Improving Profitability and Customer Retention for a Rural Latex Business through Data-Driven Strategies

A Proposal report for the BDM capstone Project

Submitted by

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Declaration Statement

I am working on a Project Title "**Improving Profitability and Customer Retention for a Rural Latex Business through Data-Driven Strategies**". I extend my appreciation to **Business A**, for providing the necessary resources that enabled me to conduct my project.

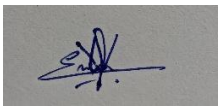
I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered through primary sources and carefully analyzed to assure its reliability.

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: EMILIN VIJU SAMUEL

Date: 13/07/2025

1 Executive Summary and Title

Project Title: “Improving Profitability and Customer Retention for a Rural Latex Business through Data-Driven Strategies”

Business A, a rural rubber latex intermediary in Maruvanchira, Anchal, Kollam, Kerala, is co-owned by Viju Kizhakkekara Samuel and Shaini Chelakkattil Chacko. Viju holds a postgraduate degree in business, while Shaini is a nursing graduate. The business, operational for over nine years, serves as a primary collection center for local rubber latex farmers, supplying to Company B for export. Earning ₹3 per kilogram of dried rubber content (DRC), Business A functions without a formal office, utilizing a private land plot and temporary labor.

Despite its pivotal role in the local supply chain, Business A encounters significant challenges. Its revenue heavily relies on fluctuating export prices dictated by Company B. Moreover, limited customer engagement persists due to inadequate marketing strategies. Operational drawbacks stem from the absence of permanent staff and manual data management, hindering effective analysis and planning. These obstacles impede the business's growth potential and decision-making processes.

The project will implement a data-centric strategy focusing on revenue prediction, customer retention analysis, and basic digitalization of operations. By leveraging predictive modeling and historical data scrutiny, income stability will be enhanced. Recommendations will also aim at refining marketing tactics, optimizing workforce management, and introducing user-friendly digital tools to bolster decision-making capabilities and ensure long-term business viability.

2 Organization Background

Business A, located in Maruvanchira, Anchal, Kerala, is an unorganised rubber latex intermediary founded nine years ago by Viju Kizhakkekara Samuel and Shaini Chelakkattil Chacko. Viju holds a postgraduate degree in business administration, while Shaini is a nursing graduate. The company operates in the B2B segment by sourcing liquid latex from local small-scale farmers and supplying it in bulk to Company B, an export-oriented latex processing firm.

Operating without a formal office, Business A utilizes a privately owned land plot for collecting and temporarily storing latex barrels. The business depends on daily-wage labor for transportation and manual tasks since it has no permanent employees. Billing and recordkeeping are conducted manually at the owners' residence without any digital systems in place.

Revenue generation involves charging a fixed commission of around ₹3 per kg of dried rubber content (DRC), subject to seasonal supply fluctuations and export pricing variations. Despite its informal setup, the business serves as a crucial link between rural latex producers and international markets. Business A's sustainability and profitability hinge on implementing structured systems, improving data management practices, and adopting scalable operational approaches for long-term success in the industry.

3 Problem Statement

3.1 Increase Profitability: Improve revenue stability by forecasting income based on seasonal trends and analyzing commission variability tied to export prices.

3.2 Retain Existing Customers: Identify and prioritize regular suppliers using historical data to enhance relationships and reduce churn.

3.3 Expand Customer Base through Local Marketing: Reach nearby latex producers through cost-effective marketing strategies to increase sourcing volume.

3.4 Implement Permanent Workforce Strategy: Analyze operational workload trends to determine the feasibility of hiring full-time workers for better efficiency.

3.5 Digitize Business Operations: Transition from manual recordkeeping to simple digital tools for billing, customer tracking, and performance analysis.

4 Background of the Problem

Business A operates in a fluctuating and informal environment, relying on a fixed commission for each kilogram of dried rubber content (DRC) sold to Company B. This fixed rate is determined by Company B based on the ever-changing global and domestic market conditions. Consequently, Business A experiences unstable monthly revenue, earning up to ₹10,000 during peak months but facing significant drops in income during low-demand periods.

Business A lacks permanent staff, depending on daily wage workers for essential tasks like loading, unloading, and transportation. This reliance on temporary laborers impacts reliability and operational consistency, particularly during busy seasons. The absence of formal employment policies hinders long-term workforce stability.

The company struggles with poor data and record management practices. Manual recording of customer bills, DRC weights, payments, and transactions not only heightens the risk of errors but also complicates performance analysis and informed decision-making regarding pricing strategies, customer relationships, and cost management.

Business A's marketing approach is primarily informal, relying heavily on word-of-mouth referrals and a small pool of regular clients. There are no initiatives in place to broaden the customer base or enhance outreach efforts. Addressing these challenges is crucial for Business A to improve its operations and sustain long-term growth.

5 Problem Solving Approach

To tackle the challenges faced by Business A effectively, we will adopt a structured and data-driven approach. This method involves systematic data collection, method selection, and the use of appropriate analytical tools. The goal is to address the unique operational challenges and limitations encountered by this rural, unorganized B2B enterprise.

