Inventory Management and Sales Revenue Maximization

A proposal report for the BDM capstone Project

Submitted by

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Declaration Statement

I am working on a Project titled "**Inventory management and sales revenue optimization**". I extend my appreciation to **Mahesh Kirana Store** 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 analysed 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 fulfilment in the BS Degree Program offered by IIT Madras. The institution does not endorse any of the claims or comments.

Signature of Candidate: 

Name: Hitesh Binjrawat

Date: 5/10/2024

1 Executive Summary

The project focuses on a small retail grocery store located at the local market of Bawal, Rewari. The business is B2C type which sells grocery items like salt, biscuits, detergents, soap and many more.

The objective is to understand the sales revenue trend for some of the products at the shop to know the overall profitability of the business. To understand which products are fast moving and which products have lesser sales so the shopkeeper can manage his inventory accordingly.

These problems can be addressed by collecting sales data of the movement of stocks inwards, outwards, stock at time of opening and stock at time of closing. These problems can be solved by proper analysis of data.

If these issues are solved it will help the shopkeeper to understand which products he needs to buy more and which products he needs to buy less. This will prevent him from not buying the products in huge amounts which have lesser sales and he can buy those products which have more sales.

This will increase the shop's overall profitability and help the shopkeeper to understand sales trends of various products at his shop.

2 Organization Background

The organization I am working with is Mahesh Kirana Store, it is a small retail grocery located near Dr B.R Ambedkar Park at Bawal, Rewari. The owner of the shop is Mahesh Binjrawat. The shop was inaugurated on the 2nd of November 2021 . It sells grocery products like oil, shop, detergents, Noodles, Chocolates and many more.

The yearly revenue of the shop is around 5 lakhs and as the shop is located at the main market so it helped to show a significant growth. The shop is managed by a single person. It opens from 7 am to 10 pm.

3 Problem Statement

3.1 Reducing the problems of stockout and overstock.

Usually at kirana stores this is a major problem, as there are a lot of products so to have the idea of sales of every product might be a challenging task, especially for the new shopkeepers.

3.2 Maximization of Revenue and Sales.

Analysis of sales data for decision making and maximizing the sales.

4 Background of the problem

There are so many varieties of product at a kirana store, so understanding sales and proper inventory management can be a challenging task. Usually there is a problem of stock out for some of the products while overstocking for some other products. These problems can be caused due to varying demand patterns for different types of SKU's.

Overstocking can lead to wastage of space and money while the problem of stock out can lead customers to return empty handed from the shop.These both problems are a major problem. So there is a need for proper inventory management of the products. Understanding which products are fast moving and which products are slow moving is an important task. It will help the shopkeeper to know which products must be bought in what quantity so he can manage the demand of the products for the particular interval of time.

Shop is managed by a single person so keeping everything in mind becomes so challenging and often a person misses out on many things and he may not know the demand of various products in the future so this might lead to lesser sales of products due to unconsciousness of the demand of products.

Stockout is a missed sales opportunity, so stockout can reduce the number of sales. When a customer approaches a shop and if he/she does not get that particular product then it might cause the customer to go to another shop. Thus, decreasing the sales and also reducing the number of loyal customers to the shop.

5 Problem Solving Approach

Prior problem i.e, inventory management can be addressed by collecting data of products on a daily basis. This involves collection of data of various stocks inwards,outwards, quantity of stock on opening and closing of day. This helps us understand sales of each product and understand average days of inventory. Sales data can be inferred from movement of stock outwards. Product data will include product name, selling price and cost price for each product.

The source of data is the notebook which I gave to the shopkeeper to record all the details of the observations which are related to the problem. Each page contains date wise record products which were inwards (purchased), outwards (sales), stock at opening of day and stock at closing of day. For the data of Products table (i.e Product Name and Selling and Cost Price), it does not require an everyday record so this information can be asked from the shopkeeper at the end.

To understand which products have more sales and which products have lesser sales, a volume Pareto chart can be drawn from Sales data. Volume pareto charts will help to understand which products contribute more to sales. This will help to classify the various products as fast moving, moderate moving and slow moving. So the fast moving stock must be bought in large quantities and slow moving stock must be bought in lesser quantities.

Sales can be maximized by avoiding the problem of stockout. Stockout problems can be solved by proper inventory management. To know which product contributes more to sales, a sales volume pareto chart is useful. It provides insights into the distribution of sales across different products and focuses more on products which have more sales and keep the products of lesser sale to increase the variety at the shop.

