Enhancing Sales, Profits & Analyzing Shopping Trends at Sri MahaLakshmi General Store

A Proposal report for the BDM capstone Project

Submitted by

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1 Executive Summary and Title

The project on "**Enhancing Sales, Profits & Analyzing Shopping Trends at Sri MahaLakshmi General Store**" outlines a strategic initiative to address the operational challenges faced by a small general store located at Shiva Sai Ram Nagar Colony, Munganoor, Hyderabad, Telangana 501511. The business operates in the B2C sector, specializing in groceries and daily essentials for the past 2 years. Sri MahaLakshmi General Store is owned by Madishetty Rama Rao and there are 2 employees, namely the owner and his wife. The store operates from morning 7 AM to evening 9PM, with an annual turnover of 5.7 Lakhs. Madishetty Rama Roa actively participated and provided the support that was much needed for doing this project in every aspect.

Even though the general store is currently performing well, there are opportunities for further improvement. The project highlights several crucial areas to address: enhancing inventory management, reducing competition from nearby stores, adjusting to changing pricing trends, overcoming transportation challenges, and optimizing overall store management.

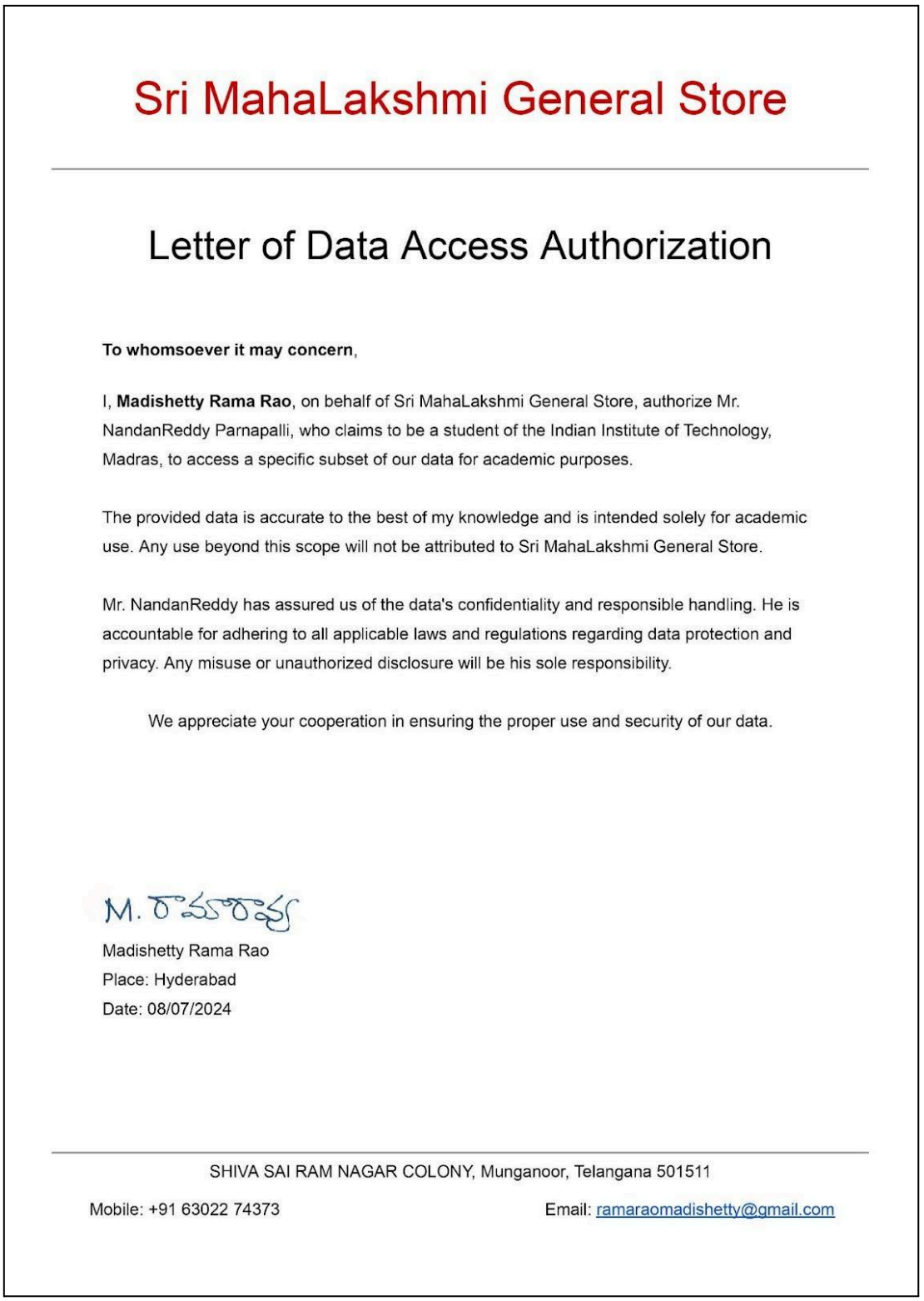
The main objective of this project is to address the identified challenges through a thorough analysis of sales data, leading to increased profitability and more efficient store management. Descriptive statistics will be employed to gain initial insights into sales trends and other pivotal characteristics.

