Business Performance Analysis for a Local Hardware Store

A Proposal report for the BDM capstone Project

Submitted by

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Declaration Statement

I am Manjusha, working on a Project titled **"Business Performance Analysis for a Local Hardware Store"**. I extend my appreciation to '**Shri Dattakrupa Traders, Sirsam(Bk.)',** 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.

Signature of Candidate: (**Digital Signature**)

Name: Manjusha Sanjay Pundkar

Date: 13 May 2025

1. Executive Summary

This project aims to improve the day-to-day operations of Shri Dattakrupa Traders, a small hardware store in Sirsam (Bk.), by applying simple but effective data analysis techniques. Currently, the shop faces problems with tracking stock, understanding what products sell best, keeping regular customers engaged, and setting the right prices. To fix this, I plan to first build a digital inventory system using Excel to help the shop know exactly what items are fast or slow moving, and when to reorder them. I'll also analyze one year of sales data using Python to find demand trends, best-selling products, and seasonal patterns. For customer retention, I'll create a basic system to log regular buyers and offer them small rewards or discounts based on how often they purchase. Lastly, I'll study prices at nearby shops and calculate profit margins using the shop's purchase and sale prices, to help build a more accurate and competitive pricing model. Altogether, this project will help the shop make smarter, more confident business decisions using its own data.

2. Shop Background

- **Shop Name:** Shri Dattakrupa Traders.
- **Owner's Name:** Mr. Dattatraya Kale.
- **Address:** Sirsam (Bk.), Hingoli-431513, Maharashtra.
- **Business Type:** Retail (Hardware & Building Materials).
- **Establishment:** 2013.
- **Number of Employees:** 2
- **Working Hours:** 9 AM - 9 PM
- **Annual Revenue Estimate:** INR 5-10 Lakhs

The shop is a hardware shop owned by **Mr. Dattatraya Kale** and has been running since **2013**.

The shop is a small local business in **Sirsam (Bk.)** that sells tools and building materials. Many customers are builders, homeowners, and small contractors. The shop does not have a system to track its sales or inventory, so it relies on memory and handwritten notes. Because of this, it is difficult for the shop owner to know which products sell the most and which ones are not needed. This project will help organize sales and inventory data in a simple and easy way.

3. Problem Statements

3.1 - Inefficient Inventory Management

The store lacks a systematic inventory management process. Stock is monitored manually using handwritten logs and memory, which has resulted in frequent stockouts and overstocking. Overstocking leads to increased holding costs and clutter, while stockouts lead to lost sales opportunities. The business objective is to minimize inventory wastage and ensure that demand for fast-moving items is consistently met without excess stockpile.

3.2 - Lack of Sales Data Utilization

There is no structured sales data analysis process in place. The owner is unable to make data-driven stocking or marketing decisions due to the absence of any historical sales trend insights. This hinders the ability to forecast demand or identify seasonal trends. The objective is to enable smarter purchasing and marketing decisions by leveraging historical sales data.

3.3 - No Customer Retention Strategy

The shop does not have a mechanism to track customer visits or purchases, which results in missed opportunities to implement loyalty programs or personalized discounts. This weakens customer relationships and reduces the chances of repeat business. The objective is to build customer loyalty and increase retention through data-backed engagement strategies.

3.4 - Pricing Strategy Issues

The pricing of products is determined through market intuition without detailed analysis of competitors' prices or profit margins. Some products are overpriced, deterring customers, while others are underpriced, reducing potential profitability. The objective is to create a pricing model that balances competitiveness and profit margins through data comparison and analysis.

4. Background of the Problems

4.1 Inventory Management Issues

Many small businesses like Shri Dattakrupa Traders face inventory challenges due to a lack of digital tools. The shop currently relies on handwritten logs and memory to track stock, which leads to frequent overstocking of low-demand items and stockouts of fast-moving goods. This not only increases storage costs but also leads to missed sales opportunities and customer dissatisfaction. Without real-time data, the owner struggles to make timely restocking decisions.

4.2 Sales Data Utilization Challenges

There is no system in place to record or analyze past sales. Decisions about stocking and marketing are made based on assumptions rather than evidence. This limits the shop's ability to recognize which products are consistently in demand or to plan for seasonal variations. As a result, the shop may invest in items that don't sell well, while ignoring products that could boost revenue.

