

Development of cost and time engineering system in construction projects

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Abstract— To give proper shape to the methodological basis of professional construction management it is possible to discuss about a new direction in the development of the construction pricing and the development of cost and time management system in construction (cost and time engineering in construction) integrating the assessment of investment costs, estimated pricing, estimated project scheduling, contract pricing, evaluation of the actual construction costs, and enabling to connect and manage the previous cost and time engineering processes. At the same time the concept of cost and time engineering systems in construction fixes the engineering, technical and technological basis of all processes directly or indirectly related to the definition of construction costs and to interpret the effects of cost and time engineering systems on construction projects. This represents the ‘considerations on the creation and implementation of cost and time engineering systems in construction at the national, territorial and corporate levels to achieve maximum utilization of resources, materials, machines, facilities manpower and money.

Keywords— Construction, Cost, Investment, Management, Resources, Time.

I. INTRODUCTION

Cost and Time Engineering is mostly implemented to most of the construction projects for having better recognition of scope of project. It is necessary to reduce the unnecessary cost of the project which does not affect functional requirement of project. In today's era the construction project is getting high in volume so it is requiring to complete project in estimated cost and time. But due to some flaws project get delayed that's why project cost unnecessarily increased. Through proper planning, Organized and creative approach and thinking it is possible to complete project in estimated cost and time without affecting values to the system. It is required to fulfill all the needs and demands of the customer. The Cost and Time Engineering systems helps to identify the best scheme for it. This theory is firstly implemented in China from this all construction companies acquire it for greater economic benefit.

Due to following points project shows poor values.

- Due to time limit the proper information is not gathered.
- If there is problem occurs, then adjustment is need to be done therefore quality of work is not achieved.
- Sometimes the demands of customer are not taken into the consideration so after completion projects not functions properly and not meets customer requirement.
- Sometimes lack in communication and misunderstanding in some aspects which leads to delay in projects.

Cost and Time Engineering is useful in preplanning stage of project for design and for analysis in completed project. Cost and Time Engineering is a systematic, low-cost approach to assessing the “value” of a project. Typically, cost and time engineering on projects can be used to gain the benefits, such as cost reductions, time savings (schedule savings), quality improvements, isolation of design deficiencies.

II. PROBLEM STATEMENT

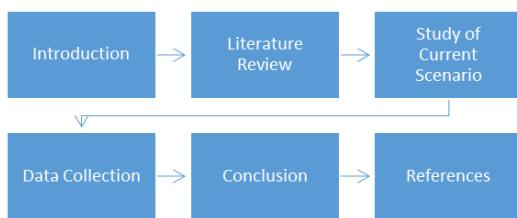
Our projects should be getting completed in on time and projects should complete in budgeted cost, it should not be overruns and our projects meets the quality requirements. In construction industry in functions with high production costs, the costs can be reduced without sacrificing construction's quality or disregarding customer's requests and completed on time. That's why Cost and time Engineering is important in construction industry and analyze techniques for the cost and time engineering.

III. OBJECTIVE

- Detail study cost and time engineering methodology in the construction industry
- To Identify the areas of cost and Time engineering in construction industry
- To Identifying the importance and benefits of application of cost and time engineering techniques.
- Discuss new methods for improvements in the Cost and time engineering. Projects.

IV. METHODOLOGY

- It consists of introduction, history, effect, advantages, disadvantages, salient features. Also introduce the objectives of this study.
- importance of cost and time Engineering.
- Effects of cost and time management in the project.
- Factors affecting for cost and time engineering.
- New technique for the improvements in cost and time management.
- Advantages and disadvantages of cost and time engineering.
- Conclusion



