

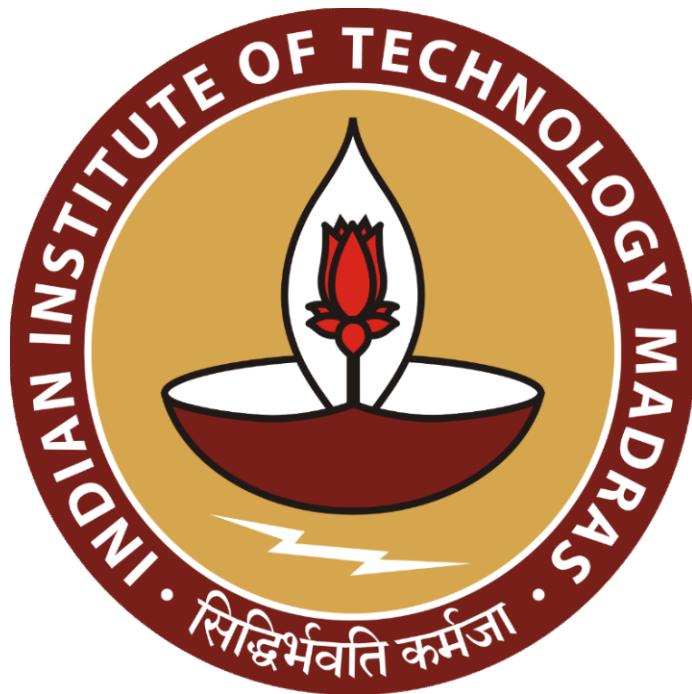
# **Improving Cost Estimation and Project Planning for Contract-Based Furniture Projects**

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

Submitted by

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### **Declaration Statement**

I am working on a Project titled "**Improving Cost Estimation and Project Planning for Contract-Based Furniture Projects**". I extend my appreciation to **The Furniture Master**, 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**)

A digital signature consisting of a stylized, handwritten name "Thakur Vishalkumar Vinod" in black ink.

Name: THAKUR VISHALKUMAR VINOD

Date: July 11, 2025

## 1 Executive Summary

**The Furniture Master** Interiors, a custom furniture business based in Pune, specializes in contract based projects for homes, offices, and institutions. Each project is unique and tailored to client specifications, involving different materials, designs, and site conditions. While the company has built a strong reputation for quality and creativity, it faces growing challenges in managing costs and meeting delivery timelines. The primary issue lies in inconsistent cost estimation and unplanned delays due to poor resource and material planning.

This project aims to solve these problems by analyzing past project data and developing a more accurate, data-driven approach to estimating costs and planning resources. By understanding patterns from previous contracts—such as where time and money tend to exceed expectations—we can create a model to predict more realistic project costs and timelines. This will help the business quote more effectively, reduce material wastage, and improve overall profitability.

The outcome will be a practical system the business can use to plan better, manage risks, and deliver projects more efficiently. Ultimately, this will lead to happier clients, more predictable margins, and a stronger foundation for sustainable growth in the highly competitive furniture market.

## 2 Organization Background

The business I am working with **The Furniture Master** Interiors is a Pune-based furniture company that was started in 2010 with a simple goal — to provide stylish, durable, and fully customized furniture for homes and offices. Over the years, the business has grown steadily, working on contract-based projects ranging from modular kitchens and wardrobes to complete interior setups for apartments, offices, and small commercial spaces.

Unlike ready-made furniture sellers, The Furniture Master focuses on made-to-order solutions where every project is designed based on the client's space, taste, and budget. The team works closely with local vendors for materials and manages on-site installation through skilled carpenters and supervisors.

The company has built a strong reputation for quality craftsmanship and timely delivery in the Pune region. However, as the number of projects increases, managing material

procurement, labor, and timelines has become more complex — highlighting the need for a more data-driven approach to planning and costing.

### **3 Problem Statement**

The Furniture Master Interiors is facing two major challenges in its contract-based furniture projects.

**3.1 First**, cost estimations at the quotation stage are often inaccurate, leading to lower-than-expected profits.

**3.2 Second**, project timelines regularly get delayed due to issues like late material deliveries, labor shortages, or mid-project design changes. These problems not only affect profitability but also impact customer satisfaction. There is a clear need for a more data-driven approach to improve planning and execution.

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

In a contract-based furniture business like The Furniture Master Interiors, no two projects are the same. Every order is customized based on client preferences, site conditions, and design choices. This creates a lot of variation in material requirements, labor needs, and timelines. However, the company currently relies on rough estimates and experience-based judgments while preparing quotations. Without proper data analysis, it becomes difficult to predict the actual cost of materials, labor hours, or delays, which often leads to under-quoting and reduced profits.

Additionally, since procurement and scheduling are handled manually, there's no system in place to forecast potential bottlenecks. Materials may arrive late, or workers may not be available when needed, resulting in delays that affect both the company's timeline and the client's satisfaction. Small changes requested by clients mid-way through a project also throw off cost and time estimates.