The project will utilize analytics tools and methodologies to examine sales data, identify market trends, and implement data-driven strategies. The data encompasses information about products, sales volumes, profit margins, and categories. Analyzing this data will reveal valuable insights that can help optimize operations, making them more efficient and effective.

This report visually explains the observed trends and patterns using graphs and charts, providing insights to enhance business performance.

2 Proof of originality

2.1 Letter from organization



Sri MahaLakshmi General Store

Letter of Data Access Authorization

To whomsoever it may concern,

I, **Madishetty Rama Rao**, on behalf of Sri MahaLakshmi General Store, authorize Mr. NandanReddy Parnapalli, who claims to be a student of the Indian Institute of Technology, Madras, to access a specific subset of our data for academic purposes.

The provided data is accurate to the best of my knowledge and is intended solely for academic use. Any use beyond this scope will not be attributed to Sri MahaLakshmi General Store.

Mr. NandanReddy has assured us of the data's confidentiality and responsible handling. He is accountable for adhering to all applicable laws and regulations regarding data protection and privacy. Any misuse or unauthorized disclosure will be his sole responsibility.

We appreciate your cooperation in ensuring the proper use and security of our data.

Madishetty Rama Rao
Place: Hyderabad
Date: 08/07/2024

SHIVA SAI RAM NAGAR COLONY, Munganoor, Telangana 501511

Mobile: +91 63022 74373 Email: ramaraomadishetty@gmail.com

Figure 1: Letter from organization.

Note: As this is a small-scale general store, they do not have a business stamp.

2.2 Images related to organization

Click here to view the images

2.3 Recorded video with the founder in the organization

Click here to view the video

3 Metadata

- **Data Collection** - For this project, day-wise sales data from Sri MahaLakshmi General Store has been collected in the form of excel sheet, covering a period of three months. This data, which is integral to the grocery shop's daily business operations, will be analyzed to gain insights and improve various aspects of the store's performance..
- **Contents of the Data** - Collected data has following contents
    - Date - Day of sale
    - Month - Month of sale
    - Item Name - Name of item
    - Category - Category of item
    - Cost Price - Cost price of an item
    - Sell Price - Sold price of an item
    - Quantity - Quantity of an item which has been sold
    - Item Amount - Price of items without tax amount
    - Tax Amount - Tax applied on an item
    - Total Amount - Revenue generated after selling an item in x quantity
    - Profit - Profit generated by selling an item

