

# **OPTIMIZING FINANCIAL STABILITY, WORKFORCE PRODUCTIVITY, AND SUPPLY CHAIN RESILIENCE OF A MANUFACTURER/SERVICE PROVIDER.**

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

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## **Contents**

- 1.Executive Summary and Title (200 Words)
- 2.Organisation Background (150 Words)
- 3.Problem Statement (Listed as objectives) (50-75 Words)
  - 3.1 Problem statement 1: Explanation in 1-2 lines
  - 3.2 Problem statement 2: Explanation in 1-2 lines
  - 3.3 Problem statement 3: Explanation in 1-2 lines
  - 3.4 Problem statement 4: Explanation in 1-2 lines
- 4.Background of the Problem (200 Words)
- 5.Problem Solving Approach (400 Words)
- 6.Expected Timeline
- 7.Expected Outcome

### **Declaration Statement**

I am working on a Project Title “**Optimizing Financial Stability, Workforce Productivity, and Supply Chain Resilience of a Manufacturer/service provider**”. I extend my appreciation to **PATNA CALIBRATORS**, for providing the necessary resources that enabled me to conduct my project.

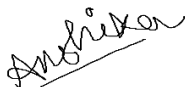
I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered through primary sources and carefully analyzed to assure its reliability.

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: (Digital Signature)

Name: ANSHIKA

Date:01/02/2025

## **1.Executive Summary and Title (200 Words)**

The project focuses on a Family Business, PATNA CALIBRATORS located at Gulzarbagh, Patna - 800007(Bihar). The business is B2B and deals in the segment of Manufacturer/ Service Provider for Petrol Pump Canopy, Water Storage Tank, Structural Fabrication Service.

The major business issues that the organization is facing are related to the delay Payment on Orders from various the businesses due to which they have to take loans for further work flow.

Other issue related to very nominal profit during rainy and winter season because of less workforce, transportation issues due to flooded roads and less number of orders.

Some important raw materials are not available in near Patna due to which the workflow stops as they are transported from Kolkata.

The total workforce of the company is 25-50 permanent employees and some of the days have inadequate workforce is available and they don't complete the daily goals despite the fact that they allow 4 paid leaves per month according to contract and then they have to arrange daily wage workers.

The issues will be addressed by analyzing the data via different analytical approaches to obtain a fruitful outcome. Payment delay analysis can be done by Time Series Analysis, identify high-risk, late-paying clients, Cash Flow Forecasting. Workforce Availability & Productivity Analysis will be studied by Trend Analysis, Asses financial impact of hiring temporary workers, categorize employees based on leave trends, Forecast workforce availability. Raw Material problem can be analyse by supply chain study, inventory forecasting, Seasonal Impact on profit using demand forecasting, weather impact on transport and weather analysis, adjust work schedules.

The expected outcome helps the organization reduce the money blockage in terms of inventory, which helps increase profitability of organization.

## **2.Organization Background (150 Words)**

Patna Calibrators is located in Patna, started by Sardar Gurudayal Singh and his wife in 1982 as a means of their livelihood by savings and their 3 generations are working there. Another suboffice in Ranchi which acts like a supply chain for the southern states and especially to Odisha. The mission is Providing the Best Quality Craftsmanship Products & Services to its Customers. Customer Satisfaction is their main agenda. The workforce is 25-50 people.

Manufacturer/ Service Provider in:

- Diesel Storage Tanker
- Oil Tanker
- Welding Electrodes
- Petroleum Storage Tanks
- Tractor Water Tanker
- Storage Tanker
- Petrol Pump Canopy
- Water Storage Tank
- Structural Fabrication Service
- Structural Fabrication Pipe
- LPG Gas storage Tanker
- Oil Storage Tanker
- Warehouse Services

Additional Businesses is Retail Business, Wholesale Business, Factory / Manufacturing. Registered With NSIC, Peso & Weight and Measure Department. They are one of the leading Manufacturers of Storage Tank & Tank Lorry of Indian Oil Corporation Ltd, Hindustan Petroleum Corporation Ltd., Bharat Petroleum Corporation Ltd, Essar Oil Ltd, bio fuel companies and other leading companies. The company is adopting new trends in manufacturing or storage. The company is now managed by Harpreet Kaur. The Legal Status of the Firm is Proprietorship. The annual Turnover is 1.5-5 Cr. The work area is 4000sq meter.

