INDIAN INSTITUTE OF TECHNOLOGY, MADRAS

BUSINESS DATA MANAGEMENT CAPSTONE PROJECT PROPOSAL

ON

"Promotional offer analysis and stock forecasting at a Supermarket"

Submitted by

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1. Executive Summary

This proposal outlines the business data management capstone project for Super Store, a grocery store owned by a private company in Okhla, New Delhi, and aims at solving the business problems faced by the store. The proposal mainly discusses 2 problem statements faced by the store: Tracking the effectiveness of discounts on sales and poor stock management due to insufficient planning of sales. These problems are resulting in decreased profit margins and customer dissatisfaction. The supermarket, being both a B2B as well as a B2C store, is well-equipped with all kinds of products and is highly known for the discounts it offers. Therefore, a solution to these problems will help the store to increase its overall revenue and profit. A problem-solving approach to the above problems has been discussed in the proposal that makes use of sales data of the store in analysing weekly trends, profit margins, high-selling products, low-selling products, high-revenue-generating products, low-revenue-generating products, discounts on the products, average stock sold, etc. to build a solution that will identify the products which have high discounts and low sales and compute an average stock forecast so that the company can increase the sales with a higher margin and maintain the customer base.

2. Organisation Background

The company discussed in this project is a private supermarket - 'Super Store Pvt. Ltd.' and is situated in [redacted], New Delhi. It was established in 1999 and has another branch in Jamia Nagar itself. The store is well-equipped with a huge collection of products ranging from pens to toiletries, most of which follow a rich culture of discounts to attract customers. The store works both as a Business to Customer (B2C) as well as a Business to Business (B2B) enterprise by providing products to local customers as well as to organisations at wholesale prices respectively, all over Delhi.

The owner of the store is '[redacted]' who has employed around 12 employees. One handles the accounting tasks, two of them manage the sales counter and the others are labourers who manage the store. The store has a net worth of about 12 crores for the whole year. The store is open every day from 10 AM to 10 PM. The store delivers only store orders to their homes and does not offer direct online home delivery.

3. Problem Statement

1. Super Store is struggling to track the effectiveness of its promotional offers and discounts, resulting in a decrease in profit margins as well as customer loyalty.
2. Store is facing problems in the timely procurement of stock for the customer due to poor stock management, thereby leading to a loss of customers.

Objectives:

- To improve the effectiveness of its promotional offers and discounts in sales.
- To forecast the stock based on the sales data.

4. Background of the problem

Problem 1: Store is struggling to track the effectiveness of its promotional offers and discounts, resulting in a decrease in customer loyalty and engagement.

The store has been applying discounts on products but the sales have not increased drastically thereby decreasing their effectiveness. Because of this, they are not able to get good profit margins on products. They also do not have any idea about the high-selling-products and high-revenue-generating products and are thus not able to optimise their pricing and discount strategies. Since their store is mainly attractive to the customers because of the discounts they provide on items, they are also losing their customer base due to this.

Problem 2: Store is facing problems in the timely procurement of stock for the customer due to poor stock management, thereby leading to a loss of customers.

On the day of a festival, the manager encountered that all the products of an SKU were sold and the stock was over. They contacted their suppliers and it so happened that the suppliers could not supply the same product to them for another week. This resulted in a loss of customers as they could not provide that product to the customers when they asked for it.

5. Problem-Solving Approach

5a) Details about methods used with justification

Problem 1:

The products sold in high volume will be carefully analysed to check which products are more popular and contribute to most of the volume sold.

The profit margin of each product considering the present discount strategy as the baseline model will be identified to know the high-profit products which contribute the most to the revenue.

The aim is to find the products with high discounts and low sales. These are the items that are responsible for low customer satisfaction levels. This will give an incentive to either discontinue them or give more discounts to expand the customer base.

Problem 2:

The products bought in large quantities by the customers are important for revenue generation and the store cannot afford to have a dead stock of these products.

These products will be identified and the average estimate of the quantity sold for each product in the month will be analysed to prioritise the stock commitment for the products in high demand.

5b) Details about the intended data collection with justification

One month of sales data from the existing point-of-sale (POS) system will be collected. The timeframe will allow a sufficient sample size for the analysis of weekly/day-wise trends in customer purchase. The analysis of prices at which the products are bought and sold along with the quantity sold will identify the products with high discounts and low sales. On the other hand, the analysis of the quantity sold for the products in high demand will help in forecasting the average stock that must be there for the coming months at the least to prevent stockout.

