Optimizing Inventory and Sales Management for Rishabh Enterprises: A Comprehensive Approach

A Mid term report for the BDM capstone Project

Submitted by

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Declaration Statement

I am working on a Project titled " **Optimizing Inventory and Sales Management for Rishabh Enterprises: A Comprehensive Approach**".

I extend my appreciation to **Rishabh Enterprises(Also known as Om Enterprises)** , for providing the necessary resources that enabled me to conduct my project.

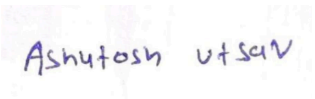
I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered from primary sources and carefully analyzed to assure its reliability.

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 principles 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 understand that all recommendations made in this project report are within the context of the academic project taken up towards course fulfillment in the BS Degree Program offered by IIT Madras. The institution does not endorse any of the claims or comments.



Signature of Candidate: (**Digital Signature**)

Name: Ashutosh Utsav

Date: 06-08-2024

Executive Summary

To enhance inventory management, we are developing an inventory management system for Rishabh Enterprise, Sheohar, Bihar. The store, owned by Mr. Jitendra Kumar, traditionally maintained sales records on paper, making data organization and access challenging. Recognizing the benefits of digitization, we initiated this project together.

Over four months, from January to April 2024, we successfully digitized sales data, capturing details such as product names, sale prices, quantities sold, and total sales amounts. This dataset allows for an analysis of sales patterns and pricing dynamics at Rishabh Enterprise. A price distribution analysis showed that most products fall within ₹50-₹150 and ₹200-₹300, with popular items like the "Plastic Fork set" and "Knife Set" in these ranges.

Daily sales patterns revealed spikes on certain days, indicating the need for better inventory control and staffing. Total sales analyses highlighted top-selling products, such as "Kadhai medium," "Knife Set," "Plate," “Bowl,” and “Glasses.” For instance, "Kadhai medium" sold 50 units in January 2024, totaling ₹22,500. Such information can enhance inventory effectiveness by increasing stocks for high-demand products.

Sales performance by day of the week showed higher sales on weekends—about 350 sales—compared to mid-weekdays, with just 250 sales. Discussions with Mr. Kumar and customers revealed that many weekend sales come from nearby villages. This trend suggests the need for weekday promotions and better inventory planning to capture peak period sales. Based on these insights, we recommend increasing stock levels for popular items like peelers, spoons, plates, and bowls and introducing more variety to attract customers and boost sales.

In summary, this project has identified key trends and insights for building a robust inventory system for Rishabh Enterprise. Utilizing this information will lead to efficient inventory management, better demand satisfaction, and sustained business growth. Regular analysis and adjustments will elevate Rishabh Enterprise to improved functioning and performance.

PROOF OF ORIGINALITY

Store Front : Store front picture

With owner : with owner

Store bill format with GSTIN Number : Bill format

Interaction with the store owner Video : Interaction with owner

Letter of Approval : letter of approval

Digitize Data : Digitize data

All other photos and videos about the store : Whole Drive Folder Link

DATA DESCRIPTION AND META DATA

The aim is to design an inventory system for Rishabh Enterprise. It is essential to know the details in the data. Earlier, when it was in Sheohar, Bihar, Rishabh Enterprise used to maintain informal, disorganized sales records. The owner of Rishabh Enterprise, Mr. Jitendra Kumar, came to know about the help of digitizing data, and so he worked with me on this project. We digitized the sales data from January to April 2024, capturing the names of the products, prices, quantity sold, and total sales amount.

A preliminary analysis of this data extracts sales patterns at Rishabh Enterprise. Best-selling items include plates, bowls, spoons, peelers, and tea cups, which means customers in small towns and villages prefer essentials rather than non-essential products. This can be used to optimize inventory by maintaining the high-selling stock to increase the possibility of sales. The data also shows a lesser demand for expensive goods since the everyday usage items are being sold in higher volumes. Besides, sales spike during Festivals, as there are spikes of purchasing during this period. Further, a more detailed analysis with the help of graphs and plots on sales dynamics will help to determine patterns for better inventory management strategies. A proper inventory system will allow Rishabh Enterprise to organize sales activities, keep stock at appropriate levels, and improve business operations.

