

**LEVERAGING DATA ANALYTICS FOR OPTIMISING INVENTORY LEVELS
AND ENHANCING THE OVERALL SUSTAINABILITY PRACTICES**
A PROPOSAL REPORT FOR THE BDM CAPSTONE PROJECT

SUBMITTED BY:

MADHAVAN R MOHAN

22F3000983



IITM Online BS Degree Program,
Indian Institute of Technology, Madras, Chennai
Tamil Nadu, India – 600036.

CONTENTS

1. DECLARATION STATEMENT	3
2. EXECUTIVE SUMMARY AND TITLE	4
3. ORGANISATION BACKGROUND	4
4. PROBLEM STATEMENT	5
5. BACKGROUND OF THE PROBLEM	5
6. PROBLEM SOLVING APPROACH	6
7. EXPECTED TIMELINE	7
8. EXPECTED OUTCOME	8

DECLARATION STATEMENT

I am working on a project titled “LEVERAGING DATA ANALYTICS FOR OPTIMISING INVENTORY LEVELS AND ENHANCING THE OVERALL SUSTAINABILITY PRACTICES”. I extend my appreciation to SELVAMANI 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 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 utilised for any other purpose with an IIT Madras tag. I understand that IIT Madras does not endorse this.

Signature: 

Name: MADHAVAN R MOHAN

Date: 14 JUNE 2024

EXECUTIVE SUMMARY AND TITLE

This proposal is for Selvamani Store, a provision store which is more than 25 years old, located in Tirunelveli District, Tamilnadu. It is a B2C (Business-to-Customer) business that sells regular grocery products (like rice, dal varieties, sugar, jaggery, palm jaggery, oil varieties, pulses, milk and other dairy products etc.) and other household items (like washing powders, washing liquids, body soaps, toothpastes, shampoos, floor cleaners etc.). After a couple of discussions I had with the business owner, I came to know that he needs to optimise the inventory levels to ensure product availability while minimizing excess stock and associated costs. Also, he needs to improve the sustainability practices in his store operations. Out of the many products he sells, I will choose any 20 products and collect the sales data, purchase data, price data, revenue data and expenditure data of those products. I will use Google Forms as the tool for collecting the data. I will do it for more than 30 days, so that, I will arrive at meaningful conclusions for giving the solution approaches to the problems. Using Microsoft Excel for analyzing the data, I will help the business owner optimise his business's inventory levels, ensure product availability, minimize excess stock. Also, I will help in improving the sustainability practices in his store operations.

ORGANISATION BACKGROUND

Name of the shop: SELVAMANI STORE

Name of the owner: Mr. M. SELVAMANI

Address of the shop: #8, SALIYAR STREET, TIRUNELVELI TOWN, TAMILNADU – 627006.

Selvamani Store is a typical provision store that sells regular groceries and other household items. After a couple of discussions I had with the business owner, I came to know that the business was initiated in 1999, by his father. He told that the store is open for almost 15 hours per day, from 8AM to 11PM, on all days of the week. It is currently managed by Mr. M. Selvamani, and was previously taken care of by his father. Mr. M. Selvamani took over the business from his father in 2019. He hasn't hired any workers for assistance as he feels that he is easily able to manage the business alone. Also, he doesn't use a computer for billing and writes the bills manually on paper for his customers. He has still not introduced digital payment option (like Google Pay, PhonePe, BHIM UPI, etc.), and has not yet partnered with any delivery service providers (like Swiggy Instamart, Zepto, Blinkit, etc.).

PROBLEM STATEMENTS

The business is facing two problems which are listed as follows:

- (i) *To optimise inventory levels, minimise excess stock and stock outs:* As the store sells many kinds of products, inventory management is crucial, where the analysis is done using the sales (to customers) data and purchases (from suppliers) data of the business.
- (ii) *To improve sustainable practices in the store operations:* By improving sustainability in the business, we can retain as well as earn new customers too. So, for achieving this, knowing the customer demographics and preferences is important, where the analysis is done using the age, gender, location, purchase history and feedback data of the customers.

BACKGROUND OF THE PROBLEMS

The explanations of the background of above mentioned problem statements are as follows:

- (i) *To optimise inventory levels, minimise excess stock and stock outs:* After a couple of discussions I had with the business owner, I came to know that in order to store the inventory stock that he purchases, the business owner maintains a separate warehouse. He told me that he purchases most of the groceries for his shop every day, and he has around 10 suppliers. He added that it would be reasonable to assume that in a business like his, either excess stock or stock out situations might occur at times, but he does his best to plan his inventory so that neither situation will occur.
- (ii) *To improve sustainable practices in the store operations:* After a couple of discussions I had with the business owner, I came to know that the area in which the store is situated, is always busy as it is the place where many people come for shopping, and there are frequent buses and trains arriving there. The business owner also told that he handles close to 200 customers daily, and has many regular customers too. He added that there are other businesses like parotta stalls and sweet shops which place bulk orders and he has to deliver the goods to them, daily. (At this point, I realised that it is also partially a B2B (Business-to-Business) business.).

PROBLEM SOLVING APPROACHES

To be able to address the challenges faced by the organization, it is necessary that we have a data-driven and procedural approach to problem solving that is comprehensive and data-driven.

