

To Study of Remedies for Delays in Construction Project Phases

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Abstract – The budget of Infrastructure projects in India are worth around Rs.100 lakh crore according to the budget 2019. Also a huge number of these projects are getting delayed invariably. According to the MOSPI reports, of the 1634 infrastructure projects in the country, 373 projects reported cost overruns, while 552 projects saw time escalation.(Express News Service / Published 09th December 2019) This is indicative of the fact that the causes of delays and their implications on the cost and time overruns warrant the need of studying. This study covers the various causes of delays in detail, as well as delays which are caused at various stages of the project. For this study only the transportation infrastructure projects are considered Currently there are no formal decision tools or guidelines to assist owners and project managers in choosing delivery systems and project strategies that allow reductions in the project cycle time. Project delivery systems in the construction industry have gone through an evolutionary process to reduce delivery time, while maintaining quality and containing cost. The most commonly utilized project delivery systems prevalent today are traditional design-bid-build; construction managed by a professional construction manager; design-build lump-sum and guaranteed maximum price; and bridging a hybrid of two different systems. Faster delivery of projects has been one of the critical success factors in almost all industries. In the construction area, fast-tracking (or phased construction), in which activities are executed concurrently, has been argued to be an effective approach to a faster project delivery.

Keywords – Infrastructure, Budget, delay

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I. INTRODUCTION

The Government very often prefers fast track modernization and development projects, which are economic. The Government projects have recorded cost overruns as high as 62%. This figure is very alarming and disheartening. Construction projects form a major share of Government's special schemes on projects of national importance. The construction projects even though large and cost intensive have a low margin of profits, due to competition in the Industry. Obsolete construction techniques that are ill equipped and labour-intensive are used for the construction projects. This makes the system of construction cut corners in quality, cost and time, the single motive being profits. The cost and time of the projects can be controlled activity-wise by adopting IT enabled project management tools. The ever-changing project management software tools address most of the man-managed deficiencies, which contribute to cost and time overruns at the cost of project quality. This paper attempts to trace down certain man-made influencing factors, which contribute to overruns in cost and time. It also advocates the use of IT enabled project management software suite, which facilitates cost-

effective, time-managed, and quality assured projects.

II. PHASES OF PROJECT AND DELAY REMEDIES

Project Life Cycle

The construction projects have five phases in the project life cycle. There are inherent systems deficiencies, which cause delays in decision making in each phase of the project life cycle. The following subsections review the commonly noted deficiencies in handling construction projects.

Conceptual Phase

This phase accounts for the scope and requirement of the project. Considerable time is spent to set up the scope. The factors influencing delay in this phase are

- Inadequate and incomplete scope of the project

- Frequent changes in the concept, scope and requirements
- Lack of planning and inadequate knowledge on the requirement
- Lack of experience in a particular technology
- Fear in deciding the scope
- Inadequate executive support
- Lack of user involvement. Scope is wrongly defined.
- The life of the utility and the scope of its various facilities are not known
- Changes in the requirements are considered due to late thinking.
- Project is conceptualized on critical / emergency situation.
- Hurried finalization of conceptual planning
- Facilities and associated sub systems not thought of as a whole system
- Concentrating only on the main portion of the cost, thus causing delay to decide on the contingencies during advanced stages of the project
- Flexible acceptance of changes without examining the feasibility and cost effectiveness of introducing additional facilities at a later stage
- Absence of activities charter concerning outside departments on regulatory requirements for local clearance for the whole project.
- Conventions are followed without examining alternatives. Alternatives may be cheaper, easier and better
- Inadequate knowledge on advances in technology Detailed concepts based on previous experience and knowledge of similar projects could avoid all the above pitfalls. Technology provides such an opportunity.

Planning Phase

The detailed designs of all systems are carried out at this phase. The detailed specifications, drawings and work schedules are defined along with the cost details of the project. A lot of time and workforce are spent in processing the above activities. In these

processes, the following factors contribute to delays at the planning stage: -

- Too many contributors are planning a project and Piece-meal planning of sub- systems.
- Divergent groups in the organizational structure have different attitude towards the project.
- Conventional methods are followed in planning
- Inadequate knowledge of advanced technology and availability of systems
- Inaccurate cost data of various components & systems
- Adequate and accurate site data are not available for planning and design
- Specifications, designs, conditions and scheduling are poorly drafted causing ambiguity in contract.
- Inadequate information on unique problems of the project & Shortage of experts in certain areas of the projects cause delays.
- Reference to regulatory requirements, environmental clearance, local clearance etc. is not taken on time.
- Poor expertise in the planning group, not having complete knowledge of the full system results in poor planning
- Defective planning due to inadequate / wrong site data is accepted.
- Non-involvement of users / operators at the planning stage
- Planners are different from executors and users
- Delay in clearing planning stages due to discipline interest, namely Engineering, Operation, Finance etc. instead of organizational interest
- Changes in the project team midway of planning Information Technology tools could well address the above problems.

