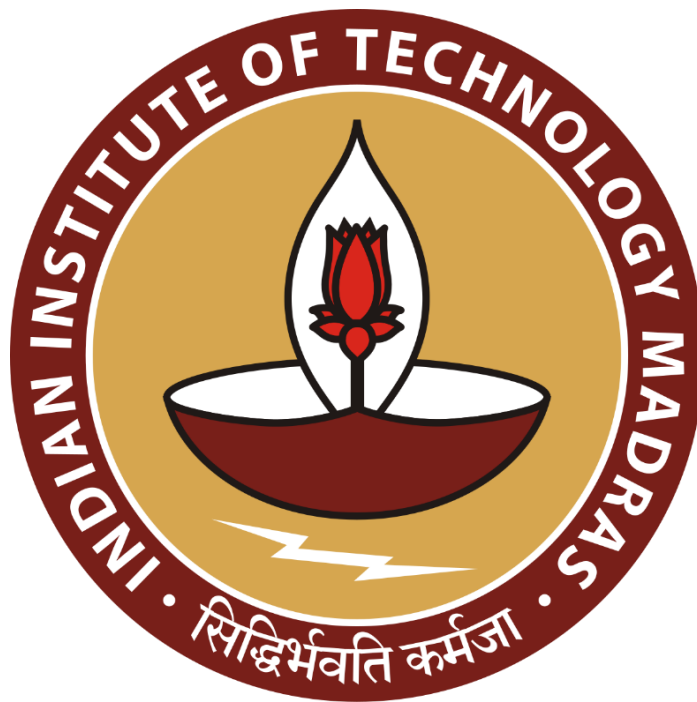# Optimizing Sales, Inventory management and analyzing the shopping trends of a general store.

A Proposal report for the BDM capstone Project

Submitted by

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Contents

Declaration Statement

I am working on a Project titled "**Optimizing sales, Inventory management and analyzing the shopping trends of a general store**". I extend my appreciation to **Needs Corner**, 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: Atharva Garajkar

Date: 31/07/2024

1 Executive Summary and Title

The project focuses on a mid sized general shop located at N5, Satyam Nagar, Chhatrapati Sambhaji nagar 431001, Maharashtra, India. This is B2C business which mainly focuses on daily needs, snacks and cold drinks.

The major business issues that the store owner is facing are related to a poor inventory management, competition from other stores and loss because of dairy products. For data collection I will be collecting data from the Store book.

The mentioned issues will be addressed by analyzing the sales data resulting in more profits and effective store management. The main focus of this project is to understand the customer behavior in a retail store and maximize the gross profit. The following methods can be implemented:

1. Analyzing sales data
2. Price prediction
3. Demand analysis
4. Quality control
5. Stock handling

The expected outcome helps the organization reduce money blockage in terms of inventory, which helps increase the profitability of the organization.

2 Organization Background

The general store that I am working with is called Needs Corner, Which is located at N5, Satyam nagar, Chhatrapati Sambhaji nagar. Needs Corner was established in 2021 and has been serving the neighbourhood since then. The Store is very reputed and well known as the owner is very kind and greets almost everyone. The store is specially loved among kids as the store stocks all the chocolate which are not available in nearby stores. The store sells all kinds of provisions such as household goods, toiletries, sanitary items, stationary, daily items, beverages and many more. People from the locality have trust in the store and support the business by purchasing all the daily necessities from the store. The store earns profits by selling the items at a reasonable price with a considerable margin.

3 Problem Statement

3.1 Problem statement 1: To identify the price trends in the sales data, buying frequency and purchaser behavior.

3.2 **Problem statement 2:** The shop faces inconsistent sales of dairy products. Which results in no profit for them.

3.3 **Problem statement 3:** To analyze the inventory management during certain times of a month, and also the slow moving stocks which holds a lot of space.

