

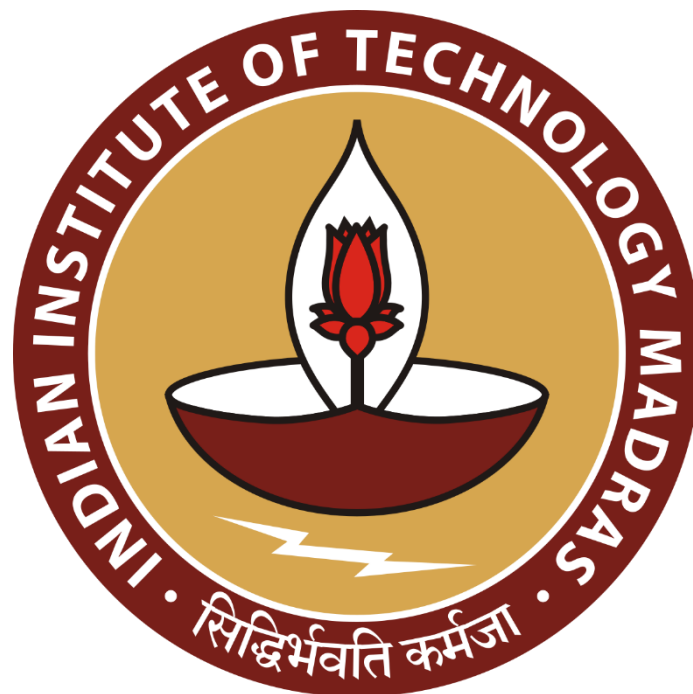
OPTIMIZING SANITATION BUSINESS OPERATIONS FOR ENHANCED MARKET DEMAND AND IMPROVED SERVICE EFFICIENCY

A Proposal report for the BDM capstone Project

Submitted by

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Declaration Statement

I am working on a Project titled "OPTIMIZING SANITATION BUSINESS OPERATIONS FOR ENHANCED MARKET DEMAND AND IMPROVED SERVICE EFFICIENCY". I extend my appreciation to **SPACE TREE pvt. Ltd.** , for providing the necessary resources that enabled me to conduct my project.

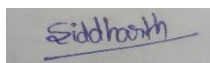
I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered from primary sources and carefully analyzed to assure its reliability.

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 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. 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 understand that all recommendations made in this project report are within the context of the academic project taken up towards course fulfillment in the BS Degree Program offered by IIT Madras. The institution does not endorse any of the claims or comments.

A rectangular box containing a handwritten signature in blue ink that reads "Siddharth".

Signature of Candidate:

Name: Siddharth

Date: 5 Aug 2024

EXECUTIVE SUMMARY

Sanitation Solutions by SPACE TREE. Address Plot No. 166, Near Ambedkar Chowk, Sector-51, Gurgaon, Haryana, deals in good quality sanitation products, from bathtubs to taps, and various other accessories used in bathrooms. The company, though offering a very comprehensive range of necessary products, has at present fallen into troubled waters because of low market demand and operational inefficiencies.

Major Issues

Low Market Demand: The customer base has fallen, and the volume of sales has decreased; as a result, revenues have fallen and the market has grown at a slow pace.

Operational Inefficiencies: Inability to efficiently manage stock and lack of well-streamlined processes that brought about the stock discrepancy, probable wastage, and higher operational costs.

Primary Objectives

Increase Market Demand: To design and implement a detailed marketing strategy to increase the visibility of the brand and attract more customers.

Inventory Management Optimization: Developing a data-driven approach to trace and quantify the correct inventory levels, which allows reducing the number of cases of stock-out and waste.

Improved Operational Efficiency: Advanced tools and technologies such as Excel, Python, and Machine Learning are put to use in smoothening data processing, decision-making, and overall operational workflows.

By overcoming these challenges, SPACE TREE will increase market penetration, reduce operation costs, and boost customer satisfaction. Expected outcomes include higher sales and inventory efficiency and stronger market presence.

