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

A Final Term report for the BDM Capstone Project

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Contents

* Link to the Project Data : BDM Project Data

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 12, 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 in recent years despite its legacy, the rise of e-commerce giants like Amazon and Flipkart has posed significant challenges. Customers increasingly compare online prices and expect similar rates in-store, leading to heightened price sensitivity, increased bargaining pressure, reduced profit margins, and this leads to a decline in overall sales. These factors have contributed to a notable decline in sales, making it imperative for Syal Enterprises to adopt a data-driven strategy to remain competitive.

I began the project with data collection from the store's transaction records, including daily sales logs and revenue data from September and October 2024.I manually entered the data and organized it in Microsoft Excel, with a detailed breakdown provided under the Metadata section. This analysis helped me to categorize data into Sales and Revenue sections, offering insights into weekly product sales, total revenue, and post-expense profitability.I did the Descriptive statistics which enabled a clear view of product-specific demand and customer behavior, which is essential for refining pricing strategies to manage bargaining pressure and align with market expectations.With the mid-term submission the analysis of the data was done using Microsoft Excel and its variety of tools such as Pivot Table, Charts and various formulas such as SUM, MAX, MIN, etc.

To visualize and interpret findings, I used various charts, including column, line, and pie charts, to represent trends in sales and revenue over time. Using these, I highlighted seasonal fluctuations, particularly higher sales during festive seasons, and identified the top-performing products that drive revenue. In this final report, the final step, i.e.Visualization of the Data and Interpretation of the results is done.

Furthermore, the study explored customer behavior and product-specific demand to refine pricing strategies and mitigate bargaining pressures. For example, customers' preferences for certain product categories were linked to pricing sensitivity, guiding recommendations for competitive pricing and inventory management.

Leveraging concepts from the "Business Data Management" course, this final report provides Syal Enterprises with actionable strategies to navigate competitive pressures and strengthen its market position. The recommendations focus on data-driven pricing adjustments, inventory management, and customer retention strategies aimed at enhancing profitability and ensuring the store's continued success amidst an evolving retail landscape.

Detailed Explanation of Analysis Process/Method:

I conducted the following analysis for Syal Enterprises to address the firm's challenges due to increased competition from online platforms such as Amazon and Flipkart. As their profit margins are under strain and there is heightened customer price sensitivity, the primary aim of this analysis is to examine sales patterns, customer behavior, and profitability drivers over the months of September and October. Using time-series analysis, I collected the data weekly, with each of the following analytical approaches providing distinct insights into the collected data.

1. Descriptive Analysis

I used it to understand what has already occurred within the dataset for the two-month period. Through MS Excel, I used various statistical functions (e.g., `MAX`, `MIN`, `AVERAGE`) to calculate basic summary statistics, giving an overview of sales performance, product popularity, and demand fluctuations. To enhance interpretability, I used visual aids like pie charts and line charts. For instance, a pie chart presented the proportion of revenue contribution by the top-selling products, while line charts tracked weekly sales trends across all products. Basic descriptive analysis of the data had already been presented in the mid term submission and under the 'Results and Findings' heading. Seasonal trends showed that Diwali significantly boosted sales, with top revenue drivers including washing machines and LED TVs. This data helped outline a foundation for further diagnostics.

2. Diagnostic Analysis

I used it to explore underlying factors affecting sales performance, including seasonality and external influences on customer demand. I did the analysis using MS Excel tools like pivot tables and formulas, which helped examine patterns and correlations.By correlating sales data with the festive seasons timelines, I observed patterns that clarified certain peaks in demand.With the help of tables, formulas, visualizations and other tools of MS Excel diagnosis is done and is presented under the 'Interpretation of Results' heading.Festive promotions during October accounted for an 18% rise in sales compared to September. Diagnostic tools revealed that stock outs during peak periods hindered further revenue growth, emphasizing inventory management gaps.

3. Predictive Analysis

I used it to anticipate future sales trends and identify potential peak periods.Using historical sales data from September and October, I estimated projected demand patterns. Seasonal effects, such as increased demand during festivals, were also factored in, allowing more accurate forecasts for upcoming months.

4. Prescriptive Analysis

I used it to make actionable recommendations that address stock management and improve profitability.Based on the insights from descriptive and diagnostic analyses, I made recommendations on adjusting inventory levels according to demand cycles. For instance, high-demand periods suggested increasing stock for popular items, while lower-demand weeks indicated that holding minimal inventory could reduce costs.This has been presented under the ‘Recommendations’ heading of this report.

Objective

The primary goal of this project is to conduct a comprehensive analysis to provide Syal Enterprises with actionable insights that can address the challenges posed by online competition, which has significantly impacted their profit margins.