4 Background of the Problem

The sales data analysis helps the owner in increasing the profit margin of the store by managing stock outs, finding different ways for quantity control, maintaining the trust of the locality by keeping the availability of stock and making sure the reach of the provisions is as fast as possible before your stock is out. Control of the stocks when it is the starting of the month as many people tend to buy soaps, salt and similar items at that time of month. Therefore, using these as background, the emphasis is to analyze the data and maintain the stocks, staying ahead of competitors and making profits.

Major cause of problems :

1. No proper management of provisions quantity which returns high profit margin and lack of promotion for the item which is least buying by giving some discounts and combo offers.

Internal problems :

1. The store suffers from transportation problem of dairy products. Consuming some of the shelf life and result in losses.
2. Sudden decrease in the price of a provision when its availability is more in the store.

External problems :

1. Lack of information regarding the opening and closing of the store which results in the competitor's entry and loss of valuable new customers of the store.

5 Problem Solving Approach

To inscribe the optimization of sales and profits, a systematic and meaningful approach will be implemented. The following approaches will be applicable to solve the problem based on the available data:

1. **Methods used:**
   - The collected data is in the books and unorganized. So, initially I have to convert it into excel and organize the data and clean it for further processing.
   - After this, plotting the data into various charts and trend lines to have an idea about the data.
   - Then, plotting various charts (like bar charts, pie charts) for visualization of the data. And use of various excel functions to classify the data and calculate the average sales of the day, quantity and prices of individual products summed up.

- Using tools like pivot tables I will summarize the data and then Identify the highest profit margin products that can be recognized using tables.
- Compute descriptive statistics for key variables like sales quantity, prices and total cost. This includes measures like mean, median, mode, minimum, maximum and standard deviation. It provides an overview of the central tendencies and distributions of the variables.

2. **Data collection:**
- Daily data collection is written in books. The data is not organized into an excel and there is no proper system for data collection.
- Many of the items in the data are written in a short code format which is precise and it takes time for me to find the item's name.
- There will be a category wise organization to know the customer choices/preferences better.

3. **Demand forecasting:**
- Identification of peaks and seasonality of purchase by consumers and meet the demand based on the data available.

4. **Develop Strategies:**
- To develop strategies based on the insights gained.
- To address the specific problem statements and solve root cause which were identified during the analysis phase, it is necessary to customize strategies that account for various factors like pricing trends, quantity control and consumer engagement.

6 Expected Timeline

6.1 Work Breakdown Structure:

1. **Project Initiation**
   - Define all the objectives.
   - Establish a proper project timeline for the project.
   - Set specific milestones for tracking progress.

2. **Data collection and preparation**
   - Collect Monthly data detailing what data was purchased in that month.
   - Gather daily data on stock sales, including details on quantities, prices and total costs.
   - Collect data related to consumers, their purchase quantities and total expenditures.
   - Clean and validate the data to ensure accuracy and completeness.

3. **Exploratory Data Analysis**
   - Review the dataset to understand its content and structure.
   - Use descriptive statistics to identify patterns and trends in the data.
   - Analyze the trends and identify the outliers.

4. **Demand Forecasting**
   - Utilize regression analysis to identify patterns and forecast prices of sales.
   - Identify peak seasons and trends to support demand forecasting.

5. **Generate Insights**
   - Interpret the results of the analysis, extracting insights that address the identified issues.

6. **ABC Analysis**

- ○ Categorize consumers based on their total purchase value or quantity.
- ○ Prioritize high-value consumers for pricing optimizations.

7. Performance Metrics
- ○ Define key performance metrics to assess revenue generation coming ahead of competitors.

8. Project conclusion and Reporting
- ○ Summarize the findings and critical insights derived from the analysis.
- ○ Present recommendations and scientific approaches for store owner to implement.
- ○ Deliver a comprehensive action plan for future initiatives and improvements.

