Data-Driven Strategies for Enhancing Petrol Bunk Performance

A Proposal Report for the BDM Capstone Project

Submitted by

Name: Rojesh

Roll number: 21f3002660

IITM Online BS Degree Program,

Indian Institute of Technology, Madras, Chennai

Tamil Nadu, India, 600036

Contents

Declaration Statement

I am working on a Project titled “Data-Driven Strategies for Enhancing Petrolbunk Performance”. I extend my appreciation to PICHAMUTHU NADAR FULES, 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 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 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: 

Name: Rojesh

Date: 05/09/2023

1 Executive Summary and Title

The project focuses on the Indian Oil Fuel Station located at 105-F, Palayamkottai Road West, Millerpuram, Tuticorin. The business is B2C and deals in the segment of selling Petrol, diesel, Xtramile petrol, and Lubricants directly to consumers at fuel stations.

The major business issues that the organization is facing are related to a very nominal profit due to a large number of inventory oils and analysis of Sales of Oils (petrol, Diesel, Xtramile).

The issues will be addressed by analyzing the data via statistical methods, data visualization tools (Excel and Python), and advanced analytics techniques to identify trends, patterns, and potential areas for improvement.

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

2 Organization Background

The company that I am working with is M PICHAMUTHU NADAR FUELS located on the Palayamkottai Road in Tuticorin. The fuel bank was established in the year 2005 and focuses on delivering high-quality fuel and lubricants for various customers. The Organization is a Dealer of Indian Oil Owned by Mr. Felix. He is dedicated to upholding the core values of serving quality products and ensuring safety and Customer Satisfaction. The Fuel Bulk has been known for providing quality oils in the past decade.

The Services offered:

- **Petrol**: Providing high-quality gasoline to fuel your journeys.
- **Diesel**: delivering reliable and efficient fuel solutions.
- **Xtramile**: To provide extended mileage.
- **Lubricants**: Providing a Range of engine oils that meet the specific needs of customers.

3 Problem Statement

3.1 **General Sales Analysis** – To perform a general Analysis to find the average daily performance.

3.2 **Inventory Management** - The problem is to optimize the inventory of all the fuels to minimize stockout, reduce excess inventory, and improve operational efficiency.

3.3 **Customer Traffic Analysis** - The problem is to analyze the Sales to identify the Dates with the highest sales volume with more customer traffic.

3.4 **Price Sensitive Analysis** - To analyze the price sensitivity of fuels by the use of trend lines between sales and price.

4 Background of the Problem

The Fuel Station primarily sells Petrol, Diesel, Xtramile Petrol, and Lubricants directly to consumers. However, it faces several pressing challenges. Inventory management proves to be an issue and inaccurate demand forecasts. Internal problems, such as ordering delays and excess inventory. Externally, fluctuating fuel prices and competitive pressures further complicate inventory optimization. The price sensitivity of fuels requires analysis of pricing data. Internally, limited data analysis capabilities and fixed pricing strategies hamper price sensitivity analysis. Externally, economic conditions play a role. Addressing these issues necessitates a holistic approach, encompassing internal process improvements, robust data analysis, and adaptability to external market dynamics, ultimately enhancing the Fuel Station's operational efficiency and profitability.

