AN INVESTIGATIONAL REPORT ON CAUSES, EFFECTS AND METHODS FOR MINIMIZING DELAYS IN CONSTRUCTION PROJECTS

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ABSTRACT
The construction industry is subjected to greater risks of delays and uncertainties than any other industries. Delays can be defined as the late completion of works as compared to the planned schedule on the contract. Delays can be avoided or minimized only when their causes are identified. When delay occurred into a project, it will have an adverse effect on project objectives in terms of time, cost and quality. To avoid these delays and manage the projects smoothly, there are lots of tools and techniques are being adopted. Among those, most of the professionals believe that the contract document is the best tool to manage most of the construction project. The contract document will allow the contracting parties to manage the delays properly.

This research project is aimed to examine delays in construction projects and compare the delay management clauses from the developed country construction contracts with the Indian construction contracts. Finally this research will recommend the changes required in the Indian construction contracts for better delay management to meet the current requirements in the Indian Construction Industry. The primary findings from the study uncovers that there are various critical elements which causes project deferrals, for example, delay in advancement installments, troubles in financing projects by the temporary worker, delay in supporting real changes in the extent of work, postponement in material conveyance, equipment breakdowns, low profitability level of laborers and climate impact on construction exercises amongst others. Writing likewise uncovered that augmentation of project time and cost overwhelms are the real impacts of construction project delays. It is hoped that this study will become the foundation of further research in the area of project delays and mitigation measures.

I. INTRODUCTION
Time is money especially on Engineering and Construction projects. The construction industry is a key sector in the development and economic growth of most countries across the world. In any case, the industry confronts various difficulties, for example, project delays. Projects or construction works that are not conveyed on time to the customer are alluded to as postponed projects. Mohamad characterizes delay as a demonstration or occasion that extends an ideal opportunity to finish or perform a demonstration under the agreement. Additionally, Assaf and Al-Hejji, states that defer is the time invade either past culmination date determined in an agreement, or past the date that the gatherings settled upon for conveyance of a project. It is essentially a project slipping over its arranged timetable and is considered as regular issue in construction projects around the world. Assaf and Al-Hejji further represents that, to the proprietor, delay implies rynloss of income through absence of creation offices and rent-capable space or a reliance on present offices. At times, to the contractual worker, delay implies higher overhead costs on account of longer work period, higher material expenses through swelling, and because of work cost increments. Theodore orders delay into two, those brought about by the customer and those created by the temporary worker. Delays brought about by the customer, for example, late accommodation of drawings and details, regular change orders, and erroneous site data produces claims from both the primary contractual workers and sub-temporary workers which ordinarily involve protracted court fights with colossal money related repercussions. Delays brought on by contractual workers can by and large be credited to poor administrative aptitudes.

OBJECTIVES OF STUDY
- To understand the delays observed by the construction professionals in their contract decision making process.
- Compare the popular form of contract conditions used in India and developed countries for better delay mitigation and recommend the suitable contract condition clauses to the Indian construction industry.

RESEARCH METHODOLOGY
The research methodology for present study contains two phases. The main phase included a literature search. The literature review was conducted through conference proceedings, books, internet and international project management journal. As the outcome of this phase,
causes of delays for construction projects were identified and categorized depending on their nature and mode of occurrence. The second phase includes comparing FIDIC RED Book 1999 which is the most popular form of construction contract in developed countries and MOSPI conditions of construction contract which is the most popular form of construction contract in developing country like INDIA, so that the delays in the projects are mitigated properly. This comparative study will help to improve the contract management system in India.

II. LITERATURE REVIEW

Doloi H. et. al., (2012) researched to investigate elements influencing delays in Indian construction projects. They chose set of 45 qualities. Their exploration initially recognized the key variables affecting deferral in Indian construction industry and afterward settled the relationship between the basic traits for creating forecast models for evaluating the effects of these components on postponement. A survey and individual meetings have framed the premise of their exploration. Variable investigation and relapse demonstrating were utilized to analyze the hugeness of the deferral components. From the component investigation, most basic elements of construction deferral were distinguished as absence of duty took after by wasteful site management and poor site coordination positioned third.

Megha Desai et. al., (2013) did research to analyze Critical Causes of Delay in Traditional Construction Projects. Total 59 causes were identified under 9 major groups.

