

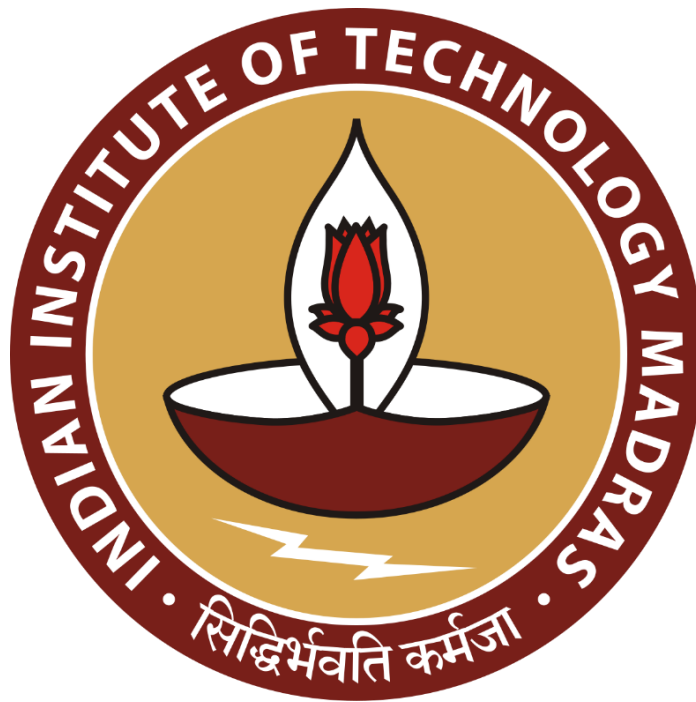
**ELEVATING SUPERMARKET PROFITABILITY BY OPTIMIZING SALES AND
INVENTORY DATA**

A Proposal report for the BDM capstone Project

Submitted by

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Declaration Statement

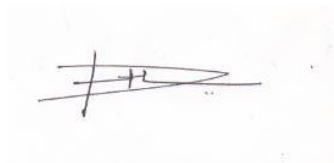
I am working on a Project titled “ELEVATING SUPERMARKET PROFITABILITY BY OPTIMIZING SALES AND INVENTORY DATA”. I extend my appreciation to Minnus Super Store, for providing the necessary resources that enabled me to conduct my project. I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered from primary sources and carefully 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.



Preethu Johnson

03-10-2024

Executive Summary

I am conducting this project on a local supermarket named Minnus Super Store, a B2C, located in Thrissur, Kerala, to analyze and optimize its sales and inventory management for improved profitability. This store has been a reliable source of groceries, household supplies, and fresh produce for the local community for several years. Despite its well-established presence, the store faces challenges with high inventory costs and low sales in certain product categories. The store management has recognized the need for data-backed strategies to optimize operations and improve profitability.

This project seeks to uncover inefficiencies in areas that may be hindering the store's growth. I am planning to analyze the sales patterns, customer behavior, and inventory turnover to identify key areas for improvement. The goal is to develop actionable strategies that will streamline operations, optimize inventory, and ultimately boost sales and profitability. I aim to help reduce wastage, improve stock management, and enhance product placement focusing on promotional tactics, effective stocking solutions, and initiatives to engage customers more effectively.

Organization Background

Minnus Super Store has been a staple in the local community, offering a range of products from fresh fruits and vegetables to household essentials for more than 10 years. Initially started operation as a small grocery store and renovated to current super store structure 2 years back. Even after expansion, like many similar businesses, they are also facing challenges related to inventory management and sales performance. As situated in the village side and handled by common man, there is lack of knowledge about new techniques and technologies to boost up the sales and service.

Minnus Super Store caters to both local residents and neighboring villages, with peak sales periods typically around festivals and holidays. The store's key strength lies in its variety of products, but with increasing competition from online retailers and other supermarkets, the need for better inventory and sales management has become critical.



