

A
Business Data Management Capstone Project Proposal

Entitled

Maximizing Profits for a Packaged Drinking Water Manufacturing Industry Through Proactive Customer Acquisition Strategies

Submitted by

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For the partial fulfilment of the
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Bachelor of Science (BS) Degree in Data Science and Applications

At

Indian Institute of Technology Madras
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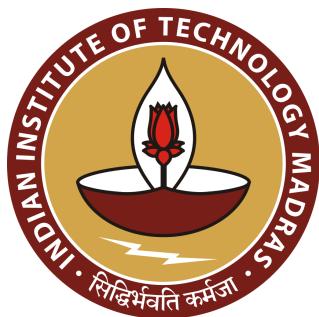


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Declaration:

I, **Barenya Kumar Dev, Roll No. 21f2000494**, Diploma Level, Bachelor of Science (BS) in Data Science and Application, Indian Institute of Technology Madras, Tamil nadu, India, 600036 , am working on the **Business Data Management Capstone Project** entitled “**Maximizing Profits for a Packaged Drinking Water Manufacturing Industry Through Proactive Customer Acquisition Strategies**”. I extend my appreciation to **M/S MAA BIRAJA TRADERS, Khata No-171, Mirijapur, Badabanta, Jajpur, Odisha, 755009** , for providing the necessary resources that enabled me to conduct my project.

I 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 analysed 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 principles 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. Therefore, I 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 recommendations provided are business-specific and limited to this project exclusively, and cannot be utilised for any other purpose with an IIT Madras tag. I understand that IIT Madras does not endorse this project.

Signature of Candidate:

Barenya Kumar Dev.

Name: Barenya Kumar Dev

Date: 05-03-2024

1. Executive Summary:

I have obtained essential data from Sohit Fresh Packaged Drinking Water Industry, which is an extension of the business house M/S Maa Biraja Traders, that deals with both B2B and B2C is located in Madhapur, a small town within the district of Jajpur in the state of Odisha. Sohit Fresh specialises in the production and distribution of premium packaged mineral drinking water under the label of “Sohit Fresh”.

The primary reasons to select this establishment:

- The manager of the packaged drinking water establishment Mr. Ashok Kumar Pati, whom I am personally acquainted with, has been cooperative and willing to share the required data crucial for the project's success.
- Size and scale of the business is appropriate for the project.
- The owner is educated and maintains the sales/stock data regularly.
- It is evident that the establishment harbours genuine aspirations for growth and success, recognizing the need for professional guidance to realise its ambitions effectively.

The primary reasons to undertake the project:

- The proprietor aims to achieve spontaneous profitability because of the large amount of capital invested for the machinery for the sake of treatment of water.
- The business house seeks maximum profit margins over the next five-ten years at least, necessitating a larger and sustained consumer base.
- The project's primary focus is on devising strategies, including market analysis and sales optimization, aimed at attracting and retaining both individual consumers and market penetration of the product primarily within the district.

Data Acquisition:

Till date I have collected the sales/stock data of 59 days(Jan-Feb) and will continue to do so until a meaningful analysis could be done and a conclusion could be drawn. I have collected the data from the record books of the establishment, with the manager's prior permission.

The data consists of the product as mentioned below:

- “Sohit Fresh” packaged drinking water
 - 250 millilitre
 - 500 millilitre
 - 1 Litre

2. Organisational Background

Name of the firm - M/S MAA BIRAJA TRADERS. (CM/L: 5200124656)

Managing Partner - Mr. Sudhansu Sekhar Swain. (Partner of the Firm)

