Data-Driven Optimization of Sales and Inventory Management of a Mobile & Accessories Shop

A Proposal report for the BDM capstone Project

Submitted by

Name: Anushka Saxena

Roll number: 24f2001243

IITM Online BS Degree Program,
Indian Institute of Technology, Madras, Chennai
Tamil Nadu, India, 600036

Declaration Statement

I am working on a Project titled "**Data-Driven Optimization of Sales and Inventory Management of a Mobile & Accessories Shop**". I extend my appreciation to **Shri Balaji Centre**, 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.

Anushka Saxena

Signature of Candidate: (Digital Signature)

Name: Anushka Saxena

Date: 03.03.2025

1

Table of Contents

Executive Summary

Shri Balaji Centre is a mobile and accessories shop located in Rajajipuram, Lucknow, UP and operates in the B2C segment and it offers a wide range of smartphones, accessories and additional services like mobile repairing, photocopying, mobile ticketing reservations, etc.

The focus is on identifying key issues related to revenue, customer engagement, inventory, and demand-supply gaps by analyzing sales and feedback data. We will use Microsoft Excel and Power BI for insights, aiming to provide data-driven solutions to increase sales by using the concept of pareto and time series analysis, manage inventory with ABC analysis, and explore the demand for second-hand products. Based on findings, we will launch a pilot program.

By focusing on key areas, the project aims to enhance sales through data-driven decisions that optimize product offerings and marketing strategies based on customer preferences. Effective inventory management will reduce losses and ensure popular products are always available. Introducing second-hand mobile phones can attract price-sensitive customers. Additionally, a strategic Instagram marketing approach will boost customer engagement and sales. Implementing these recommendations will enable Shri Balaji Center to make informed decisions that drive growth, improve customer satisfaction, and optimize inventory management.

Organization Background

The business that I'm working with is Shri Balaji Centre, which is a mobile and accessories shop. The shop was opened on 30th June, 2024 by Mr. Shashank Tripathi, and operates in the B2C segment offering a wide range of smartphones and accessories from brands like Samsung, Apple, Google, Oppo, Vivo, OnePlus, BOAT, FireBolt, and Noise. Additionally, they provide services like mobile repairing, photocopying, mobile ticketing and reservations, and form filling. They have an Instagram shop, which allows customers to order directly. Mr. Shashank's vision for this shop is to serve as a one stop place for mobile and tech-related products, and also planning to sell laptops and PCs in future.

Relevant Business Information:

Location: C-2206, Rajajipuram, Lucknow, Uttar Pradesh.

Founder: Mr. Shashank Tripathi

No. of Employees: 3

Shop Operating Hours: 9 AM to 10 PM

No. of Working Days: Monday to Saturday

Problem Statement

3.1. Revenue Optimization: The shop struggles to maximize revenue and engage customers due to insufficient data on purchasing patterns and preferences, leading to lost sales.

3.2. Inventory Management: Excess low-demand stock leads to financial losses, while stock outs of high-demand items result in lost sales.

3.3. Demand-Supply Gap: Customers are requesting second-hand phones, but the shop currently doesn't offer so there is a loss of additional sales.

Background of the Problem

Based upon the discussion with the owner of the Shri Balaji Center, following are the internal and external reasons for each challenges:

1. Internally, the sales data is not analyzed accurately because of a lack of knowledge, and resources. Also, The staff does not know how to study customer behavior and find useful patterns from the data. Additionally, there is no proper system like dashboards or reports to help make better business decisions based on the sales information.
   Externally based on the market condition, competitors are using their data more effectively to attract customers.

2. Internally, despite sales records existing, they are not properly analyzed to identify which items will sell more. As a result, wrong stocking decisions are made which eventually lead to unsold products and missing out on sales of popular items. There is also no proper inventory tracking system to monitor which products are moving fast and which are slow. Based on external factors, Customer preferences are changing quickly competitors are better at adjusting their stock according to market trends. This fast-changing environment makes it even more important for the shop to manage its inventory smartly to avoid losses and missed opportunities.

3. Based on the demand of customers they prefer buying second-hand phones to get premium models at lower prices. With the increasing prices of new smartphones and faster model upgrades by brands, the second-hand market is growing quickly. Missing out on this, the shop will miss out on a large and active customer base that prefers value-for-money deals.

Problem Solving Approach

Justification of the methods used:

1. **Revenue Optimization**

   Analyze sales data to identify trends month wise using Time series analysis and look for which products are in high demand and low demand and figure out purchasing patterns and seasonality.

   Using Pareto principle, we can identify which products contribute to most of the revenue, that will help us to focus on the main products that contribute to maximum sales. This will help in making precise decision-making and reduce sales losses. By analyzing purchase behaviour, creating targeted promotions will help in increasing retention and boosts sales through personalised marketing that can be done through their instagram page.

2. **Inventory Management:**

   By implementing the concept of ABC Analysis we can categorize the products into three categories that is high value, moderate and low value products to prioritize stock control. We can analyze which products are not being sold for the last months since the shop has opened. Additionally, we can analyze which products are in high demand in the market based on the market research.

3. **Demand-Supply Gap:**

   For introducing second-hand phones, we can use customer feedback data collected from in-store interactions to gain insights about the demanding phones and models of specific brands. Based on that data, a pilot program can be launched with a limited selection of popular second-hand products to test market response and analyze the profitability before a full-scale implementation.

