

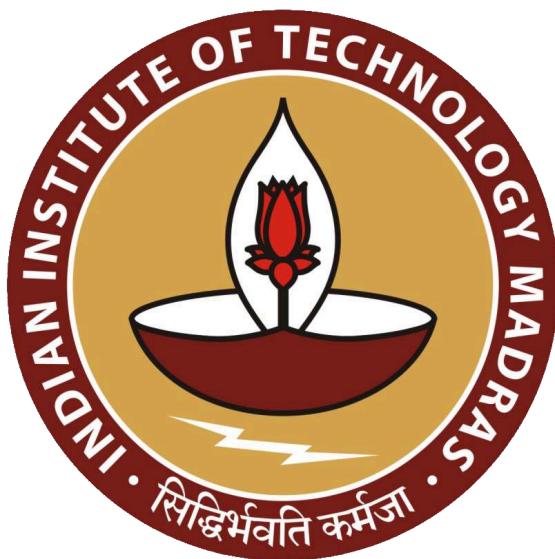


Enhancing Profitability and Customer Retention for an Electronics Shop Amidst Online Competition

A Proposal report for the BDM Capstone Project

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Declaration Statement

I am working on a Project Title “Enhancing Profitability and Customer Retention for an Electronics Shop Amidst Online Competition”. I extend my appreciation to Syal Enterprises for providing the necessary resources that enabled me to conduct my project.

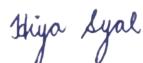
I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered through primary sources and carefully analyzed to assure its reliability.

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

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

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

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



Signature of Candidate: (Digital Signature)

Name: Hiya Syal

Date: November 3, 2024

Executive Summary

Syal Enterprises is a family owned electronics shop located in Phagwara, Punjab. It is a B2C Business. It was established in 1980 and since then the firm is a very trusted source for home appliances like washing machines, refrigerators, LED TVs, microwaves, air conditioners and more. After discussion with the firm owner, Mr Sunil Syal, I came to know that the recent shifts in consumer behavior and the rise of e-commerce giants such as Amazon and Flipkart have led to many challenges in the business. Customers these days are increasingly comparing online prices, and expecting similar or lower prices in-store. This heightened price sensitivity and competition from large online retailers have led to reduced profit margins, increased bargaining pressure, and a drop in overall sales volume, putting the store's sustainability at risk.

To address these challenges, I undertook a data-driven approach. I started gathering the data directly from store transaction records, including daily sales logs and financing data. I used Microsoft Excel to manually enter the data for 2 months [Sep '24 and Oct'24] to ensure complete data collection and preprocessing. I described the raw data collected from the firm in a detailed manner under the Metadata heading. I further explained the data using descriptive statistics which helped in breaking down the data and getting a clear picture.

There are different categories in the sheet for the data that has been collected to solve the problems faced by the firm. One of them is the Sales data which is crucial and tells us about the weekly sales of the products sold by the firm. Another one is Revenue data which tells us about the total sales amount and the leftover revenue after rent of the shop is deducted. With insights into product-specific demand and customer preferences, Syal Enterprises can adopt a clearer pricing strategy to reduce bargaining pressure and align pricing with customer expectations.

I have also done Pictorial representation of data for visualization and better understanding of the data collected.

By leveraging the analytical methods from the "Business Data Management" course, this project aims to equip Syal Enterprises with a roadmap to not only survive but thrive amidst growing online competition. The findings will help solidify the store's market position and boost profitability, ensuring continued growth in an evolving marketplace.

Proof of Originality

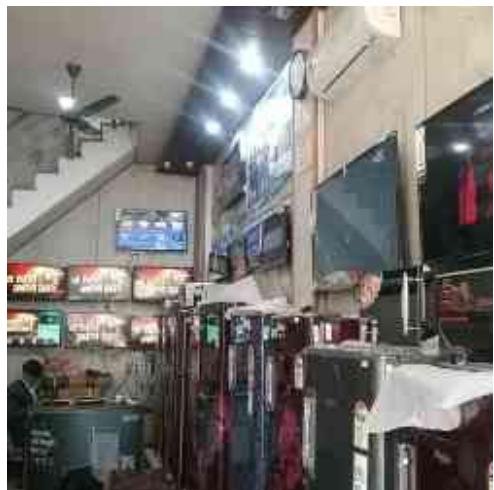


Figure 1
Pictures of firm



Figure 2



Figure 3
Owner of Firm: Mr Sunil Syal



Figure 4

Figure 5

Primary Data

Figure 7

Primary Data



Figure 8
Business Card

Video Link: [BDM Project Intro Video](#)