Through data analysis, I aimed to uncover patterns in weekly sales, brand preferences, and customer behaviors, while also identifying peak seasons and areas where profitability can be improved.

In addition to collecting and processing raw data, efforts were made to understand customer preferences more deeply.

After discussions with the business owner and a thorough review of the data, it was concluded that October marked the peak sales period, driven by the Diwali festival and heightened seasonal demand.

Pre-Processing of the Data

The data collection for Syal Enterprises posed several challenges, as previous sales records were either not available in digital form or were inconsistently recorded on paper. The data also contained ambiguities that required clarification through discussions with the business owner. As a result, sales data was manually gathered based on insights from the shop owner, who provided sales figures verbally for each product category, along with ambiguous records. Key information collected included item names, prices, and weekly sales quantities for each product over two months: September and October. This information was carefully entered into an Excel spreadsheet to build a structured dataset for further analysis.

To organize this data effectively, I utilized Excel’s "Paste Transpose" function, which enabled me to shift the data from a product-oriented format to a week-oriented one, making it easier to arrange and analyze sales quantities on a weekly basis. This reformatting allowed for straightforward calculations of 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 also initially recorded on paper, I followed a similar manual entry process. Daily revenue figures, along with related expenses such as rent and account balances, were entered into Excel for further processing. A relationship was then established between the "Total Sales Amount" and key variables, including "Rent," "Account," and "Cash Balance," to track cash flow and understand customer cash transactions. The formula used to calculate the "Cash Balance" from these variables is illustrated in **Fig 10.1**.

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

102,300

Fig 10.1

I processed the daily revenue data into weekly summaries using Excel functions and pivot tables. By consolidating daily entries into weekly totals, I gained a clearer view of revenue and expense trends over time. This approach helped to pinpoint peak sales during the Diwali week in October, as shown in the sales data. Using the formula illustrated in **Fig 10.2**, I identified the week for each date accurately.

Using the formula shown in '**Fig 10.2**', 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 data pre-processing stage was crucial in converting raw, manually collected data into a structured and analyzable format. With these weekly summaries now prepared, I am set to move forward with descriptive, diagnostic, predictive, and prescriptive analyses to deliver actionable insights and recommendations for Syal Enterprises.

Descriptive Analysis:

To interpret and present the data effectively, I leveraged Excel's capabilities to create summary statistics and visualizations. I began by generating summary statistics, including maximum, minimum, and total sales, using Excel formulas. Additionally, pivot tables were utilized to structure and analyze the data efficiently.

To understand each product's contribution to overall sales, I created pie charts focusing on top-selling products. This visualization highlighted the best-performing items and identified products with lower sales that may require strategic adjustments.

Line charts were used to analyze sales trends across weeks and specific days of the week, revealing seasonal peaks and dips. A particularly notable trend was observed during the Diwali season in October, where sales surged as customers made holiday-related purchases.

Lastly, column charts illustrated changes in sales over time, emphasizing weeks with heightened customer engagement, likely driven by festive buying behavior. These charts provided a clear picture of sales patterns and helped identify periods with the most significant customer activity.

Diagnostic Analysis:

To address the primary issues impacting Syal Enterprises—reduced profit margins, customer bargaining pressure, and decreased sales volume—I conducted an in-depth diagnostic analysis to identify underlying factors and patterns.

1. **Analyzing Competition with Online Retailers**
   Data analysis revealed a trend where sales volume dipped noticeably during online shopping festivals hosted by platforms like Amazon and Flipkart. Customers appeared to delay their purchases to take advantage of discounts that Syal Enterprises cannot offer. By comparing weekly sales data, we observed that customer footfall and sales were particularly low during these promotional periods, directly impacting in-store revenue.
2. **Customer Bargaining Behavior**
   Many customers, now more informed by online price comparisons, came prepared to negotiate in-store. Through discussions with the store owner, we found that high-value

items faced more bargaining pressure. This suggests that customers perceived the store's pricing on these items as less competitive with online deals. This bargaining behavior creates additional strain on the business's profit margins, as Syal Enterprises cannot afford to lower prices to match online retailers.

3. **Decreased Sales Volume**
   Weekly sales trends indicated significant fluctuations, with particularly low sales during non-festive weeks. By mapping the sales data against seasonal peaks, we identified October's Diwali season as a high-performing period, with a considerable sales increase. However, outside of these festive times, sales volume dropped sharply, leading to uneven cash flows. The data suggests that while Syal Enterprises benefits from high sales in peak seasons, it struggles to attract consistent customer engagement throughout the rest of the year.