As the company grows and handles multiple projects at once, these inefficiencies are becoming more noticeable. What worked with a few projects per month is no longer sustainable with increasing demand. That's why there's a strong need to shift from experience-based planning to a more data-backed approach that improves cost accuracy, reduces delays, and helps the business scale effectively.

## **5 Problem Solving Approach**

To address the issues of inaccurate cost estimation and project delays, this project will follow a step-by-step, data-driven approach. The focus is on understanding past patterns and building a system that helps in better planning and decision-making.

### **5.1 Data Collection from Past Projects**

We will begin by collecting data from 8–10 completed projects. This will include:

Quoted vs. actual project costs

Material and labor breakdowns

Timeline estimates vs. actual completion

Notes on project-specific issues like client changes or delays

This data will come from quotations, bills, purchase records, site reports, and team feedback.

### **5.2 Cost Analysis and Pattern Identification**

Once the data is collected and cleaned, we will analyze:

Where and why costs exceeded the estimates

Which types of materials or project sizes are most unpredictable

Common causes of project delays (e.g., supplier delays, client changes, labor gaps)

This analysis will help us identify which areas need better forecasting or buffer planning.

### **5.3 Build a Simple Estimation Model**

Using the insights, we will create a basic estimation model that helps predict likely total cost and timeline based on project size, material types, and client requirements. This model will guide future quotations and planning.

### **5.4 Planning Tools and Recommendations**

**Cost Estimation Template (Excel-Based):** A structured cost estimation sheet will be created where the business can input project-specific details such as: Room types (e.g., kitchen, wardrobe, office cabin) Material choices (plywood, laminate types, hardware) Estimated area in sq. ft. Labor type and estimated working days. This template will use historical cost averages and profit margins to suggest a realistic quotation amount. It will also alert the user if the quoted price is too low based on past data.

**Material Requirement Planner:** A Bill of Materials (BOM) generator will be included.

Based on project type and size, it will list the materials needed and their approximate

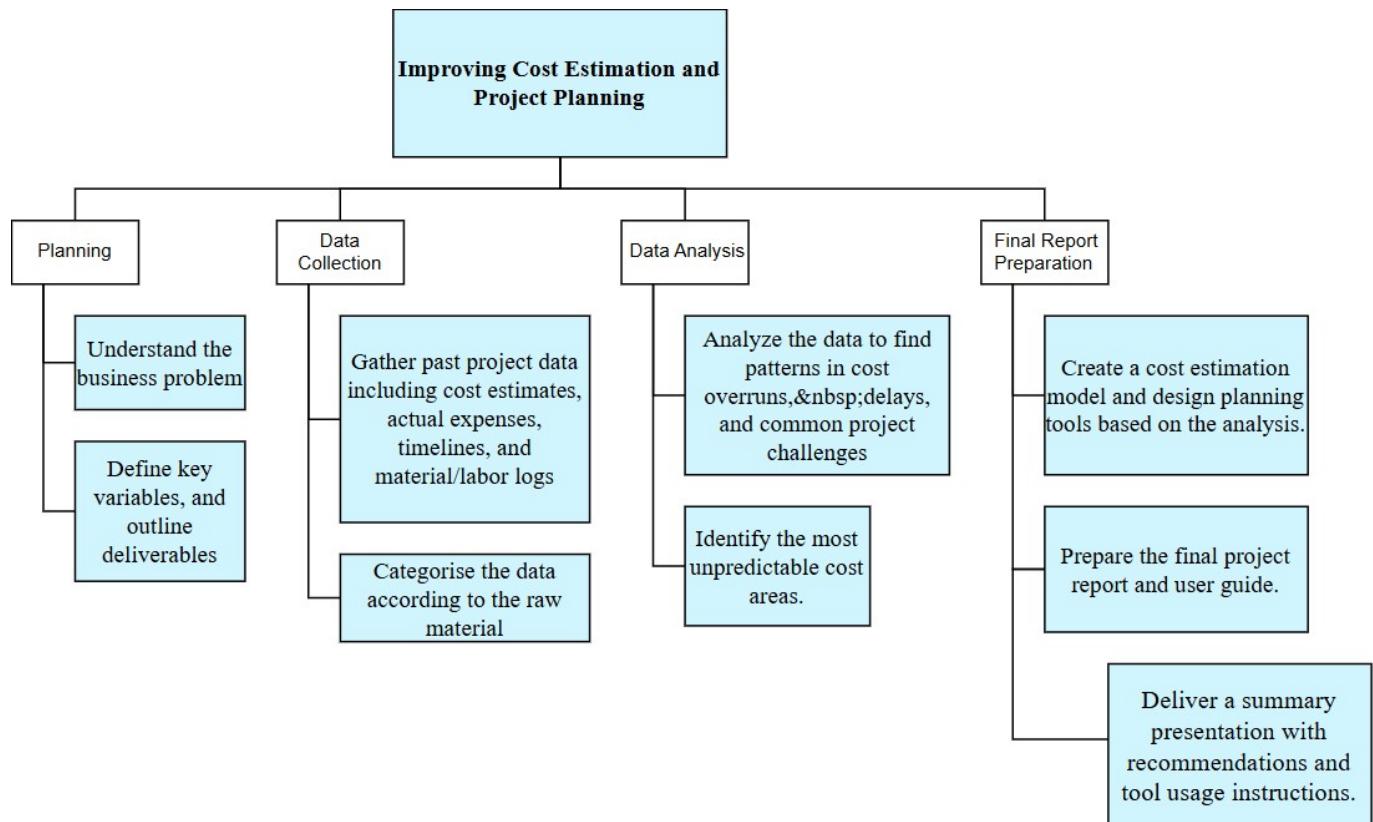
quantities. This will allow the team to place material orders early, reducing last-minute shortages or over-purchasing. It also helps negotiate better rates with suppliers through bulk planning.