Meta Data

Firm Information:

Field	Details
Shop Name	Syal Enterprises
Address	Sarai Road,Sondhi Chowk,Phagwara, Punjab-144401
Contact	9463887115,01824-267438
Email	sunilsyal28@gmail.com
Operating Hours	Mon-Sat [9 am to 9 pm]
Description	Syal Enterprises is a family owned electronics shop located in Phagwara, Punjab. It is a B2C Business. It was established in 1980 and since then the firm is a very trusted source for home appliances like washing machines, refrigerators, LED TVs, microwaves, air conditioners and more.

Table 1

Product Categories and Items:

Product Categories (Electronics and Appliances)	Brand
LED	Videoworld, Akai,Samsung
Washing Machine	Samsung,Lloyd,Voltas,T-Series,Godrej, Whirlpool
Refrigerators	Samsung, Whirlpool,Voltas
Gas Stove	Kaiff, Pringle, Cliff
Microwave	Samsung,IFB
Air Conditioner (AC)	Godrej, Lloyd,Panasonic
Cooler	Khaitaan

Air Fryer	Pringle
Iron	Pringle, Voltas, Philips
Juicer	Pringle, Bajaj
Water Filter	Pureit, Kent

Table 2

Accepted Payment Methods:

1. Cash
2. UPI Payments
3. Bajaj Finance
4. Card Payments

In the workbook, there are 4 worksheets namely:

Sales Data ▾ Data (Brand-Wise with Pricing) ▾ Revenue Data ▾ Revenue Data (Weekly) ▾

Fig 9

- **Sales Data :** This sheet holds the data of all the items of the shop, weekly sales of each item.
- **Data (Brand-Wise with Pricing):** This sheet holds the data of Product and the associated Brand, its Model/Capacity/Features, Price (INR) and the quantity sold.
- **Revenue Data :** This sheet holds the revenue data across two months day wise.
- **Revenue Data (Weekly) :** This sheet holds the revenue data generated weekly.

1. Sales Data worksheet:

A	B	C	D	E	F	G	H	I
Name of the Item	Sale in Week-1 (Sep 1, '24 - Sep 7, '24)	Sale in Week-2 (Sep 8, '24 - Sep 14, '24)	Sale in Week-3 (Sep 15, '24 - Sep 21, '24)	Sale in Week-4 (Sep 22, '24 - Sep 30, '24)	Sale in Week-1 (Oct 1, '24 - Oct 7, '24)	Sale in Week-2 (Oct 8, '24 - Oct 14, '24)	Sale in Week-3 (Oct 15, '24 - Oct 21, '24)	Sale in Week-4 (Oct 22, '24 - Oct 31, '24)

Fig 9.1

The metadata of the above mentioned column headers are explained as follows:

- **Name of the Item :** This column contains the names of the items sold by the firm.
- **Sale in Week-1 (date) :** The column header has date according to the weeks. This column indicates the quantity of a particular item sold in one week. There are a total 8 columns for the quantity of products sold in weeks 1 to 8. Week-1 basically refers

to the week starting from Sep 1,2024.

2. Data (Brand-Wise with Pricing) worksheet:

A	B	C	D	E	F
Product	Brand	Model/Capacity/Features	Price (INR)	Quantity (Sep 24)	Quantity (Oct 24)

Fig 9.2

The metadata of the above mentioned column headers are explained as follows:

- **Product** : This column contains the names of the items sold by the firm.
- **Brand**: This column contains the names of the brands associated with the product type sold by the firm.
- **Models/ Capacity/Features**: This column contains the features/ capacity like for refrigerators they may be single door or double door, capacity may be 180 l or 235 l of the product type sold by the firm.
- **Price**: This column tells the price of products sold by the firm.
- **Quantity (Sep 24)** : This column tells the quantity of products sold by the firm in the month of September.
- **Quantity (Oct 24)**: This column tells the quantity of products sold by the firm in the month of October.

