

### 2.1 Sales Analysis:

- For sales analysis computation of average sales of each product on a daily basis can be useful. It helps to gain information on how much a particular product is sold on a day. Average sales is computed by

$$\text{Average Sales}(\text{product}) = \frac{1}{n} \sum_{n=1}^n \text{Sales of product},$$

here n refers to day number.

- Weekly sales trends can also be insightful as it helps in understanding the behaviour of sales in festival weeks and ordinary weeks.
- Sales on the basis of day of week can be plotted with a bar chart thus helping us to know which day of the week contributes more to sales.

Date	Sales	Week
5/8/24	202	1
6/8/24	219	1
7/8/24	160	1
8/8/24	152	1
9/8/24	130	1
10/8/24	211	1
11/8/24	183	1
12/8/24	161	2
13/8/24	165	2
14/8/24	157	2
15/8/24	143	2
16/8/24	128	2
17/8/24	153	2
18/8/24	202	2

Fig 1 Calculation of Sales on Weekly basis

### 2.2 Revenue Analysis:

- For calculation of revenue following formula is used:

$$\text{Revenue} = \text{Price} \times \text{Sales}$$

- For analysis of revenue trends line charts help in capturing the upwards or downwards trend over the month on a daily basis. Similar things can also be made on a weekly basis to capture weekly trends of revenue over the month.
- Comparison between sales and revenue helps to know which products contribute more to sales, which products contribute more to revenue and which group of products contribute equally well in sales as well as in revenue.

D	E	F	G
Name	Sales	Selling Price	Revenue
AgarBatti	329	₹10	₹3,290
Chips	733	₹10	₹7,330
Chocolate	1034	₹10	₹10,340
Detergent	166	₹140	₹23,240
Edible Oil	210	₹130	₹27,300
Garam Masala	125	₹5	₹625
Ghee	60	₹550	₹33,000
Gooday Biscuit	452	₹10	₹4,520
Hair Oil	150	₹20	₹3,000
Maggie	434	₹14	₹6,076
Meat Masala	74	₹5	₹370
Namkeen	641	₹10	₹6,410
Parle Biscuit	1043	₹5	₹5,215
Rusk	493	₹20	₹9,860

Fig 2 Calculation of Revenue

## 2.3 Profit Analysis:

- For calculation of profit the following formula is used:

$$\text{Profit} = \text{SellingPrice} - \text{Cost Price}$$

$$\text{TotalProfit} = \text{Sales}(\text{SellingPrice} - \text{CostPrice})$$

- Profit percentage helps in determining how much percent a product is contributing to the profit.

$$\text{Profit Percentage} = \frac{\text{Profit}}{\text{CostPrice}} \times 100$$

- Comparison between cost price and selling price can be made with the help of a grouped bar chart. It helps in visualising the difference between cost price and the selling price.
- Profit pareto chart can be drawn so we can check whether the profit of the shop follows Pareto principle i.e., 20% of products contribute to 80% of profit.

A	B	C	D
Name	CostPrice	SellingPrice	Profit Percent
Parle Biscuit	₹4.4	₹5	14%
Garam Masala	₹4.5	₹5	11%
Meat Masala	₹4.5	₹5	11%
Namkeen	₹8.0	₹10	25%
Chips	₹8.0	₹10	25%
Gooday Biscuit	₹9.0	₹10	11%
AgarBatti	₹9.0	₹10	11%
Choclate	₹9.0	₹10	11%
Maggie	₹13.0	₹14	8%
Tooth Brush	₹15.0	₹20	33%

Fig 3 Calculation of Profit Percent

## 2.4 Inventory Management:

- For calculation of inventory at the end of day i.e, stock at time of closing the shop on that day, the following formula is used:

$$\text{closing} = \text{opening} + \text{purchase} - \text{sales}$$

But for my case it was difficult to track sales of products so I have asked shopkeeper to calculate sales by rearranging the formula i.e,

$$\text{sales} = \text{opening} + \text{purchase} - \text{closing}$$

- Inventory turnover ratio helps in knowing how effectively inventory is managed. A higher inventory turnover ratio suggests strong sales and effective inventory management, while a lower ratio may indicate overstocking or weak sales performance.

$$\text{Inventory Turnover Ratio} = \frac{\text{Goods Sold}}{\text{Average Inventory}}$$

$$\text{Goods Sold} = \text{Beginning Inventory} + P - \text{Ending Inventory}$$

where  $P$  = Total Purchases during period

$$\text{Average Inventory} = \frac{\text{Beginning Inventory} + \text{Ending Inventory}}{2}$$

- It measures how many times inventory is sold and replaced over a certain period, typically a year, but for our case it is month.



