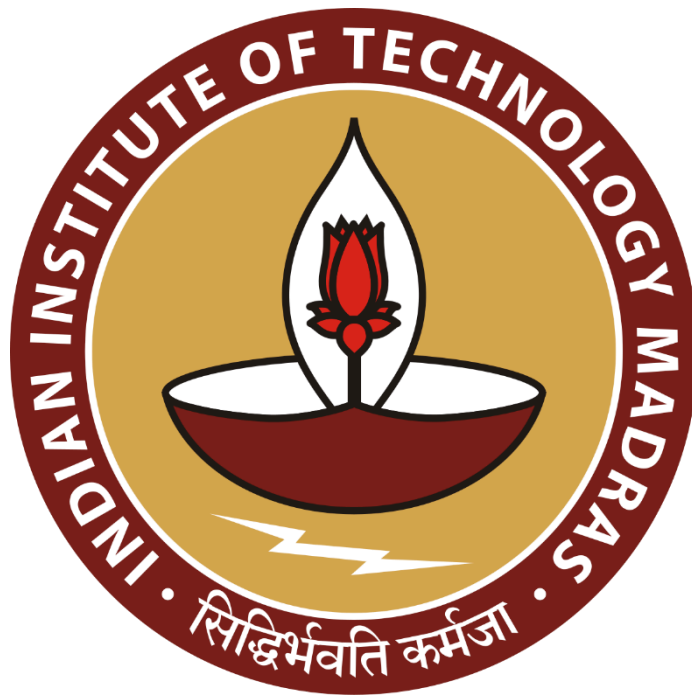# Enhancing Operational Efficiency and Customer Satisfaction: A Data-Driven Approach for MS Medical Store

**A Proposal Report for the BDM Capstone Project**

Submitted by

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# 1 Executive Summary

Medical shops are the backbone of the healthcare system, providing medicines and health products to the society. Good management and customer satisfaction is key to their success. MS Medical Store is known for its quality service and customer care.

Located in Chhatikara, Mathura, Uttar Pradesh, MS Medical Store is a part of the local healthcare network by providing essential pharmaceutical products and services. Despite its importance, the store faces challenges like managing inventory to avoid overstock and understock, providing quick customer service to minimize waiting time, and executing marketing strategies to engage potential customers and achieve KPIs like revenue, units sold and market share.

This project will tackle these challenges through data driven approach. It will optimize inventory to avoid stock imbalance, improve customer service by reducing waiting time and develop targeted marketing campaigns to increase engagement and performance. By using data analysis and modern management tools the project will simplify operations, reduce cost and increase customer satisfaction.

Expected outcomes are inventory accuracy, shorter waiting time, customer loyalty and more sales. These will not only improve the store's operational efficiency but also its reputation as a trusted healthcare provider in the community.

# 2 Organization Background

MS Medical Store, founded by Mr. Sonu Sharma in Chhatikara, Mathura, Uttar Pradesh is a main pillar of the local medical industry. Known for providing best quality pharma products and medical services the store is a backbone of the society. It has a wide range of products like over the counter medicines, prescription medicines, OPD (Out Patient Department) supplies and essential sanitary items.

The store has antibiotics, analgesics, antihistamines, medicines for chronic diseases. It also has OPD supplies like bandages, diagnostic tools, first aid kits, sanitary products like hand sanitizers, disinfectants and personal care items.

Though it's a main pillar, MS Medical Store faces problems in inventory management, service and marketing. To overcome these problems is a must to be excellent and customer satisfied.

# 3   Problem Statement

MS Medical Store has the following challenges:

3.1   **Inventory Management Challenges:** MS Medical Store can't maintain optimal stock levels, resulting in overstocking, understocking and some medicines expiring. This affects the availability of essential medicines and healthcare products and reduces customer satisfaction and operational efficiency.

3.2   **Customer Service Efficiency:** The store can't minimize the time taken to serve each customer when there's a crowd. Long wait times and service delay affects the customer experience and may lead to decreased customer loyalty and satisfaction.

3.3   **Marketing Effectiveness:** MS Medical Store can't reach and engage potential customers well. This affects the store's KPIs such as revenue, units sold and market share and ultimately hinders growth and competitiveness.

# 4   Background of the Problem

MS Medical Store is facing many operational challenges that affect its efficiency and customer satisfaction. One big issue is inventory management. The store stocks products from multiple companies that offer different prices for the same compound, making pricing and inventory control difficult. This is further complicated by nearby stores, making it hard to manage stock levels and stay competitive.

Customer service is also an issue. The store gets a lot of customers during peak hours especially when doctors from nearby hospital prescribe meds during patient (admitted) visits. This results in a lot of patients' relatives asking for meds at the same time, resulting in long wait times and reduced operational efficiency during peak hours.

Plus MS Medical Store doesn't have a marketing strategy. The store focuses on daily-use products and hasn't promoted high-margin items that can increase profitability. Developing a marketing strategy that covers both daily-use products and high-margin items is key to increasing revenue and overall operational efficiency. Addressing these is key to performance and customer satisfaction.

# 5   Problem-Solving Approach

To tackle the operational challenges of MS Medical Store and increase overall efficiency and customer satisfaction I will use a problem-solving approach. This approach will use advanced data analysis techniques using Python and Excel to optimize inventory management, improve customer service and refine marketing strategies.

**5a. Methods Used with Justification:**

1. **Inventory Management Optimization:**
   - **Time Series Analysis:** Use time series analysis techniques like ARIMA (AutoRegressive Integrated Moving Average) or Exponential Smoothing using Python to forecast future demand based on historical sales data. This will help in predicting inventory needs and avoid overstocking or understocking.
   - **ABC Classification:** Implement ABC classification to categorize inventory into three classes (A, B, and C) based on sales volume and importance. Python will be used to analyze sales data and apply ABC classification to high-impact items for more precise management.