3. Revenue Data worksheet:

A	B	C	D	E
Date	Day	Total Sale Amount (INR)	Rent (Fixed 200)	Account Cash Balance

Fig 9.3

The metadata of the above mentioned column headers are explained as follows:

- **Date** : This column includes the date from the first week of September to the last week of October.
- **Total Sales Amount** : This column indicates the total amount of revenue generated by the sales of products in a day.
- **Rent** : This column tells the amount of rent to be paid for the shop.
- **Account Cash Balance** : This attribute refers to the amount that was collected after sales.

4. Revenue Data (Weekly) worksheet:

A	B	C	D
Week	Total Sale Amount (INR)	Rent (INR)	Account Cash Balance (INR)

Fig 9.4

The metadata of the above mentioned column headers are explained as follows:

- **Week** : This column refers to the week number.
- **Total Sales Amount** : This column indicates the total amount of revenue generated by the sales of products in a week.
- **Rent** : This column tells the amount of rent to be paid for the shop.
- **Account Cash Balance** : This attribute refers to the amount that was collected after sales.

* Link to the Project Data : [BDM Project Data](#)

Descriptive Statistics:

These statistics were calculated using Excel formulas such as MAX, MIN, and SUM. These formulas were applied to each item to generate a descriptive summary for the entire dataset. This analysis has overall helped in understanding the sales distribution for each item, identifying trends, and gaining insights into the business' revenue generation.

Insights from the below table:

- The item with the **highest total sales** is the "Samsung Washing Machine (10 kg)" with 25 units sold.
- The **least sold items** include "Akai LED TV (43 inch)," "Samsung LED TV (43 inch Premium)," and others, each with only 1 unit sold.
- Some items, like various **AC models** (e.g., Godrej, Panasonic, Lloyd 1.5 Ton), recorded zero revenue, indicating no sales during the observed period.
- The column '**Revenue Generated**' displays the total revenue from each item, calculated by multiplying the rate per item by the total sales. The **highest revenue-generating item** is "Samsung Washing Machine (10 kg)," which generated ₹ 4,12,500.00.

Further visual aids like bar charts and pie charts have been used to depict the data which can further enhance the overall understanding:

- Certain products, like **refrigerators and washing machines**, dominate the revenue share due to their high sales volume and rates.

- Items like **LED TVs** and **microwaves** have lower sales frequency, possibly indicating less demand.
- Some products saw more consistent sales, while others had irregular or zero sales, indicating potential areas for restocking strategies or marketing efforts.

Table 3

Name of the Item	TOTAL SALE	MAX SALE	MIN SALE	Revenue Generated (Rate*Total Sale)
Videoworld LED TV (43 inch)	13	2	0	₹ 156,000.00
Akai LED TV (43 inch)	1	1	0	₹ 13,000.00
Samsung LED TV (43 inch)	1	1	1	₹ 14,000.00
Samsung Washing Machine (10 kg)	25	7	2	₹ 412,500.00
Volta's Washing Machine (8 kg)	5	2	1	₹ 62,500.00
T-Series Washing Machine (8 kg)	7	2	2	₹ 91,000.00
Lloyd Washing Machine (10 kg)	2	1	1	₹ 32,000.00
Godrej Washing Machine (8 kg)	3	2	1	₹ 39,000.00
Whirlpool Washing Machine (10 kg)	4	2	2	₹ 66,000.00
Samsung Microwave (Standard)	3	1	1	₹ 28,500.00
IFB Microwave (Standard)	2	1	1	₹ 17,000.00
Pureit Filter (Standard)	1	1	1	₹ 13,000.00
Kent Filter (Standard)	1	1	0	₹ 14,000.00
Pringle Gas Stove (3 Burner)	8	2	1	₹ 56,000.00
Cliff Gas Stove (2 Burner)	5	1	1	₹ 25,000.00
Kaff Gas Stove (3 Burner)	2	1	1	₹ 14,000.00
Whirlpool Refrigerator (235 L)	15	4	1	₹ 367,500.00
Samsung Refrigerator (235 L)	4	1	1	₹ 76,000.00
Volta's Refrigerator (180 L)	2	1	1	₹ 26,000.00
Godrej AC (1.5 Ton)	0	1	1	₹ 0.00
Panasonic AC (1.5 Ton)	0	1	1	₹ 0.00
Lloyd AC (1.5 Ton)	0	1	1	₹ 0.00
Khaitaan Cooler (Standard)	0	1	1	₹ 0.00
Pringle Air Fryer (4.2 L)	1	1	1	₹ 4,200.00
Pringle Iron (Standard)	3	1	1	₹ 1,800.00
Volta's Iron (Standard)	1	1	0	₹ 600.00
Philips Iron (Premium)	1	1	1	₹ 1,550.00
Pringle Juicer (Standard)	1	1	1	₹ 3,000.00
Bajaj Juicer (Premium)	1	1	1	₹ 3,500.00