ORGANIZATIONAL BACKGROUND

SPACE TREE is a leading company. The company was formed in 2020 under the partnership of Mr. Ram Singh Bengani, Mr. Nikhil Dangi, Mr. Madan Lal Dugar, and Mr. Dheeraj Sharma. The registered address of this firm is situated at Sector-51, Gurgaon, Haryana, near Ambedkar Chowk, with a total no of 6 staff members working in this company.

This company only derives sales from customers who visit the stores in person, hence the first mover advantage of walk-in customers. It provides a platform where customers can visit to view the products with their own eyes, thus ensuring customer satisfaction. They can get to see and even test the product, hence making informed purchase decisions, and walk out of the store with the purchased products then and there. Direct dealing develops trust and satisfaction, as customers get to examine the products properly before making a purchase. Notably, there is no alternative method of sale through the Internet or home delivery; rather, it is all within the shop premises.

PROBLEM STATEMENT

The business owners are happy earning solid profits with high customer retention, mainly due to the fact that the high quality of the sanitation products keeps the customers loyal and attracts new ones. Conversely, the most serious issues encountered by SPACE TREE are inventory management-related, further compounded by the wide variety of products offered that makes it difficult to track such inventory accurately.

Inventory Tracking: With this being a fast-moving sector—sanitation products—with fluctuating demands from the customers, the inventory becomes very hard to manage. The problem brought about is keeping track of different items with different shelf lives that usually result in wastage and stock level discrepancies.

Classify inventory material and quantify usage: Although rough estimates on the stock levels and usages for every product exist, some remain unclassified—hence the problems of overstocking or understocking. This mismanagement may be another area of potential unnecessary waste. With a better sense of demand for various products, SPACE TREE will be better positioned to make informed purchasing decisions and, in turn, reduce waste that need not exist.

Optimize Operational Expenses: Lack of proper inventory management system and underutilization of stock flow result in resource wastage and monetary inefficiency. Inability to find out the avenues of cost saving and rectifying the issues mentioned above accentuate these financial drains.

SPACE TREE has to address these challenges in inventory management to reduce waste, smooth operations, and increase total efficiency to achieve better financial performance and customer satisfaction.

BACKGROUND OF THE PROBLEMS

Inventory Tracking: Inventory management is complex because the product line goes from baths and toilet seats and taps to all other bathroom accessories. While some of them have their invoices, like branded products, some like plumbing accessories are sourced from local suppliers without proper documentation, which makes inventory tracking quite problematic. Additionally, the cost of raw materials like metals and plastics depends on market conditions and fluctuates often, thus giving a further problem by surging prices overnight.

Classify inventory materials and quantify usage: Most of the products in the business are estimated approximately, thereby leaving the unclassified open to overstocking or understocking, which consequently leads to waste. Those products with limited shelf life, such as some fixtures and fittings, are prone to obsolescence due to the lack of accurate tracking. Overstocking and understocking by estimation may lead to wastage or lost sales due to a lack of products.

Minimize Operational Costs: Focus on the inventory management system's ease and efficiency.

At SPACE TREE, the process of inventory would be smooth, with the best possible arrangement of resources, minimizing wastage, and not using undesirable costs.

This results in great challenges in following up on stock for SPACE TREE due to the number of products involved, coupled with the poor record-keeping for some purchases. It relies on rough estimates, so it is prone to overstocking and associated wastages. Setting up an easy-to-use inventory management system will help reduce operational costs and optimize resource use.

PROBLEM SOLVING APPROACH

Problems that SPACE TREE faces in the domain of inventory management demand a comprehensive data-driven and systematic solution. This would be comprised of the use of a mix of methods, strategies of data collection, and tools of analysis. Each one is justified according to its rationale for using it as an optimization tool for inventory control and reducing operational costs.

Methods Applied

Data-Driven Approach: SPACE TREE will utilize the past sales data and customer consumption behavior to project the demand accurately. This can include the kind of products usually ordered by customers, thereby helping in inventory planning and reducing wastages. Further, with the ABC analysis method for inventory classification by value and consumption, it will focus on key items and ensure that their stocks are optimal and do not run out of stock with respect to high-demand products.

Intended data collection

Sales Data: Number of each product item sold to make out the trend in sales.

