

Costing Simulator: Comparative Analysis of Contract and Job Costing in Engineering Projects

A comprehensive analysis of cost classification and comparative costing methods in engineering projects through an interactive web-based simulator.



Academic Project

Costing Simulator – Cost Classification and Comparative Costing Analysis

Project Team

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Course Details

Cost Accounting (PBL Project)

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Introduction

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What is Cost Accounting?

A systematic approach to recording, analyzing, and reporting costs associated with business operations and projects.



Why is cost management important in engineering projects?

Effective cost management ensures profitability, resource optimization, and informed decision-making throughout project lifecycles.



Objective

To analyze and compare **Contract Costing** and **Job Costing** using an interactive simulator.

Project Overview

01

Built a web-based **Costing Simulator** using **ReactJS**, **TailwindCSS**, and **Node.js**.

02

Allows users to input real project data and visualize results dynamically.

03

Demonstrates how cost accounting principles apply in both Civil and IT domains.



Smart Hostel Construction (Contract Costing)



Long-term project with work certification and retention clause.

Direct materials, wages, overheads tracked.

Profit recognized stage-wise.

Example Cost Breakdown

Cement

₹55,00,000

Steel

₹15,00,000

Wages

₹25,00,000

Student Management System (Job Costing)



Short-term software development project.



Cost unit: ₹ per module.



Each module (Attendance, Fee Management) treated as a separate job.



Focus on flexibility, control, and per-job profitability.

Cost Classification

Key Cost Categories

- Direct vs Indirect Costs
- Fixed vs Variable Costs
- Controllable vs Uncontrollable Costs

Example Table comparing Civil & IT Project components.

Cost Type	Civil Project Example	IT Project Example
Direct Costs	Cement, Steel, Labour	Developer Salaries, Software Licenses
Indirect Costs	Site Supervision, Equipment Rental	Project Management, Cloud Hosting
Fixed Costs	Equipment Depreciation	Annual Software Subscriptions
Variable Costs	Materials, Daily Wages	Freelancer Fees, API Usage

Simulator Demo Overview

1

Input Parameters: Materials, Labour, Overheads, Escalation, etc.

2

Backend Processing: Calculates total cost, works cost, and profit.

3

Output: JSON result + Bar chart visualization.

4

Screenshot of the simulator (insert image from your running app).

Results & Visualization

Comparison of both methods through charts.



Key findings:

- ❑ Contract Costing → steady, stage-wise profit

Provides predictable revenue recognition and long-term financial planning capabilities.

- ❑ Job Costing → flexible, module-specific profit

Enables precise profitability tracking for individual components and rapid project adjustments.

Example graph showing cost and profit breakdown.

Managerial Insights

Helps determine better cost control.
Enables managers to identify cost drivers and implement targeted control measures across different project phases.

Enables profit planning and budgeting.
Provides accurate forecasting tools for financial planning and resource allocation decisions.

Decision example: Material escalation sharing between client and contractor.
Demonstrates practical application of cost accounting principles in negotiating contract terms and managing risk.