In order to define the approach correctly, it is necessary for that approach to cover all details related to the methods, the methods of collection of the data, and the tools for analysis that will be used in the analysis of the data.

Additionally, the approach should justify each step that has been taken during the process of defining the approach.

- (i) *Details about the methods used:* In order to optimize inventory levels, there are a number of tools that can be used, including ABC Analysis and Inventory Turnover Analysis, among others. A number of methods, such as RFM (Recency, Frequency, Monetary Value) Analysis and Market Basket Analysis (MBA) can be utilized as part of the process of improving sustainability practices.
- (ii) *Details about the intended data collection:* Several types of data, including sales data, purchase data, inventory data, as well as other information, can be collected in order to optimize inventory levels based on sales data, purchase data, and inventory data. In order to improve sustainability practices, data about customer demographics and preferences, feedback and satisfaction scores from customers, and other information about customers can be collected in order to improve sustainability practices.
- (iii) *Details about the analysis tools:* As a primary analysis tool for optimizing inventory levels and improving sustainability practices, Microsoft Excel can be used to address these problems because it has a number of features like Pivot Tables and Charts, Mathematical and Statistical Functions, VLOOKUP, and a variety of graph types (such as bar graphs, line graphs, pie charts, scatter plots, box and whisker plots, and so on). The software can also be used for managing data in a complete manner and can be imported, explored, cleaned, analysed, and visualized in an easy manner.

EXPECTED TIMELINE

Figure1.1 - WORK BREAKDOWN STRUCTURE (WBS)

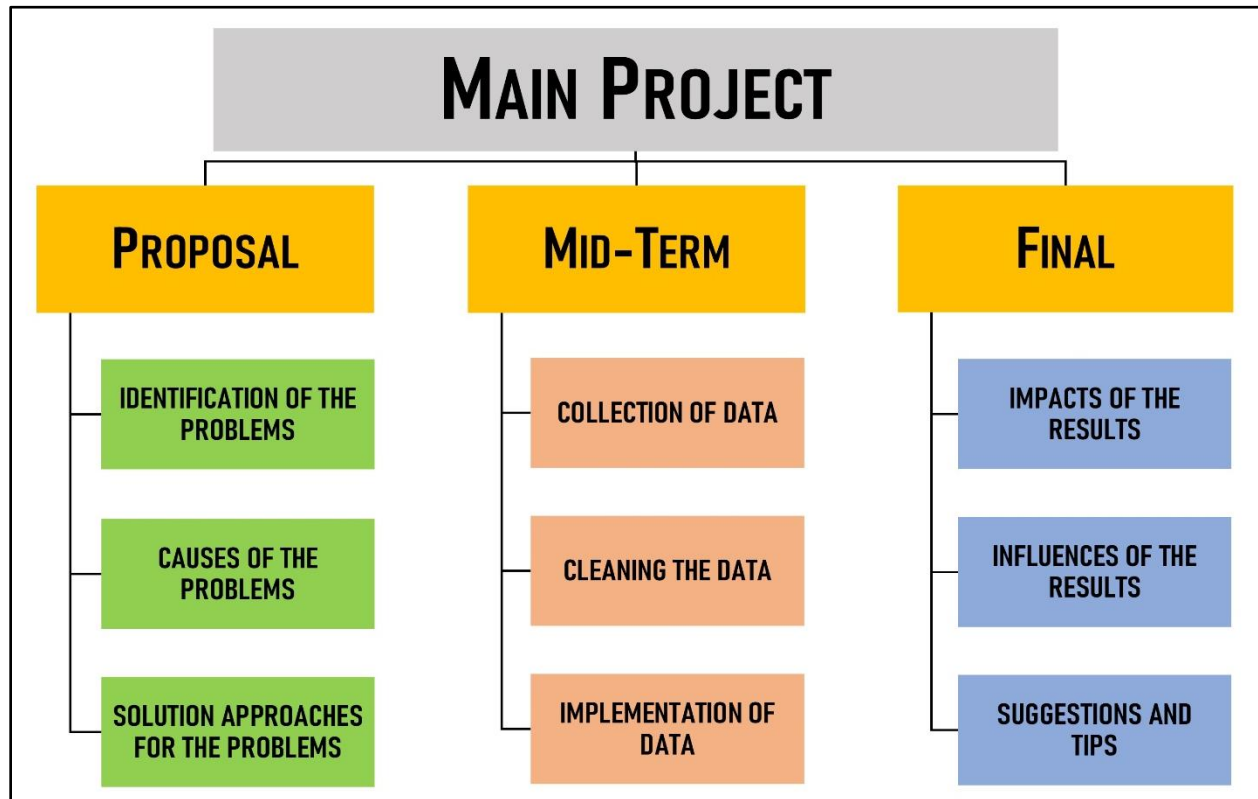


Figure1.2 - GANTT CHART



EXPECTED OUTCOME

On the basis of the problem solving approaches mentioned above for addressing the problem statements mentioned above, the expected outcomes can be summarized as follows:

- (i) Making use of the collected data as well as the insights that can be derived from the data collected in order to create a more efficient inventory management process and improve the efficiency of inventory management within the business, with the help of the data collected.
- (ii) Making improvements in the sustainability practices of the business, based on the information collected and the insights that are gained, that will enable it to dramatically improve its sustainability performance, will enable it to make improvements in its sustainability practices.

-----END OF REPORT-----