Sample of Sales Data Click here to view the data

Date	Month	Item Name	Category	Cost Price	Sell Price	Quantity	Items Amount	Tax Amount	Total Amount	Profit
2024-04-01	April	Milk 500ml	Dairy	26	30	1	26.4	3.6	30	4
2024-05-03	May	Sprite 750ml	Beverage	54	60	3	171	9	180	18
2024-06-21	June	Wheat Flour	Food	22	30	0.25	6.15	1.35	7.5	2

- The dataset utilized for this analysis is sourced from sales records spanning the last three months, covering the period from April 1, 2024, to June 30, 2024.
- The primary objective of utilizing this dataset is to analyze daily sales trends and assess profitability. The insights gained from this analysis are essential for informed decision-making, focusing on optimizing both sales and profits.
- This metadata paragraph offers a comprehensive overview of key details associated with the sales data used in this project. This clarification enhances understanding, accessibility, and efficient utilization of the dataset.

Columns	Data Type
Date	Date
Item Name	String
Category	String
Cost Price	Numeric
Sell Price	Numeric
Quantity	Numeric
Items Amount	Numeric
Tax Amount	Numeric
Total Amount	Numeric
Profit	Numeric

4 Descriptive Statistics

Presented is a descriptive statistics table encompassing diverse financial metrics. The tabulation includes 14 rows and 8 columns namely "Statistic," "Cost price," "Sell price," "Quantity," "Item Amount," "Tax Amount," "Total Amount," and "Profit.". The rows document various statistical measures such as mean, median, mode, sample Variance, Standard Deviation, kurtosis, skewness, minimum, maximum, sum, and count. This structured arrangement provides a comprehensive overview of key financial indicators, facilitating detailed dataset analysis.

To gain a comprehensive understanding of the dataset's characteristics, the initial phase involved conducting descriptive statistics. Key statistical measures were calculated, and pie charts and bar charts were created to examine data distributions and daily patterns within item categories. Exploratory Data Analysis (EDA) was utilized to detect anomalies, identify outliers, and establish a foundation for further analyses.

The dataset's inherent characteristics, along with the project's specific objectives, warranted the use of Exploratory Data Analysis (EDA). EDA aligns perfectly with the project's goal of understanding business drivers and their influence on gross revenue. It serves as an initial step to thoroughly comprehend the data, uncover trends, and highlight potential outliers.

Descriptive Statistics of Sales Data

Statistic	Cost Price	Sell Price	Quantity	Item Amount	Tax Amount	Total Amount	Profit
Mean	29.652692	36.30936	1.92895	53.1852207	9.4948279	62.60072816	11.33572
Standard Error	0.488374	0.562847	0.026329	0.96049355	0.1975141	1.283512502	0.172623
Median	25	30	2	39.6	6.3	50	8.75
Mode	11	30	1	26.4	3.6	30	8
Standard Deviatic	23.247831	26.79295	1.253329	45.7219144	9.4021667	61.09843078	8.217283
Sample Variance	540.46166	717.8623	1.570833	2090.49346	88.400739	3733.018243	67.52375
Kurtosis	2.9382968	3.035925	9.644861	6.63761424	11.325388	67.77571405	9.507128
Skewness	1.7967176	1.799966	2.282781	2.18772879	2.8080958	0.746471316	2.256139
Range	108.5	117	9.75	292.74	66.95	2000	65
Minimum	1.5	3	0.25	2.46	0.25	2	1
Maximum	110	120	10	295.2	67.2	1000	66
Sum	67193	82277	4371	120517.71	21515.28	141853.25	25686.75
Count	2266	2266	2266	2266	2266	2266	2266

5 Detailed Explanation of Analysis Process

5.1 Collection

I used an Excel sheet for the analysis, representing sales data with pivot tables and graphs. The data, collected from a grocery store, spans from April 1, 2024, to June 30, 2024. The business manager was formally notified, both personally and in writing, about the project's objectives and methodology. Formal authorization and explicit consent were obtained.

During the analysis phase, the data underwent cleansing and organization. Trends and insights were uncovered using descriptive statistics, measures of central tendency, and graphical representations.