### **3.Problem Statement (Listed as objectives) (50-75 Words)**

3.1 Problem statement 1: Delay Payment of the orders by the customer/companies causes workflow disbalance causing delays in procurement and production schedules resulting in taking loans from banks, paying interest and decrease in the profitability.

3.2 Problem statement 2: Seasonal conditions like rain and winter weather causes significant decrease in workforce, disruptions in the supply chain and delay in orders completion resulting in potential loss and decrease in production pace.

3.3 Problem statement 3: Unavailability of raw materials in Patna and transporting them from Kolkata causes delay in completion of order and customer unsatisfaction.

3.4 Problem statement 4: Decrease in the workforce results in the hiring of daily wage worker causes extra workforce expense.

#### **4. Background of the Problem (200 Words)**

Delay Payment problem happens when the company/customer doesn't pay for the orders on time or gives the payment in small lumps. This unables the service provider to further proceed in the workflow. For example they cannot pay for the transportation costs, raw material purchase, worker's wages of the worker etc. In a wider sense it ruptures the organisations financial stability as they require continuous cash flow that impacts the production schedules. To build a long term relationship companies give extended credit terms but the failure causes issues.

Major Causes- Unstable Customer Financial Status, Market and economic conditions.

Internal Problem- Poor financial planning

External Problems- Inflation, Different Customer priorities

Seasonal Weather like winter and rain causes a slow down in the work flow and the workers come for far away approx (20km ). Sometimes it becomes hard for them to report to the location. This causes transport problems as well. They even get less orders than other months.

Rainy season causes transportation issues, less workforce etc. The cold weather causes more leaves and very less productivity. This causes delays in completion of orders.

Internal Factors- illness, extreme cold and difficulty in reaching the location, difficulty in hiring daily wage workers,

External Factors-Blocked and uneven roads delays the transportation of raw material from Kolkata and transport of delivery of orders to different states.

#### **5. Problem Solving Approach (400 Words)**

For solving the problems we have to go to the depth of the issue and what are the internal and external factors causing it. Firstly the workforce problem is there for the entire year and especially during rainy and winter season .So, we can see the attendance sheet and analyse the work productivity of each worker and we can schedule the work according to this to manage our human resources and we can see predict the days when workforce will be very

less due to heavy rains and make a schedule to specify that the far stay workers can come on less rainy days and the workers who stay near and come on heavy rain days according to their productivity analysis and we can even analyse the productivity of the daily wage workers and they hire them accordingly in need so that our workforce is managed properly and we don't end up spending extra expense for human resources that just go in vain.

Seasonal Problem has issues like flooded roads, heavy rains that creates hindrance for the movement of trucks etc. We can study the material needs in the season for the past years and predict the needs for the future and order the raw materials accordingly and we can study the weather data and make our transport accordingly so that we can make the delivery at the correct time for customer satisfaction.

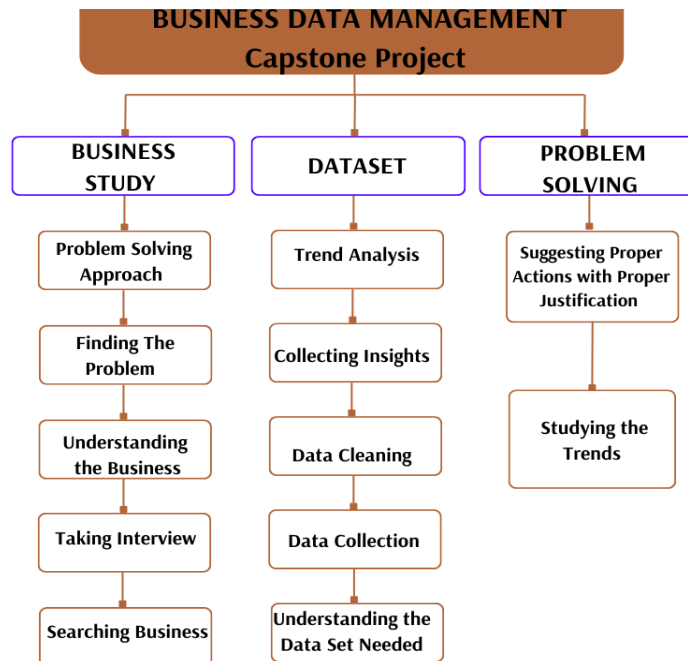
Historical data and business insights along with prediction models should be used for solving the problems. Analysing transaction history with payment patterns by making a time series data analysis to identify regular behaviours. Apply need forecasting to ensure timely availability of raw materials.

