

INDIAN INSTITUTE OF TECHNOLOGY, MADRAS

Business Data Management Capstone Project Proposal Report



Optimizing Grocery Sales Through Data Analytics

Report By:

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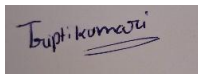
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Declaration Statement

I am working on a Project Title “BUSINESS DATA MANAGEMENT - CAPSTONE PROJECT”. I extend my appreciation to [Name of Business/Company], 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 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 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:

A rectangular box containing a handwritten signature in dark ink. The signature appears to read "Tripti Kumari" with a stylized flourish at the end.

Name: Tripti kumari

Date: 03/03/2025

Executive Summary:

Neha Prem General Store is a grocery shop that provides essential items such as food products, toiletries, and stationery supplies. The store is an integral part of the local community, serving over 100 families daily. The business aims to expand its customer base, introduce seasonal services, and eventually transition into wholesaling to supply smaller retailers in the area.

Small grocery businesses often face challenges such as fluctuating demand, stock mismanagement, and low profit margins. This project applies Business Data Management techniques to analyse sales trends, optimize inventory, and develop data-driven strategies for growth. By leveraging demand forecasting, competitor analysis, and regression modelling, the store owner can make informed decisions about pricing, stock levels, and customer engagement.

Through systematic data collection and analysis, this study aims to provide actionable insights to improve operational efficiency, minimize waste, and enhance profitability. The expected outcomes of this project include an increase in customer acquisition, higher revenue, and a successful transition into wholesaling. Implementing strategic bulk purchasing and improved marketing initiatives will allow the business to strengthen its market position, ensuring long-term growth and sustainability.

Business Objectives:

1. Expanding customer reach
2. Enhancing services based on seasonal demand
3. Opening an additional store nearby

By adopting data-driven strategies and efficient stock management, Neha Prem General Store aims to scale its operations and establish itself as a leading supplier in the local grocery market.

Organization Background

Neha Prem General Store was established by Mr. Shivam Jha in August 2020 during the COVID-19 pandemic. Previously, he worked in the hotel industry in Delhi, but due to the lockdown, he lost his job and returned to his village. Observing a lack of nearby grocery stores, he decided to open a shop to serve the local community.

The store is located in Andauli, Darbhanga, Bihar (847103) and currently operates as a single-owner business. It started with limited stock but has grown to serve over 100 families daily. The shop provides groceries and stationery items, making it an essential part of the community.

With an estimated monthly revenue of approx.2lac, the shop faces challenges such as competition, supply chain inefficiencies, and seasonal demand fluctuations. The store is run by the owner with the assistance of two employees, helping with daily operations. The business seeks to optimize operations, expand services, and transition into wholesaling to sustain long-term growth.

Problem statement

The business problems that can be identified from the discussion are as follows:

1. The grocery shop owner has difficulty attracting a wider customer.
2. Stock wasted cause of changing customer purchasing behaviour according to season and festival.
3. Less profit generation because of he himself buy goods from nearby market.

Background of the problem

After a conversation with the owner of the grocery shop, I identified three major problems outlined above. The problem faced by the owner are likely rooted in a combination of factors, including the local market dynamics, business operations, and management shortcomings.

1. There are many other small sellers in his area, as a result people tend to buy goods from their nearest shop. This is a major issue, as only a fix people visit his shop to buy items. The fixed number of people are mostly his neighbours.
2. The owner doesn't change or stock any other item according to season or festival so customer go to other shop for purchasing goods according to their needs.
3. The shop owner generates less profit due to these challenges. If he buys goods from the nearest market, he receives limited discounts. Purchasing more items to increase profit margins risks overstocking, leading to losses. Vice-versa buying goods from more distant market also result in losses due to higher transportation costs.

In the end, identifying the underlying background of the problems is key to finding effective solutions to the business challenges faced by grocery owner.

Problem Solving Approach

To address the business challenges faced by Neha Prem General Store structured data-driven approach will be implemented using Business Data Management techniques. The following key strategies will be applied:

1. Competitor Analysis

- Conduct research on nearby grocery shops to understand their pricing, customer attraction techniques, and product availability.
- Identify unique selling points (USP) that can differentiate Neha Prem General Store from competitors.
- Implement strategies like loyalty programs and personalized offers to attract and retain customers.

2. Demand Forecasting

- Analyze past sales data to identify seasonal purchasing trends and fluctuations.
- Predict demand for products during festivals, changing weather conditions, and other local events.
- Ensure stock availability of high-demand items while minimizing overstocking of low-demand products.

3. Regression Analysis

- Use statistical models to study sales performance, pricing impact, and profit margins.
- Determine how customer purchasing behavior is affected by product pricing, promotional offers, and external factors.
- Adjust pricing strategies based on insights derived from data analysis.

4. Stock and Inventory Optimization

- Implement inventory management techniques to avoid stockouts and wastage.
- Categorize products into high-demand, medium-demand, and low-demand items to optimize purchasing.
- Reduce excess inventory costs by ensuring that slow-moving products are restocked in minimal quantities.