Figure 1: Front View of the Store

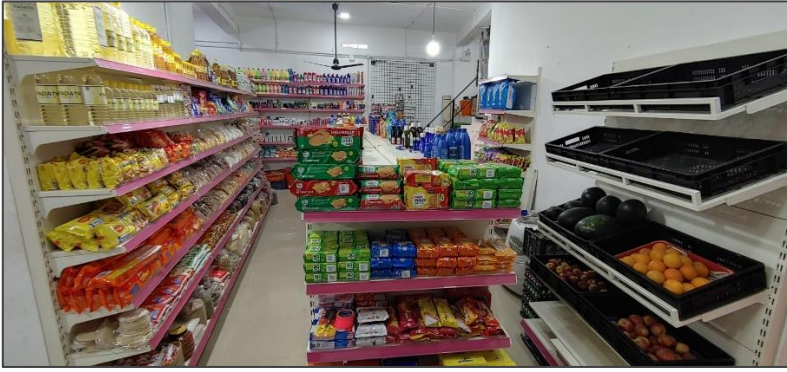


Figure 2: Inside of the Store

Problem Statement

Following a thorough data analysis and discussions with the owner, I identified the following problems:

1. **Inconsistent Sales Despite Expansion:** Despite expanding its capacity to accommodate more products and attract a larger customer base, the store continues to experience fluctuating sales.
2. **Inefficient Inventory Management:** The store faces challenges in managing its inventory, leading either to wastage, or run out of stock.
3. **Revenue Instability Due to Seasonal Variations:** Sales at the store fluctuate significantly due to seasons, festivals, and local events, making it difficult to maintain consistency.

Background of the Problem

Minnus Super Store expanded its operations two years ago, from a small grocery store to the current super store adding more products and aiming to attract a broader customer base. However, even after the renovation, the store couldn't attain the sales expected and has faced irregular sales patterns. One major issue came in discussion is their ineffective inventory management. When some products remain unsold after their shelf life, leading to losses, others experience high demand but are often unavailable, causing a loss of potential revenue.

Additionally, the store's earnings fluctuate considerably due to changes in seasons, festivals, and local events, making it challenging to maintain steady income year-round. Further, the absence of effective promotional strategies limits opportunities to boost sales in slower-moving categories and retain customers, indicating a need for better solutions to streamline operations and improve performance.

Problem Solving Approach

Data Analysis

Since Minnus Super Store has a wide variety of products across different categories, I decided to focus on analyzing a select group of 20 key products over a 6-month period. These products were chosen based on their importance to the store's overall sales and inventory management. Many of these products are available under different brands, so I collected detailed information for each brand as well.

The key fields I gathered data on include:

- The sales during the period from the bills generated.
- The amount of these products available during the start and end of the period.
- The cost price and selling price for each product, also discounts provided to calculate profitability.

Once the data is cleaned, I can calculate important metrics such as:

- Revenue: To determine total income generated from sales.
- Profit: To assess gross and net profitability.
- Expenditure: To track spending on product purchases.
- Gross profit: To evaluate the profitability of each product category.
- Average inventory: To monitor stock levels over time and avoid overstocking or stockouts.
- Stockouts and overstocking incidents: To identify inefficiencies in inventory management.

Additionally, by collecting data on various operational expenses, such as employee salaries, electricity bills, rent, and transportation costs, I will be able to calculate the net profit of the firm. This will provide a comprehensive view of profitability and help in formulating strategies to solve the business's current challenges.

Analysis Tools Planning to Use

As I have received the time-series data and for performing in-depth analysis, I am using **MS Excel** as the primary tool for processing and analyzing the data and **PowerBI** for the visualisation. These tools offer powerful capabilities for data manipulation, analysis, and visualization, making it an ideal tool for this project.

The following tools and techniques will be employed in the analysis:

1. **Pivot Tables with Filtering**
2. **Excel Functions (VLOOKUP, COUNTIF, etc.)**
3. **Visualization Tools (Charts, Scatter Plot, PowerBI)**

This combination of tools will allow for a comprehensive analysis of Minnus Super Store's data, providing clear insights into how to optimize inventory, enhance sales, and increase overall profitability.

Expected Timeline

Work Breakdown Structure

The project work is planned to execute in the following phases.