1. From the graph it is observed that the products like Chips, Chocolate, Namkeen and Parle Biscuits have significantly higher average sales and products like toothbrush, toothpaste, meat masala, detergent, garam masala, ghee, hair oil, salt and soap have significantly less average sales.
2. Products like Agarbatti, Gooday Biscuit, Maggie and Rusk have an average sales between 10 to 20.

### **3.2 Average Sales on the Basis Day of Week**

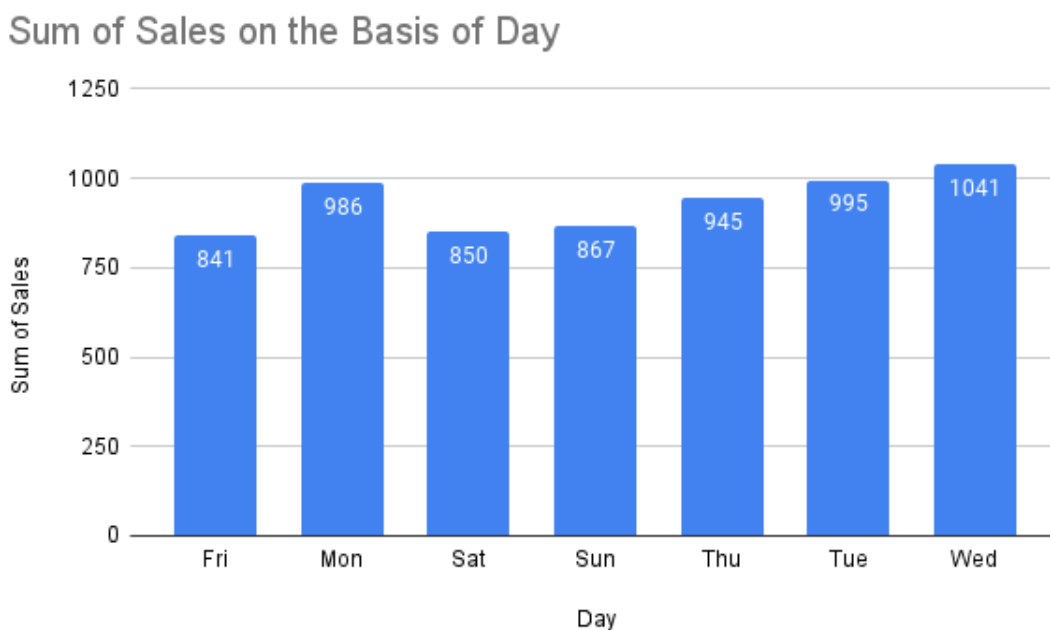


Fig 6

1. From the graph we observe the sum of sales on weekdays is greater than weekends (i.e, Saturdays and Sundays). Depicting higher sales on weekdays compared to weekends. But there is an extra observation day for all weekdays. Weekdays were recorded 5-times while weekends were recorded 4-times during the time period of 5-August to 6-September. So we cannot assume that sales on weekdays are generally more than weekends.



### **3.3 Weekly Sales Trends**

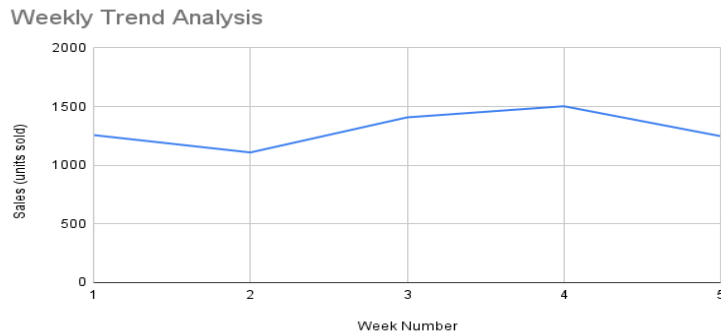


Fig 7

1. There is a dip in sales in the second week from the time period data was collected. But there is no significant trend that can be observed in weekly sales trends.
2. Week 4 has the highest sum of sales indicating that there is higher sales at the end of the month.
3. For 5th week data is collected only for weekdays so it is obvious to have lesser sum of sales for fifth week