5. Expanding Customer Base through Marketing

- Promote the store through local advertising, posters, and WhatsApp marketing within the village.
- Introduce referral discounts and special promotions to increase foot traffic.
- Engage with customers through personalized service to encourage repeat purchases.

6. Wholesale Business Expansion

- Transition from a small retail model to a hybrid wholesale-retail model, allowing small sellers to source products from the store.
- Offer bulk purchase discounts to nearby shopkeepers to increase sales volume.
- Establish direct relationships with suppliers to reduce procurement costs and increase profit margins.

Implementation of Data Analysis Tools

- Use Microsoft Excel to track sales trends, analyze product performance, and visualize data with graphs.
- Implement Pivot Tables for better insights into revenue trends and stock movement.
- Use Bar Graphs and Pie Charts to present sales patterns and demand fluctuations effectively.

By applying these strategies, Neha Prem General Store can optimize its operations, increase profitability, and successfully transition into a larger-scale wholesaler while improving customer satisfaction.

Intended data:

To solve the above problem which I have mentioned the data required is sales data by days and month and stock data by month with price of each item to analysing stock, revenue of shop and to check which item is his hero product.

By interacting with shop owner, we analyse general problem like customer purchasing pattern change for this we need Calander of year to check festival and all.

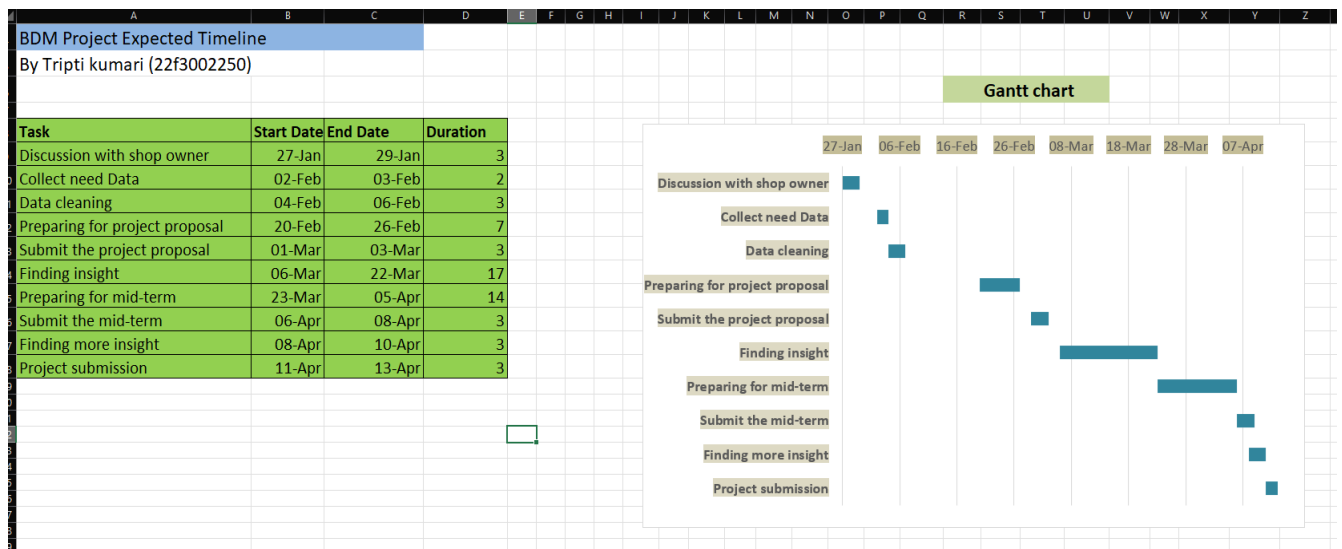
Tools for analysis:

I will use Microsoft excel and its various functions, features like pivot table, bar graph, pie charts to showcase the problem and its solution.

Expected Timeline

- Discussion with shop owner: 27 January – 29 January
- Collect need Data: 2 February – 3 February
- Data cleaning: 4 February – 6 February
- Preparing for project proposal: 20 February – 26 February
- Submit the project proposal: 1 March– 3 March
- Finding insight: 6 March – 22 March
- Preparing for mid-term: 23 March – 5 April
- submit the mid-term: 6 April – 8 April
- finding more insight: 8 April – 10 April
- project submission: 11 April – 13 April
- Complete Analysis on how to solve the problem and upload my final project: 13 April

Here is the Gantt chart to present my expected timeline



Expected Outcome:

This project aims to apply Business Data Management techniques to improve the efficiency and profitability of Neha Prem General Store. Expected outcomes include:

1. Increase Customer Base – By implementing marketing strategies and promotional offers, more villagers will be attracted to the store.
2. Optimize Inventory Management – Demand forecasting and stock categorization will ensure reduced wastage and increased availability of high-demand products.
3. Higher Profit Margins – Bulk purchasing and direct supplier relationships will help lower costs and improve revenue generation.
4. Wholesale Business Expansion – By attracting small retailers to purchase from the store, the business can successfully transition into a wholesaler.
5. Data-Driven Decision Making – Through Excel-based analysis, business insights will drive strategic improvements.