V.CONSTRUCTION SECTOR

A. Usage of Cost and Time Engineering in construction Sector

The Companies in the construction sector have a better chance of getting jobs when they use the resources of the country in which they work reasonably, keep their costs at the lowest level and decrease their offer price in comparison with their rivals. But the low offer price is not the only factor for a specific company to get the job. Project must have a high "value". Value has different meanings for the producing company, owner, user or the designer. The builder company tries to finish the construction with the lowest cost to obtain high profit. Owner wants to get the biggest income from the building. User wants to be able to perform his works easily, while the designer gives more importance to his creation's aesthetics or functions. Purpose, time, quality and cost of every activity that will be realized during the construction process must be determined or estimated beforehand. Owner or user wants to know which feature they will have after the building is completed and with what cost they will have it. Because construction process has many components such as concept, design and drawing details of the project, construction etc., and it is a long-term production, the risk of completion of construction in time, based on the estimated costs (first investment + usage cost) by providing features Suitable precautions are taken by predetermination of problematic areas via various project planning's and scheduling techniques. But none of these methods includes an examination in terms of the "value". After a building is completed or during the construction stage, comparing the building value with the costs that occur during its construction

is not thought about. Although many buildings were built with high costs, desired functions were not provided.

B. Methods that increase the value in construction sector

• Reducing Construction Production Costs:

In constructions, especially in functions with high production costs, the costs can be reduced without sacrificing construction's quality or disregarding customer's requests, by using different materials and/or different methods. Materials, equipment's and stipulated production methods in the specification and projects may become old according to current day or be out of date. In case the suggestion of the contractor for making changes is accepted by the employer, a much more economical solution will be provided for both sides. Carrying out production with better quality by using the suggested methods, in other words improving the quality may be a more economical solution.

• Finishing the Job before Time Schedule:

Finishing the job earlier provides economic benefits in term of reducing general costs. By comparing the cost of job acceleration and the reduced general costs, it can be decided to complete the job earlier. It may not be necessary to accelerate the production speed to finish a job earlier. It may be possible to start earlier. projects.

C. Factors affecting for Time and Cost Engineering

- Management factors
- Environmental factors
- Organizational factors
- Technology

D. Relationship between Time, Cost & Scope in project Success

A project has a definite starting and finishing point and must meet certain specified objectives. Broadly these objectives are required to be achieved by meeting three fundamental criteria i.e.:

- the project must be completed on time

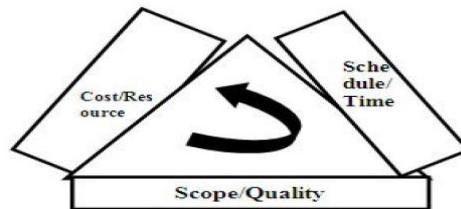


Fig 1. Triple Constraints in Project Management

- the project must be accomplished within the budgeted cost and

- the project must meet the prescribed quality requirements.

These criteria can be graphically represented by well-known project triangle

COST ENGINEERING

Construction cost management provides for interconnection of the investment and construction process stages, and transitions from one kind of cost to the other – from investment to estimated, from estimated to contract, from contract to actual, from actual to operation cost engineering involves the engineering approach to pricing in construction, therefore the regulatory framework consists of the rules of town planning, civil and investment legislation, provisions of the technical regulations, etc. At the same time the listed legal acts regulate only some issues addressed by cost engineers. There is no systematic specialized regulation in this sphere.

A. Project Cost Management Tools and Techniques

The capabilities of tools and techniques refer to, expert judgment, analogous estimating, parametric estimating, bottom-up estimating, three-point estimates, reverse analysis, cost of quality, project management estimating software, vendor bid analysis

Project control automation and relationships of project control to project integrated data bases have been explored earlier. Project Management Software such as Primavera and MS Project describes detailed cost and schedule integration with a focus on exception reporting.

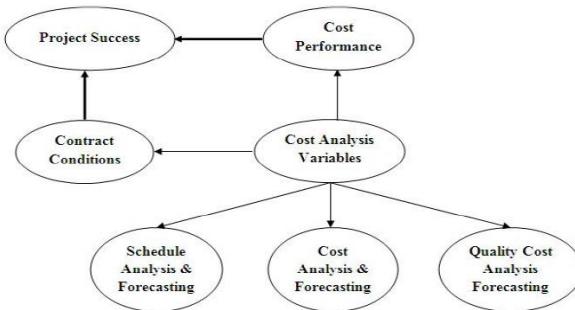


Fig 2. Project Success Research Model

The useful techniques in the cost management are budgeting, estimating, cost planning and control, cash flow forecasting, cost code system, financial cost reporting and judgment. The overall planning process in a project budget plays an important role, it evaluates the financial consequences of the plan and provides financial feedback so that plans can be monitored and revised. Cost management is the important components to control the project success and also it is the important tool to control

and improve cost performance of construction projects. The cost management helps to keep the project within the budget. Poor cost management often results in the cost overrun of a project.