Information about Data Collection:

Day wise sales data is maintained by the owner since 1st July, 2024 which has the details about products that are being sold, its price, and quantity on that particular date. Customer feedback data is available based on the interactions and demand regarding the second hand products.
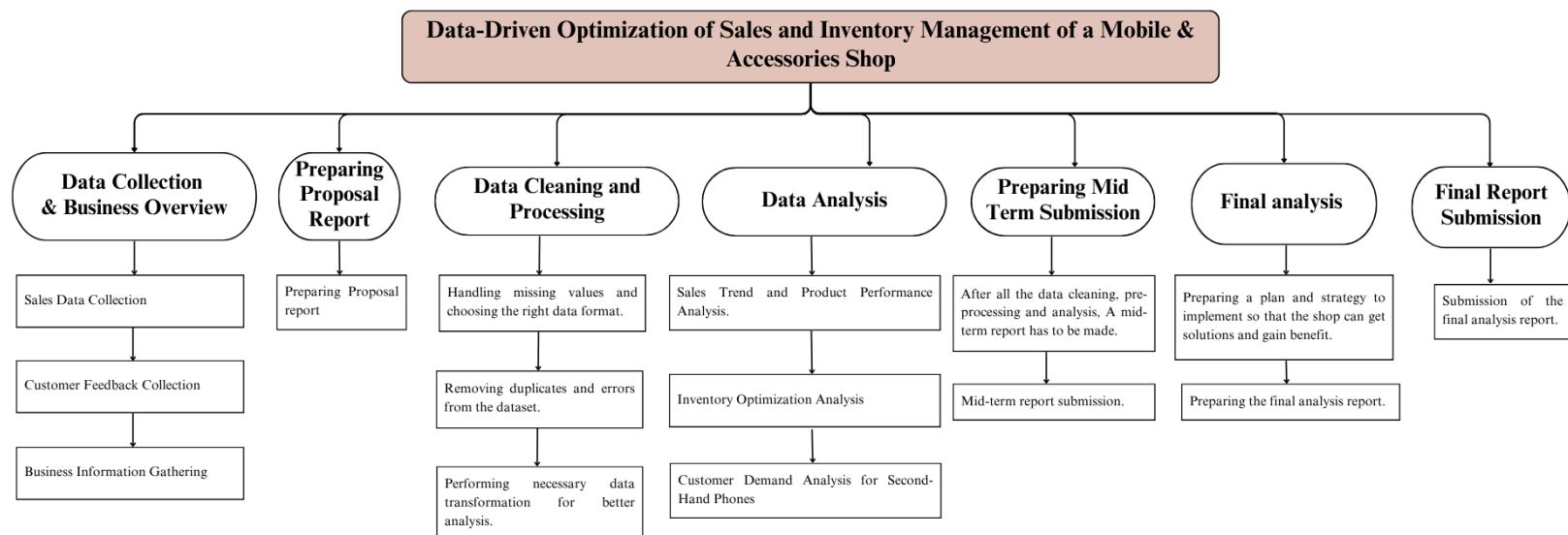
Analysis Tool Used:

Microsoft Excel will be used for data analysis and manipulation since the data is not large, excel is good for the overall analysis. Power BI will be used to make insightful visualizations because it facilitates clear and accurate data visualization and decision making.

By Implementing these approaches, it will enhance decision-making and will improve customer satisfaction. Also, it will increase revenue while minimizing financial losses.

Expected Timeline

Work Breakdown Structure

Data-Driven Optimization of Sales and Inventory Management of a Mobile & Accessories Shop

Data Collection & Business Overview	Preparing Proposal Report	Data Cleaning and Processing	Data Analysis	Preparing Mid Term Submission	Final analysis	Final Report Submission
Sales Data Collection	Preparing Proposal report	Handling missing values and choosing the right data format.	Sales Trend and Product Performance Analysis.	After all the data cleaning, pre-processing and analysis, A mid-term report has to be made.	Preparing a plan and strategy to implement so that the shop can get solutions and gain benefit.	Submission of the final analysis report.
Customer Feedback Collection		Removing duplicates and errors from the dataset.	Inventory Optimization Analysis	Mid-term report submission.	Preparing the final analysis report.	
Business Information Gathering		Performing necessary data transformation for better analysis.	Customer Demand Analysis for Second-Hand Phones			

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PROJECT NAME- Data-Driven Optimization of Sales and Inventory Management of a Mobile & Accessories Shop	PROJECT LEAD- ANUSHKA SAXENA

ACTIVITY	START DATE	END DATE	MONTH: APRIL	MAY	JUNE	JULY
Data Collection and Business Overview	15.04.2025	20.04.2025	███			
Preparing Proposal Report	21.04.2025	10.05.2025		███		
Proposal Report Submission	11.05.2025	13.05.2025		██		
Data Cleaning and Processing	14.05.2025	22.05.2025		██		
Data Analysis	23.05.2025	30.05.2025		██		
Preparing Mid-Term Report	31.05.2025	05.06.2025			██	
Mid-Term Report Submission	06.06.2025	08.06.2025			██	
Final Analysis	09.06.2025	30.06.2025			██	
Final Report Submission	01.07.2025	03.07.2025				███

Expected Outcome

The expected outcome from this project is that it will improve sales performance, inventory management and marketing strategies for the shop by doing the analysis of sales data, this capstone project will identify high-demand and low-demand products and purchasing patterns. This will help in developing strategies to improve revenue and reduce sales losses. For inventory management, by identifying underperforming products that have not been sold for months and will suggest their removal to optimizing stock levels. Based on the customer feedback for second-hand phones, will allow the shop to stock models that customers prefer. A targeted Instagram marketing strategy will be proposed to enhance customer engagement and increase sales along with it will improve customer retention. Finally, this project will deliver actionable

insights and data-driven recommendations that will definitely help the business to enhance efficiency, customer satisfaction and annual sales. The findings will be presented in a detailed report along with qualitative and quantitative summarizing key insights and recommendations with a final presentation.