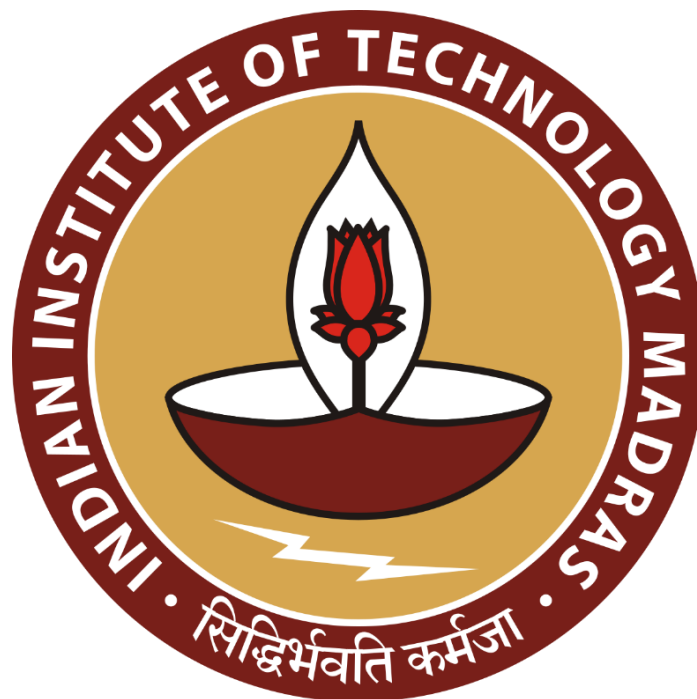# Citizen Care Pharmacy: Unlocking the Potential of Data-Driven Solutions for B2C Success

A Mid Term report for the BDM capstone Project

Submitted by

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Declaration Statement

I am working on a Project Title "**Citizen Care Pharmacy: Unlocking the Potential of Data-Driven Solutions for B2C Success**". I extend my appreciation to **Citizen Care Pharmacy**, 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.
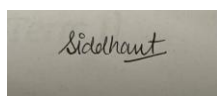
Additionally, I affirm that all procedures employed for the purpose of data collection and analysis have been duly explained in this report. The outcomes and inferences derived from the data are an accurate depiction of the findings acquired through thorough analytical procedures.

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: SIDDHANT GAHLOT

Date: 04/03/2025

1   Executive Summary and Title

Project Title: "Citizen Care Pharmacy: Unlocking the Potential of Data-Driven Solutions for B2C Success"

Citizen Care Pharmacy, a B2C healthcare business located in Greater Noida, Uttar Pradesh, is currently navigating several operational and financial challenges. Established in 2021 and catering primarily to senior citizens and local residents, the pharmacy provides essential services such as free home delivery and discounts of up to 15%. However, hefty rent payments, increasing competition from online platforms, and the absence of workforce support are affecting the pharmacy's profitability and efficiency.

This midterm report aims to address these challenges using business data management techniques. By analyzing sales patterns, customer demographics, and financial data, this project seeks to develop actionable solutions. Key objectives include optimizing inventory management to improve profit margins, identifying high-demand and high-margin products, and crafting strategies to enhance customer loyalty and engagement. Additionally, financial performance trends will be studied to identify cost-saving opportunities and ensure sustainable growth. Through robust data collection and analysis, this project is committed to equipping Citizen Care Pharmacy with practical tools and strategies to overcome its challenges. The ultimate goal is to enhance its operational efficiency, drive profitability, and cement its role as a trusted healthcare provider for the community.

2   Proof of Originality of Data

As part of the proof of originality for the collected data, I am providing the following supporting documents and materials: Letter from the Organization, Images of the Firm/Servicescape and a video capturing an interaction with the founder. These are securely attached via a Google Drive link for your reference and review:

https://drive.google.com/drive/folders/1yIxvrjxJVGDdFYJ191uJLa88aXxrbpFV?usp=sharing (copy and paste the link in browser please)

The mode of the video is in Hindi Language majorly and an English transcript is provided in the google drive link for your reference and review.Please note that the rent mentioned in the video is higher than mentioned in sheets due to inflation as the video was recorded in March. Photos of the shop have been added in the same drive link for your reference.

3 Metadata and Descriptive Statistics

For this project, data was systematically collected from 1st December 2024 to 28th February 2025, tracking the daily sales and revenue generated at Citizen Care Pharmacy. This dataset encompasses detailed transactional information, enabling accurate analysis of the pharmacy's performance over the three-month period.