Detailed Explanation of Analysis Process/Method:

The analysis of the collected data for Syal Enterprises was conducted using time-series analysis, covering the months of September and October. The main objective of this analysis was to address the primary challenges faced by the firm due to increased competition from online platforms like Amazon and Flipkart. As the profit margins are under pressure and there is heightened customer price sensitivity, my focus was to examine the sales patterns, customer behaviors, and profitability drivers. I applied four key analytical techniques to structure my approach which are as follows:

1. **Descriptive Analysis:** This helped me to identify what has already happened over the two-month period. Basic descriptive analysis of the data had already been presented, which gives an overview of sales trends and customer demand.
2. **Diagnostic Analysis:** I worked on finding the underlying factors for reduced sales volume, which was particularly focused on the competitive impact of online platforms.
3. **Predictive Analysis:** I analyzed Sales data trends to anticipate future demand, which could help in inventory management and strategic planning.
4. **Prescriptive Analysis:** Based on the complete analysis, I will try to make actionable recommendations to improve profitability and address customer expectations.

Objective

The main objective of this project is to analyze and provide insights to help Syal Enterprises counteract the challenges posed by online competition, which has significantly affected profit margins. My data analysis has an aim to uncover patterns in weekly sales, brand-wise preferences, and customer behaviors, and at the same time to identify peak seasons and potential areas for profitability improvement. Other than collecting the raw data an effort to understand the customer preferences was done.

Analysis Process

The data collected provides us with weekly sales records across different product categories, including LED TVs, washing machines, microwaves, refrigerators, air fryers, and other household electronics. To visualize the trends and gain some valid insights, I have utilized bar charts, pie charts, and line charts to capture fluctuations in sales volume and customer preferences. Brand and model data is also analyzed in order to assess which products were most impacted by competitive pricing pressures. Also, the weekly revenue data, alongside fixed expenses such as rent, have been tracked to assess profitability over time.

A significant insight from the descriptive analysis as well as after I discussed the same with the owner was that the sales spiked in the month of October 24, which corresponds to Diwali, the

peak shopping season. This trend helped me understand the importance of seasonal factors in boosting sales, especially for high-demand items.

The diagnostic analysis has highlighted that the price comparisons with the online retailers has led to increased bargaining by customers, making it challenging for the store to maintain consistent profit margins. Based on these findings, the prescriptive analysis has suggested actionable steps, such as refining inventory based on high-demand products during festive seasons and implementing promotional strategies to retain and attract more customers amidst online competition.

Pre-Processing of the Data

Collecting the data for Syal Enterprises presented several challenges, as the prior records were not correctly available in a digital format or on paper. They had ambiguities which were to be removed after discussion with the owner of the firm. Therefore, the sales data was gathered manually based on discussions with the shop owner, who provided sales figures for each product category verbally as well as the ambiguous records. The primary information obtained included the name of each item, its rate, and the weekly quantity sold across two months: September and October. This information was then meticulously entered into an Excel spreadsheet to create a structured dataset for analysis.

To organize the data effectively, Excel's "Paste Transpose" function proved crucial to me. This allowed me to convert the data from a product-oriented format to a week-oriented format, helping to arrange sales quantities by week. Using this transposed data, it became easier to compute weekly sales totals for each product category.

Weekly Sales	
Week	TOTAL WEEKLY SALES
1	10
2	6
3	9
4	9
5	29
6	28
7	27
8	26

Table 4.1

For revenue data, which was initially recorded only on paper, a similar manual entry process was required to be conducted by me. Daily revenue figures, as well as associated costs like rent and account balances, were recorded in Excel for further processing. A relationship was established between the "Total Sale Amount" and key variables : "Rent," "Account," and "Cash Balance" in order to calculate cash flows and better understand cash-based transactions from customers. The formula in the 'Table 4.2' was used to calculate the Cash Balance from the rest of the two variables.