In brief, developing a strong inventory system for Rishabh Enterprise is essential. It will make the whole process of sales easier, will raise the product portfolio, and improve the effectiveness of sales. Further support from Mr. Jitendra Kumar to digitize more and more will enable Rishabh Enterprise to expand its horizons in increasing their business and sustain growth.

DESCRIPTIVE STATISTICS

Descriptive statistics will give an overall view of the sales for the period from Jan 2024 to Apr 2024.

	Count	Mean	std	min	25%	50%	75%	max
Price	3298.00	187.21	283.24	8.00	35.00	100.00	200.00	3200.00
Q.sold	3298.00	1.93	0.82	1.00	1.00	2.00	3.00	3.00
Total	3298.00	303.21	356.59	8.00	60.00	160.00	450.00	3200.00

Fig1: Shows the stats for total price

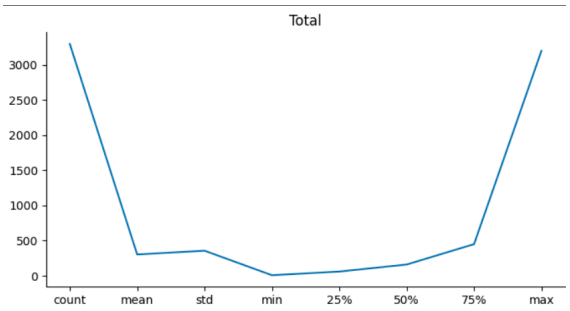


Fig2: Shows the stats for Quantity Sold

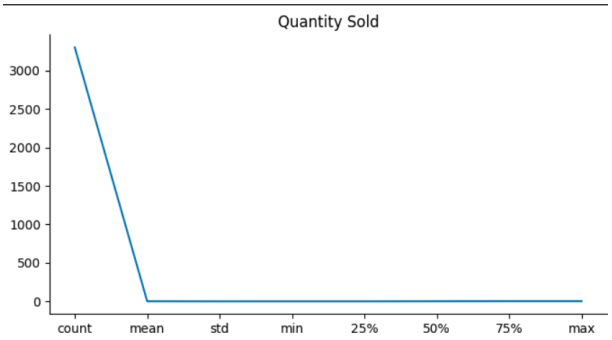
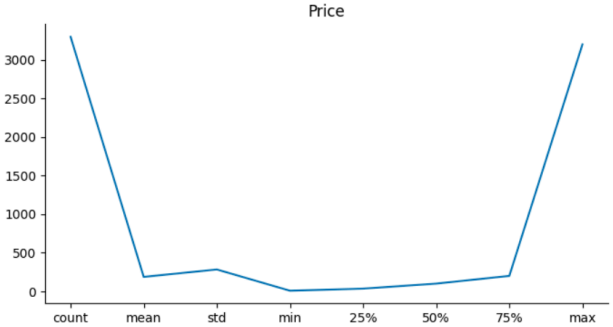


Fig3: Shows the stats for Price



The data cover from Jan 2024 to Apr 2024. there was total 3298 sales transaction recorded during this period

For the Price of Product:
The average price was 187.21
Prices ranged from a minimum of 8.00 to a maximum of 3200.00
The median price (50th percentile) was 100.00

For the Quantity Sold:
The average quantity sold was 1.93 units
Quantities ranged from 1 to 3 units per transaction
The median quantity sold was 2 units

The total sales value had a mean of 303.21, with a minimum of 8.00 and a maximum of 3200.00

The Graph illustrate the distribution of total price, quantity sold, and price across different percentiles.