5 Problem-Solving Approach

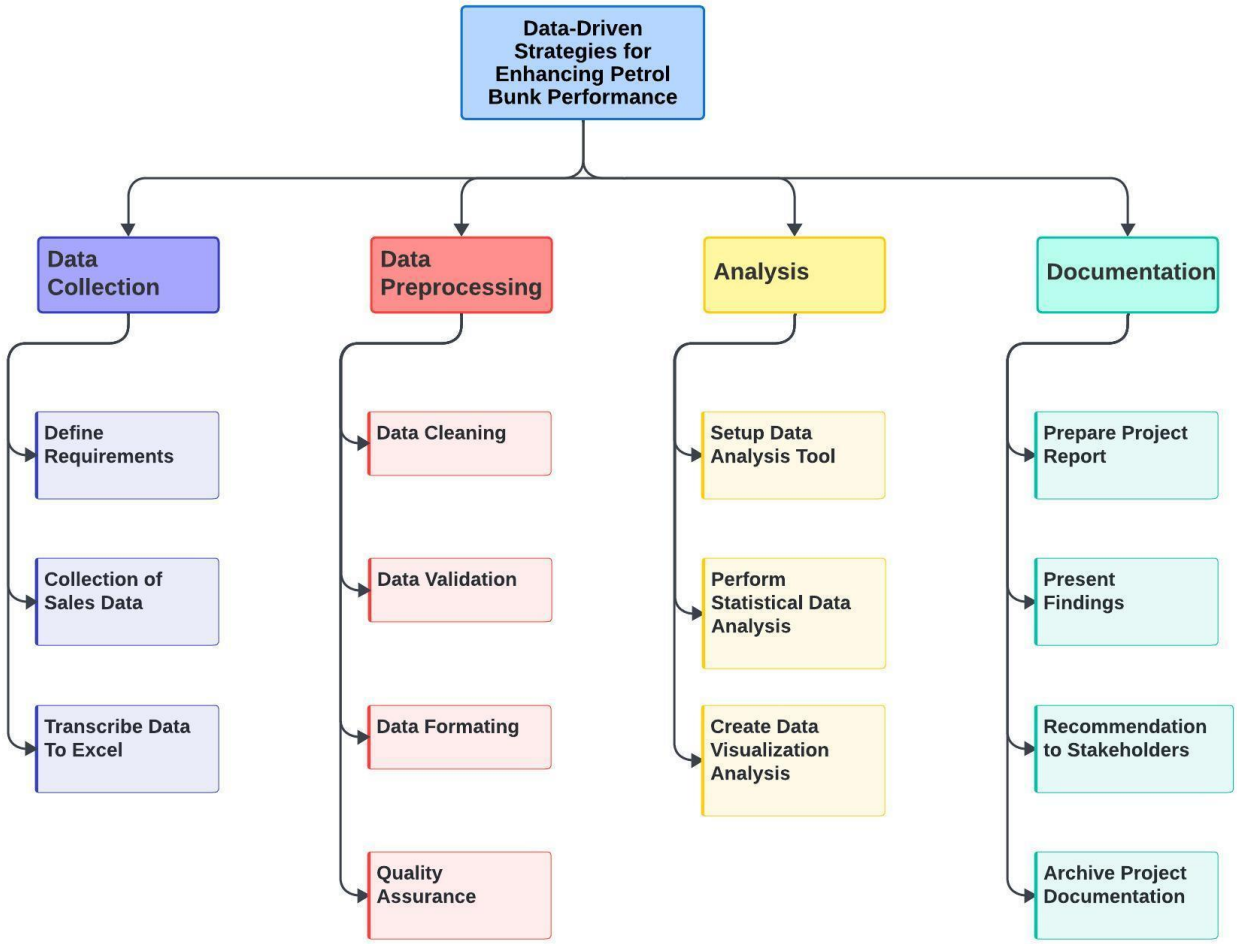
1. **Data Analysis and Visualization:** In the initial phase, historical sales data and customer traffic patterns will be collected and cleaned to ensure data accuracy. Data analysis techniques will be applied, including regression analysis, time series analysis, and data segmentation. These methods will provide actionable insights into sales trends and peak traffic days. Data visualization tools like Excel and Python will be employed to create clear and informative charts and graphs, aiding in the presentation of findings to stakeholders.
2. **Inventory Optimization:** To optimize inventory management, data analysis will be used to refine demand forecasting models. The implementation of automated reorder points and safety stock levels will reduce stockouts and minimize excess inventory. Regular performance monitoring and adjustment will ensure that inventory levels remain aligned with changing demand patterns.
3. **Price Sensitivity Analysis:** Analyzing the relationship between fuel prices and sales volumes will be a crucial aspect of addressing price sensitivity. Data will be used to assess how customers respond to price changes. This information will guide pricing strategies, helping the organization strike a balance between competitiveness and profitability.

Details about the data collection:

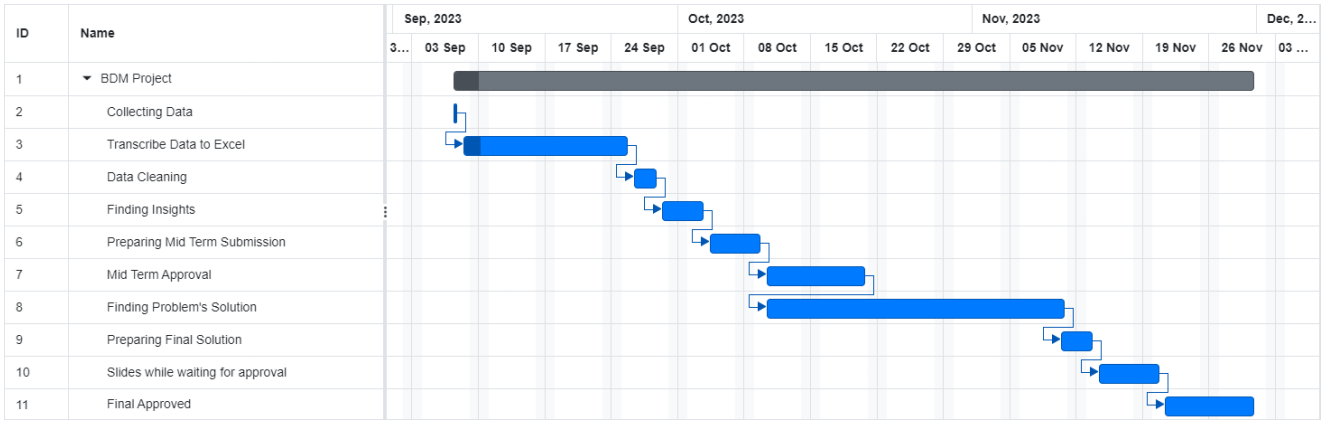
- Since Fuel Bulk has no software for maintaining any data they record all data in handwritten books
- Therefore, I must input the data into the spreadsheet.
- A year of data is to be gathered and entered into the spreadsheet.

6 Expected Timeline

6.1 Work Breakdown Structure:



6.2 Gantt chart



7 Expected Outcome

7.1 Data Trends are presented in various graphs, tables, and plots

7.2 Better inventory planning and strategy to optimize purchases.

7.3 Area to improve to increase profits.

7.4 A better idea to reduce costs in managing Businesses