The shop owner follows a unique system of recording transactions, wherein flat numbers are noted instead of customer names. This ensures clarity in identifying recurring customers while respecting privacy, as the pharmacy is located within a residential complex. The collected data was structured into the following columns:

1. **Date:** This column records the date of each transaction in DD/MM/YYYY format to allow chronological sorting and trend identification.
2. **Flat:** A text-based column documenting the flat numbers of customers within the residential complex.
3. **Category:** This categorical column classifies products into types such as Allopathic Medicines, Ayurvedic Medicines, Cosmetic Products, or Surgical Supplies.
4. **Product:** A text-based column listing specific product names purchased (e.g., Paracetamol, Vicks Vaporub, Lip Balm, Bandages).
5. **Quantity:** A numerical column capturing the number of units purchased for each product during a transaction.
6. **Price per Unit:** This column displays the price per unit for each product, reflecting accurate market rates.
7. **Total Price:** A calculated column summarizing the revenue generated per transaction by multiplying the quantity by the price per unit.

Once the data was collected, it was transcribed into Google Sheets for detailed analysis. Using Google Sheets, tools such as formulas, pivot tables, and charts were employed to uncover trends in sales patterns, revenue streams, and seasonal fluctuations. This structured approach provided valuable insights into high-demand products, customer purchasing habits, and overall operational efficiency.

Link to the Data:

https://docs.google.com/spreadsheets/d/1bbbBZjTPY1YRc_MHW3Ofr_4NjPYFf0muQy222vos0D8/edit?usp=sharing

Descriptive Statistics

This analysis provides a statistical summary of the dataset collected from 1st December 2024 to 28th February 2025. By calculating key measures, we aim to uncover significant insights into sales and revenue trends across product categories.

1. Measures of Central Tendency

These measures summarize the central point of the data for sales and revenue:

- **Mean (Average):** The average revenue across transactions provides insight into typical sales figures:
    - Allopathic Medicines: ₹ 36785.16667
    - Ayurvedic Medicines: ₹ 30699.16667
    - Cosmetic Products: ₹ 36195.83333
    - Homeopathic Medicines: ₹ 22928.75
- **Median (Quantity Sold):** The median quantity sold identifies typical purchase sizes across categories:

- o Allopathic Medicines: 559
- o Ayurvedic Medicines: 360
- o Cosmetic Products: 310
- o Homeopathic Medicines: 297
- **Mode (Category):** The most frequently occurring product category reveals customer preferences for each month:
  - o December:Allopathic
  - o January: Allopathic
  - o February: Allopathic

2. Measures of Variability

These measures illustrate the spread of revenue across categories:

- **Standard Deviation (SD):** Indicates the consistency of revenue across transactions for each category:
  - o Allopathic Medicines: 1309.912696
  - o Ayurvedic Medicines: 3102.096321
  - o Cosmetic Products: 1502.399546
  - o Homeopathic Medicines: 1691.804307
- **Range (Revenue):** The difference between the highest and lowest revenue values reflects variability:
  - o Allopathic Medicines: ₹ 2431
  - o Ayurvedic Medicines: ₹ 5431.5
  - o Cosmetic Products: ₹ 3004.75
  - o Homeopathic Medicines: ₹ 3268.25

3. Frequency Analysis

Top-Selling Categories: Categories with the highest frequency of transactions are:

- Category with Maximum Transactions: Allopathic-572(Feb)
- Category with Minimum Transactions: Homeopathic-268(Feb)

4   Detailed Explanation of Analysis Process/Method

The analysis process began with the systematic collection of data from 1st December 2024 to 28th February 2025, which was then cleaned and structured in Google Sheets. This crucial step involved verifying the dataset for inconsistencies, missing values, and duplicates to ensure

accuracy and reliability. The data was organized into columns such as Date, Flat, Category, Product, Quantity, Price per Unit, and Total Price, providing a clear structure for analysis. Descriptive statistical techniques—including mean, median (for quantity sold), mode (for product categories), standard deviation, and range—were applied to uncover key insights about customer preferences, revenue trends, and variability in performance across product categories.

For visual representation, several chart types were employed to highlight important patterns and trends effectively. Clustered column charts compared monthly revenue across categories, showcasing profitability trends and identifying the top-performing months. Line marker charts tracked fluctuations in revenue over time, revealing peak demand periods and changes in customer behavior. Pie charts were utilized to illustrate the percentage contribution of each category to total revenue, while bar charts outlined monthly expenses, offering a clear understanding of cost distribution and opportunities for optimization. These visualizations made it easier to interpret the data and communicate findings clearly.