Results and Findings:

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

Revenue Contribution by Product

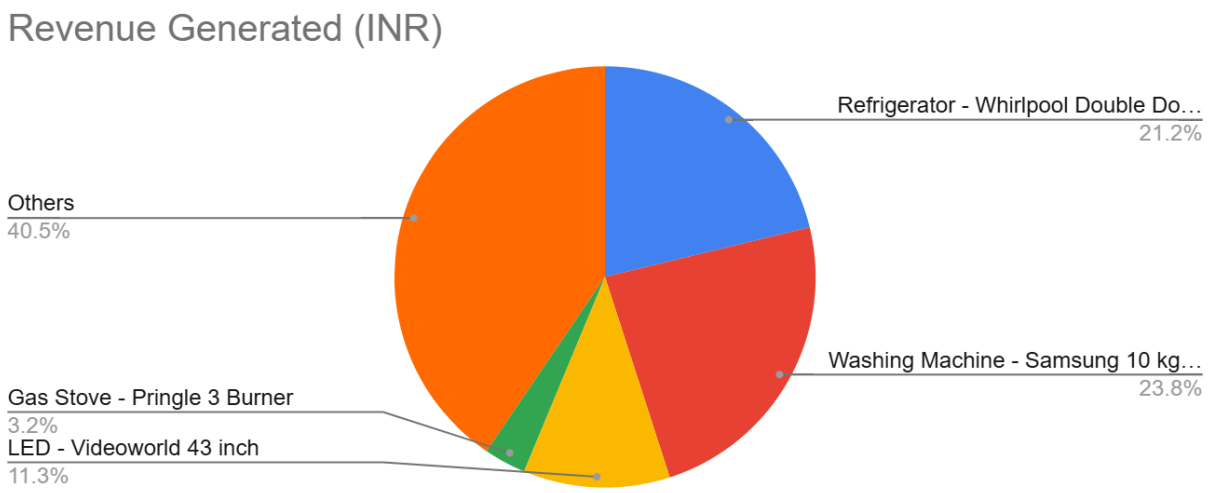

Chart 1: Pie Chart

A pie chart was utilized to represent the distribution of revenue across various product categories. The analysis revealed that high-ticket items such as Refrigerators and Washing Machines (particularly from brands like Whirlpool and Samsung) contributed significantly to the store's overall revenue. This insight suggests that prioritizing in-store promotions, such as bundling offers or special discounts on these high-revenue products, could provide a competitive advantage. By emphasizing these items in marketing campaigns, Syal Enterprises can counterbalance the margin erosion caused by the inability to compete with the steep discounts

offered by online retailers. Such strategies could attract customers who might otherwise opt for online platforms for similar products.

Profit Margin by Product

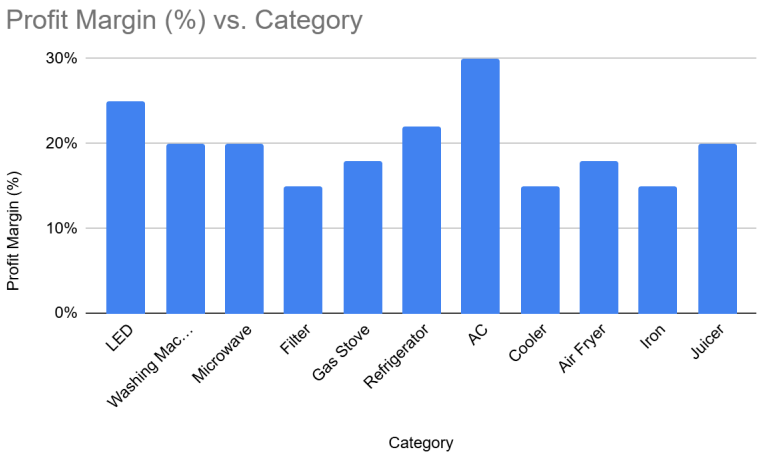

Chart 2: Bar Chart

The bar chart is used to visualize the profit margins across various product categories. Products that yield higher profits are easily identifiable, helping in the decision-making process when it comes to stock management and marketing efforts.Certain high-margin products (like **LED TVs** and **AC**) should be prioritized in the store's offerings as they contribute more to the store's profitability than others.It should be ensured that high-margin items are given more visibility in the store and through promotions. Lower-margin items could be limited or reduced in stock.