Date	Day	Total Sale Amount (INR)	Rent (Fixed 200)	Cash
01-Sep-24	Sunday	102,500	200	=C2-D2 102,300
02-Sep-24	Monday	135,000	200	134,800

Fig 10.1

Also, the daily revenue data was processed into weekly summaries using Excel functions and pivot tables. By transforming daily entries into weekly totals, I obtained a clearer view of revenue and expense trends over time. This approach also helped to identify peak sales during the festive Diwali week in October, as observed in the sales data.

Using the formula shown in 'Table 4.3', the week of the particular date was identified

01-Sep-24	Sunday	102,500	200	102,300	=YEAR(A2)&" - "&TEXT(WEEKNUM(A2,2), "00")
02-Sep-24	Monday	135,000	200	134,800	+ Add new function Ctrl + Alt + N
03-Sep-24	Tuesday	60,000	200	59,800	2024-36

Fig 10.2

Therefore, this preprocessing stage was essential in structuring raw, manual data into a format suitable for further analysis. With these weekly summaries now in hand, I can proceed to the descriptive, diagnostic, predictive, and prescriptive analyses and provide insights and recommendations for Syal Enterprises.

Descriptive Analysis:

I leveraged Excel's capabilities, created summary statistics and visualizations to interpret and present the data effectively.

To begin, summary statistics, including maximum, minimum, and total sales. I used pivot tables to structure the data. To better understand each product's contribution to overall sales, I used pie

charts which were focused on the top-selling products. This visualization illustrated the best-performing items and highlighted products with lower sales that may need strategic adjustments.

I used Line charts to analyze the trend of sales across weeks and days of the week, revealing seasonal peaks and dips. The impact of the Diwali season in October was particularly notable, with a significant rise in sales during the festive period as customers made purchases for the holiday.

I used Column charts which further illustrated changes in sales over time, and emphasized how certain weeks showed higher customer engagement, likely due to the festive buying behavior.

Results and Findings:

The insights drawn from the analysis of the data are the following:

Revenue Contribution by Product

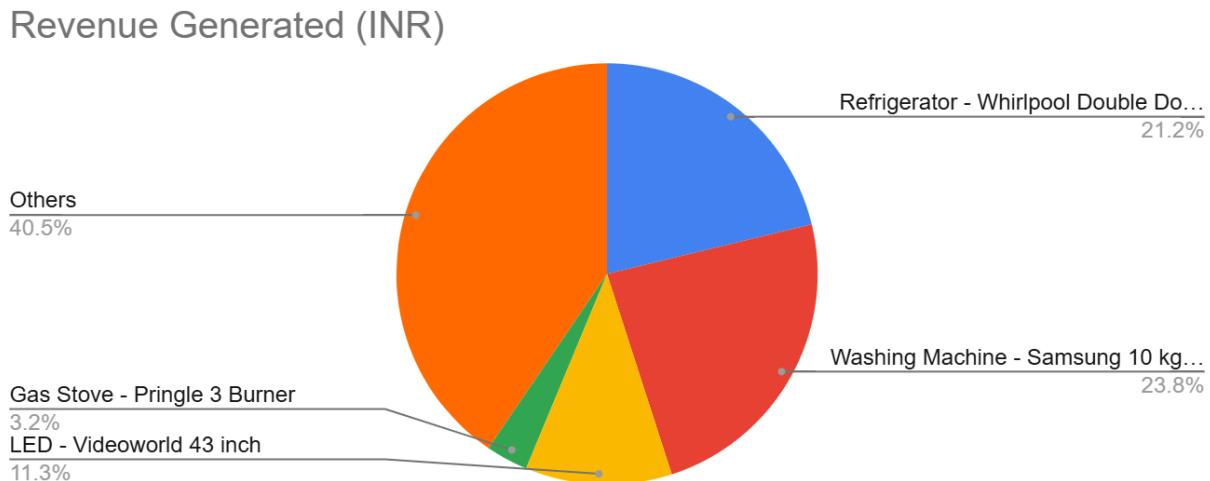


Chart 1

I used a **Pie Chart** to represent the share of revenue generated by the top four products compared to others and it became clear that products like **Refrigerators** and **Washing Machines** accounted for a significant share of the store's revenue. This insight helped me suggest that prioritizing in-store promotions or bundling offers on these high-revenue items could help Syal Enterprises maintain a competitive edge against online discounts on big-ticket items. The emphasis on these products may partially offset the margin losses experienced in other categories and attract customers who might otherwise turn to online retailers for similar items.

