

INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI – 600 036

Unveiling Challenges:

Addressing and Analyzing Operational Issues in a Small Business

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Proposal for the Project on Business Data Management

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Declaration Statement

I am working on a Project titled “**Unveiling Challenges: Analyzing Operational Issues in a Small Business**”. I extend my appreciation to XYZ, 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 ensure its reliability. Additionally, I affirm that all procedures employed for 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. If 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: Kannan S

Date: 10-05-2024

Executive Summary

XYZ, located in Salem, Tamil Nadu, is an onion delivery business, a multi-channel (both Business-to-Business and Business-to-Consumer) establishment, operating within the owner's house. Established in October 2023, this business, owned by Mr. R, primarily serves local businesses while also aiming to expand the business across the district.

The enterprise is currently grappling with a significant challenge: a deficiency in customer base, which is impeding growth and leading to financial losses. To rectify this issue, the business needs to concentrate on understanding customer requirements. This can be achieved by soliciting customer feedback, thereby gaining insights into their strengths and areas requiring enhancement. Another crucial measure is to monitor the daily sales of onions, which can provide a clear indication of the success or failure of their customer acquisition efforts.

By discerning customer preferences and implementing changes based on the received feedback, the business could witness substantial improvement. This could potentially lead to an increase in onion sales, acquisition of new customers, and fostering customer loyalty. The primary focus is on catering to customer needs and ensuring their satisfaction with the provided service.

Business Background

- **Name of Business:** XYZ
- **Name of Owner:** Mr. R
- **Address:** Kadambur Muniyappan Kovil Street, Kitchipalayam, Salem, Tamil Nadu 636015

XYZ was started by Mr. R. It is based in Kitchipalayam, Salem - 636015, and aims at delivering quality onions to other local businesses (like restaurants) and homes in and around the same region. Mr. R started XYZ on the 26th of Oct 2023 and has been running it for the last 6 months. XYZ has been under the sole proprietorship of Mr. R, since the beginning. Due to the business being a small-scale one, it has been functioning from the owner, Mr. R's home. His marketing strategy has been mostly through posters and word of mouth. As of now, he takes orders of delivery either by calls or word of mouth. Since it is a small-scale business, he has not hired any staff, yet, and manages it by himself.

Problem Statement

The two major problems faced by XYZ are as follows:

1. Identify the factors for low customer retention rates and implement strategies that encourage and improve overall customer loyalty.
2. Overcome limitations imposed by sole proprietorship by restructuring the business model to accommodate expansion in terms of geographical area coverage and diversifying offerings such as delivering vegetables other than onions.

Background of the Problems

The problems, as objectively stated above, faced by the business can be traced back to arising from some particular factors. These factors are as follows:

1. **Lack of feedback:** One of the key factors that may be noticed is the lack of feedback from the customers. Feedback from customers could be a valuable resource for the business, providing key insights into areas with scope for improvement. However, in the case of the concerned business, it has been noticed that the customers were not asked for feedback.
2. **Not following up with the customer:** Failing to check in with a customer after a purchase to ensure their satisfaction or address any of their concern over the sold products and/or services of the business may lead to forming poorer relations with the customers. It is also important to resolve any queries expressed by the customers promptly to boost customer satisfaction, brand identity as well as overall profit.
3. **Lack of a brand image:** The low retention rate of customers could also be due to a lack of knowledge among the customers about the business. Which, in hindsight, could indicate that the customers may not be perceiving the business differently from its peers. Making the customers more aware of the business using various measures could potentially help create its own brand identity and make it stand out from the rest.
4. **Shortage of staff:** XYZ has been formed and run under the sole proprietorship of Mr. R. Thus, due to the obvious shortage of staff, he could be losing out on potential customers since it is less efficient to manage the business and make sales under the supervision of a single person.

Problem-Solving Approach

Details About The Methods Used With Justification:

- **Exploratory Data Analysis(EDA):**
 - Identify general patterns in customer repetition in the daily sales data. Patterns may include identifying customer repetition frequency and sale volume by each customer, type of business, and locality, helping prioritize the efforts to retain valuable customers and meet their needs effectively.
 - Analyze monthly sales and expenses by sales data aggregation to gauge business performance and pinpoint areas for expansion across different geographical regions.
- **Geospatial Analysis:**
 - The rendering of processed data into a geographical component shall enable a better representation of the spatial representation of sales areas on a map.
- **Recruitment Drive:**
 - To address the issue of expansion, a recruitment effort shall be initiated to streamline more people in the business with the hope of aiding in business expansion, faster deliveries, and greater coverage in terms of areas of delivery.

Details About The Intended Data Collection With Justification:

- **Daily Sales Data:** The primary data collected to address and analyze the sales performance of XYZ is the time-series data of sales records across a period of 6 months, as provided by the owner himself. The dataset includes critical information about the historical data encompassing the date of sale, customer ID, onions bought(in kg), buying and selling price, total price, discount, and sold price.
- **Feedback Survey:** For the concern about lack of customer retention, a survey has been conducted to collect customer feedback including, customer ID, a 5-point rating scale (based on the delivery, product quality, and price range), and a section inquiring about any grievance and/or suggestion.
- **Customer Database:** Establishment of a comprehensive customer database aimed at capturing essential customer information, including addresses, business names, and types, to facilitate targeted marketing efforts and identify strategic 'Sales Hotspots' for optimal business growth and expansion.