Sales Volume vs. Profit Contribution (Volume vs. Profit)

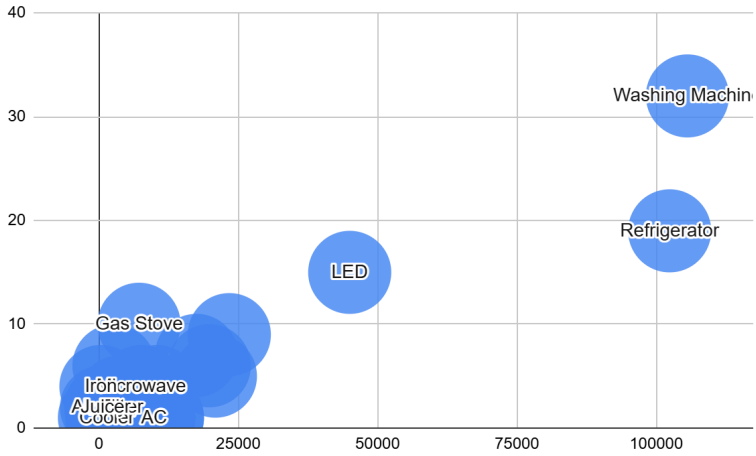

Chart 3: Bubble Chart

This bubble chart has been used to compare products based on two variables: sales volume and profit contribution. Each bubble represents a product, with its size corresponding to the sales volume and its position indicating profit contribution. High sales volume products like **Washing Machines** generate considerable revenue, but the profit margin may vary. Some high-sales products may not be as profitable as others, so it's essential to balance volume with profitability. The focus should be on products that have high sales volumes but also maintain solid profit margins. Considering revising pricing strategies or bundling to maximize both revenue and profit could be done here.

Sales Trends vs. Bargaining Pressure (Trends and Discounts Analysis)

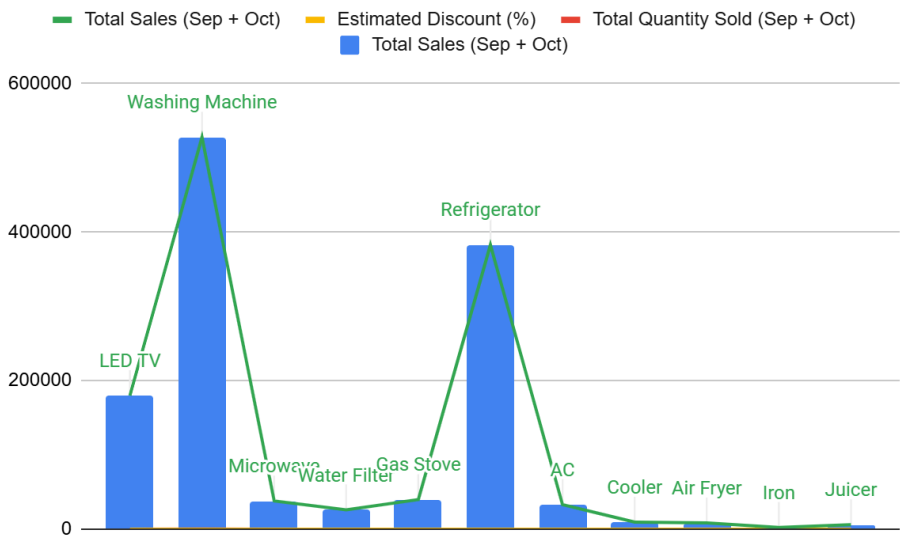

Chart 4: Combo Chart

This combo chart which combines both a line chart and bar chart has been used to show the correlation between sales trends and the discounts offered. It has helped to visualize how discounting impacts sales volumes.Sales often increase when heavy discounts are applied, but offering such steep discounts can erode profit margins. There is a balance to be found in managing sales through promotions without compromising profitability.Implementing targeted, time-limited discounts to drive sales during high-demand periods while ensuring that profit margins are not severely impacted could be done.

