

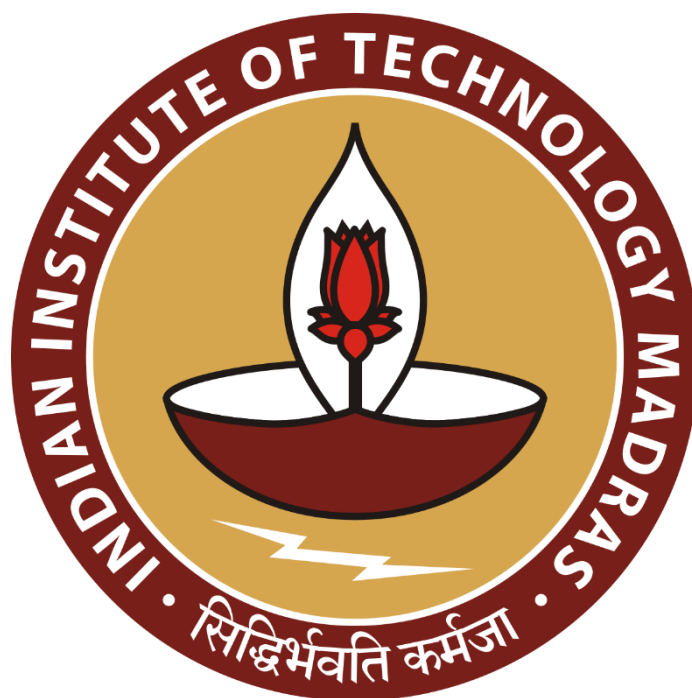
# **Optimizing Inventory Management and Business Processes for Sustainable Growth in a Manufacturing SME**

**A Proposal report for the BDM capstone Project**

Submitted by

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## Contents

1	Executive Summary	3
2	Organisation Background	3
3	Problem Statement	4
3.1	Inefficient Inventory Management	4
3.2	Working Capital and Cash Flow Gaps	4
3.3	Lack of Automation and Scalability	4
4	Background of the Problem	4
5	Problem Solving Approach	5
6	Expected Timeline	7
7	Expected Outcome	8

## **Declaration Statement**

I am working on a Project titled “**Optimizing Inventory Management and Business Processes for Sustainable Growth in a Manufacturing SME**”. I extend my appreciation to **Sterling Foods and Beverages**, 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.



Signature of Candidate: **(Digital Signature)**

Name: Abhinav Jaswal

Date: 13-06-2025

# **1 Executive Summary**

Sterling Foods and Beverages, located in Sumara Ki Dhani, Neota, Jaipur, Rajasthan, is a B2B manufacturer specializing in packaged water bottles under the brand name Cubic, serving wholesale clients across the region. Despite its established presence, the company faces persistent operational challenges that limit profitability and growth.

Upon analyzing the business's purchase, sales, and inventory records, it is evident that manual inventory tracking has led to inconsistent stock levels, frequent overstocking, and a significant amount of working capital tied up in unsold goods and raw materials. These issues are compounded by the absence of automated systems, making it difficult to quickly identify slow-moving products, forecast demand accurately, and scale operations efficiently.

This project aims to address these challenges by applying data-driven analytical approaches using tools like Excel and Python. By implementing process improvements and exploring automation options, the expected outcome is to reduce excess inventory, free up cash flow, and build a more agile, scalable, and profitable business model for Sterling Foods and Beverages.

# **2 Organization Background**

Founded in 2016, Sterling Foods and Beverages is a partnership-based manufacturing enterprise located in Sumara Ki Dhani Neota, Jaipur, Rajasthan. The company specializes in the production and supply of packaged drinking water, marketed under the brand "Cubic," and caters primarily to B2B clients across the region. With an annual turnover ranging from ₹40 lakh to ₹1.5 crore and GST registration since July 2017, Sterling Foods and Beverages has established itself as a reliable player in the packaged water segment.

The organizational structure is typical of a small to mid-sized manufacturing firm, operating under a partnership model and employing a lean workforce to ensure timely delivery and quality control. The business focuses on providing effective and prompt service, with an emphasis on maintaining product purity and consistency. Sterling Foods and Beverages operates from its manufacturing facility in Jaipur, leveraging its strategic location for efficient distribution within Rajasthan and neighboring states.

The company's mission centers on delivering high-quality, safe packaged drinking water to its clients while upholding standards of reliability and customer satisfaction. As it continues to grow, Sterling Foods and Beverages aims to enhance operational efficiency and adapt to evolving market demands, positioning itself as a trusted supplier in the B2B beverage industry.

### **3 Problem Statement**

#### **3.1 Inefficient Inventory Management:**

Manual inventory tracking processes have resulted in inconsistent stock levels, frequent overstocking of certain items, and increased risk of stockouts, highlighting a need for improved inventory control systems.