Google Sheets' features, including pivot tables and formulas, facilitated a structured and interactive exploration of the dataset. This systematic approach enabled the identification of trends, patterns, and actionable insights, empowering Citizen Care Pharmacy to optimize its operations and enhance decision-making for sustained profitability.

5 Results and Findings
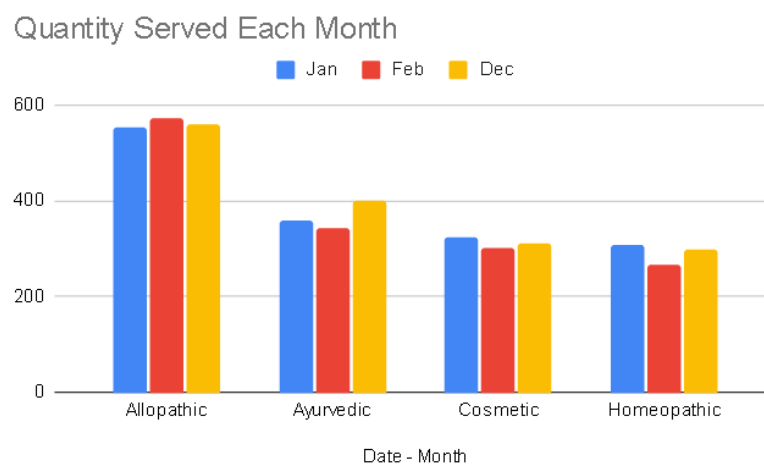
**FIGURE1:Quantity served each Month**

The clustered column chart reveals that December recorded the highest quantity served (1,567), driven by increased demand for Allopathic (559) and Ayurvedic (401) products, likely due to seasonal health concerns and year-end preparations. Allopathic medicines consistently led across all months, with a total of 1,683, indicating their essential role in meeting customer needs. In contrast, Homeopathic products accounted for the lowest quantity served (872), suggesting niche preferences or limited demand. February maintained strong engagement (1,482) despite fewer days, reflecting consistent customer loyalty. These trends highlight the seasonal and category-specific variations that inform inventory planning and business strategies.
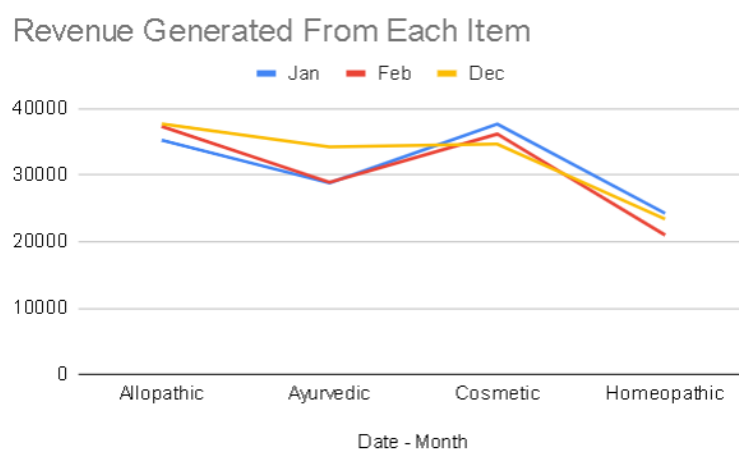

FIGURE2:Revenue generated From Each item

The line marker chart visualizing revenue generated from each product category across months reveals clear trends and patterns. December recorded the highest overall revenue (₹130,122.25), with Allopathic medicines contributing significantly (₹37,718.75), likely due to increased purchases for seasonal illnesses and year-end stocking. Cosmetic products peaked in January (₹37,693.25), reflecting stable customer interest, while Ayurvedic products maintained a gradual incline, reaching their highest in December (₹34,280.50), potentially driven by winter-specific health remedies. Homeopathic products consistently generated the lowest revenue, totaling ₹68,786.25 over three months, suggesting limited demand or customer base.

Interestingly, February, despite being a shorter month, achieved a commendable revenue (₹123,564.50), emphasizing steady customer engagement across categories. These trends underline the dominance of Allopathic medicines as the primary revenue driver, while the variations in other categories highlight opportunities for targeted marketing or stock adjustments to capitalize on seasonal demand patterns. The chart effectively captures revenue fluctuations and category-specific dynamics, aiding in strategic planning.
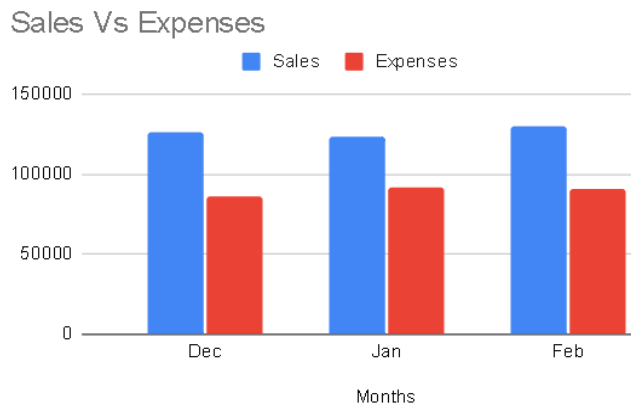
FIGURE3:Sales Vs Expenses