Stock and Inventory Data: Estimations and value for all items purchased to account for availability of the same stocks.

Quantities Data: The owners will provide a rough estimation of the quantities used or sold.

Historical Sales Data: Provided the owners are willing to avail it, this data will help in recognizing demand patterns, seasonal variations, and foretell future demands.

The mechanism of such rigorous data collection will help in quantifying consumption patterns, identifying hot-sellers, and optimizing levels of stock to allow for minimal wastage and prevent stock outs.

Analysis Tools

Microsoft Excel will be the core tool for me to maintain the organization's inventory data. I can input, organize, and store inventory information; manipulate data and perform relevant calculations; and create tables for stock level and sales tracking. Graphing and pivot table features can be used to help plot trends and consumption patterns, thus enabling data summarization and analysis.

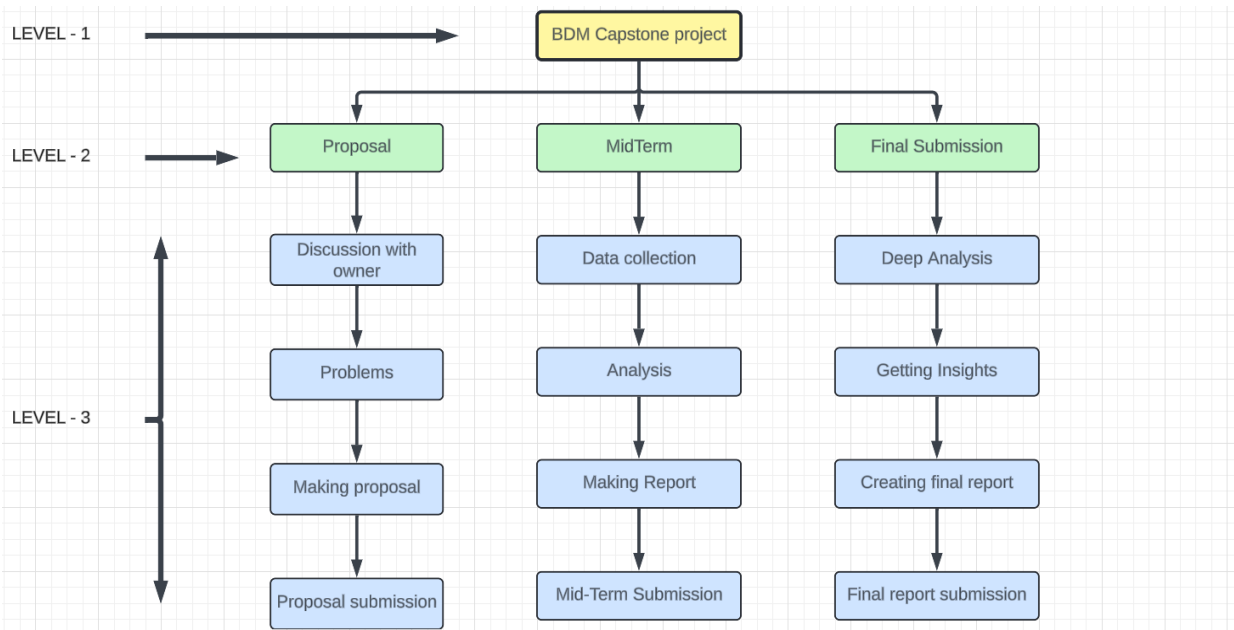
Pareto charts are useful in spotting important or very significant inventory items contributing to sales or even wastage, thus prioritizing efforts on this inventory for inventory management.

Python and Tools of ML: As a general-purpose language, Python comes with many libraries and frameworks like Pandas and NumPy that make efficient data manipulation, processing, and statistical analytics possible. Using Python, I will overcome large volumes of data, compile intricate calculations, and derive meaningful insights from the inventory data.