DETAILED EXPLANATION OF ANALYSIS PROCESS

Data Collection and Digitalization: We began the study by collecting data. The sales records of Rishabh Enterprise were all in books, which was creating many problems in arranging the data as well as in its retrieval. Mr. Jitendra Kumar, the owner, was cooperative. By converting hand-written records into soft copies, we were able to collect and digitize four months of sales records.

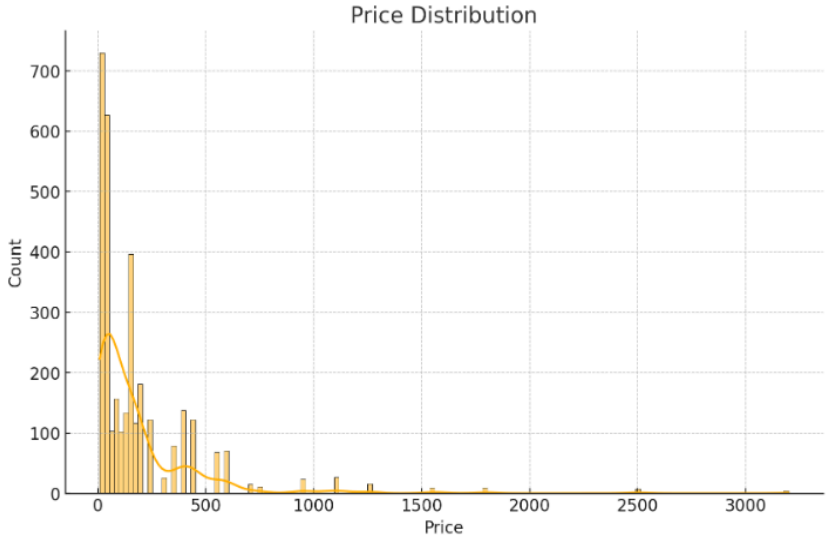
Data Cleaning: After digitizing data that covered about four months, the next significant process was cleaning up the data to be accurate and reliable. It involves dealing with errors in the dataset—those with missing values, incorrect entries, and inconsistencies. A very rigorous data-cleaning process was conducted, which would identify errors, fill in missing values, standardize the data, and produce a result that is both correct and trusted for the analysis.

Exploratory Data Analysis: The data having been cleaned, the exploratory analysis of trends, patterns, and insights in our dataset will be performed. EDA is the process of exploring sales data to identify products that make both the highest and the lowest sales. Graphs and plots reveal sales patterns, seasonal trends, and customer preferences. The findings have to be developed into an efficient way of managing inventory to take strategic business decisions.

1) PRICE DISTRIBUTION

Price distribution analysis comes in to find a solution in settling competitive prices and managing the inventory. we must understand your price range and common price points so as to align stock with customer preferences and trends. This leads you to better pricing strategies, hence improved sales. The graphical representation of price distribution will make it easy for us to note those trends and adjust the respective strategies easily.