The comparison between sales and expenses highlights consistent profitability, with sales surpassing expenses throughout the observed period from December to February. February emerged as the most profitable month due to high sales paired with controlled expenses, while December also demonstrated strong cost efficiency, maintaining the lowest expense levels. Despite this, January's slightly elevated expenses impacted profitability marginally, emphasizing the need for continuous cost control. This consistent trend reflects effective financial management, but it also underscores the importance of strategic planning to sustain revenue during potential low-demand periods in the future.
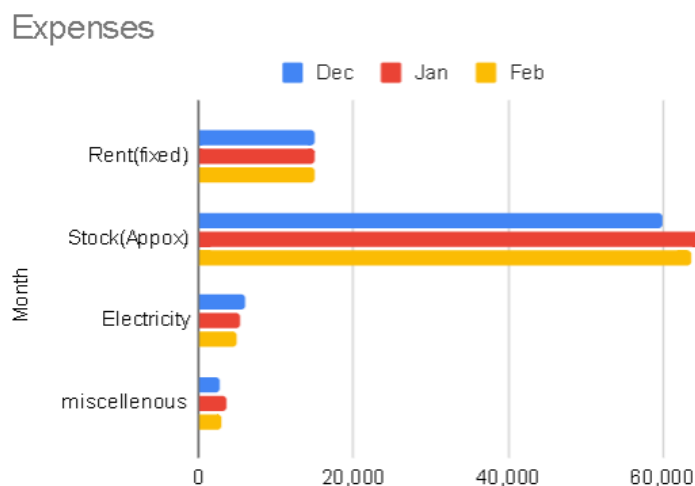
FIGURE4:Expenses across months

The clustered bar graph outlines monthly expenses, with fixed rent consistently at ₹15,000. Stock expenses, being approximate due to fluctuating medicine demand, peaked in January (₹65,650). Electricity costs decreased steadily from ₹5,900 in December to ₹4,970 in February, though the higher December bill reflects heater usage during the cold winter. Miscellaneous expenses varied slightly, indicating operational adjustments. This breakdown highlights effective cost management despite seasonal and demand-driven variations.
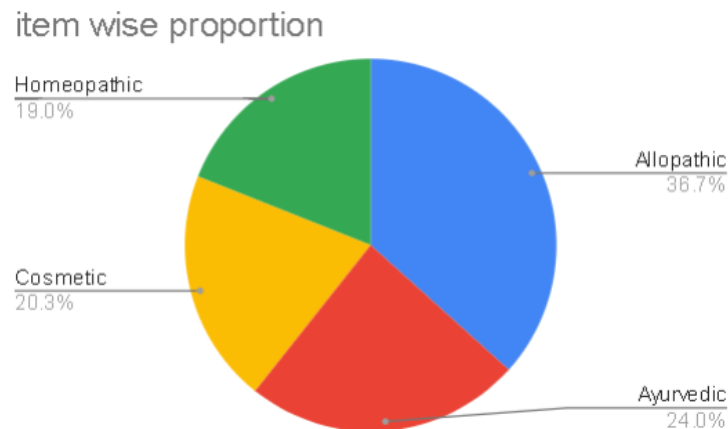
FIGURE5:Item Wise Proportion to Revenue

The pie chart depicting item-wise proportion of quantities sold highlights that Allopathic products accounted for the largest share at 36.7%, reflecting their consistent demand as essential medicines. Ayurvedic items followed with 24%, underscoring a significant preference for herbal and wellness products, particularly during the winter season. Cosmetic items constituted 20.3% of the total, showing steady demand for personal care products, while Homeopathic products made up the smallest share at 19%, indicating niche customer preferences. This breakdown emphasizes the dominance of Allopathic products while showcasing varied customer interest across other categories.

In Summary, Allopathic medicines lead in revenue generation, while Homeopathic products have the lowest incoming across all months. December emerges as the best-performing month in total revenue, driven by high demand in the Allopathic and Ayurvedic categories. February, despite steady performance, recorded the lowest revenue due to a dip in Homeopathic product sales.