#### **3.2 Working Capital and Cash Flow Gaps:**

A significant portion of the business's funds is locked in inventory and raw materials, which restricts cash flow and limits the organization's ability to allocate resources towards growth and operational improvements.

#### **3.3 Lack of Automation and Scalability:**

The absence of automated sales and inventory systems makes it challenging to promptly identify slow-moving products and respond to demand fluctuations, thereby constraining the business's scalability and operational efficiency.

### **4 Background of the Problem**

Sterling Foods and Beverages, as a B2B manufacturer of packaged drinking water, operates in a sector where efficient inventory management is crucial for profitability and growth. The business currently relies on manual processes for tracking inventory and sales, which is a common challenge among small and medium-sized enterprises (SMEs). This manual approach often leads to inconsistent stock levels, with some products being overstocked—tying up valuable working capital—while others run out, resulting in missed sales opportunities and dissatisfied clients.

Internally, these issues stem from several factors. The absence of automated systems makes real-time tracking and demand forecasting difficult, increasing the risk of both surplus and obsolete stock. Manual record-keeping is prone to human error, complicating the identification

of slow-moving products and hindering timely decision-making. Additionally, the lack of integration between procurement, production, and sales data further exacerbates inefficiencies, making it challenging to optimize stock replenishment cycles and align inventory with actual demand.

Externally, Sterling faces pressures from fluctuating supplier lead times, changing customer demand, and rising warehouse costs. Economic conditions, competition from other B2B suppliers, and evolving regulatory requirements also impact inventory and cash flow management. The combination of these internal and external challenges means that a significant portion of the company's funds remains tied up in inventory and raw materials, limiting cash flow and restricting the ability to invest in growth initiatives or technology upgrades.

## 5 Problem Solving Approach

### 1. 5.1 Methods

To address the inventory management, cash flow, and scalability challenges at Sterling Foods and Beverages, a combination of quantitative and process-oriented methodologies will be implemented:

- **ABC Analysis:** This method will categorize inventory into three classes (A, B, and C) based on their consumption value, helping to focus control efforts on high-value items and reduce overstocking of less critical stock. This is justified as it enables prioritization and efficient allocation of resources, directly addressing issues of overstock and stockouts.
- **Inventory Turnover Ratio Analysis:** Calculating how often inventory is sold and replaced over a period will highlight slow-moving and fast-moving items. This is critical for identifying excess stock and improving cash flow, as higher turnover typically correlates with better liquidity and lower holding costs.
- **Demand Forecasting:** Using historical sales data, demand forecasting will help predict future inventory needs, reducing both overstock and stockouts. This approach is justified as it aligns procurement with actual sales trends, optimizing working capital use.

- **Process Mapping and Automation Assessment:** Mapping current manual workflows will identify bottlenecks and inefficiencies, while evaluating automation options (like inventory management software) will provide a roadmap for scalable, efficient operations.

## 2. 5.2 Data Collection

The data collection process will focus on gathering all variables relevant to inventory and cash flow optimization:

- **Sales Data:** Monthly and product-wise sales figures will be collected to analyze demand patterns, identify bestsellers, and detect seasonality. This data is crucial for accurate demand forecasting and ABC analysis<sup>89</sup>.
- **Purchase Data:** Details of raw material and finished goods purchases, including quantities, costs, and supplier lead times, will be gathered. This information is essential for understanding procurement cycles, cash outflows, and for turnover ratio calculations<sup>1011</sup>.
- **Inventory Records:** Opening and closing stock levels for both raw materials and finished goods, including SKU-level details, will be tracked. This data is fundamental for turnover analysis, stockout/overstock detection, and ABC categorization<sup>121113</sup>.
- **Financial Data:** Cash flow statements, accounts payable/receivable, and working capital metrics will be reviewed to assess the impact of inventory on liquidity and profitability.
- **Process Documentation:** Observations and documentation of current inventory and sales tracking processes will be collected to identify manual intervention points and automation opportunities.

Collecting these variables is justified as they directly impact the core problems of inconsistent inventory, cash flow blockages, and operational inefficiency.

## 3. 5.3 Analysis Tools

- **Microsoft Excel:** Excel will be used for initial data cleaning, pivot table analysis, ABC categorization, and basic visualization. Its accessibility and versatility make it ideal for SMEs with limited resources.
- **Python:** For more advanced analytics, Python (with libraries like pandas and matplotlib) will be employed to automate calculations, generate forecasts, and produce

deeper insights into inventory trends and cash flow patterns. Python is justified for its scalability and ability to handle large datasets efficiently.