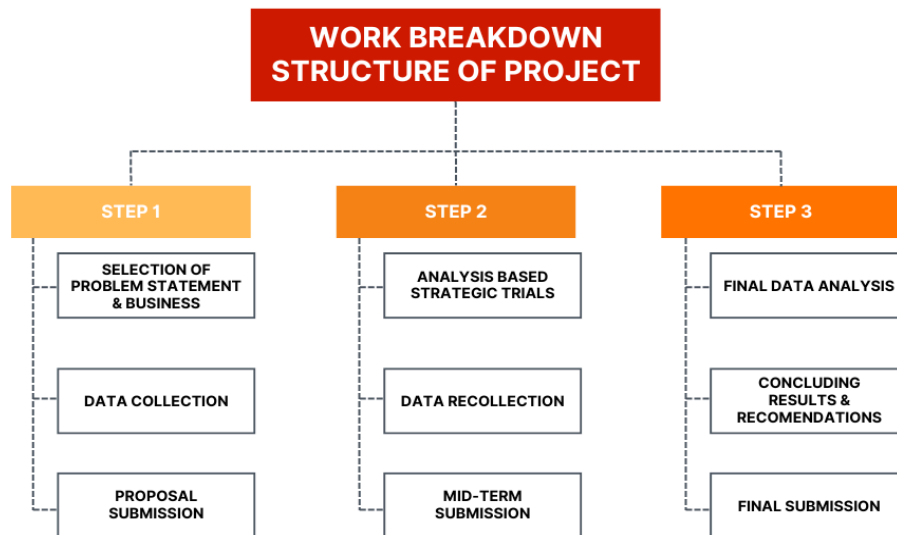
Details About Analysis Tools With Justification:

- For data recording, Google Spreadsheet has been utilized.
- The task of preprocessing including cleaning and aggregation of the raw recorded data has been achieved with the help of Google Spreadsheet and Pandas, to find meaningful insights from the data
- The visualization and analysis of the processed data were accomplished using Spreadsheets, and two Python libraries, namely, Matplotlib and Seaborn. Employing Matplotlib allows versatile and efficient rendering of recorded data into visual illustration.
- Lastly, Python and Geopy for fetching business location i.e. longitude and latitude for location-based analysis using Folium.
- Google Documents has been used for the report making of the total analysis

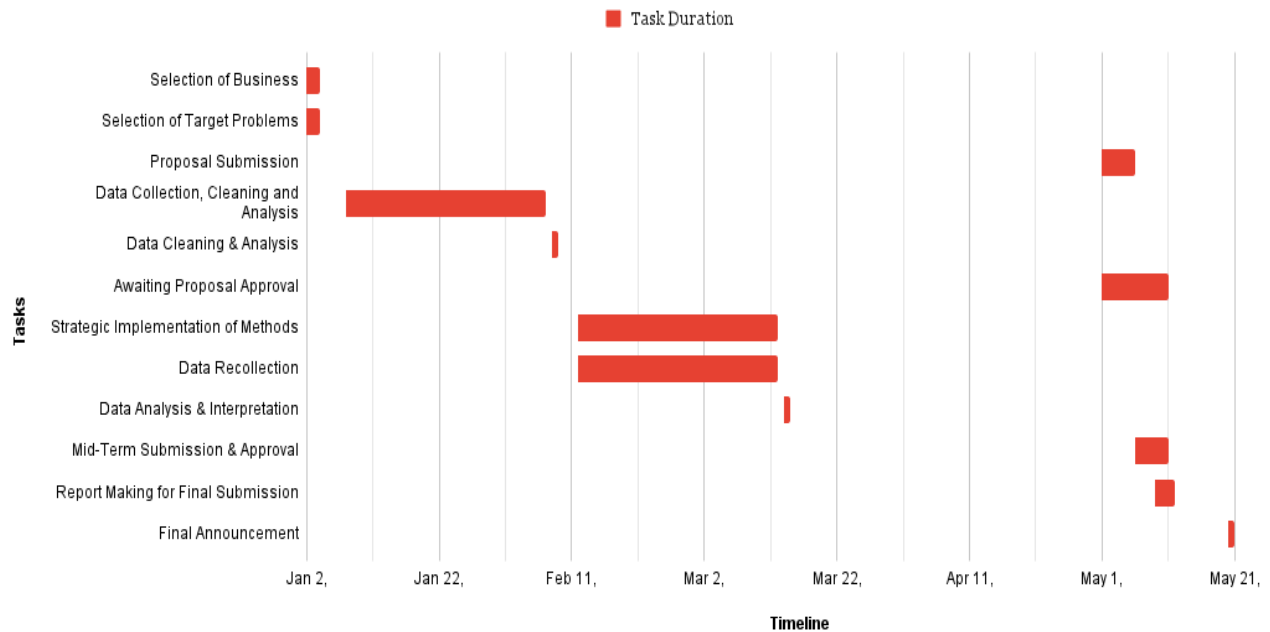
Expected Timeline

In this section, the project has been broken down into small bite-sized portions to explain its advancement, workings, and direction. Along with it, a detailed timeline has also been presented in the form of a Gantt Chart.

Work breakdown structure:



Gantt Chart:



Expected Outcome

1. Understanding and adapting to the needs of the customers essentially improving customer base and loyalty with the help of collective feedback and addressing any expressed grievances.
2. An increase in overall sales is expected as a result of the collection, and analysis of data, followed by improvements, based on the concluded results in the business.
3. Lastly, establishing a brand image through various evidence-backed techniques is expected to make the business stand apart from its peers.

—End of Report—