### **3.4 Collection of Revenue on a Daily Basis**

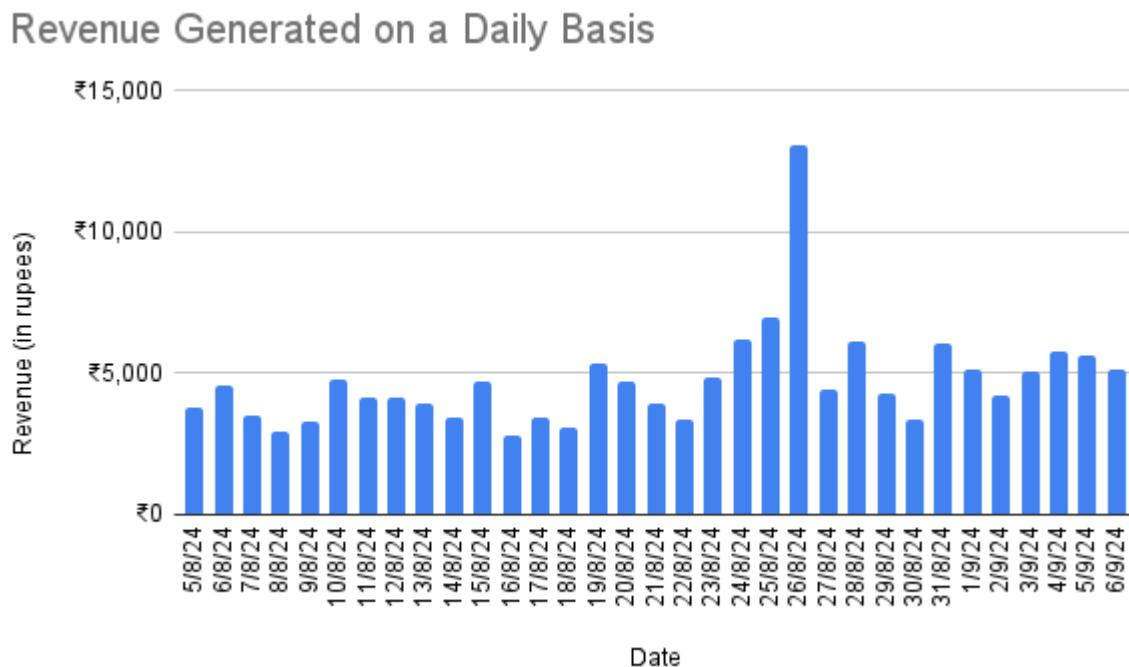


Fig 8

1. Average revenue generated on a daily basis is ₹4,733 and revenue generated for most of the days is less than 5000.
2. Constant growth of revenue can be seen in the month of September where revenue for most of the days is nearly 5000.
3. There is a significant fluctuation in revenue on 26-August because there was high volume sales of Ghee compared to other days. Ghee was sold more on 26-Aug because of the occasion of Janmastami.