5.1 Methods:

We will use both **descriptive** and **predictive analytics** to understand past performance and forecast future trends.

- **Descriptive Analytics:** Identify customer purchase patterns, DRC trends, and monthly revenue variations.
- **Predictive Analytics:** Utilize time series forecasting to estimate future sales volumes for better staffing and logistics planning.
- **Segment Analysis:** Classify customers based on volume and frequency to prioritize retention and service strategies.

These methods were chosen for their simplicity, effectiveness in low-data environments, and ability to provide actionable insights without the need for extensive infrastructure.

5.2 Data Collection:

The primary dataset will consist of customer billing records from the previous five months, encompassing the following key variables:

- **Customer Name:** Utilized for tracking purchasing behavior and frequency analysis.
- **Date of Sale:** Employed to identify seasonality effects and temporal trends.
- **Quantity of DRC (kg):** Serves as the principal metric for revenue calculation and demand forecasting.
- **Rate per kg:** Reflects dynamic pricing influenced by seasonal fluctuations.
- **Total Bill Value:** Represents aggregate revenue generated per transaction.
- **Commission (₹3 per kg):** Directly correlates with Business A’s income stream.

These variables will be digitized into a structured format (e.g., Excel or Google Sheets), facilitating efficient data manipulation and quantitative analysis. The selected data points are integral to addressing the core objectives: enhancing income predictability, optimizing customer segmentation, and improving workforce allocation strategies.

5.3 Analysis Tools:

Microsoft Excel will be utilized for initial data entry, cleaning, and visualization due to its accessibility, user-friendliness, and suitability for managing small-scale datasets.

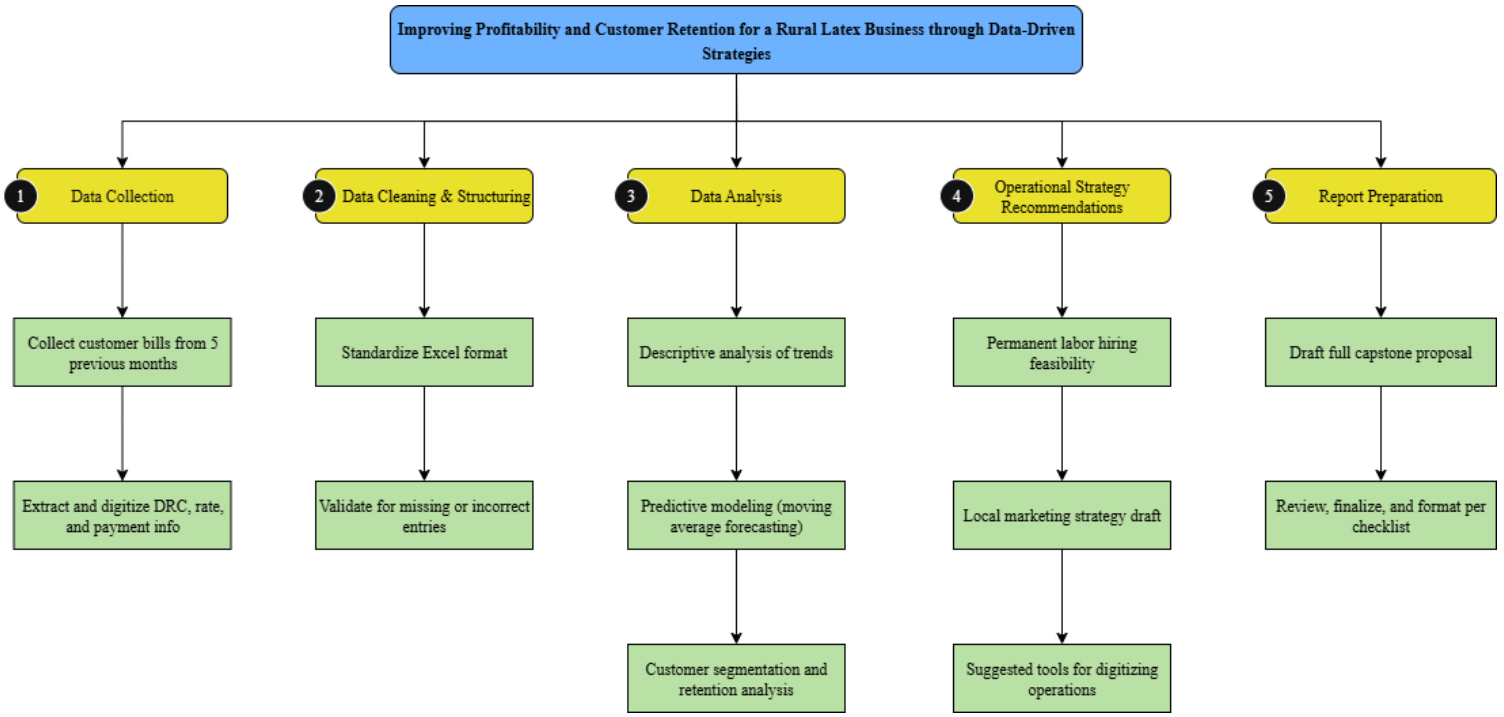
- **Pivot Tables** will be employed to aggregate and summarize DRC quantities and income on a per-customer basis.
- **Charts and Line Graphs** will facilitate the visualization of sales and commission trends over time.
- **Simple Moving Averages** will be calculated to support short-term earnings forecasting.