2. **Customer Service Efficiency:**
   - **Customer Flow Analysis:** Analyze transaction data to identify peak periods and customer volume trends using Python. Time series analysis will be used to forecast high-traffic times and understand customer flow patterns.
   - **Service Time Analysis:** Conduct regression analysis on service time data using Python to identify factors affecting service efficiency. Excel will be used for summarizing and visualizing service time data to identify patterns and delays.

3. **Marketing Strategy Development:**
   - **Market Basket Analysis:** Perform market basket analysis using Python to understand customer purchasing patterns and identify frequently bought-together items. This will help in creating effective promotions and cross-selling strategies.
   - **Customer Segmentation:** Use cluster analysis to segment customers based on purchasing behaviour and demographics. This enables targeted marketing efforts tailored to different customer groups.

**5b. Intended Data Collection with Justification:**

1. **Sales and Transaction Data:**
   - **Details:** Collect comprehensive data on transaction timestamps, product types, and quantities sold. This includes records of when customers are served.
2. **Customer Demographics (if possible):**

- **Details:** Gather information on customer demographics such as age, gender, and purchase history.

**5c. Analysis Tools with Justification:**

1. **Python:**
   - **Details:** Utilize Python for advanced data analysis, including time series forecasting, regression modeling, market basket analysis, and customer segmentation.
2. **Excel:**
   - **Details:** Use Excel for organizing data, performing preliminary analyses, and creating visualizations of service times, customer flow patterns, and inventory data.

This problem-solving approach is designed to address MS Medical Store's operational challenges through a data-driven methodology. By leveraging Python for detailed analysis and Excel for visualization, I aim to optimize inventory management, improve customer service efficiency, and develop effective marketing strategies. This structured approach will enable the store to enhance its operations and better serve its customers.

# 6 Expected Timeline

## 6.1 Work Breakdown Structure:

- **Discussion with MS Medical Store**: Initial meetings to understand current practices and challenges.
- **Data Collection**: Gather sales data, inventory records and marketing information.
- **Data Cleaning and Preparation**: Process and prepare the collected data for analysis.
- **Analysis and Problem Identification**: Conduct analysis to identify specific issues and define problem statements.
- **Develop Problem-Solving Strategies**: Create solutions based on analysis findings to address identified challenges.
- **Report Generation and Presentation**: Prepare and present reports summarizing findings and recommendations.
- **Review and Feedback**: Review the final report with management and gather feedback.
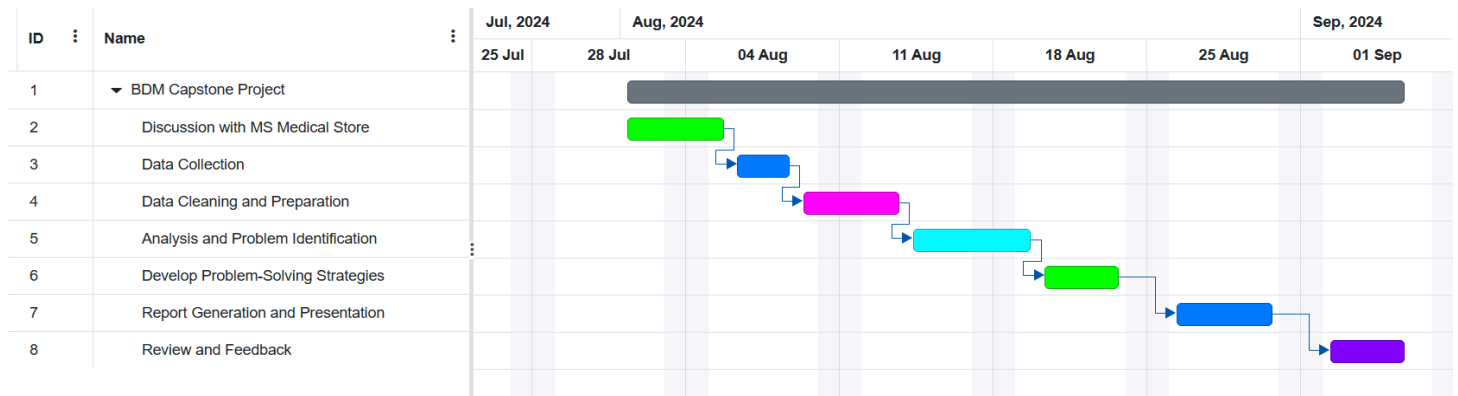
## 6.2 Gantt chart

| ID | Name | | | |
|----|------|---|---|---|
| 1 | ▾ BDM Capstone Project | | | |
| 2 | Discussion with MS Medical Store | | | |
| 3 | Data Collection | | | |
| 4 | Data Cleaning and Preparation | | | |
| 5 | Analysis and Problem Identification | | | |
| 6 | Develop Problem-Solving Strategies | | | |
| 7 | Report Generation and Presentation | | | |
| 8 | Review and Feedback | | | |

*Figure 1 Expected timeline for completion of project.*

# 7   Expected Outcome

7.1   **Improved Inventory Management:** Enhanced forecasting and optimized stock levels, reducing overstocking and understocking.

7.2   **Enhanced Customer Service Efficiency:** Reduced wait times and improved operational efficiency during peak periods.

7.3   **Effective Marketing Strategies:** Increased sales of high-margin products and better customer engagement through targeted marketing.