Smart Pharmacy Management : Leveraging Data For Efficiency & Growth

A Proposal Report For The BDM Capstone Project

Submitted By -

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Declaration Statement

I am working on a Project titled **"Smart Pharmacy Management : Leveraging Data For Efficiency & Growth"**. I extend my appreciation to **Janta Medical Store, Muradnagar, Ghaziabad, Uttar Pradesh**, for providing the necessary resources that enabled me to conduct my project.

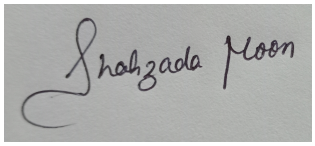
I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered from primary sources and carefully analysed to assure its reliability.

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 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

Name : Shahzada Moon

Date : 12/07/2025

1. Executive Summary and Title

My project name is **"Smart Pharmacy Management : Leveraging Data For Efficiency & Growth"** which focuses on a local pharmacy store located at Gurudwara Market, Ordnance Factory Road, Mohammadpur Dwedha, Muradnagar, Ghaziabad - 201206, Uttar Pradesh, India". The pharmacy is a B2C business (i.e., it serves individual customers). It offers drugs prescription from the doctors and Over The Counter Products (O.T.C. Products - Medications and products that can be purchased without the prescription from the doctor). Despite consistent demand, the store faces recurring issues in inventory control, manual billing, and lack of structured customer engagement.

The primary business problems include mainly three problems. The first one is Inefficient Stock Management Problem (i.e., overstocking, stock-outs, expired medications and absence of demand forecasting). The second problem is Account Management Problem (i.e., inefficient billing processes and lack of a digital record system). Additionally, the third one is Customer Management Problem (lack of organised customer database and message reminders for missed medications of regular customers) which restricts effective decision-making and customer retention.

These problems can be addressed by analysing the daily and weekly data which I'll collect directly from the pharmacy over a 42 days period through interviews, daily stock records, and manual transaction logs. The data will be cleaned, analysed, and visualised for analysing sales, trends, stock movement patterns and the regular & loyal customers using simple tools such as Excel and Google Sheets.

The expected outcomes include identifying top-selling products, understanding buying patterns, and suggesting practical methods like Excel-based inventory tracking, demand estimation, and basic customer logging to streamline operations.

2. Organisation Background

Janta Medical Store is a small, owner-operated pharmacy located in a semi-rural area of Ghaziabad, Uttar Pradesh. Established over two decades ago by Mr. Vikram Singh, the pharmacy caters to local residents with both prescription and OTC medicines. With no digital systems in place, all operations including stock tracking, billing, and accounting are done manually. The store receives approximately 30–35 customers daily, with around 70% being repeat buyers. Despite a

decent monthly turnover (1.5 Lakh INR) and a strong customer base, operational inefficiencies hinder scalability and profitability. The owner does not currently use any software tools or formal business practices, resulting in missed opportunities for optimisation and competitive improvement.

3. Problem Statements

3.1 Inefficient Stock Management Problem

Pharmacy store does not have any sufficient management for stock-outs & overstocking, expiry of medicines and manual tracking. It also have lack of demand forecasting for trends like top-selling products or seasonal demand, which results in overstocking and stockout.

3.2 Account Management Problem

Pharmacy store does not have proper digital records of sales & income. Manual records often have errors or omissions which makes it difficult to know real profits or losses. Thus, affects the decision-making and strategic planning.

3.3 Customer Management Problem

Pharmacy store does not have an organised digital database of regular customers, nor an automated reminder system for missed medication refills or appointments. This leads to poor decision-making and low customer retention, especially for customers who depend on regular medication or services.

4. Background of the Problem

The Janta Medical Store operates in a semi-rural area and lacks modern business tools or processes. One of the primary issues is inefficient stock management. The absence of a digital inventory system has resulted in frequent stock-outs and expired medicines. Sales trends and seasonal demands are not analysed, leading to either over-stocking or under-stocking. Internally, the owner tracks stock manually and has no supplier performance monitoring. Externally, seasonal spikes in

demand, inconsistent deliveries from suppliers, and limited communication channels compound the problem.

The second challenge relates to the lack of structured accounting. Billing is done manually, and there is no digital log of sales or income. This makes it difficult for the owner to track profits or losses, generate invoices, or evaluate financial performance. Internally, this creates confusion, while externally it limits the store's credibility with suppliers or institutions that may require verified financial records for credit or funding.