### **3.5 Comparison between Sales and Revenue Pareto**

Sales Pareto Chart

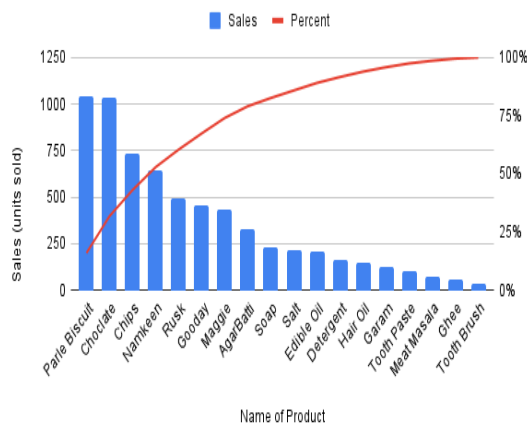


Fig 9

Revenue Pareto Chart

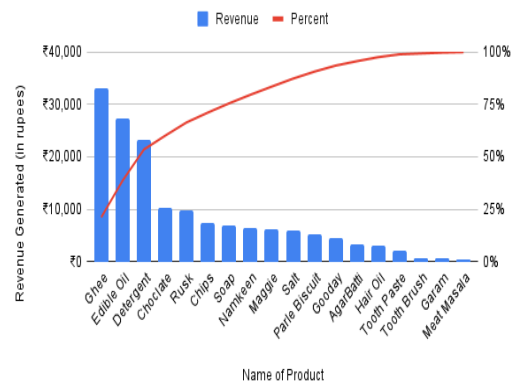


Fig 10

1. Although Parle Biscuit has a majority of contribution to sales but its contribution to revenue is very less this is due to less price of parle biscuits.
2. On the other hand Ghee tends to produce very less sales but it generates very high revenue due to its high price.
3. If we compare revenue generated by ghee and parle biscuits, it will take sales of 100 units of biscuits to match the revenue generated by 1 unit of Ghee.
4. On the other hand the products like Chocolate, Chips, Rusk and Soap tend to perform equally well on revenue as well as on sales.
5. Some products like Toothbrush, Meat Masala, Garam Masala and Toothpaste do not contribute more to revenue as well as sales.

### 3.6 Comparison between Cost Price and Selling Price

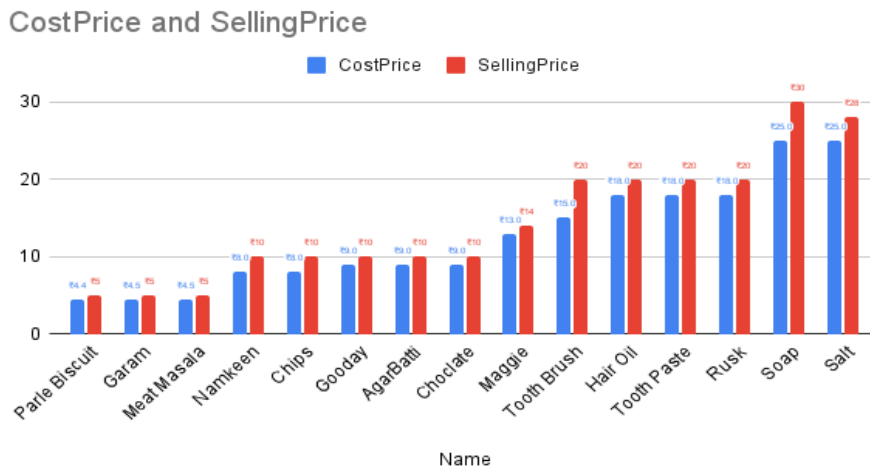


Fig 11

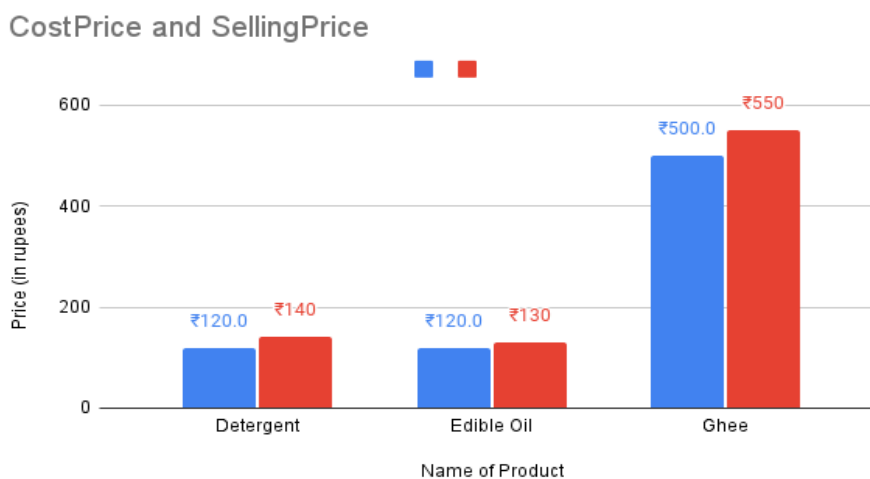


Fig 12

1. The products Ghee, Edible oil and Detergent are sold at a good margin of profit. Significant differences in cost price and selling price can be seen in these products.
2. Parle Biscuit, Meat Masala and Garam Masala produce very less profit. Profit on a single unit is even less than a rupee in these products.