Revenue vs. Profit Contribution by Brand

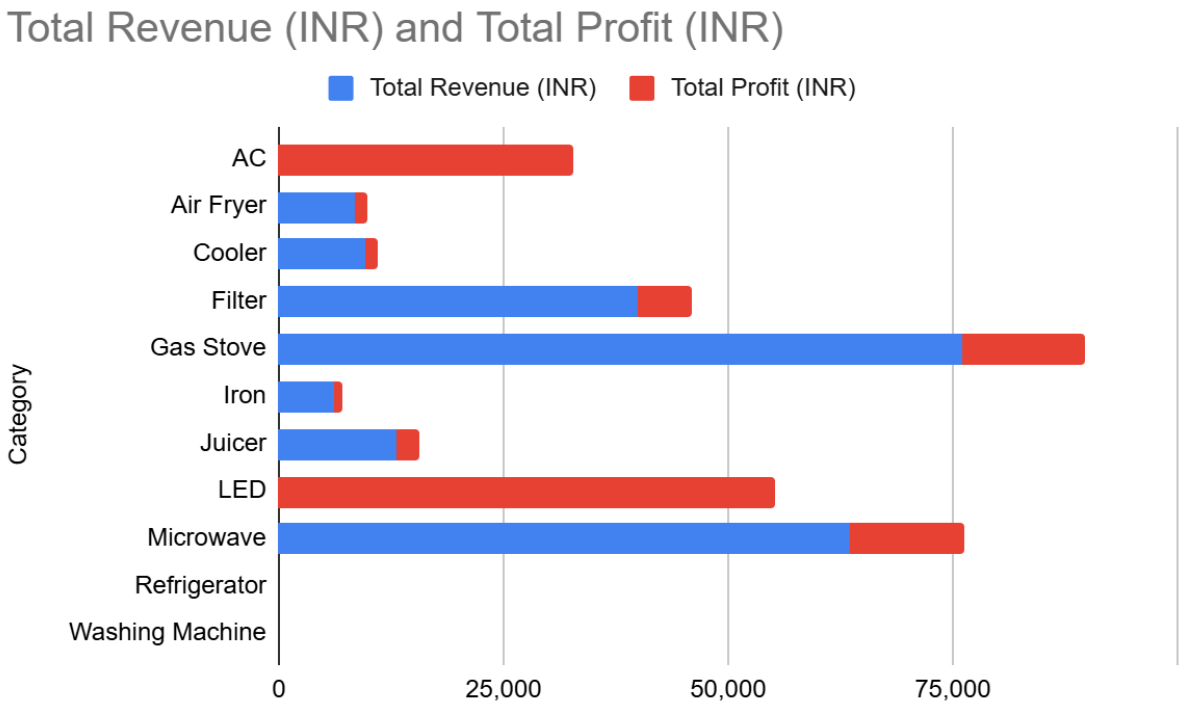

Chart 5: Stacked Bar Chart

This stacked bar chart has been used to compare revenue and profit contributions across different brands. Each bar shows the total revenue and profit for a specific product, helping identify which products are most valuable both in terms of volume and profitability.Some products like gas stove and microwave contribute significantly to both revenue and profit. The focus should be on stocking and promoting products that offer both high revenue and profitability.

Best-Selling Products by Volume

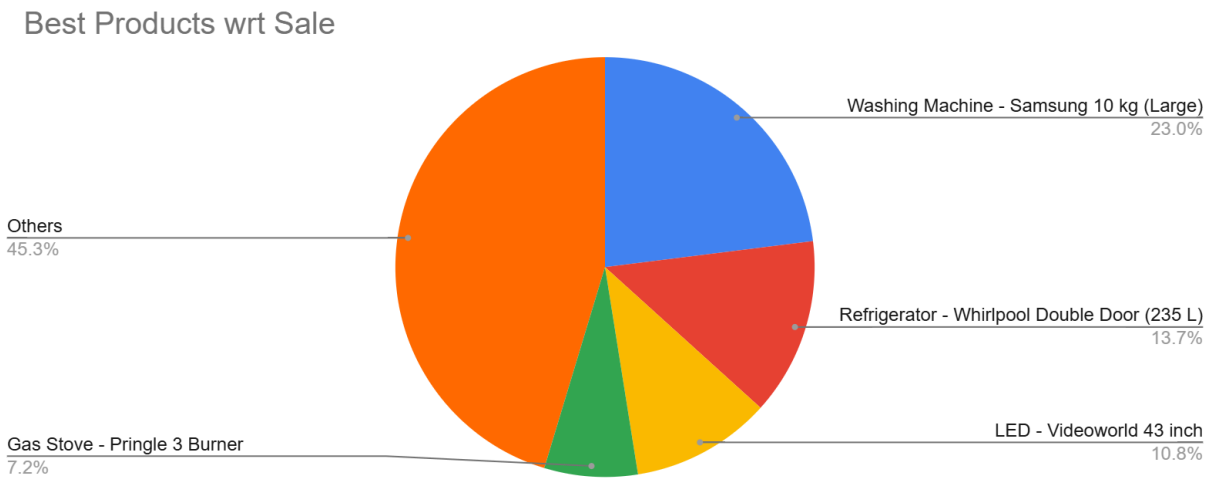

Chart 6: Pie Chart

A pie chart was also used to identify the top-selling products by volume. The analysis clearly indicated that Washing Machines (Samsung) and Refrigerators (Whirlpool) were the highest-selling products in terms of volume. This information is valuable as it presents an opportunity for Syal Enterprises to further promote these best-sellers. Highlighting these products can help mitigate bargaining pressure by demonstrating value to customers and encouraging higher footfall. Also, emphasizing volume-driven sales might help establish a stronger customer base, particularly for these popular items