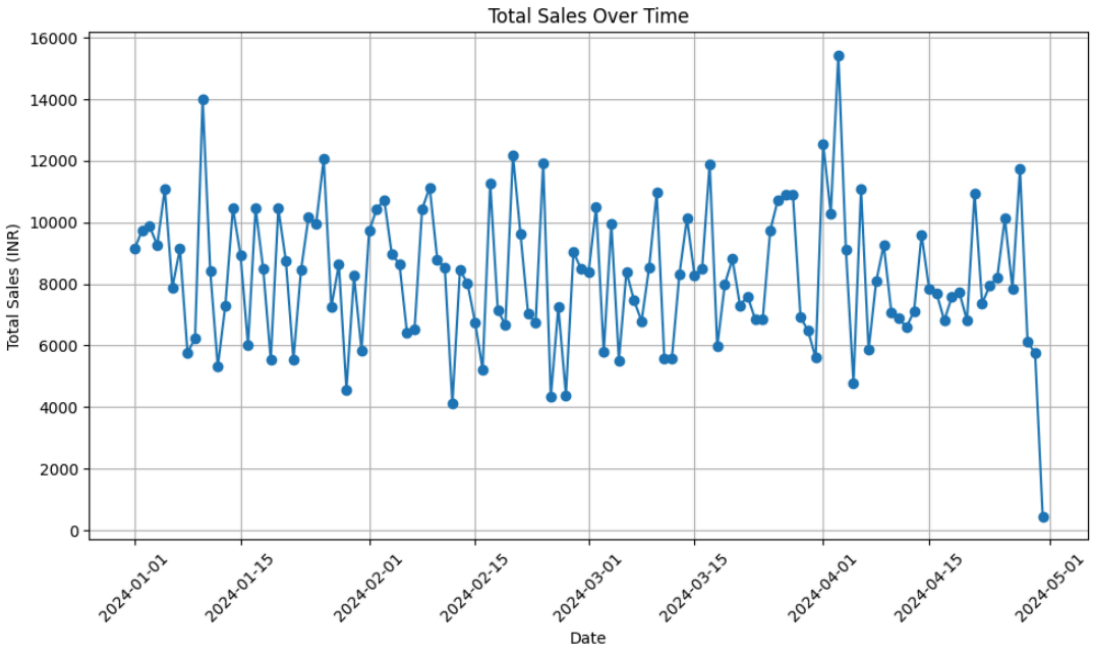
Fig4: Price Distribution of product



2) TOTAL SALES OVER TIME

Total sales trends over time, therefore, provide peaks, troughs, and general tendencies that can be used to identify high or low sales periods, hence very important information in the areas of inventory optimization, marketing campaigns, and staff allocation. Better efficiency and increased customer satisfaction will be achieved if stocking and resources available in the business are aligned with the trend of sales.

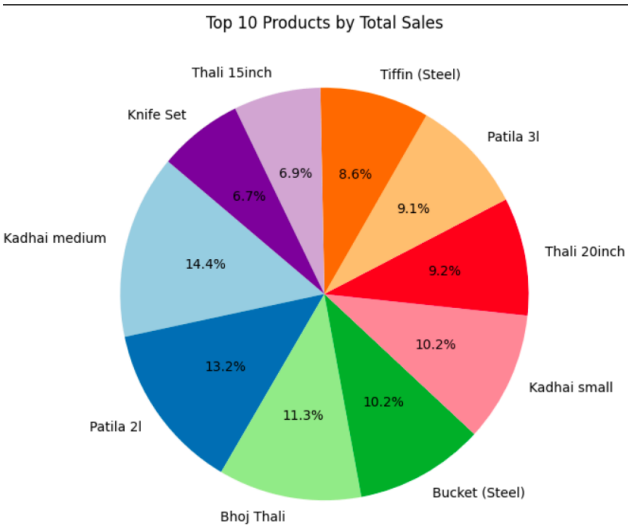
Fig5: Total Sales Over Time



3) TOTAL SALES BY PRODUCT

Effective inventory management can be done by identifying the bestselling products. This way, by paying more attention to best-sellers and handling underperformers better, you will be able to optimize your product mix, boost sales, and improve customer satisfaction. The informed decisions made will enhance the performance of the business at large.

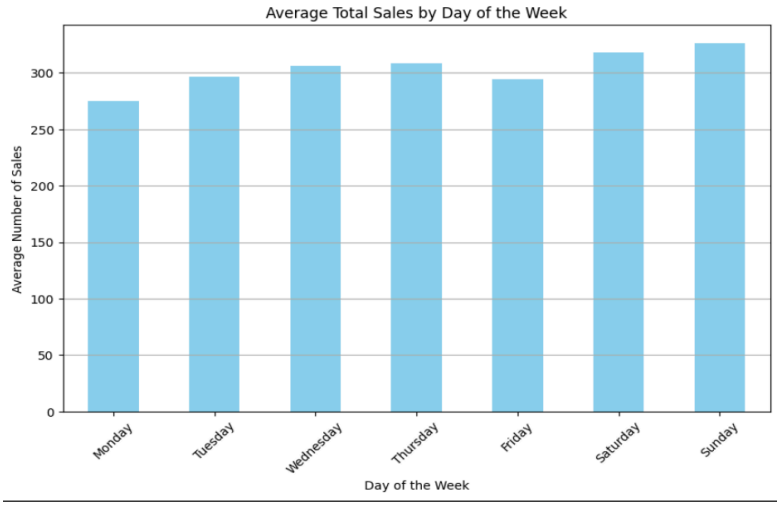
Fig6: Top selling product and their Price Distribution