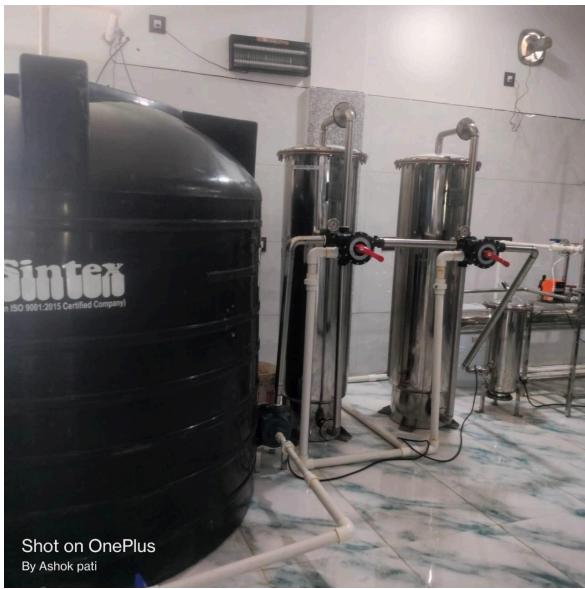
Manager: Mr. Ashok Kumar Pati

- “Sohit Fresh” Packaged Drinking Water Industry specialises in the production and distribution of premium quality packaged filtered, mineral induced and ozonated drinking water.
- Founded in late 2023, the industry specialises in water purification, ozonation, and bottling, offering various sized bottles (250ml, 500ml, and 1L) and leveraging its expertise and equipment for water treatment and packaging.
- The manufacturing industry has a dedicated channel of distributors through which it makes the products available in the retail stores.
- The manufacturing industry also has a dedicated website: <https://sohitfresh.com>



FEBRUARY

DATE	Opening Stock	Production	Total	Sales			Closing Stock
				250 ml	500 ml	1000 ml	
01-02-24	564	1400	2444	534	24	0	754
02-02-24	574	274	852	0	0	0	574
03-02-24	574	164	738	0	0	0	574
04-02-24	574	0	574	574	154	0	574
05-02-24	574	0	574	283	94	0	574
06-02-24	574	0	574	283	94	0	574
07-02-24	574	0	574	283	94	0	574
08-02-24	574	0	574	283	94	0	574
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28-06-24	574	0	574	283	94	0	574
29-06-24	574	0	574	283	94	0	574
30-06-24	574	0	574	283	94	0	574
31-06							



Shot on OnePlus
By Ashok pati



Shot on OnePlus
By Ashok pati

(Pictures of the packaged drinking water manufacturing plant)



Shot on OnePlus
By Ashok pati



(Picture of me with the manager
of the industry, holding the 1L product)

3. Problem Statement

My conversation with the owner revealed several challenges impacting their profit margins. While the 500ml and 250ml bottles are their best sellers, the higher-profit 1L bottle struggles with low market penetration. The owner attributed this partly to their premium product's higher production cost compared to local competitors. Furthermore, a significant gap exists between distributors and retailers, with distributors hesitant to sell the 1L bottle batches to the retailer due to concerns about lower margins. The retailer sells the products with significantly high markups, leaving both the distributor and manufacturer with insufficient profits.

- Product struggles to reach consumers due to inefficiencies in the supply chain.
- Sales suffer from a disconnect between manufacturer, distributor, and retailer.
- Unsold inventory piles up due to flawed inventory management practices.

4. Problem Background:

The basic issues of the industry, as per the owner is marked as follows:

- Full inventory, because of a weak distributor chain. The product's market penetration is very less within the district.
- Not profitable/less profitable business because of the product not selling as expected.

The problems that I assume (as a consumer and an analyst) from first impressions and after using the product are listed as follows:

Product issues:

- Low Demand: The water quality in terms of taste is on par with the premium competitors but in the local market, the taste, quality, or mineral content is not a selling point, but the reusability of the product is. From my initial usage of the product's packaging I found some structural and design flaws in the packaging that might be causing less sales.
- Product Differentiation: The packaging, however, unique in terms of design and robust in terms of quality, there are still a few problems that are stopping the product from being differentiable. From my personal observation, I found problems in the label and colour scheme used.
- Low Brand Awareness: Brand recognition amongst the public is likely less.

Distribution and Sales Issues:

- Limited Distribution Network: The company suffers from limited distribution and an almost full inventory.
- Weak Sales Strategy: The industry probably has a weak sales strategy that hampers the growth.

Financial Issues:

- High Production Costs: The production cost of making one bottle of 1L packaged drinking water is relatively higher due to the premium quality of the product.

Additional Factors:

- Competition: Market is saturated with established brands.
- Consumer Preferences: The average consumer prefers 500mL bottles that come at a retail cost of INR 10, but the profit margin is maximum for the 1L bottle that comes at a retail cost of INR 20.

I will use the theories and skills taught in the BDM theory course to arrive at an appropriate solution to these problems.