For more advanced analysis and trend modeling, Python libraries such as Pandas and Matplotlib may be leveraged, contingent on the availability of sufficient data volume. This combination of tools offers a practical balance between analytical rigor and operational feasibility within the context of an unorganized rural business environment.

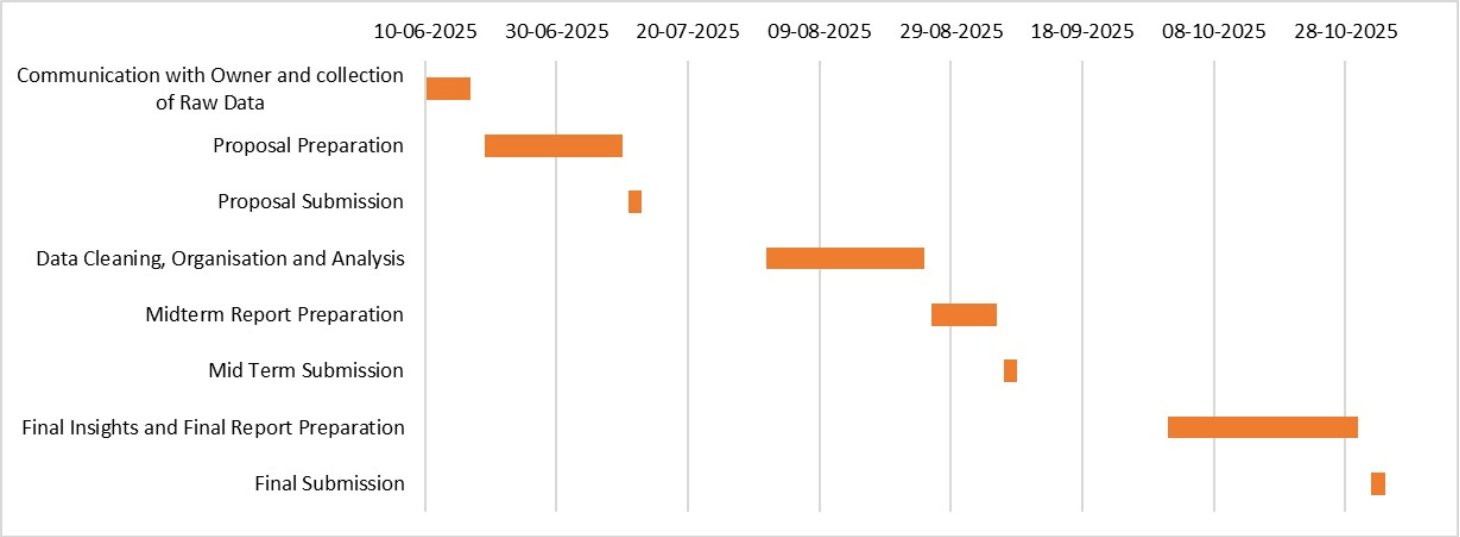
By implementing these methodologies, Business A can evolve from reactive day-to-day management toward proactive strategic planning and informed decision-making.

6 Expected Timeline

6.1 Work Breakdown Structure:



6.2 Gantt chart



7 Expected Outcome

7.1 Improved Revenue Forecasting: By leveraging historical DRC sales and commission data, Business A will enhance the accuracy of monthly income predictions. This capability supports more effective financial planning and mitigates risks associated with volatile latex prices.

7.2 Increased Customer Retention: Segmenting customers based on purchase frequency and volume enables Business A to identify key contributors and tailor engagement strategies. This data-driven approach fosters stronger, long-term relationships with dependable suppliers.

7.3 Better Operational Stability: Analyzing workforce patterns will provide actionable insights into labor demand, justifying the transition toward hiring permanent staff. This shift reduces operational disruptions caused by reliance on daily-wage workers, improving overall stability.

7.4 Enhanced Data Management: Implementing structured digital recordkeeping systems (e.g., Excel or mobile applications) will improve billing accuracy, customer tracking, and performance monitoring. This move from manual to digitized records strengthens business control and operational efficiency.

7.5 Growth Opportunities through Local Outreach: Utilizing geographic data combined with customer trend analysis will inform targeted marketing efforts to attract new suppliers from surrounding rural areas, thereby increasing total DRC volumes handled.

Collectively, these outcomes—rooted in rigorous data analysis—will enable Business A to transition toward sustainable and scalable growth.