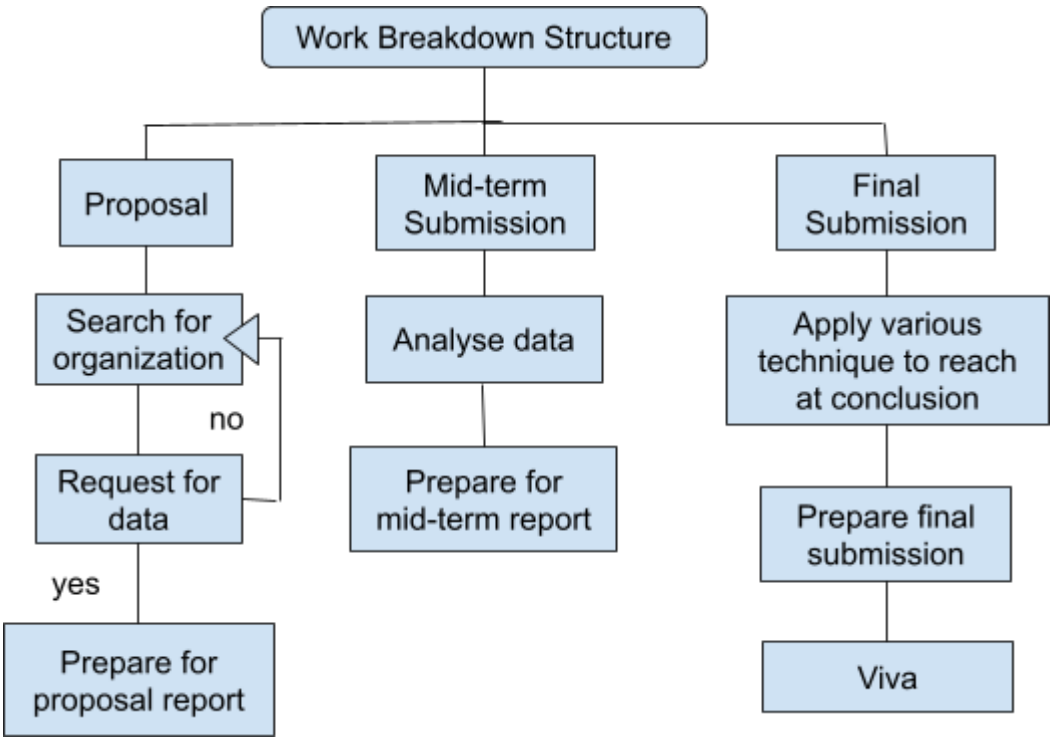
To get insights about revenue, revenue pareto charts can provide valuable insights. It helps businesses to identify and prioritize key factors that contribute more to revenue generation and make strategic decisions regarding allocation of resources.

Daily or weekly sales analysis can be done from a line chart as it is a time series data. Line charts are used to get weekly, daily trends of sales of data. It provides a clear visual representation of how data changes over time. By analyzing historical data from line chart sales forecasts can be made and also predict about future performance of the shop.

If required, Regression models like Linear Regression or complex machine learning models can be applied like Decision Trees, Random Forests or Gradient Boost algorithms. These algorithms provide more accurate and precise predictions. These models also capture non-linear relationships in the data and help to reach closer to actual sales in the future.

6 Expected Timeline

6.1 Work Breakdown Structure:



6.2 Gantt Chart

				September				October			
SNo	Tasks	Start	End	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
1	Proposal Submission	5/9/2024	5/9/2024								
2	Get Requested Data	6/9/2024	11/9/2024								
3	Analysis and Data Cleaning	11/9/2024	20/9/2024								
4	Pepare for mid-term report	21/9/2024	26/9/2024								
5	Apply various techniques	26/9/2024	3/10/2024								
6	Submission of mid term report	6/10/2024	6/10/2024								
7	Prepare for final submission	4/10/2024	11/10/2024								
8	Final report submission	12/10/2024	12/10/2024								
9	Final Approved	13/10/2024	20/10/2024								
10	Viva Voce	25/10/2024	30/10/2024								

7 Expected outcome

7.1 Better space management of the shop.

After getting the proper idea of sales of every product better inventory management can be made thus reducing the wastage of space due to overstocking.

7.2 Increase of sales and holding the customers.

After resolving the stockout problem, it will automatically increase sales and customers will not return empty handed from the shop.