Customer management is another neglected area. The pharmacy does not maintain a database of regular customers or their medication histories. As a result, customers receive no refill reminders and may switch to competitors offering better service. This creates reputational risks and health risks for customers who miss essential medications.

5. Problem Solving Approach

The goal of this project is to provide simple, data-driven solutions to operational problems faced by Janta Medical Store. To address these, I have chosen specific methods aligned with each problem, supported by primary data collected during visits of 42 days, and will analyse using basic tools like Excel, Google Sheets, and Python where required.

5.1 For The Inefficient Stock Management Problem

The primary method adopted is **ABC Analysis**, which helps classify medicines based on their contribution to overall sales revenue. Category A includes the top 70–80% of revenue-generating items, Category B the next 15–20%, and Category C the remaining 5–10%. This method allows the owner to prioritise procurement and stock maintenance for high-value products. I also plan to use **line charts** to analyse seasonal sales trends and identify periods of high demand. This will support **basic demand forecasting** using a 3-point moving average method to estimate expected quantities for top-selling products. The goal is to minimise overstocking, stock-outs, and expired products by aligning purchase quantities with historical demand.

5.2 For The Account Management Problem

I will adopt a **simple book-keeping framework** using structured Excel/Google Sheets templates and a Flask-. The templates will include daily sales entries, purchase costs, and income summaries. From these, I will generate **bar graphs and pie charts** showing monthly income, expenditure breakdown, and profit margins. The data analysis will help identify sales trends and periods of high profitability or loss. A simplified **Profit Calculation Formula (Profit = Total Sales – Total Cost)** will be applied monthly. This system will allow the pharmacy owner to monitor finances regularly and make informed decisions about inventory spending and pricing.

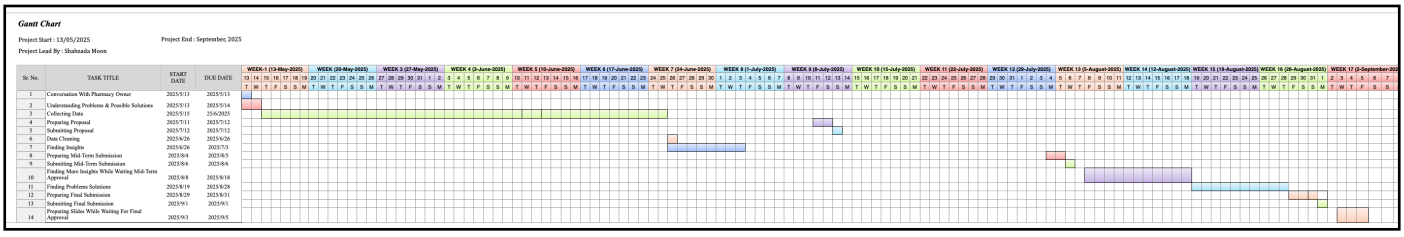
5.3 For The Customer Management Problem

I will collect customer visit data and use it to identify **repeat customers** based on frequency and purchase type. The method includes creating a **customer logbook** and analyzing it to find high-frequency customers (e.g., customers visiting more than 4 times a month). This will help segment loyal customers. Based on this, I will propose setting up a basic **follow-up calendar** in Google Sheets or a reminder column in Excel to alert the owner for potential missed refills.

Besides these solutions, for all three problems (Inventory, Accounting and Customer Management problems), a lightweight **Flask-Based Web Application** connected to a local SQLite database will be proposed as an optional digital solution. This app will allow the pharmacy owner to manage inventory, log sales, and track customer purchases and medication schedules on a single dashboard. Features like refill reminders and auto-generated sales summaries will be included, for technical comfort.

6. Expected Timeline

6.1 Gantt Chart :-



6.2 Work Breakdown Structure (W. B. S.) :-

7. Expected Outcome

7.1 Better management for stock-outs, over-stocking and expiration of medicines with time-to-time alert.

7.2 A proper daily, weekly, monthly and yearly accounting report for analysing the profit or loss in pharmacy store.

7.3 Better customer management by saving the history of customers for predicting their preferences and also pointing out the regular and loyal customers.

7.4 A customised system for sending the Email-alert if the regular customers missed their medicines.

7.5 A fast billing process which reduces the time consumptions of manually billings

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