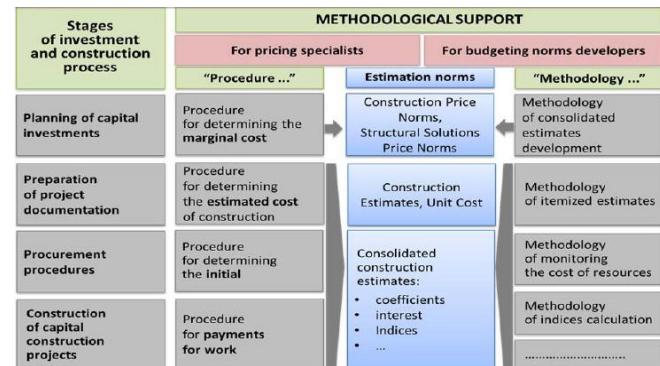
TIME ENGINEERING

Time Management Techniques:

Time management is the essential technique for complete the construction project in estimated time. Without time management technique the construction projects will be extended and cost of project will increase timely.

The important time management technique is:

- Gantt chart,
- milestone chart,
- critical path method,
- programmer evaluation
- review technique,



Methodological Basis of the State Cost Engineering System in Construction

SR NO	PROJECT NAME	BUILDER	ESTIMATED		ACTUAL		SYSTEM USED	REMARKS
			COST	TIME	COST	TIME		
1	KUNJGAN	VIVANTA REALTY	6.3 CR	2.5 YRS	6.85 CR	3.1 YRS	ERP	UNDER CONTROL
2	NILAY	SONIGARA	9.6 CR	03 YRS	10.5 CR	3.5 YRS	MS EXCEL	EXCEED TOLERENCE
3	VERONICA	YASHADA	10.9 CR	2 YRS	11 CR	2.2 YRS	ERP	UNDER CONTROL
4	VISHAKHA	VIVANTA REALTY	4.3 CR	4 YRS	4.6 CR	4.3 YRS	ERP	UNDER CONTROL
5	LANDMARK	SONIGARA	10.5 CR	3 YRS	11.2 CR	3.8 YRS	MS EXCEL	EXCEED TOLERENCE
6	NANDADEEP	SRI SRI DEVELOPERS	5.4 CR	1.5 YRS	5.6 CR	1.8 YRS	ERP	UNDER CONTROL
7	EPIC	YASHADA	11 CR	3.5 YRS	11.1 CR	3.6 YRS	ERP	UNDER CONTROL
8	RADIANCE	YASHADA	5.6 CR	2.5 YRS	5.9 CR	2.9 YRS	ERP	UNDER CONTROL
9	LAUREL	SONIGARA	9.6 CR	3 YRS	10.04 CR	3.5 YRS	MS EXCEL	EXCEED TOLERENCE
10	SPLENDID SQUARE	YASHADA	4.5 CR	3.5 YRS	4.6 CR	04 YRS	ERP	UNDER CONTROL
11	INDRAPRASTHA	SONIGARA	4.8 CR	02 YRS	5.3 CR	2.9 YRS	MS EXCEL	EXCEED TOLERENCE
12	TCG SQUARE	TCG GROUP	5.6 CR	1.5 YRS	6 CR	02 YRS	MS EXCEL	EXCEED TOLERENCE
13	INSIGNIA	MANTRA	20.2 CR	06 YRS	21 CR	6.5 YRS	HIGHRISE	UNDER CONTROL
14	LITTLE EARTH	MASULKAR	70 CR	11 YRS	70.8 CR	12.5 YRS	SAP	UNDER CONTROL

VI. DATA COLLECTION

VII CONCLUSION

Cost and time engineering integrating the methods and means of construction cost management is the topical system of construction pricing, while a cost and time engineer becomes a modern expert on pricing in construction. Proper cost and time management turns into the higher productivity, higher quality and Optimum utilization of resources, materials, machines, facilities manpower and money. So Cost and time management is very important in the construction projects.

VIII. ACKNOWLEDGMENT

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