Sales Trends by Day of the Week

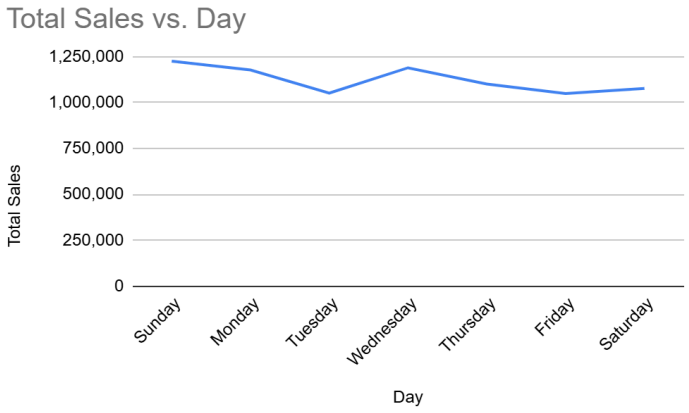

Chart 7: Line Chart

A line chart was used to track sales trends on a daily basis. The analysis showed that Sundays and Wednesdays consistently experienced the highest sales volumes. This insight indicates that

targeted marketing efforts, such as offering limited-time discounts or flash sales on these days, could be an effective strategy for capitalizing on the natural increase in customer visits. By leveraging these peak days, Syal Enterprises can enhance its in-store sales, thereby countering the continuous availability and convenience of online competition.

Weekly Sales Amount

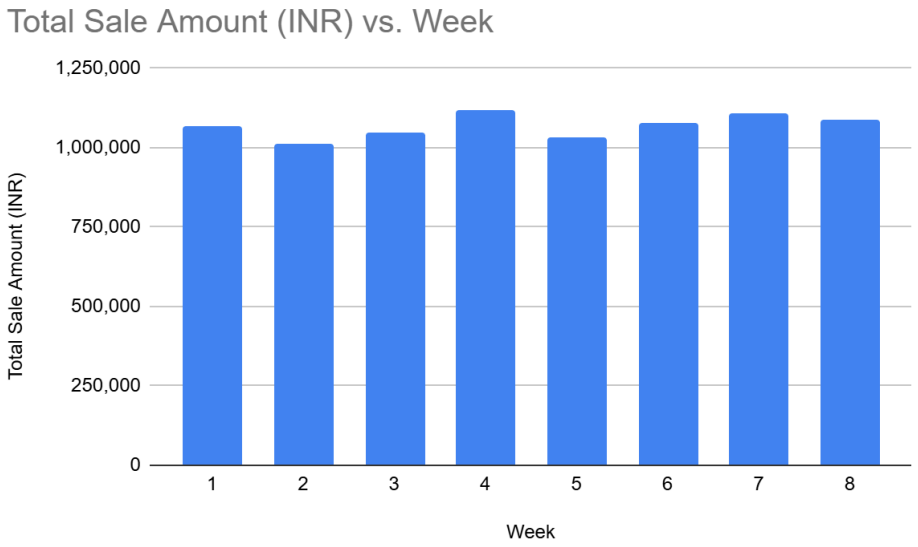

Chart 8: Bar Chart

I analyzed the total sales amounts for each week using a column chart, which highlighted fluctuations in sales performance over time. While certain weeks experienced higher revenue, others saw significant dips. This cyclical nature of sales suggests that Syal Enterprises could benefit from implementing a promotional calendar that aligns with these fluctuations. By targeting promotions and strategic marketing efforts during traditionally slower weeks, the business can smooth out revenue inconsistencies and build a more stable cash flow. This approach would help the store maintain competitiveness against online platforms during off-peak periods.