5c) Details about the analysis tools with justification

Microsoft Excel: This tool helps to analyse the data in a structured manner, both mathematically as well as statistically, and is a very powerful spreadsheet program.

- Pivot tables: These help to analyse and summarise large amounts of data quickly and easily by just dragging and dropping various attributes of the data in rows, columns, or values.

- Charts and graphs: These tools will help us visualise the data and give good pictorial insights into the sales so that it becomes easier to get a hold of enormous numbers involved in the computation which might otherwise be difficult to read and interpret.
- Data validation: This tool is used to restrict the data type and add constraints to the range of certain attributes like discounts or to reach a minimum order size, etc.
- Data filters: It offers a quick way of sorting and filtering out the products that need to be prioritised in the analysis.

6. Expected Timelines

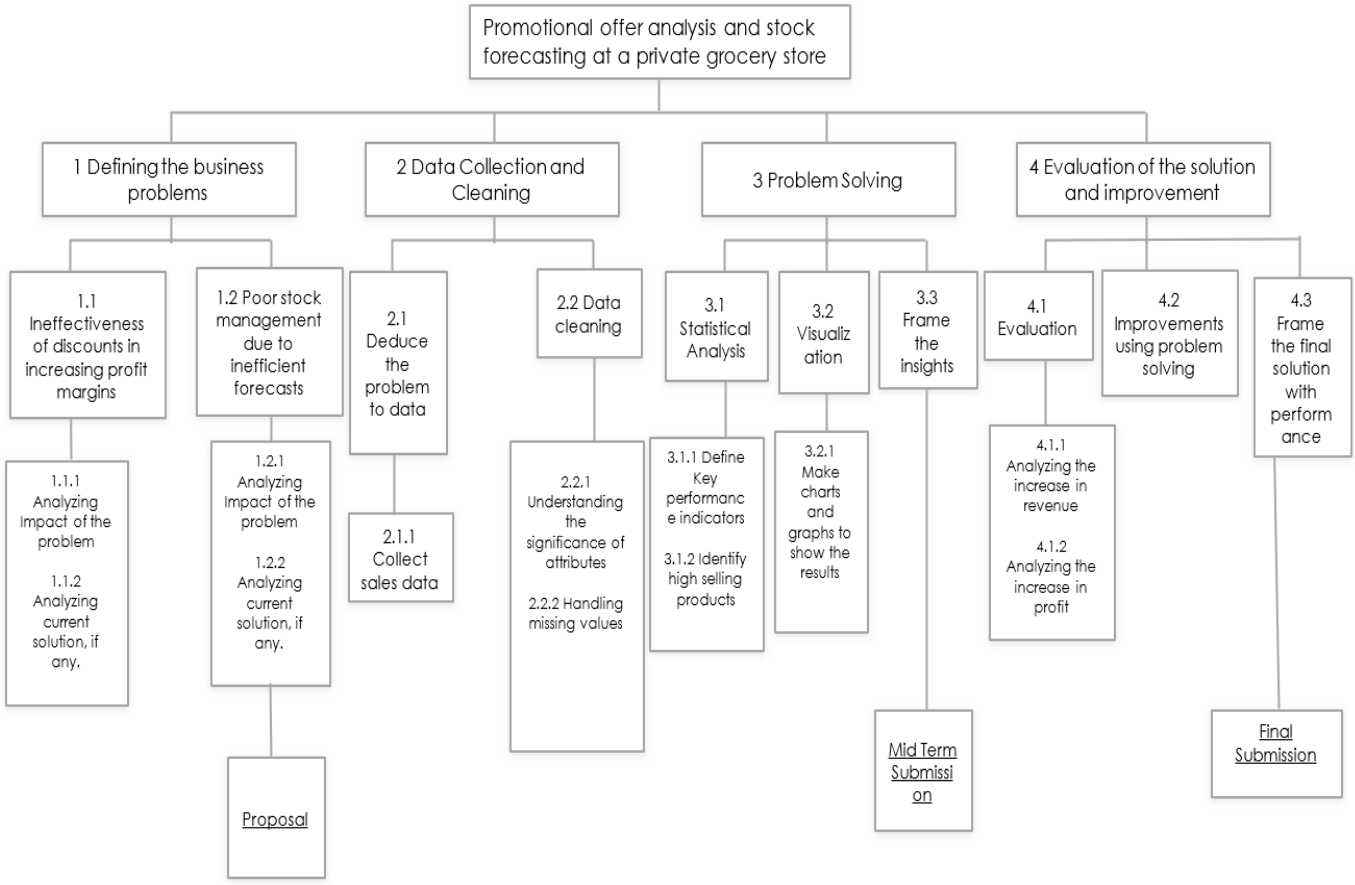

Figure 1 : Work Breakdown Structure

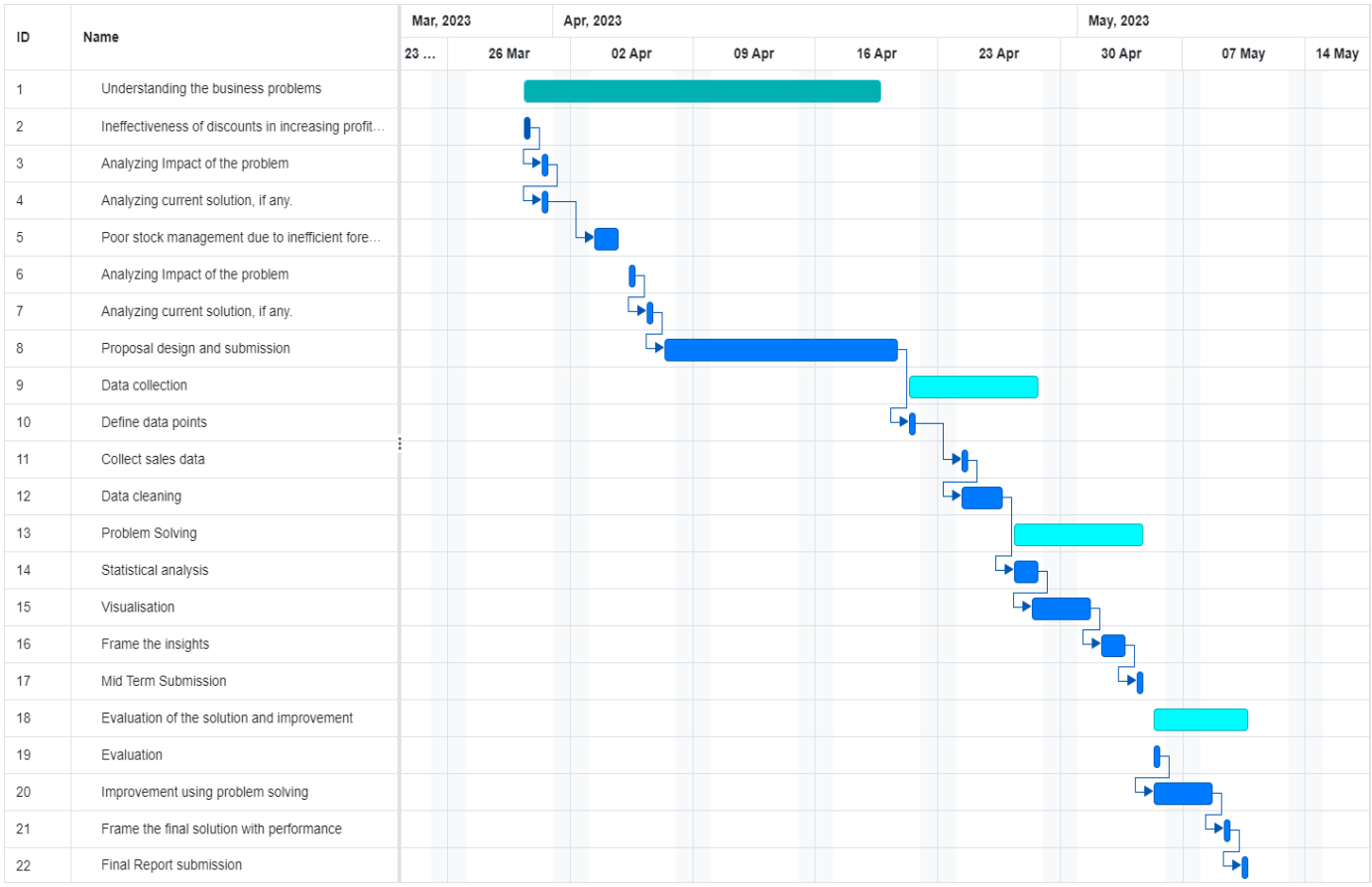

Figure 2 Gantt Chart

7. Expected Outcome

Problem 1: The analysis should identify the products with high discounts but low sales so that they are either discontinued or their quality is looked upon. An optimised discount strategy that focuses on the high-selling products will be developed.

Problem 2: The analysis should identify the high demand products and based on the demand, the stock will be forecasted appropriately to reduce stockouts and loss of customers due to it.