4.3 Customer Retention Limitations

Currently, no customer data is collected or tracked. There is no way to identify loyal buyers or understand customer preferences. Without a loyalty program or personalized offers, the shop loses the chance to build strong relationships with its regular customers. This affects long-term business growth, as retaining an existing customer is often more cost-effective than acquiring a new one.

4.4 Pricing and Profitability Concerns

Pricing is decided without any structured method. Some items are priced too high, discouraging buyers, while others are priced too low, reducing the potential profit margin. Since there is no proper record of cost prices or competitor pricing, the shop cannot ensure consistent profits or competitiveness in the local market.

5. Problem Solving Approach

5.1 Data Collection

To begin the analysis, data will be collected from various primary sources, including handwritten sales records, purchase invoices, and supplier bills. Over a span of 12 months, this data will be digitized into Excel sheets and verified for accuracy. Additionally, informal

interviews with the shop owner will be conducted to understand undocumented patterns in customer behavior and stocking practices.

5.2 Inventory Optimization

An Excel-based inventory management system will be created to log stock quantities, reorder levels, purchase dates, and selling prices. By analyzing product movement over time, products will be categorized as fast-moving or slow-moving. A restocking threshold will be set for each category, and alerts will be designed using formulas in Google Sheets to automatically notify the shop owner when restocking is required. This will help avoid stockouts and reduce holding costs of unsold inventory.

5.3 Sales Data Analysis

Sales trends will be explored using Python's Pandas and Matplotlib libraries. The analysis will include seasonal demand trends, product-wise revenue contribution, and peak sale days or months. This will allow the shop to forecast demand more accurately and plan inventory purchases accordingly. A dashboard will be created to visualize trends and simplify interpretation for non-technical users, such as the shop owner.

5.4 Customer Retention Strategy

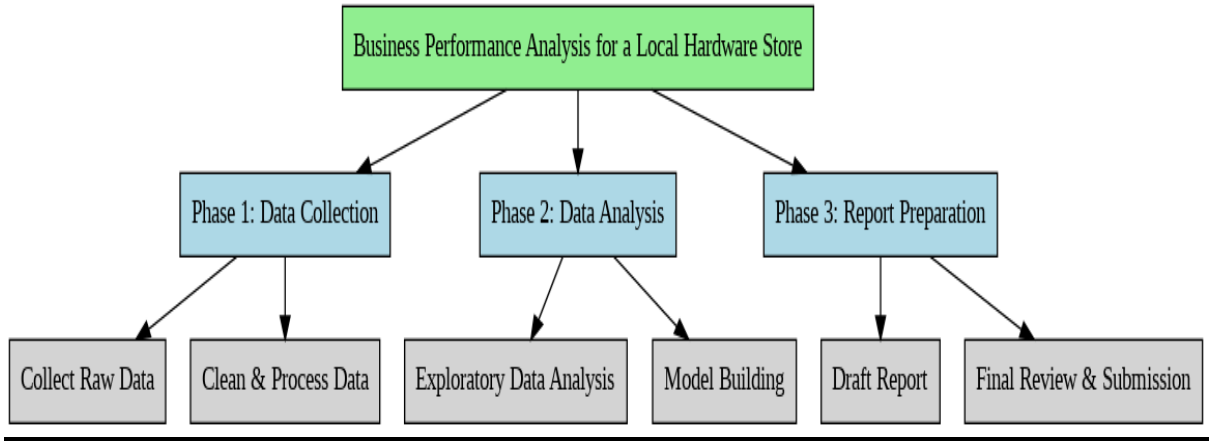
A basic customer database will be created using Google Sheets to store information like customer names, phone numbers, visit frequency, and purchase history. Using this data, a loyalty system will be developed—frequent buyers will be offered discounts or bonus items after a certain number of purchases. This engagement strategy will not only promote customer retention but also increase sales through personalized promotions.

5.5 Pricing and Profit Margin Analysis

The current pricing strategy is based on guesswork, which affects both competitiveness and profit. To improve this, a local market survey will be done to collect prices of similar products from nearby shops. Purchase prices and selling prices will be used to calculate profit margins manually. Based on this, pricing suggestions will be made to ensure the shop stays competitive while earning reasonable profits.