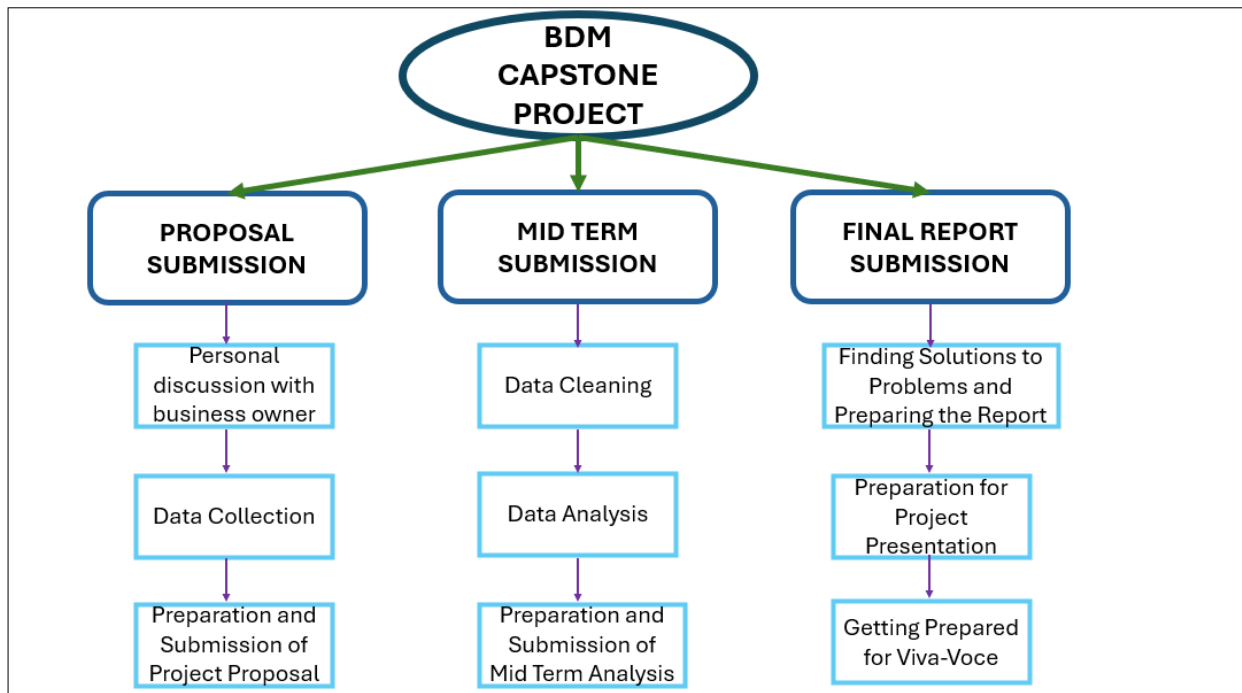


Figure 3: Project Work Breakdown

Detailed Timeline

The expected detailed timeline is given in the table below:

Task	Start Date	End Date	Duration	Dependencies
Meeting with Business Owner	20-Sep-2024	20-Sep-2024	1 day	None
Data Collection Planning	20-Sep-2024	23-Sep-2024	3 days	Meeting with Business Owner
Data Collection	23-Sept-2024	28-Sept-2024	5 days	Data Collection Planning
Identification of Business Problems	28-Sept-2024	1-Oct-2024	4 days	Data Collection
Proposal Preparation	01-Oct-2024	03-Oct-2024	3 days	Identification of Business Problems
Proposal	03-Oct-2024	03-Oct-2024	1 day	Proposal Preparation

Submission				
Data Cleaning	04-Oct-2024	14-Oct-2024	10 days	Data Collection
Data Analysis	14-Oct-2024	30-Oct-2024	16 days	Data Cleaning & Proposal Submission
Mid-Term Submission Preparation	31-Oct-2024	06-Nov-2024	7 days	Data Analysis
Mid-Term Submission	07-Nov-2024	07-Nov-2024	1 day	Mid-Term Submission Preparation
Solution Finding	07-Nov-2024	17-Nov-2024	10 days	Mid-Term Submission
Visualization of Results	17-Nov-2024	27-Nov-2024	10 days	Solution Finding
Project Report Preparation	27-Nov-2024	14-Dec-2024	18 days	Visualization of Results
Report Submission	15-Dec-2024	15-Dec-2024	1 day	Project Report Preparation
Project Presentation Preparation	15-Dec-2024	22-Dec-2025	7 days	Report Submission
Viva Voce	23-Dec-2025	23-Dec-2025	1 day	Project Presentation Preparation

Table 1: Project Timeline

Gantt Chart

The Gantt chart developed on the detailed timeline is given below:

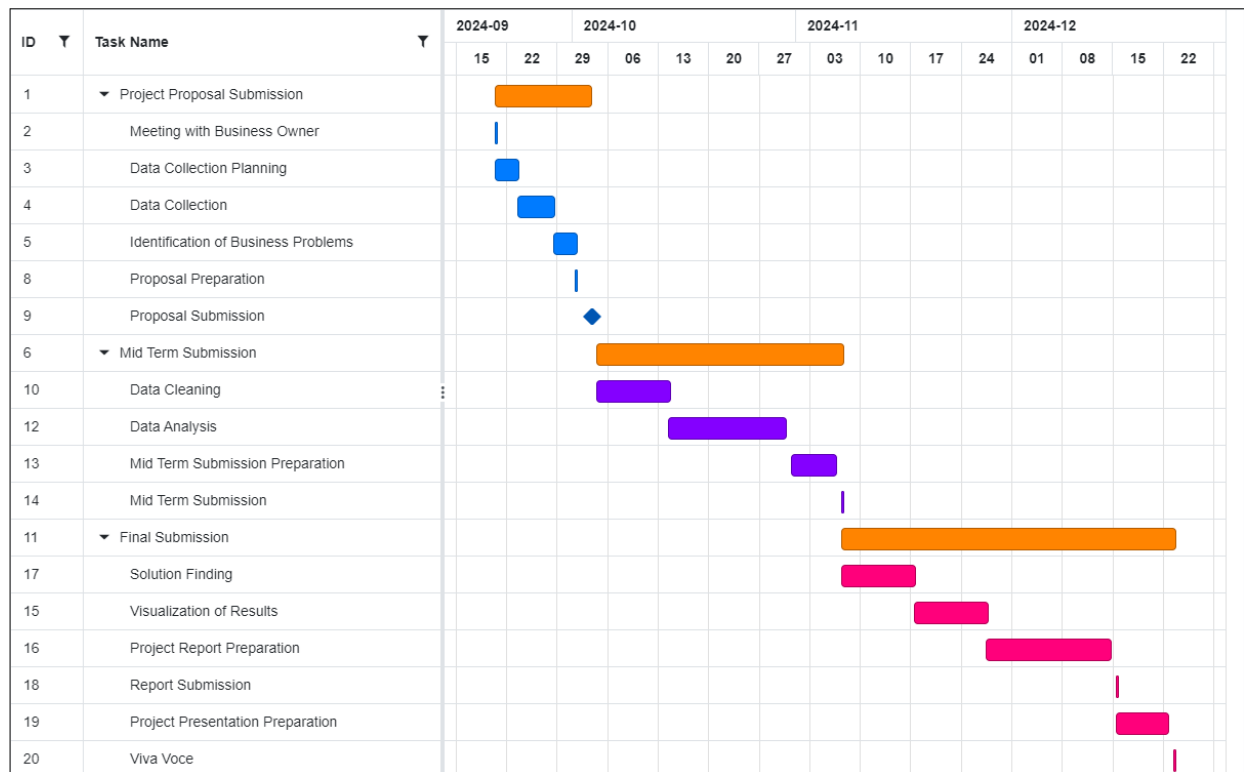


Figure 4: Gantt Chart

Expected Outcome

The successful completion of this project is anticipated to result in significant improvements in the overall profitability and operational efficiency of Minnus Super Store. Specifically, the key outcomes will include:

1. Optimized Inventory Management:

By identifying inefficiencies in stock levels, the store will be able to reduce both stockouts and overstocking. This will help maintain optimal inventory levels, reduce waste, and improve product availability for customers.

2. Increased Sales and Profitability:

Through data-driven marketing strategies, such as targeted promotions and better product placement, the store will be able to boost sales in underperforming leading to a more balanced and profitable product mix.

3. Enhanced Customer Satisfaction:

By analyzing customer purchasing behavior, the store will be better equipped to meet customer demands, improving overall customer satisfaction and loyalty. Personalized promotions and stocking strategies will ensure that customers have access to the products they need.

4. Informed Decision-Making:

The data analysis will provide actionable insights, enabling the store's management to make informed decisions. This will support the store in navigating market competition, improving customer retention, and maximizing profitability.

5. Sustainable Growth:

The project will contribute to the long-term sustainability of the store by improving sales forecasting, aligning supply with demand, and implementing continuous improvement processes for inventory management.