6.2 Gantt chart

ID	Task	Start Date	Due Date	Duration
1	Identifying Problems and making Proposal Document	30/07/2024	31/07/2024	2 Days
2	Data Collection	01/08/2024	12/08/2024	12 Days
3	Performing Exploratory data analysis	13/08/2024	28/08/2024	15 Days
4	Creating Mid Term submission Document	29/08/2024	31/08/2024	3 Days
5	Solutions and analyzing data more and applying optimization techniques	01/09/2024	08/09/2024	8 Days
6	Preparing Final Submission	09/09/2024	12/09/2024	4 Days
7	Preparing for Viva	13/09/2024	17/09/2024	5 days

GANTT CHART

TASKS	JULY	AUGUST	SEPTEMBER
IDENTIFYING PROBLEMS AND MAKING PROPOSAL DOCUMENT			
DATA COLLECTION			
PERFORMING EXPLORATORY DATA ANALYSIS			
CREATING MIDTERM SUBMISSION DOCUMENT			
SOLUTIONS AND ANYLYZING DATA MORE AND APPLYING OPTIMIZATION TECHNIQUES			
PREPARING FINAL SUBMISSION			
PREPARING FOR VIVA			
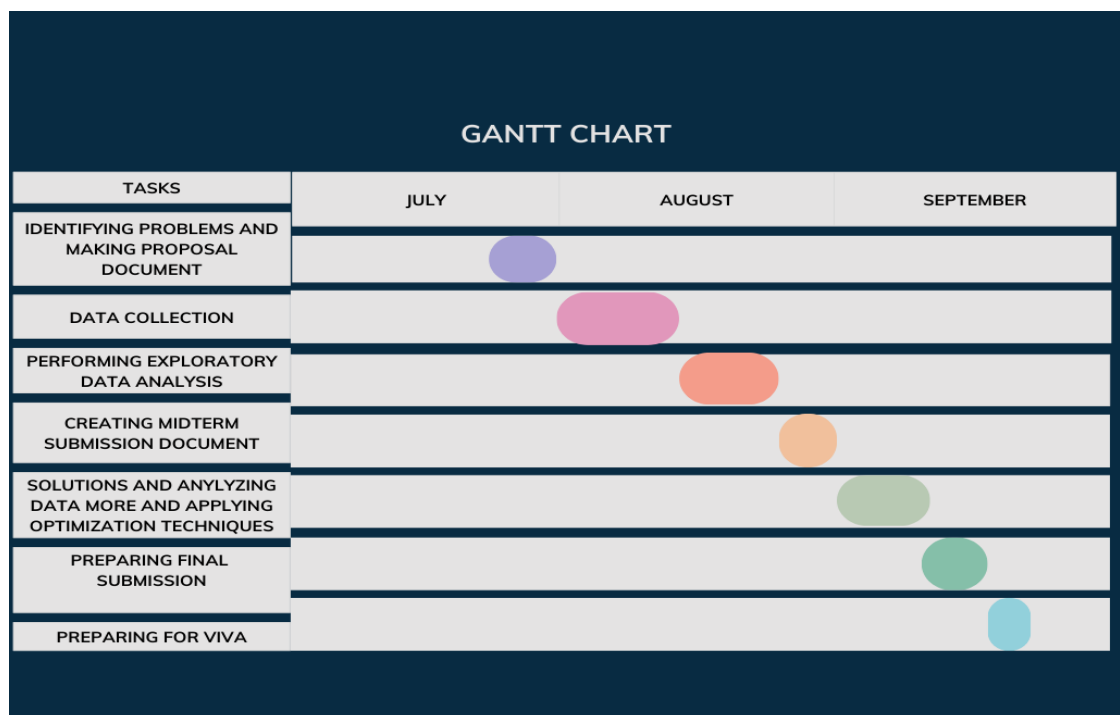
7 Expected Outcome

7.1   Identifying the items which are in stock for a long time and framing some strategies to sell them out.

7.2   Recognizing the oncoming demands of the provisions and consistently maintaining the stocks at store can significantly optimize inventory management.

7.3   Identifying the provisions based on the data analysis which might go through sudden decrease in the price in advance, so that the store will not go into losses.

7.4   Analyze the sales of dairy products and Identifying the root cause of the problem and Provide a Solution which will turn loss into profit.