### 3.7 Comparison between Revenue Percent and Profit Percent

## RevenuePercent and ProfitPercent

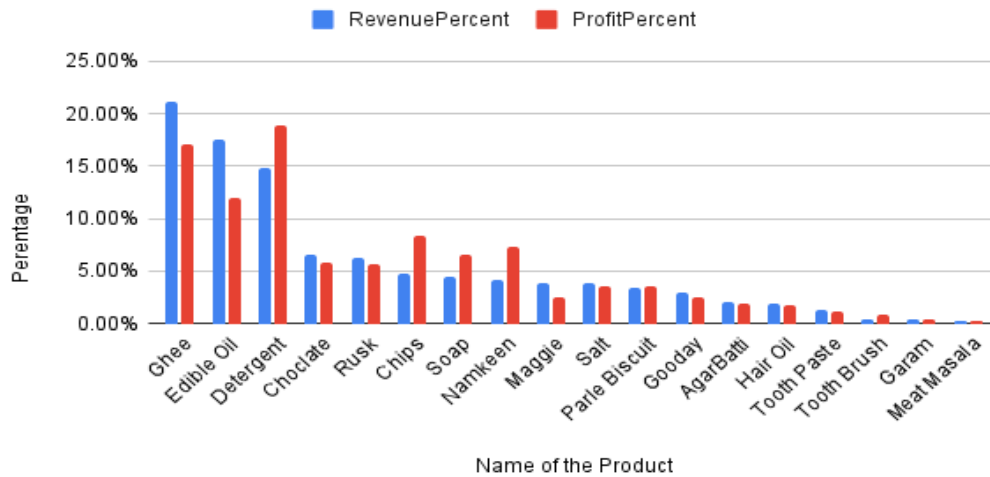


Fig 13

1. Ghee contributes almost equally well in revenue as well in profit percentage. It generates 20% of total revenue and nearly 16% of total profit.
2. Products like Detergent, Chips and Namkeen contribute more to profit percentage rather than revenue percentage. This slight trend can also be seen in toothbrushes. This is not significant in toothbrushes because its sales volume is very less.
3. There is no significant contribution of Garam Masala and Meat Masala in revenue as well as in sales.
4. Parle Biscuit, AgarBatti, Gooday, Salt and Hair oil have the same amount of contribution in revenue and profit. Which means if they contribute 2% of total revenue then they also contribute to 2% of total profit at the shop.