Product Contribution by Brand

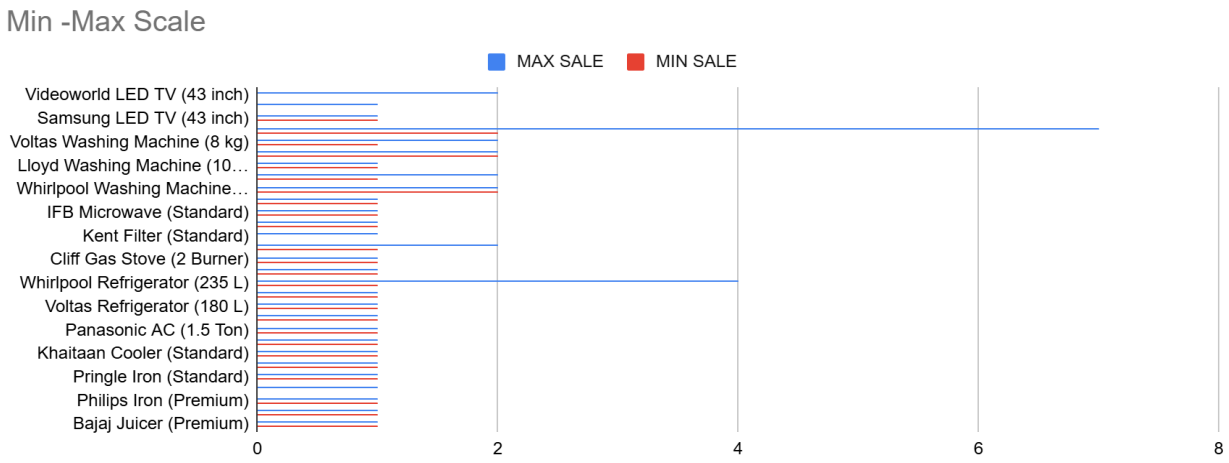

Chart 9

A Min-Max scale chart was used to assess the contribution of each brand across various product categories. This analysis revealed which brands are performing well and where there may be room for optimization. For instance, prioritizing high-margin brands and reducing stock levels of low-performing items could help streamline inventory management. By focusing on profitable products and adjusting the product mix accordingly, Syal Enterprises can minimize excess inventory costs and concentrate on the most lucrative offerings, which would also improve the store's profitability.

Interpretation of Results:

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.

The following insights have been drawn from the data analysis, which provides valuable conclusions and actionable recommendations for improving Syal Enterprises' performance and addressing the challenges it faces:

1. **Revenue Contribution by Product**The pie chart analysis of revenue contribution across product categories revealed that high-ticket items, such as Refrigerators and Washing Machines (specifically from brands like Whirlpool and Samsung), contribute significantly to the store's overall revenue. This finding suggests that Syal Enterprises should focus on in-store promotions, including bundling offers or providing special discounts on these high-revenue products. Emphasizing these items in marketing campaigns could help counterbalance the margin erosion resulting from the store's

inability to match online platforms' steep discounts, thus attracting customers who might otherwise turn to online retailers for similar products.

2. **Profit Margin by Product (Chart 2: Bar Chart):** The bar chart indicates significant variation in profit margins across product categories. High-margin products, such as **LED TVs** and **ACs**, contribute more to the store's profitability. These products should be given greater visibility in-store and be the focus of promotional efforts. On the other hand, lower-margin products should either be reduced in stock or removed from the product mix. This approach ensures that the firm prioritizes items that provide higher returns on investment.
3. **Sales Volume vs. Profit Contribution (Chart 3: Bubble Chart):** The bubble chart compares products based on sales volume and profit contribution. High-sales products like **Washing Machines** generate substantial revenue but may not always offer high profit margins. This insight emphasizes the need for Syal Enterprises to focus on products that achieve a balance between high sales volume and solid profit margins. Adjusting pricing strategies or offering bundled packages could help increase both revenue and profitability, particularly for high-volume but lower-margin items.
4. **Sales Trends vs. Bargaining Pressure (Chart 4: Combo Chart):**The combo chart reveals the impact of discounts on sales volumes. While sales increase with higher discounts, this comes at the cost of profit margins. The key takeaway is that there is a need for a balance between driving sales through discounts and maintaining profitability. Time-limited promotions during high-demand periods could be an effective strategy to boost sales without compromising on margin erosion.
5. **Revenue vs. Profit Contribution by Brand (Chart 5: Stacked Bar Chart):**The stacked bar chart compares revenue and profit contributions across various brands. Products from brands like **gas stoves** and **microwaves** show a strong contribution to both revenue and profit. The focus should be on stocking and promoting products that deliver high revenue and profitability. Ensuring a robust brand mix will help maintain a competitive edge and improve both top-line and bottom-line performance.
6. **Best-Selling Products by Volume:**The pie chart tracking best-selling products by volume revealed that Washing Machines (Samsung) and Refrigerators (Whirlpool) are the highest-selling products in terms of volume. This presents an opportunity for Syal Enterprises to leverage these popular items further in marketing efforts. Highlighting these products could alleviate bargaining pressure by showcasing the value of in-store purchases and could encourage repeat customers. This strategy might also help strengthen customer loyalty, particularly for these high-volume products, fostering an environment of sustained sales.
7. **Sales Trends by Day of the Week:**The line chart tracking sales by day of the week identified Sundays and Wednesdays as the days with consistently high sales volumes. Given this insight, Syal Enterprises should consider offering limited-time discounts or flash sales on these peak days. By leveraging the natural increase in customer visits

during these times, the store could enhance its in-store sales, countering the ongoing competition from online retailers that operate around the clock. This approach would ensure that the business maximizes foot traffic during high-demand periods.