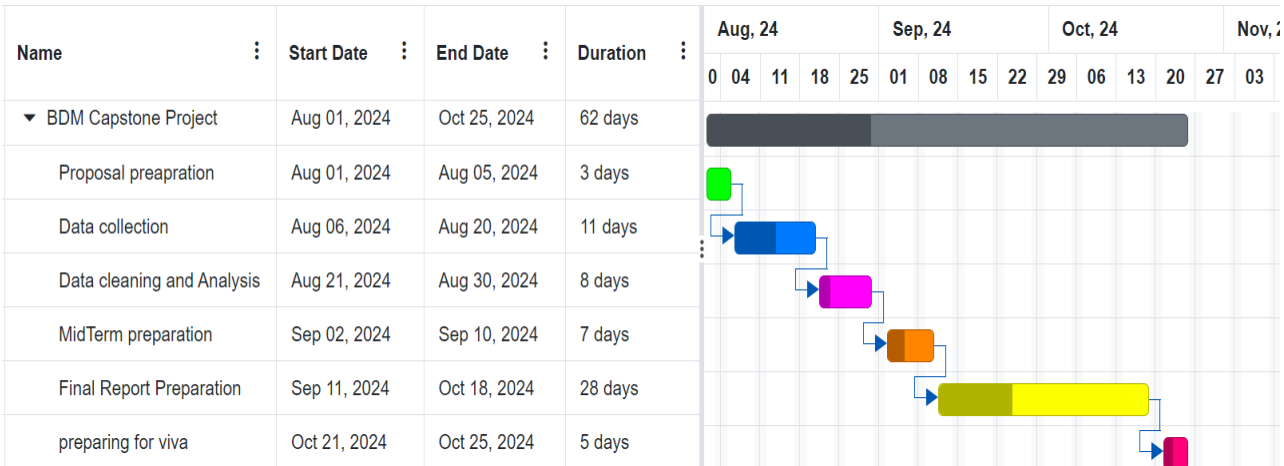
The combination of methods and techniques for data collection, supported by tools for analysis, will let me proceed with the development of a strong inventory management system. This will enable the company to have visualization and transparency of data in making effective data-driven decisions toward waste reduction at minimum, optimal stock levels, and effective reduction in operational costs. Therefore, accuracy pressure and efficiency in inventory management would mean customer satisfaction—through product availability—and be integral to long-term success and profitability of SPACE TREE in this fiercely competitive market.

EXPECTED TIMELINE

WORK BREAKDOWN STRUCTURE



GANTT CHART



The overall project is expected to be completed within the projected timeframe, conforming to the project

EXPECTED OUTCOMES

This inventory optimization project is expected to improve the financial outcome of the organization. Performance and operation efficiency is achieved through effective tracking and quantification of the inventory. This leads to the reduction of wastage and stock outs. Reduced operational costs and enhanced. Ensuring customer satisfaction as a result of consistent product availability and quality, the success of the project will also this will further align with Space Tree's commitment to sustainability and responsible business practices. Consequently, implementing the project will enhance the company's competitive it offers a position and contributes to its long-term success in the industry.

IMAGES OF THE SHOWROOM




PROOF OF ORIGINALITY



Government of India
Form GST REG-06
[See Rule 10(1)]

Registration Certificate

Registration Number : 06AEHFS3297L1ZF

1.	Legal Name	SPACE TREE			
2.	Trade Name, if any	SPACE TREE			
3.	Constitution of Business	Partnership			
4.	Address of Principal Place of Business	PLOT NO 166, NEAR AMBEDKAR CHOWK, SECTOR-51, GURGAON, Gurgaon, Haryana, 122001			
5.	Date of Liability				
6.	Period of Validity	From	16/12/2020	To	Not Applicable
7.	Type of Registration	Regular			
8.	Particulars of Approving Authority	Centre			
Signature Signature Not Verified Digitally signed by DE GOODS AND SERVICES TAX NETWORK(4) Date: 2020.12.16 10:31:05 IST					
Name		Ajeet Kumar			
Designation		Superintendent			
Jurisdictional Office		Gurgaon (East) Ward 1			
9. Date of issue of Certificate		16/12/2020			
Note: The registration certificate is required to be prominently displayed at all places of business in the State.					

This is a system generated digitally signed Registration Certificate issued based on the approval of application granted on 16/12/2020 by the jurisdictional authority.