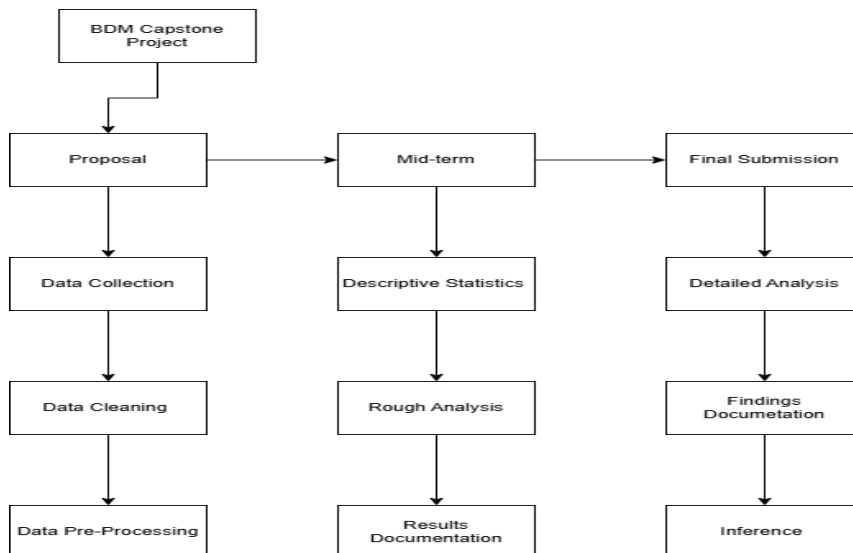
- **Visualization Tools (Tableau/Power BI):** These will be used to create interactive dashboards for presenting findings to stakeholders, enabling clear communication of trends and actionable insights.

#### 4. Justification

This multi-pronged approach—combining ABC analysis, turnover ratio evaluation, forecasting, and process mapping—directly targets the root causes of Sterling’s inventory and cash flow challenges. The chosen data points ensure all relevant operational and financial variables are considered, while the selected tools balance affordability, ease of use, and analytical power. Collectively, these methods will provide actionable, data-driven recommendations to optimize inventory, release tied-up capital, and pave the way for scalable, automated business processes.

## 6 Expected Timeline

### 6.1 Work Breakdown Structure:





## 6.2 Gantt chart

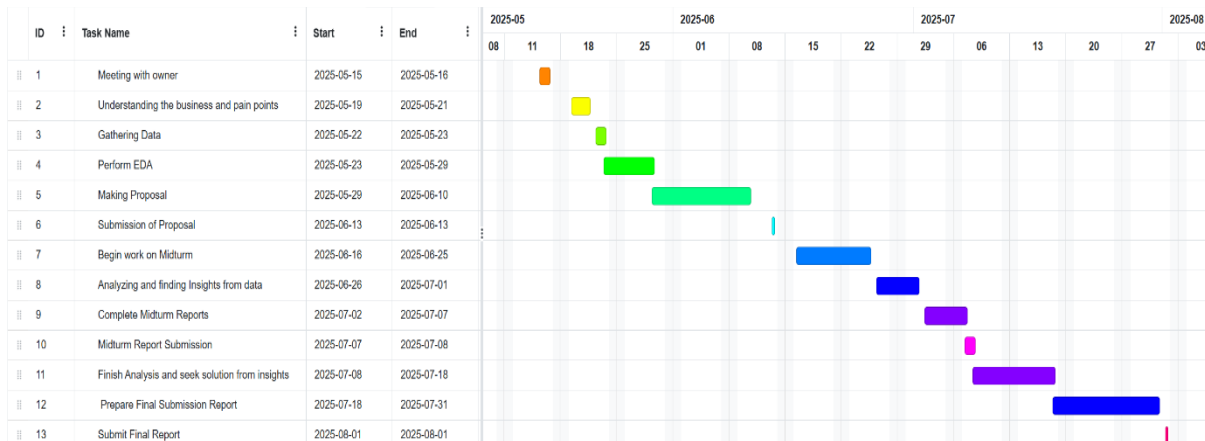


Figure 1 Expected timeline for completion of project.

## 7 Expected Outcome

- 7.1 The project will deliver a data-driven inventory management strategy for Sterling Foods and Beverages by analyzing sales, purchase, and inventory data. This will help maintain optimal stock levels, reduce overstocking and stockouts, and free up working capital to improve cash flow and support growth.
- 7.2 By using ABC analysis, inventory turnover evaluation, and demand forecasting, the project will identify key products and improve procurement efficiency. Automated tools and process improvements will reduce manual errors and provide real-time stock and sales visibility.
- 7.3 The insights will support smarter decisions in procurement, production, and sales. Expected benefits include higher profitability, lower holding costs, better operational efficiency, and a strong foundation for scalable, tech-driven growth in the B2B beverage market.