To ensure data accuracy and reliability, the data gathering procedure was meticulously executed with precise attention to detail. A comprehensive investigation was conducted, resulting in the delivery of insightful advice beneficial to the owner.

5.2 Analysis

The goal of this analysis was to achieve a comprehensive understanding of revenue, with a specific emphasis on sales dynamics across various product categories and their respective patterns. A critical aspect of the analysis involved segmenting the dataset into distinct time periods, represented by days, and conducting a thorough examination and comparison within these segments. This approach highlighted evolving sales trends and financial outcomes.

A pivotal component was the "Day-wise sales" column, which provided a comprehensive view of monthly sales trends. This facilitated meaningful comparisons and offered insights into fluctuations and variations in sales over time. The analysis meticulously evaluated performance metrics such as "Category," "Sell Price," "Total Amount," and "Profit" to derive insightful conclusions.

In addition, the analysis involved creating visual representations such as charts and graphs. These visual tools were crucial for effectively communicating complex patterns and trends within the data. The objective was not only to present data but also to make it accessible and understandable, thereby easing the identification of key insights.

This comprehensive examination aimed to reveal detailed insights into the financial dynamics of the business. It established a basis for strategic decision-making by clearly illustrating how factors such as product categories and time periods influenced revenue and profit. The ultimate objective was to empower decision-makers with the knowledge necessary to steer the business toward sustainable growth.

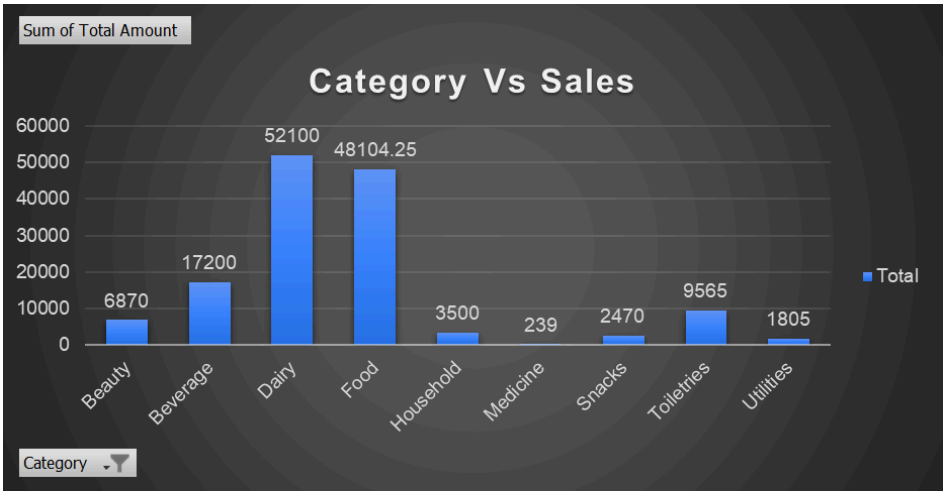
In conclusion, the analysis explored the interplay of factors such as categories and days, revealing intricate revenue and profit patterns. The combination of detailed data examination and clear visual communication laid a robust foundation for strategic decision-making, ensuring a well-informed approach to business development.