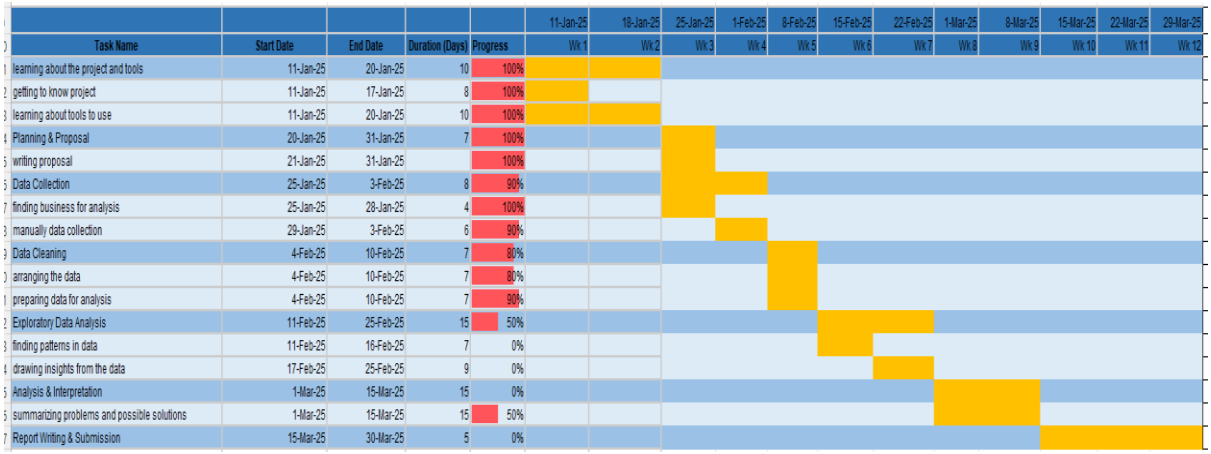
6. Expected Timeline

❖ **Work-flow breakdown structure :**



Week 1-2:	Planning, proposal writing, collecting data from the hardware shop
Week 3-4:	Cleaning and preprocessing (handling data, formatting data)
Week 5-6:	Exploratory Data Analysis (EDA) – Understanding trends, patterns.
Week 7-8:	Completing the analysis and Interpreting results
Week 9-10:	Conclusion and Summary
Week 11-12:	Creating reports, visualizations, and preparing the final submission

Gantt chart



Task Name	Start Date	End Date	Duration (Days)	Progress
learning about the project and tools	11-Jan-25	20-Jan-25	10	100%
getting to know project	11-Jan-25	17-Jan-25	8	100%
learning about tools to use	11-Jan-25	20-Jan-25	10	100%
Planning & Proposal	20-Jan-25	31-Jan-25	7	100%
writing proposal	21-Jan-25	31-Jan-25		100%
Data Collection	25-Jan-25	3-Feb-25	8	90%
finding business for analysis	25-Jan-25	28-Jan-25	4	100%
manually data collection	29-Jan-25	3-Feb-25	6	90%
Data Cleaning	4-Feb-25	10-Feb-25	7	80%
arranging the data	4-Feb-25	10-Feb-25	7	80%
preparing data for analysis	4-Feb-25	10-Feb-25	7	90%
Exploratory Data Analysis	11-Feb-25	25-Feb-25	15	50%
finding patterns in data	11-Feb-25	16-Feb-25	7	0%
drawing insights from the data	17-Feb-25	25-Feb-25	9	0%
Analysis & Interpretation	1-Mar-25	15-Mar-25	15	0%
summarizing problems and possible solutions	1-Mar-25	15-Mar-25	15	50%
Report Writing & Submission	15-Mar-25	30-Mar-25	5	0%

7. Expected Outcome

With the implementation of structured data analysis techniques, Shri Dattakrupa Traders is expected to experience notable improvements in its day-to-day operations and overall business performance. The introduction of an organized inventory tracking system will significantly reduce stock wastage and prevent frequent stockouts, ensuring that high-demand items are always available. The analysis of sales data over the past 12 months will offer the owner meaningful insights into sales trends and seasonal demands, leading to better stock purchasing decisions and more accurate demand forecasting.

Furthermore, by initiating a basic customer tracking system and introducing a loyalty strategy, the shop will likely see an increase in repeat purchases and stronger customer relationships. A simple yet effective pricing strategy will be developed based on competitor analysis and profit margin evaluations, which will help in standardizing pricing and maximizing revenue. Overall, this project is expected to result in improved operational efficiency, enhanced customer satisfaction, and a measurable increase in profitability — helping the shop transition from traditional methods to a more informed, data-driven approach to business.