Tendering Phase

The cost overrun takes root at the tendering phase. Some of the factors adding time and cost to the project are:

- Poor response to tender notification due to non-publishing of Notice Inviting Tender (NIT) in newspapers, and not widely publishing due to cost of press publications
- Unclear terms in press notification about deciding parameters for qualifying bidders. The schedule, specification, terms, and conditions of contract in the tender document contain inadequate and ambiguous terms.
- Presentation of Illegible documents on drawing, specifications and schedules in tender documents. Obsolete specifications and unavailable materials are mentioned.
- No time conscience in framing document and processing tender
- Incomplete tender documents with incomplete designs and scopes are used. Inadequate qualifying parameters for bidder participation
- Multiple disciplines are involved in tender processing - Engineering, Users, Finance etc.
- Non-observance of tender instructions by bidders to furnishing EMD, Technical clarification, pricing and conditions that deviate from user's requirement
- Influences and interference from different bidders at the time of tender evaluation
- English terms in the tender are often interpreted to violate the intentions.
- Non-adoption of tender procedures by User, Bidder and Finance
- Interference and influence from higher ups are entertained
- Delay in award due to mishandling of tender process at tender opening, in evaluation and at final decision-making process.
- Bidders always intend to have dialogue with owners and hence keep terms ambiguous in their offers. Keep details incomplete and delay tender processing by creating unethical influence from external sources
- Delay due to pre-occupation of officers on jobs other than routine and unnecessary reference to higher officers for sheer fear of responsibility.
- Casual approach of bidders in adhering to time schedules for tender processing as their priority is not in consonance with the owners objective
- Too many decision makers in hierarchy, having different priorities and objectives, are involved in deciding the tender process
- Decisions are reversed at an advanced stage of tender finalization due to procedural changes

Execution Phase

The impact on quality, cost and time is felt more at the execution stage of the project. The main contractor, after award of the work, searches for sub-vendors who can supply materials at cheaper rates. In this process of identifying the cheap vendor, the time and quality are compromised. The factors normally encountered during execution are: -

- Delay in site clearance and handing over the site to the contractor after the award
- Contract Analysis to understand the intention of the contract terms and conditions clearly is not made. Programme schedule for execution is not done in the beginning
- Execution Time Schedule for all activities and their inter-relations are not decided
- Sub-vendors are not identified in time. Sub-vendors' specifications are not checked with the contract specifications
- Delay in approval of drawings by the owner. Delay in Inspection schedule by the contractor and the sub-vendors. Delay in the accepted inspection schedule by the owner.
- Delay in inspection clearance due to non-adherence to specifications, and delay in manufacturers programme. Delay in transport of materials to the site by the sub-vendors
- Inadequate coordination in supply of material from the sub-vendors is encountered.
- Supervision and site coordination are not done by the contractor during execution at site
- Obsolete construction methods with labour intensive activity are used which contribute to loss of time and poor quality of construction

- Non-use of automated machines to ensure quality and increased daily turnover
- Poor initial funding of the project by the contractor and weekly wage payments are uncertain.
- Lack of timely resources of materials, machineries and workforce and their management
- Delay in measurements of works executed by the owners
- Delay in preparation of bills by the owner. Delay in scrutiny of bills by the accounts.
- Delay in payment of bills by the owner, and stoppage of works for want of daily site financing
- Delay in final testing of system due to little enthusiasm by the main contractor
- No concern about settlement of final bills, on contract closing
- Poor site storage conditions for construction materials, difficulties in finding skilled manpower, absenteeism, temperamental job supervisors - all cause expensive delays in job completion
- Minor associated works are not included in the contract.
- Inbuilt contract clause such as 10 cc to advocate delay for monetary benefits is included.
- Incompetent project managers mishandle the project
- Quality and experienced project managers avoid project execution responsibility by sheer fear of vigilance and audits. Standard modern project control techniques through use of technology are advocated to address the above problems.
- Poor documentation is prepared on commissioning activities.
- Failure of sub-system components during pre-commissioning.
- Non-availability of standby components for replacement at the time of commissioning
- Incomplete sub-systems and associated activities
- Rectification of defects is ignored. Taking over by operation staff is delayed
- No training is provided on operation of systems. Operation procedure is not developed after commissioning
- No system of documentation is followed on in-built systems' layout and drawings
- No documentation is made on operating instruction of functional systems
- No trained staff is provided at the time of commissioning of the system and for further operation
- Supervisors and executors are transferred before finalization of work

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Commissioning Phase

At the commissioning phase, most projects are completed in a hurry, to declare the system 'functional', due to political pressure. All team members work to 'somehow commission the project' on the politically declared date of completion, ignoring many factors. These shortcomings cause functional problems at a later stage. The lessons learnt are not analyzed and documented for improvement in future projects. The factors, which depict a poor picture of the project in reference to cost and time overruns, are:

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