Best-Selling Products by Volume

Best Products wrt Sale

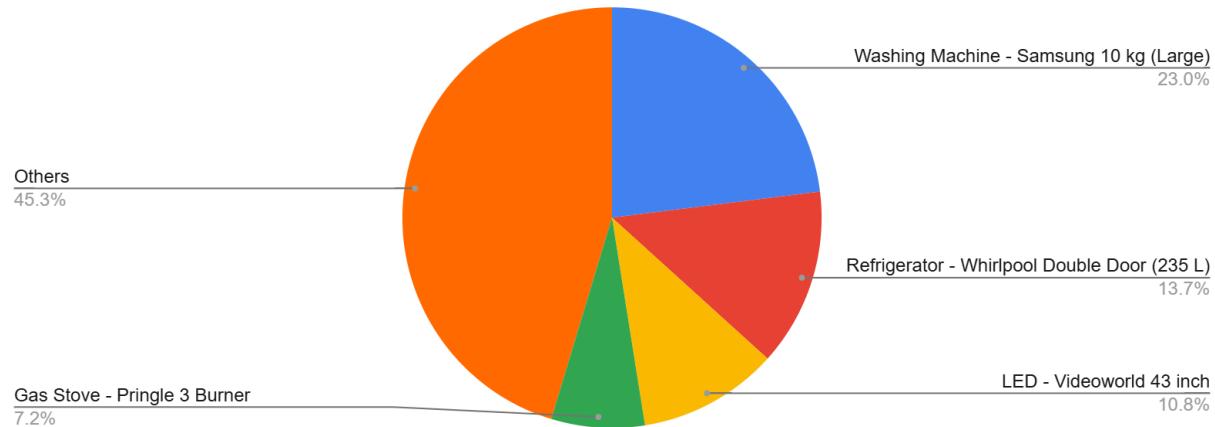


Chart 2

I created a **Pie Chart** to display the top four products with the highest sales volume. This analysis revealed that **Washing Machines [Samsung]** and **Refrigerators [Whirlpool]** were the most frequently sold items. Promoting these best-sellers could also help Syal Enterprises combat bargaining pressure by demonstrating the store's commitment to offering value.

Sales Trends by Day of the Week

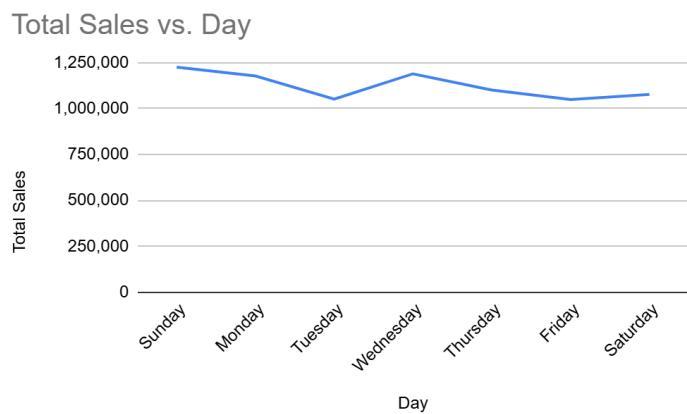


Chart 3

I created a **Line Chart** to track the daily sales patterns that showed that Sundays and Wednesdays Consistently saw the highest sales. Offering limited-time discounts during these 2 days can leverage the natural peak in customer visits, which could potentially improve sales volume and counter online competition that operates around-the-clock.