### 3.8 Margin on Each Product

Profit Percentage of Each Product

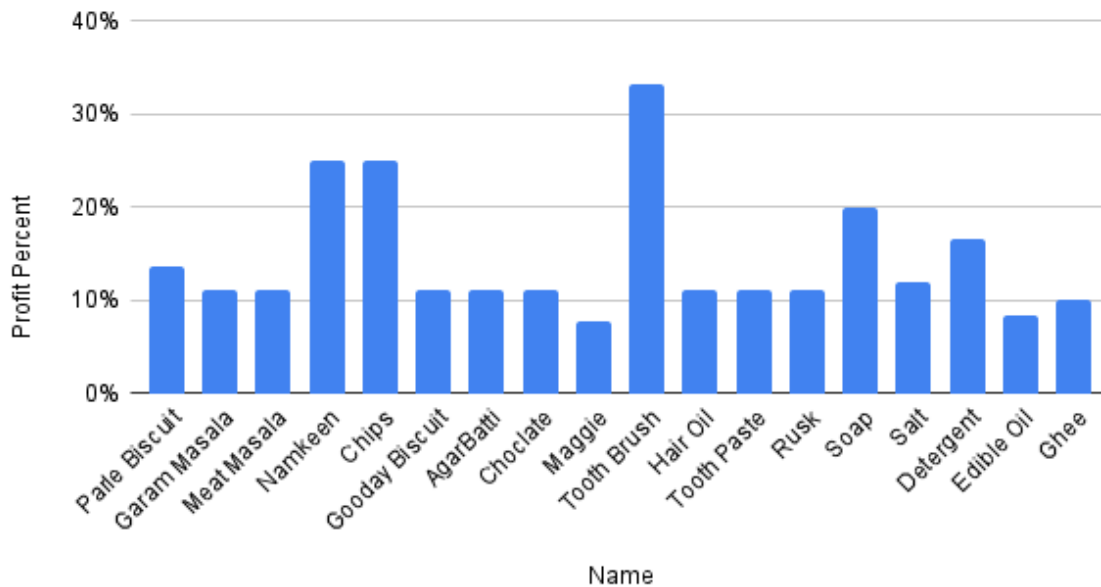


Fig 14

1. If we consider profit percent on a single unit of each product then it is observed that ToothBrush, Namkeen and Chips have higher margins.
2. Most of the products have nearly 10 % of margin.
3. Biscuits have nearly 12% margin but it does not tell the true picture as profit obtained when selling single biscuit is 0.6 while Ghee has 10% margin but its profit obtained when selling single product is 50. Similarly products like Garam Masala, Meat Masala might show a margin of 10% but their actual contribution is very less.
4. ToothBrush shows a significant margin and its contribution to profit is also quite significant when a single unit is sold but due to lesser sales, its contribution to revenue is not significant.

### 3.9 Profit Pareto Chart

Profit Pareto Chart

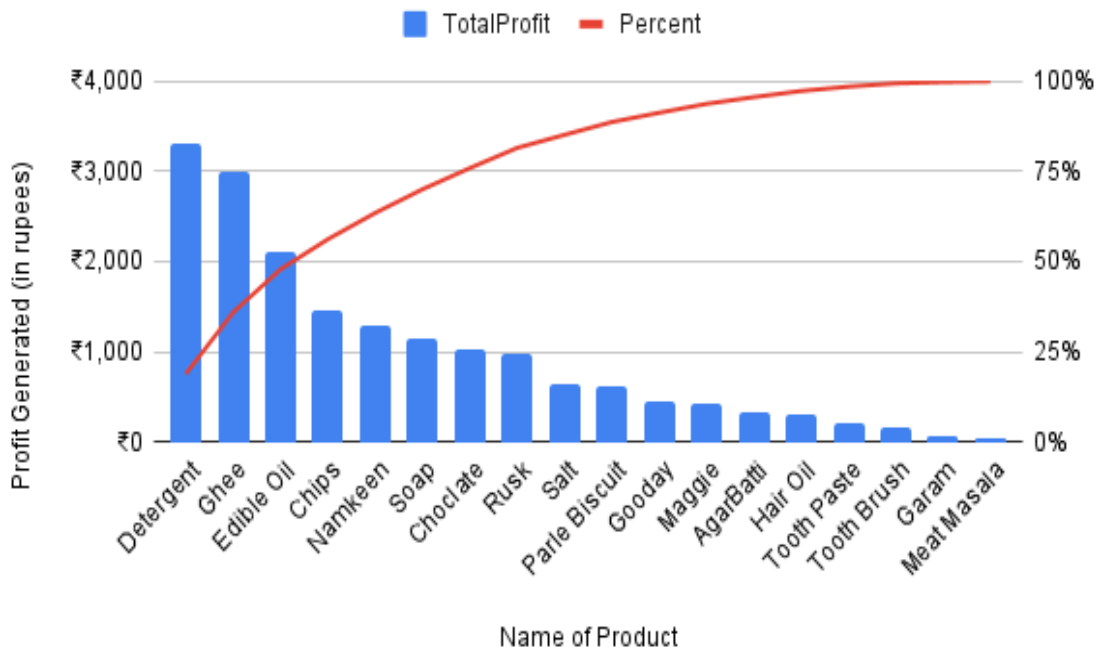


Fig 15

1. Profit is not following pareto principle. Nearly 50% of the items are generating 80% of the profit. 20% of items are producing 3.6% of profit.
2. Detergent, Ghee and Edible Oil are most profitable, whereas Meat Masala, Garam Masala, Tooth Brush, Tooth Paste, Hair Oil, AgarBatti, Maggie, Gooday Biscuit, Parle Biscuit, Salt generates least profit. Their individual contribution to profit is less than 1000 for the month.
3. Chips, Namkeen, Soap, Chocolate and Rusk have a contribution of rupees 1000-2000 to the profit for the month.