4) TOTAL SALES BY DAY OF THE WEEK

Analysis of daily sales trends may also help identify peak and slow days of the week. Information of this kind allows for targeted sales promotions and markdowns on slower days while ensuring adequate staffing and inventory for busy days. With these insights, you can better your sales strategies and operational efficiency.

Fig7: Total sales avg. for each day of week



5) SWOT ANALYSIS:

Strengths:

1. Strong sales in specific price ranges (₹50-₹100 and ₹200-₹300), indicating a good understanding of customer price preferences.
2. High-performing products like "Kadhai medium" and "Knife Set" contribute significantly to revenue.
3. Higher sales on weekends, showing a consistent customer shopping pattern.

Weaknesses:

1. Lower sales during weekdays, indicating potential for improvement in off-peak periods.
2. Possible over-reliance on a few best-selling items, which could be risky if market preferences change.

Opportunities:

1. Potential to expand the range of essential items (peelers, spoons, plates, bowls) to meet high demand.
2. Possibility to introduce new products in the popular price ranges to diversify offerings.
3. Leverage data insights to optimize inventory management and pricing strategies.

Threats:

1. Potential inventory shortages during peak sales periods if not managed properly.
2. Risk of overstocking less popular items, leading to tied-up capital.
3. Possible market saturation in popular price ranges, leading to increased competition.

RESULTS AND FINDINGS

Our initial data analysis of sales data has revealed substantial trends and findings, which we will use to create a robust inventory management system for Rishabh Enterprises. The following are the initial findings and results:

Price Distribution Insights:

- We noticed that most products are priced between ₹50-₹150 and ₹200-₹300. It seems like these price points really resonate with our customers.
- Items like the "Plate", "Kadhai", "Knife set" and more essential items are selling more. This suggests that our customers are looking for practical, budget-friendly options, which is great information for planning our inventory.

Sales by Day of the Week:

- Weekend sales are notably higher, averaging around 350 transactions, while weekdays hover around 250. It's clear that weekends attract more customers, including folks from nearby villages.
- Given this trend, it makes sense to boost our inventory and staff up for weekends. Additionally, it might be worth considering special promotions during the weekdays to draw in more customers.

Inventory Management Recommendations:

- **Boost Stock Levels:** For items that are selling well, like peelers, spoons, plates, and bowls, we should keep more in stock. This will help us avoid running out of popular products and better meet customer demand.
- **Expand Product Range:** It might be a good idea to add more variety in the price ranges that are popular. This could attract a wider range of customers and keep sales strong across different products.

Conclusion

Such results are very indicative of the sales pattern and pricing dynamics of Rishabh Enterprise. The store can use this information to develop better strategies for its pricing and inventory management. A data-driven approach will help the store be well equipped to suffice for customer demand, optimize stock levels, and improve overall business performance. This is because, with further study and changes depending upon these understandings, Rishabh Enterprise would not only be able to improve the functioning but also ensure growth over time.

From these initial findings and results, we suggest some of the following steps that can be taken for better inventory management: excess demand is seen in high-moving goods like spoons, peelers, plates, and bowls. For example, the shop should increase the stock level of these products and should have more range of essential products to satisfy the customers and better results.

From the preliminary examination of the historical sales data, we have identified the significant trends and points through which we shall be able to form a robust inventory system for Rishabh Enterprise. These insights are foundational to strategic decisions toward optimal inventory, better customer satisfaction, and business growth.