**Labor Scheduling Tracker:** A simple Gantt-style Excel tool or Google Sheet will be developed to map: Site readiness dates, Labor availability, Task-wise timelines (e.g., carcass making, laminate finish, installation). This ensures smoother labor allocation, avoids overlaps, and keeps the team aware of upcoming deadlines.

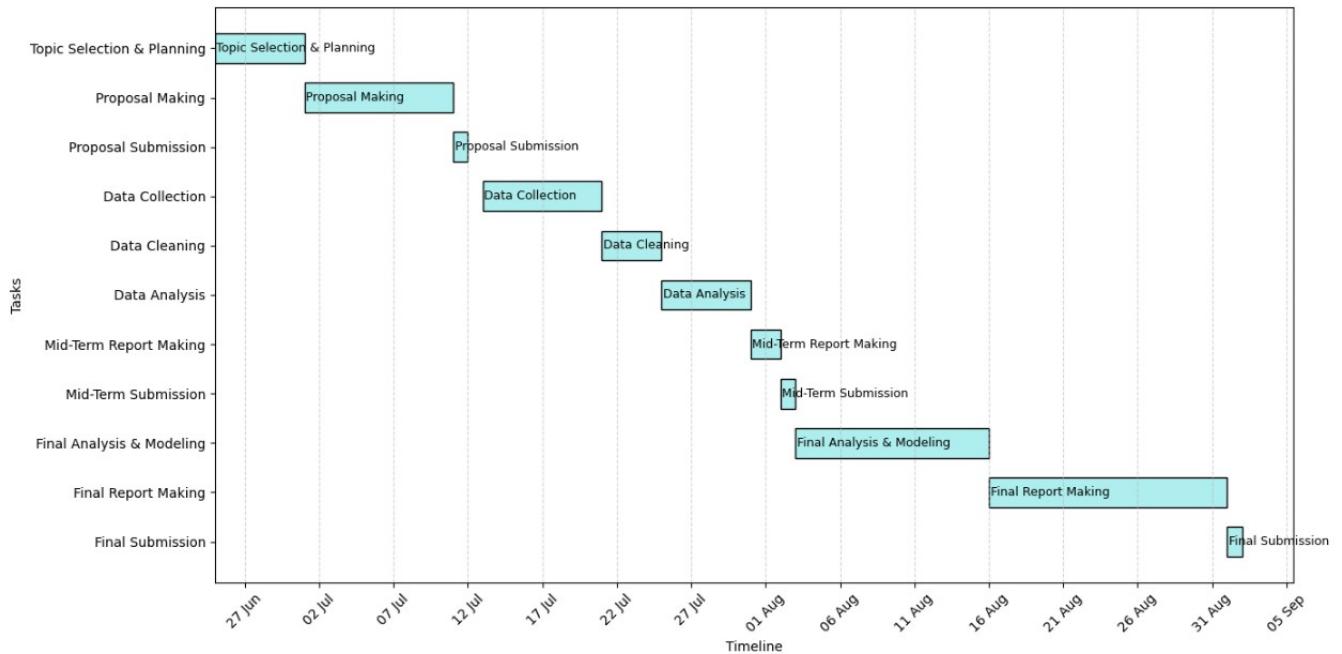
## 6 Expected Timeline

This project will be completed over 12 weeks, divided into four major phases: Planning > Data Collection > Analysis, Tool Development > and Reporting. Each phase is carefully structured to ensure steady progress and practical results for the business.

### 6.1 Work Breakdown Structure:



## 6.2 Gantt chart



## 7 Expected Outcome

### 7.1 Improved Project Planning and Visibility

The business will gain a clear understanding of how to structure furniture projects from the initial quotation stage to final delivery. By reviewing past trends, the company will be able to plan better for similar future projects.

### 7.2. Accurate Cost Estimation Model

A cost estimation template will be developed using historical project data. This model will help the company predict realistic material, labor, and overhead costs, ensuring that quotations are not underpriced. This directly supports healthier profit margins.

### 7.4 Timeline Management

A Gantt-style visual planner will help break down each project into steps with realistic deadlines. This allows the team to manage multiple projects with better control and meet customer expectations more consistently.

### 7.5 Competitive Edge in Pune's Market

By becoming more organized and data-driven, The Furniture Master Interiors will stand out in Pune's growing furniture and interior design industry.