6 Results and Findings

I. Contribution of each Category to the Total Shop Income

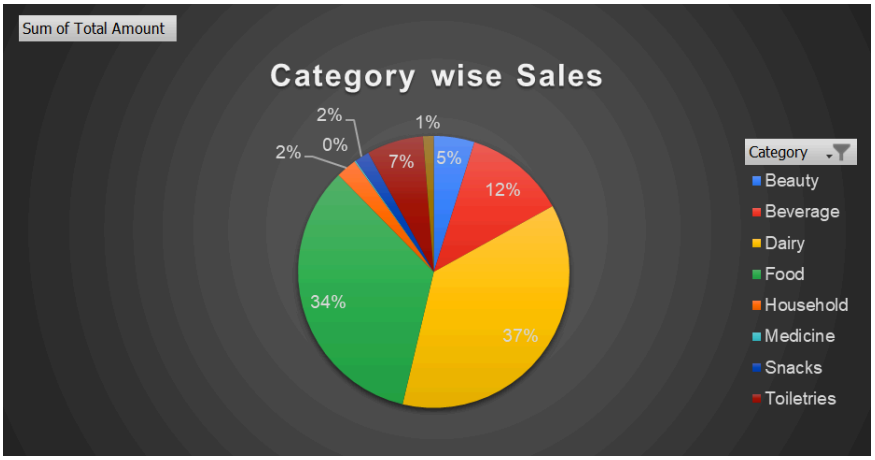
Category	Sum of Total Amount
Beauty	6870
Beverage	17200
Dairy	52100
Food	48104.25
Household	3500
Medicine	239
Snacks	2470
Toiletries	9565
Utilities	1805
Grand Total	**141853.25**

II. Column chart representing each category's contribution towards Total Income



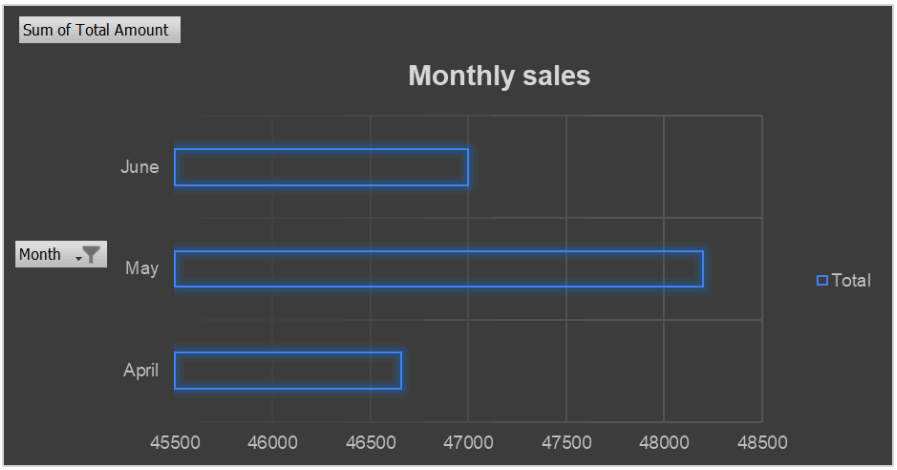
The column chart displays the sales distribution across various categories over three months, highlighting their contributions to the shop's total revenue. The data shows that Dairy had the highest sales, totaling Rs. 52,100, followed by Food with Rs. 48,104.25, and Beverage with Rs. 17,200. Other categories like Toiletries and Beauty also made significant contributions with Rs. 9,565 and Rs. 6,870 respectively. Smaller categories such as Snacks, Household, Utilities, and Medicine had lower sales figures, but collectively they added to the overall revenue. This breakdown assists in pinpointing sales trends, informing decisions on inventory management, and strategizing marketing efforts to optimize overall profitability and sustain business growth.

III. Pie chart showing Sales in percentage of each category



The pie chart depicts the sales share of each category in relation to the total revenue. Notably, "Dairy" emerges as the top performer, generating Rs 52,100, constituting 37% of the total revenue. Conversely, "Medicine" lags behind with the lowest revenue of Rs 339, representing a mere 0.2% of the total shop's revenue.This analysis is specifically focused on comparing the performance of each category based on revenue. Once identified, specific and tailored strategies can be implemented to boost sales within individual categories, thereby optimizing overall revenue.

IV. Sales across April, May, June in a bar graph



The bar chart illustrates the variation in total sales across the observed months. Notably, there is a slight increase in sales in May, with revenue approximately Rs. 48,198.75. However, this is followed by a gentle dip in June, with revenue reaching around Rs. 46,997.00.
April exhibited respectable sales, amounting to Rs. 46,657.50, contributing to the overall total of Rs. 141,853.25, as evident from the bar chart.