III. METHODOLOGY

Causes of delay

As the outcome of this, reason for delays for Traditional construction projects were identified. These causes were categorized in 9 main groups depending on their nature and mode of occurrence as:

Project related
- Project Construction complexity
- Speed of decision making involving all project teams
- Communication among various parties
- Non availability of incentives for early work

Type of project bidding and award
- Insufficient penalty for delay
- Owner related
- Delay in payments by owner

- Delay in delivering of site to the contractor
- Variations during construction
- Unrealistic contract duration
- Suspension of work
- Contractor related
- Contractor Experience in planning and controlling
- Site management and supervision

Degree of subcontracting
- Difficulties in financing project
- Construction methods adopted
- Change of subcontractors
- Quality of technical staff
- Consultant related
- Inadequate experience
- Delay in approval of design documents
- Inconsistency of consultant
- Delay in inspection and testing

Construction Contracts in Developing country for mitigating delays in construction projects.

In developed countries there are lot of self-governing organizations are functioning to deal with project management and contract management practices, for example (NEC, JCT, ICE).

STRUCTURE OF FIDIC CONS

The General Conditions are in 20 main clauses or parts.

- The General Provisions incorporate an exceptionally finish set of definitions, first of the Contract itself and the records, determinations, and so forth, then of the Persons included, including the Engineer, who still has a part, and the Dispute Adjudication Board, a gathering about whom you will hear tomorrow, in spite of the fact that I would say in passing that the Conditions visualize them being delegated and named in the Contract.
The Definitions go ahead to manage dates and times for Commencement and Completion and for any tests, together with Taking-Over and Performance declarations. Cash terms, for example, the "Acknowledged Amount" and the "Agreement Price". There's a distinction.

COMPARISON BETWEEN FIDIC CONS AND MOSPI FOR MITIGATING DELAYS IN TRADITIONAL CONSTRUCTION PROJECTS

Critical Analysis

a. To mitigate this cause of delay, both MOSPI and FIDIC says that the contractor is responsible to arrange labor, material and equipment to carry out the work. Under both the contract conditions the contractor is entitled to get the compensation if the employer doesn't provide something which he is to provide by the date for providing it shown on the accepted programmed. Both the contract conditions allow the contractor to get compensation event, if there is any delay caused by the employer nominated subcontractors.

b. The FIDIC contract clearly mentioned that the contractor shall, subject to (Employer’s claim) pay delay damages to the employer for every day which elapses between the relevant Times for completion. This clause makes the contractor to feel more responsible to get work done from the subcontractors rather than blaming others.

RECOMMENDATION TO THE INDIAN CONSTRUCTION INDUSTRY

In India, MOSPI form of contract is used as a standard document as well as a guiding document for preparing bespoke contract. The other form contract conditions available in India were drafted to deal with the more specific projects. MOSPI is the only standard form of construction contract published by the Ministry of Finance India, for adopting in any general projects in the domestic market. Hence it is important to analyze its delay management capabilities by comparison with the Developed Countries popular form of contract condition (FIDIC).

IV. CONCLUSION

The successful completion of a project depends on many factors of which proper delay mitigation is one of the most important. This research undertaken to perform a comparative study of the delay mitigation clauses from the popular form of contract conditions adopted from India and Developed Country's construction industry. Such a comparative study has helped to make the critical analysis of the delay mitigation capability of the developing contract management system in India with the developed contract management system. To make the comparative study more effective, this research has identified the popular form of contract condition and procurement method adopted from Developed Countries and India, i.e., FIDIC contract in Developed Countries and MOSPI contract in India. The significant risks associated with the traditional methods were identified from the literature review and the top 10 delays were prioritized through a comprehensive assessment of their impact severity, likelihood of occurrence established through the research survey. The contractual delay mitigation mechanism for the top 10 delay factors was identified through the data analysis process.

The key findings obtained from this comparative study of FIDIC (Developed Countries) with MOSPI (India) for mitigating the delays associated with the traditional contract methods shall help to improve the condition of Indian Construction Industry. This comparative study helps to get to know about the delay mitigation capacity of the Indian construction projects. However the recommendations made by this research project is not conclusive, but to provide a comparative list of delay mitigation techniques adopted by both the contractual and industry perspective. Hence the reader of this research shall consider these recommendations as a guide note to mitigate delay rather consider as conclusive solution to mitigate delays.

REFERENCES