8. **Weekly Sales Amount:**The column chart analysis of weekly sales amounts revealed fluctuations in revenue performance across different weeks. Some weeks experienced significant sales dips, which could be attributed to various factors, including the competitive pressure from online platforms. To stabilize revenue, Syal Enterprises could benefit from implementing a promotional calendar that aligns with these fluctuations. By targeting promotions during slower weeks, the business can help smooth out revenue inconsistencies, ensuring more consistent cash flow and maintaining competitiveness even during off-peak periods.
9. **Product Contribution by Brand:**The Min-Max scale chart analysis of product contributions by brand revealed which brands are performing well and where there is room for improvement. The data suggests that prioritizing high-margin brands and reducing stock of low-performing items could lead to better inventory management. By focusing on more profitable brands and adjusting the product mix accordingly, Syal Enterprises can streamline its inventory costs and concentrate on the most lucrative offerings. This will not only improve profitability but also reduce the risk of holding excessive stock of underperforming products.

Recommendations:

Based on the results and findings derived from the analysis, the following recommendations have been proposed to help Syal Enterprises enhance its sales performance and improve overall business strategy:

1. **Increase Inventory of High-Ticket Items (Refrigerators and Washing Machines):** Since products like Refrigerators (Whirlpool) and Washing Machines (Samsung) have a significant contribution to the store's revenue, it is advisable to increase their inventory levels. This will ensure the store is prepared to meet customer demand, especially during peak sales periods. Additionally, promoting these high-value items through in-store discounts or bundling could help attract more customers and boost overall sales.
2. **Enhance Marketing for Best-Selling Products by Volume:** The analysis shows that Samsung Washing Machines and Whirlpool Refrigerators are the top-selling products by volume. To capitalize on this trend, Syal Enterprises should focus marketing efforts on these items. Running promotional campaigns that highlight these popular products can attract more customers, establish brand loyalty, and drive repeat business.
3. **Target Promotions During Peak Sales Days (Sundays and Wednesdays):** Sundays and Wednesdays have been identified as days with the highest sales volumes. To leverage these peak periods, the store can implement time-sensitive promotions or flash sales on these days to further drive sales. Offering limited-time discounts or exclusive deals on

these days can help maximize customer foot traffic and sales, which are already naturally higher during these times.

4. **Optimize Promotions During Slow Weeks:** The analysis
5. **Focus on High-Margin Brands and Products:** The Min-Max scale chart analysis revealed that some brands perform better than others in terms of revenue generation. Syal Enterprises should focus on stocking high-margin brands and products while reducing the inventory of underperforming items. By adjusting the product mix to prioritize profitable products, the store can reduce excess inventory costs and improve profitability.
6. **Consider Expanding Promotional Offers for In-Store Purchases:** In light of online retail competition, Syal Enterprises should look to enhance the value proposition of in-store purchases by offering more bundled deals or exclusive in-store promotions for high-ticket items like Refrigerators and Washing Machines. This could counter the impact of online discounts and offer customers a compelling reason to choose in-store shopping over online platforms.
7. **Revise Store Hours for Weekends:** Based on the findings, it might be worthwhile for the store to reconsider its weekend schedule. Extending store hours on weekends or opening earlier could cater to students and customers who are more likely to shop during their free time rather than on weekdays. This adjustment could increase foot traffic during weekends and improve sales performance.

By continuously tracking and analyzing the sales data, Syal Enterprises can adjust its strategies to maximize profitability, improve customer retention, and remain competitive against online retailers. It is crucial for the business to adapt and stay responsive to trends, customer preferences, and external factors such as online shopping behavior.

Conclusion:

In conclusion, Key insights include identifying the most profitable product categories, such as high-ticket items like Refrigerators and Washing Machines, which significantly contribute to revenue. By emphasizing these products in targeted in-store promotions, such as bundling offers or special discounts, Syal Enterprises can counteract the margin erosion caused by online competition. Additionally, the analysis of best-selling products and customer preferences indicates that focusing on volume-driven sales could help mitigate bargaining pressures and attract consistent customer engagement.

The findings also underscore the importance of effective inventory management. By optimizing stock levels during peak demand periods and reducing excess inventory during low-demand weeks, the store can enhance operational efficiency, minimize costs, and ensure sufficient product availability without overstocking.

Furthermore, analyzing sales trends by day of the week reveals that Sundays and Wednesdays consistently experience the highest sales volumes. This insight suggests that targeted marketing

strategies on these peak days, such as limited-time discounts or flash sales, could help capitalize on natural increases in footfall.

In terms of fixed costs, focusing on optimizing expenditure on electricity and containers could further improve cost efficiency and profitability. By evaluating and reducing these costs where possible, the store can enhance its margins.

By implementing these recommendations: optimized inventory management, targeted promotions, and data-driven pricing adjustments: Syal Enterprises can significantly improve its financial performance, increase profitability, and better compete with online retailers. The business owner should continually monitor and assess the effectiveness of these strategies to ensure sustained growth and adaptability in an evolving retail landscape.

Important Links:

* Link to the Project Data : BDM Project Data