Following an employee incentive program that will keep skilled workers and decrease unavailability. Providing seasonal bonus or transport facilities, shelters for workers in case of extreme weather.

Conducting a credit worthiness assessment so that only the deserving companies get extended payment terms. Offering discount and charging a fine in case of late payments.

## 6.Expected Timeline

### 6.1 WBS (Work Breakdown Structure)

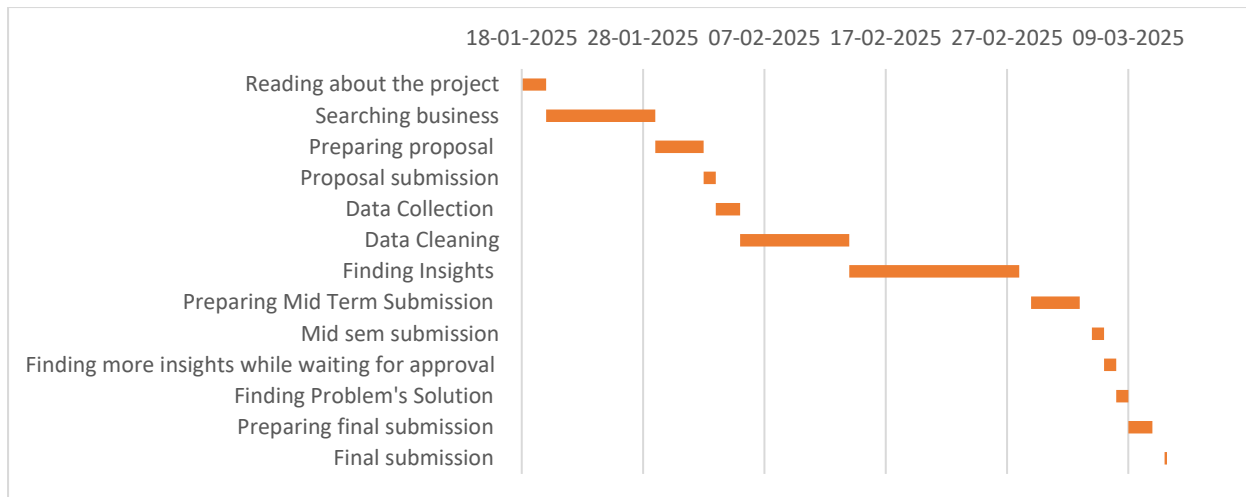


### 6.2 Gantt Chart

S.NO	Task	Start Date	End Date	Duration
1	Reading about the project	18-01-2025	20-01-2025	2
2	Searching business	20-01-2025	28-01-2025	9
3	Preparing proposal	29-01-2025	01-02-2025	4
4	Proposal submission	02-02-2025	02-02-2025	1
5	Data Collection	03-02-2025	05-02-2025	2
6	Data Cleaning	05-02-2025	14-02-2025	9
7	Finding Insights	14-02-2025	28-02-2025	14
8	Preparing Mid Term Submission	01-03-2025	05-03-2025	4
9	Mid Sem submission	06-03-2025	06-03-2025	1
10	Finding more insights while waiting for approval	07-03-2025	08-03-2025	1
11	Finding Problem's Solution	08-03-2025	09-03-2025	1
12	Preparing final submission	09-03-2025	11-03-2025	2
13	Final submission	12-03-2025	12-03-2025	1

Table 1: Shows Expected timeline for completion of project.





## 7. Expected Outcome (Briefly explain in 150-200 words)

The aim is to increase the financial stability, workforce productivity and improve the supply chain efficiency of a B2B manufacturer/service provider, Patna Calibrators.

Firstly, the financial stability can be improved by identifying the clients who delay payments and change the payment collection strategies, better financial planning so that they don't end up taking loans from banks and paying interests. We can also study the credit debit data so predict the finances in a better way.

Better understanding of the workforce availability and the productivity of the employees by using trend analysis and making an effective schedule in winter and rainy conditions to meet the order requirements.

Better leave management rules to have a threshold number of employees, and reduction in hiring daily wage workers and having a stable labor expense.

Better understanding of the needs of raw materials to ensure that raw materials are available at the time we need. Better supply chain planning to minimize disruptions.

Studying the winter and rainy season analysis will help us make better work schedules to complete orders on time.

The projects motive is to decrease the operational challenges caused by these problems that will lead to increase profit, stabilise the business workflow and operation.