Weekly Sales Amount

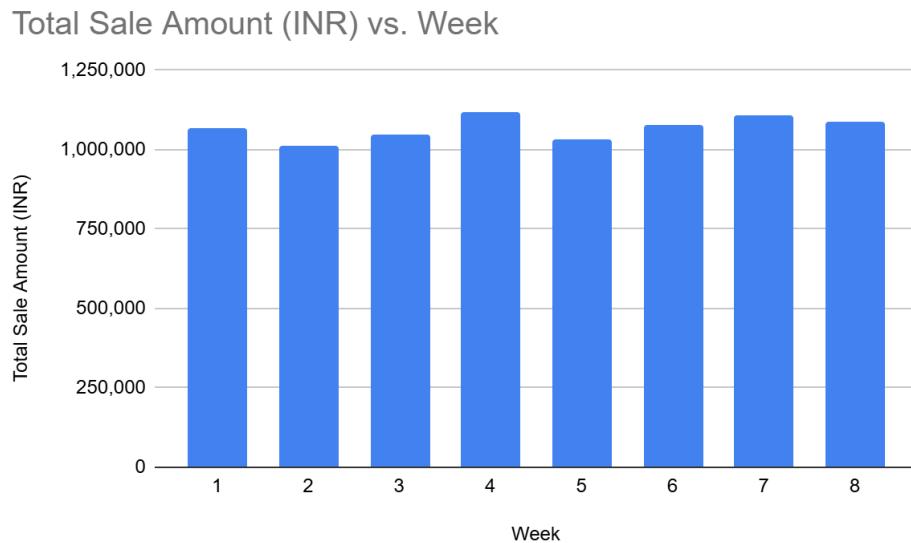


Chart 4

I analysed the total weekly sales amounts through a **Column Chart** which highlighted fluctuations in sales volume. While certain weeks showed higher revenues, others experienced significant dips. This trend suggests that Syal Enterprises might benefit from a promotional calendar that is more strategically aligned with high and low sales periods. Syal Enterprises can counteract low-performance weeks and maintain a more stable revenue stream, despite online competition by following the strategy.

Product Contribution by Brand

Min -Max Scale

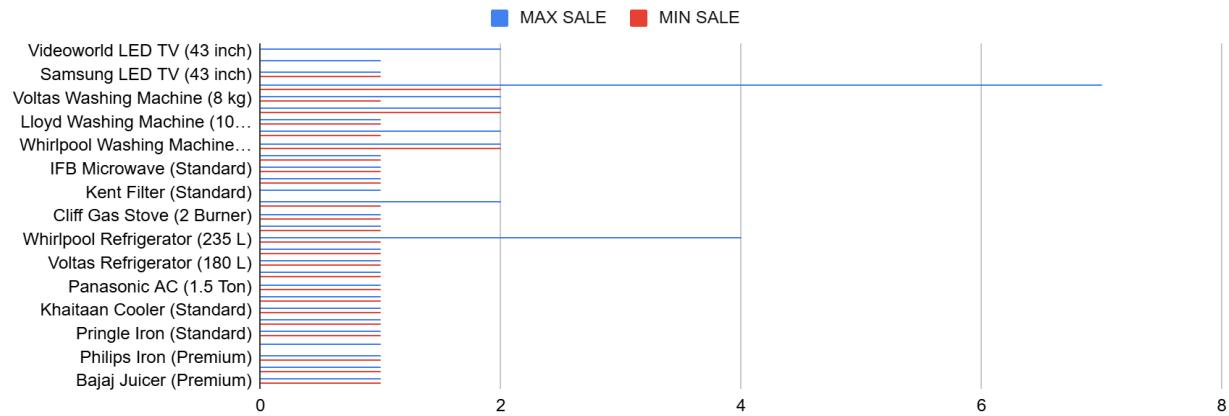


Chart 5

I used a **Min-Max Scale Chart** to assess each brand's contribution across various product categories. This helped me to identify which brands are performing well and where there may be room for adjustment. For instance, by prioritizing brands with high profit margins and reducing stock of low-demand items, Syal Enterprises can minimize unnecessary inventory costs and focus on more profitable options.

Therefore, by focusing on high-revenue items and strategically timing promotions, the firm can better align its pricing structure with customer demand while countering competitive pressures from online platforms.

Summary and Next Steps:

Through ongoing analysis and a close partnership with the owner, the project is progressing well. I have shared the initial findings. The analysis is still underway, with a strong focus on uncovering insights that can help drive improvements and growth for Syal Enterprises.