



IITM ONLINE BS DEGREE PROGRAM,  
INDIAN INSTITUTE OF TECHNOLOGY, MADRAS, CHENNAI  
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**Inventory Management and Demand Forecasting  
of the Bright Box Company, a Manufacturing  
Firm, in 2024**

**A PROPOSAL REPORT FOR THE BDM CAPSTONE PROJECT**

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## **Declaration Statement**

I am working on a Project titled “Inventory Management and Demand Forecasting of the Bright Box Company, a Manufacturing Firm, in 2024”. I extend my appreciation to the Bright Box Company, 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 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. 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 fulfilment 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: Aaliya Ansari

Date: 1st February 2024

## **Executive Summary and Title**

**Title of the project:** “Inventory Management and Demand Forecasting of the Bright Box Company, a Manufacturing Firm, in 2024.”

The project focuses on the Bright Box Company, which is a manufacturing firm located in the Moradabad city of Uttar Pradesh. This is a B2B oriented firm and deals in the manufacturing of corrugated boxes and cartons.

Their need is to understand and maintain sufficient inventory levels, in the period when there is very low demand. Also, growing business to maintain earnings and other costs is a tough task as of now due to instability in the market.

The problems will be addressed by collecting relevant information and data like Sales to Inventory Ratio, Lead Time for various order sizes, and Current order sizes, and more. This data would help in analysing the situation and coming to an effective solution. Moreover, various analytical approaches like Descriptive, Predictive, Statistical and Time Series Analysis will be required and applied to obtain beneficial outcomes.

The outcomes would provide the organization with demand forecasting strategies and help it in reducing the monetary obstacles in terms of inventory and fixed expenses which would lower the chances of loss in the low sales period.

## **Organization Background**

**Name:** Bright Box Company

**Owner:** Mr. Humayun Anwar

**Industry:** Manufacturing

The organization I am dealing with is “Bright Box Company”, which is a manufacturing firm located at Moradabad, Uttar Pradesh.

The roots of the company date back to 1993, where it started as the manufacturer and supplier of corrugated boxes and cartons. Later, it added a corrugation unit and started the manufacturing of the sheets as well.

The company supplies to various companies within the country. Most of its customers are based in the same city. Currently, the company has 15 employees. The corrugation unit consists of Max sizes of machinery in more than 1000 square feet. The main customers of the company are

the exporters. Thus, there is a direct impact of the global market situation on the business of the company. The organization believes in providing the best of the quality and making sure that the customer's requirement is met up to his/her expectations.

## **Problem Statements**

### **PROBLEM STATEMENT 1-**

Management of Inventory during low demand in Industrial market, in Moradabad, Uttar Pradesh.

### **PROBLEM STATEMENT 2-**

Identification of future scope and demand in the market for corrugated box manufacturing industry.

### **PROBLEM STATEMENT 3-**

Management of working capital & manpower with low sales.

## **Background of the Problem**

Major problems faced by the Bright Box Company are of low demand of products in the market and maintaining the inventory accordingly. As everything is interconnected, the chart below signifies the chain reaction of problems and factors being affected due to the same. All these factors raise a question for the owner and the managing entity on how to survive or rise from this situation.

The sales are low, due to which the inventory is stuck. The production is simultaneously dependent on the sales, which brings out another question mark. Manpower is to be managed, but with negligible or stuck revenue, it is just an expense for the firm. Raw material is not of huge value currently but needs to be protected and utilized accordingly whenever required.



### **Causes of problems:**

- International Relations & Trade
- Production & Manpower
- Inventory Management
- Fixed Expenses
- International War
- Blocked Routes

## **Problem Solving Approach**

To solve the problems, various approaches would be required. Below mentioned are the details about the methods that would be used along with the justification.

- The data collection will constitute of historical sales data, inventory records, market trends and other relevant data sets.
- As the data is the time-series data, trend lines, scatter plots and histograms will be used for the analysis. The problems would be addressed by analysing the collected data to identify demand patterns, seasonality and factors influencing demand variability using various types of charts.
- Demand forecasting could be done by using statistical methods such as **time-series analysis** and Optimal Inventory levels can be analysed based on demand forecasts. Customer types could be analysed using Pie charts.

### **Intended data collection details along with justification-**

The intention is to collect historical sales data of all the products. The cost price, selling price, quantity sold etc. would be recorded from the past year.

The data about the different market scenarios during the sales period will also be collected to acknowledge the factors contributing to various patterns in the sales. The data pertaining to the inventory will be collected which would include the quantity of the stock stacked, the cost price of the raw material and cost of maintaining the inventory. The number of workers during different seasons and the variations in the wages of the workers (if any), the extra costs which would include the electricity charges, machinery maintenance charges etc. will also be recorded to analyse the total profit/loss incurred by the company.

### **Details about the analysis tools with justification-**

MS Excel would be used to record the data, clean the data and visualize the data. Below mentioned are some of the features of excel which would be extensively used in the project.

- VLookup, HLookup, If, CountIf, Pivot Tables, Statistical Functions, sorting, filtering, concatenate would be used to cleaning, interpreting, evaluating, and analyzing the data.
- Data would be visualized using stacked histograms, scatter plots, trend lines etc.

## Expected Timeline

### Work Breakdown Structure:

Firstly, the data collection would be done from the company and along-side some market research and knowledge about the industry will be gathered.

The next step would be data cleaning and analyzing to find meaningful insights from the data which would be the preparation for the mid-term submission. Once mid-term approved, further analysis of the data and collection of relevant information would be done to complete the project.



*Figure 1 Expected timeline for completion of project.*

## Expected Outcomes

- Recommendations about inventory optimization, i.e., appropriate stock levels and inventory classification criteria. This includes determination of optimal quantity to meet demand while minimizing excess, and categorizing inventory based on factors like demand variability, lead time and criticality improve efficiency.
- Complete analysis of historical sales data and demand patterns to gain insights into purchasing behaviour and future customer needs accurately.
- Efficient strategies recommendations for managing working capital aiming to optimize cash flow and ensuring effective utilization of available resources and sustained financial health.
- Recommendations for optimal manpower utilization during low sales period. This ensures efficient use of workforce resources, maintains operational effectiveness, and contributes to financial stability by minimizing overhead costs while preserving essential functions and customer service standards.