5. Problem solving strategies:

I have acquired the time series data of the inventory as I plan to analyse the same for solving the problem at hand. Here are the few problem solving approaches that I might have to take in the following months:

- Optimising Pricing Strategy:
 - Cost-Plus Pricing: Implementing a cost-plus pricing strategy for the 1L bottle, ensuring it remains competitive while factoring in production costs and desired profit margin. This would guarantee the manufacturer's profit.
 - Negotiating with suppliers for raw materials and packaging.
 - Exploring alternative materials or packaging options that maintain quality while reducing cost.
 - Competitive Analysis: Conducting a competitive analysis to understand competitor pricing and adjust your pricing strategy accordingly.
- Profit-Sharing Model: Develop a profit-sharing model with distributors where they earn a higher percentage of profit on each 1L bottle sold.

- Guaranteed Sales Volume: Offer guaranteed minimum sales volume agreements to incentivize distributors to stock and promote the 1L bottles. Also to increase the production and sale of 500ml and 250ml bottles to maximise the profit in these segments.
- Marketing and Sales Support: Devising strategies to provide marketing and sales support to distributors, such as co-branded marketing campaigns or training on the benefits of the 1L bottle.
- Advertisement: Running advertisements on media outlets.
- Removal of middle man: Sale of products direct to some retailers.

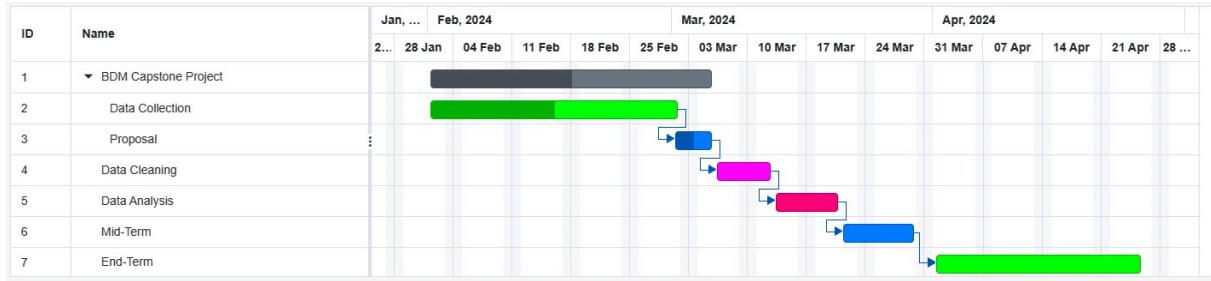
The data I am collecting for now, for each segment of packaged drinking water includes the following:

- Production cost
- Sale price
- Quantity sold

Then I intend to do a complete analysis of the sale and stock, thus ensuring an optimised profit margin. Inventory optimization leading to a free flow of product into the market. Using the data I can compute revenue, EBITDA, expenditure, growth, net profit and profit margin, average inventory, GPR, NPR etc. Also I plan to do a thorough demand-supply curve analysis. I plan to use Excel(primarily) and Tableau(secondary) for the analysis and visualisation of data. Excel offers a surprisingly powerful set of tools for data analysis, even without complex formulas or macros, like SUM, AVERAGE, COUNT, MIN, MAX to summarise key metrics like sales volume, profit margins, and production costs. and conditional Formatting to highlight trends and outliers in your data using colour coding or data bars. We can use Filters and Sort to focus on specific regions, products, or time frames to identify areas needing improvement. PivotTables and Charts can be used to create interactive visualisations to see trends and relationships between different variables; for example, analyse sales by region, product category, or price point. We can employ a what-if analysis using Goal seek to find the value needed in one cell to achieve a desired outcome in another cell. This can be helpful in setting sales targets or optimising production costs. For data visualisation I will be primarily depending upon scatter plots, pie charts, histograms and heatmaps.

6. Timeline:

I have acquired 30 days worth of data, and will continue to do so, from the owner which is subject to cleaning and further analysis. The following is the gantt chart showing the projected flow of the project:



7. Expected Outcomes:

- Maximise the profits of the company by employing the aforementioned strategies.
- Suggest best inventory management techniques and solutions.
- Assist the owner in reorganising the business and possibly remodelling the business model itself.