### 3.10 Purchase and Sales Trends

#### Purchase and Sales

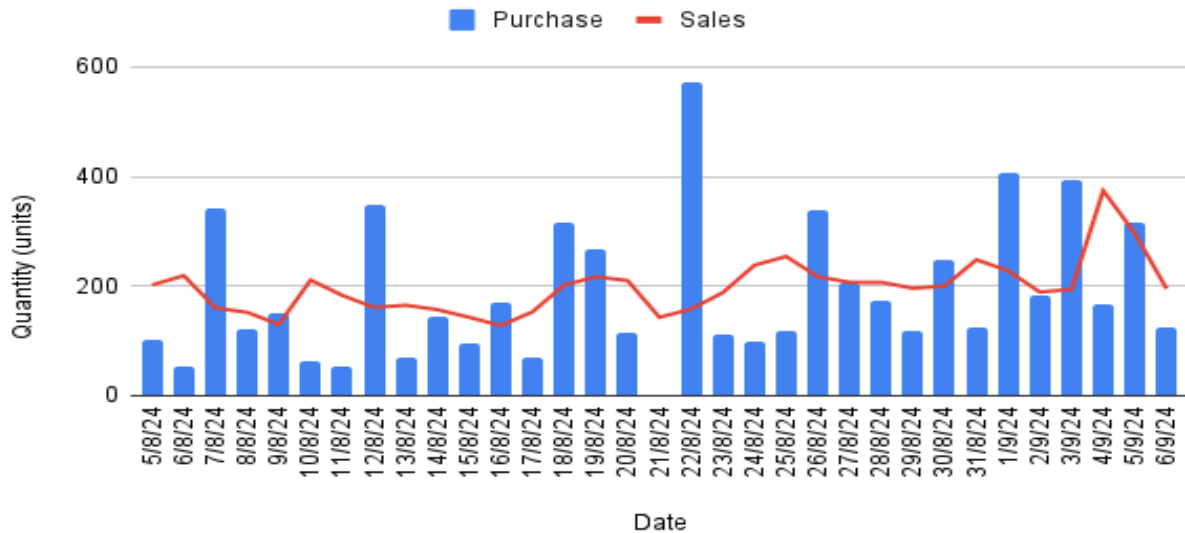


Fig 16

1. If we sales trend (line chart) then there is no significant fluctuation except for 4th September. But on observing purchase data (bar chart). We found that there was no purchase on the 21st of August, because there was no need to buy any single product because all 18 products were in stock.
2. But on the next day there was a spike in purchase of products because no products were purchased the day before. It's quite normal to purchase more products because most of the products might be merged to stock out.
3. On most days sales are usually greater than products purchased but on some days sales are less than purchase because the shopkeeper purchases Parle Biscuits in bulk. Due to which purchase volume goes higher than sales volume.

### 3.11 Average Days of Inventory

Average Days of Inventory of each Product

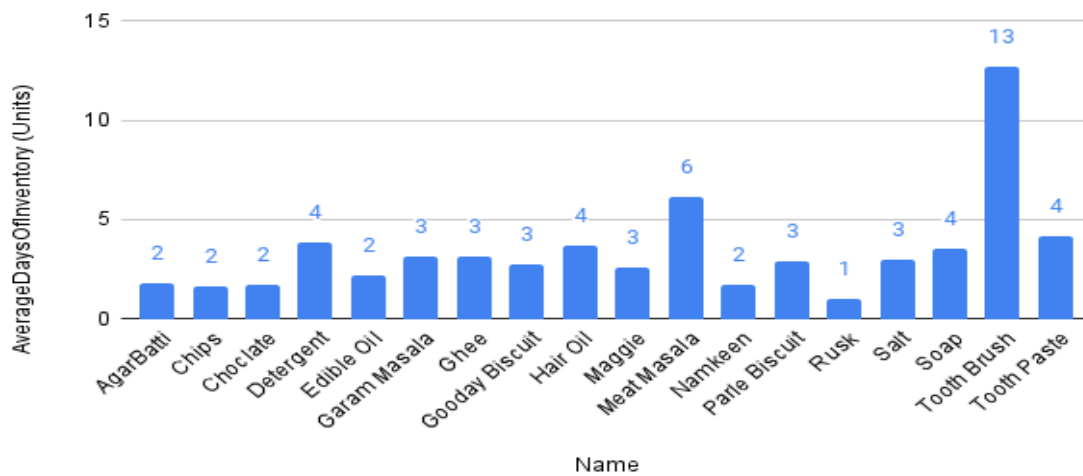


Fig 17

1. ToothBrush has the highest average days of inventory and Meat Masala has an average inventory of 6 days.
2. Other products have 2-4 average days of inventory while rusk has only a single day of inventory. So rusk will always be in danger of stockout.

### 3.12 Inventory Turnover Ratio

Inventory Ratio for Each Product

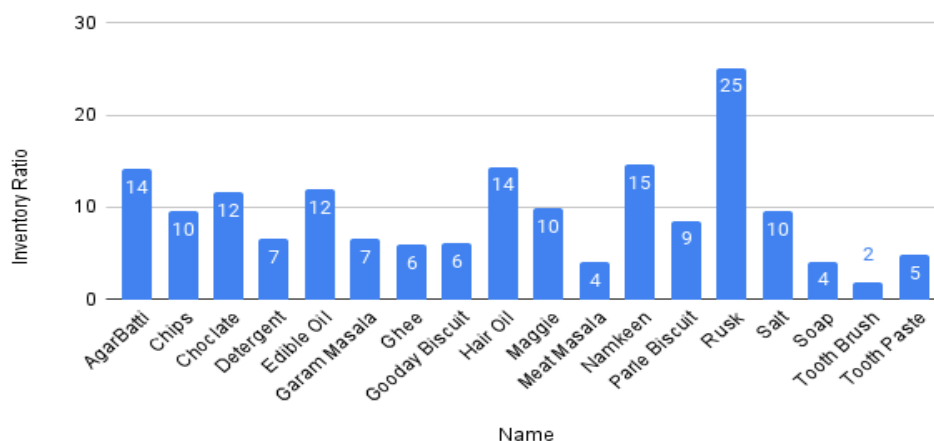


Fig 18

1. Rusk has the highest inventory ratio, this depicts that rusk was sold and its inventory was replaced 25 times. This shows higher demand for the product but it can also lead



to stock out if rusk supply is not efficient or there is a problem in rusk supply even for a single day.

2. Toothbrush has an inventory ratio of 2 showing that it can cause the problem of over stocking. In a month the tooth brush inventory was replaced only 2 times.
3. The products like AgarBatti, Chips, Chocolate have a good inventory turnover ratio indicating that these products are managed properly and their demand is quite stable in the market.

## **4 Interpretation of Results and Recommendations**

### **4.1 Interpretation of Results**

- Revenue generated by 18 products for given time period = ₹156,202
- Profit generated by given products for given time period = ₹17,591
- Ghee is the most revenue generating product due to its very high price compared to other products.
- Parle Biscuits and Chocolate are among the most selling products. But Parle Biscuit is among the least revenue as well as one of the least profit generating products.
- Toothbrush has a very good profit margin and also has potential to generate good revenue so efforts must be made to increase sales of Toothbrush as it is among the least products to be sold.
- Most of the products have good inventory ratio, but toothbrushes have very less inventory ratio depicting overstock problems.
- Chocolate, Chips, Soap and Rusk have higher sales and generate good revenue and their contribution to profit is also quite good. So they perform well on profit, revenue and sales.

### **4.2 Recommendations**

- Most of the products have a very good inventory ratio but I would recommend the shopkeeper to pay more attention to the supply of rusk and try to have multiple suppliers especially for rusk. If there is shortage of supply even for a single day then it can lead to stock out. Another way is to increase the amount of purchase for rusk.
- As stated in interpretation of results, Toothbrush has potential to generate more revenue along with higher profit margin. Thus maximising sales of toothbrushes can lead to maximising profit as well as revenue.
- Apart from toothbrushes, focus must be made on improving sales of products like Ghee, Detergent and Edible Oil as these products have higher prices so maximising sales of these products can lead to maximising revenue.
- The products like Detergent, Chips and Namkeen contribute more to profit percent of total profit earned compared to their contribution in revenue. So I would recommend increasing sales of these products so that profitability of the business can be improved.

**Data Link:**  **DataProcessed**

Thank You !