International Journal on Applications in Civil and Enviornmetal Engineering
Volume 2: Issue 3: March 2016, pp 5-7. www.aetsjournal.com ISSN (Online) : 2395-3837

Study on Influence of Delay and Disruptions in Construction Project

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Abstract— In India, ConstructionDelay has become endemic. Constructions are being carried-over owing to the human habitations and most predominantly every construction has a complexity which are to be carefully designed as well as scheduled before commencement. Delays can instigate negative effects such as increased costs, loss of productivity and revenue many lawsuits between owners and contractors and contract termination. The objective of this study is the identification of factors of delay and disruption on completing a project successfully. Some common factor of delay and Disruption are improper planning, Design changes by owner or his agent during construction, Financial crises, improper site management, Lack of experienced Staves, etc. This paper covers the delay factors and causes of delay and disruptions and some concern suggestions for reducing those disruptions in construction projects.

Keywords—Time; Construction Delays;Causes of Delays; Analysis of Disruptions; Influence over Construction Project;

I. INTRODUCTION

When the construction industry of a Nation Prospers, Everything prospers" as per a familiar French Dictum. Escalation of construction industry is of imperative for all regions of national and international economy, as well as everyone involved in the industry like contractors, workers, financiers, architects, engineers etcThe damage caused by a project delay is compensated by the Contractor in principle in the form of 'liquidated damage'. However, the Contractor shall claim the extension of time or the recovery of financial burden if the Employer is liable for the cause of delay. In fact, a variety of factors contribute to the delay of project completion in complex interdependencies of a number of tasks. Hence determining the contractual responsibility of delay is the most likely source of dispute in construction projects for transportation infrastructure. Despite of the systematic nature of delay analysis, there has been no guidance on the implementation of delay analysis methods explained in a formal language such as a mathematical modelling. Consequently, delay claims are now a major source of conflict in the construction industry and also one of the most difficult to resolve. Most standard forms of contract thus have provisions that anticipate delay brought about by the actions and/or inactions of the contractor, the owner or are outside the control of both parties. The contractor is often excused from the consequences and/or allowed compensation for any costs due to delays resulting from events or circumstances that are beyond its control. The need for greater awareness and incorporation of these issues in delay analysis is crucial to ensuring fairness and amicable resolution of delay claims. As part of a wider study aimed at addressing these issues, the purpose of this paper is to: discuss the most common existing DATs, as well as review the issues that are often missed in the analysis, and the required improvement needs. In this study, it is discussed about the most critical factors causing delay and disruptions in construction projects.

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II. REVIEW OF LITERATURE

Delay owing to Risks in Construction

Time related risks identified by Zou et al (2006) that are have influence on project delivery are: tight project schedule, design variations, excessive approval procedures in administrative government departments, variations by the client, incomplete approval and other documents, unsuitable construction program planning and inadequate program scheduling. Aiyetan et al (2008) point out that the three most significant factors that adversely impact construction project delivery time performance are: quality of management during construction; quality of management during design, and design coordination.

The concept of risk differs according to viewpoint, attitude, and experience. To most people, risk is viewed in terms of a negative effect. Project risk is an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives such as scope, schedule, cost, and quality.Causes of Delays and Disruptions Construction projects are carried out within a specified time the scenario that calls for proper time management in particular eliminating all avenues of delays and disruptions. A study by Kumaraswamy and Chan (1998) on causes of construction delays in Hong Kong found differences in perceptions as to causes of delays by different groups of participants in building and civil engineering works. They suggested that biases of different industry groups might direct blame for delays to other groups. Noulmanee et al(1999) investigated causes of delays in highway construction in Thailand and concluded that delays can be caused by all parties involved in projects; however, main causes come from inadequacy of sub-contractors, organizations that lack sufficient resources, incomplete and unclear drawings and deficiencies between consultants and contractors. AlMomani (2000) investigated causes of delay in 130 public projects in Jordan and found that

main causes of delay were related to designer, user changes, weather, site conditions, late deliveries, economic conditions and increase in quantity.

III. METHODOLOGY

A questionnaire was designed and used to collect occurrence likelihood assessments of the minefields and manifestations. Over 300 sets of questionnaire were issued to construction professionals. 100 professionals returned the questionnaire representing a response rate is 33 % And 95 of them were valid and used in the data analysis. The questionnaire section includes questions on demographic characteristics of the respondents over 58 % of the respondents are working in developer companies, and 30 % of the respondents are working in property developers. 10 % of the respondents are working in law firms. Besides, the majority of the respondents have more than 10 years of experience in administering construction Contracts. In the other section, the respondents were asked to assess the occurrence likelihood of the artefacts. The respondents were asked about the grading and scoring of the causes and factors of delay. After the analysis of these, the recommendations were made to counter these problems. The grading and scoring of delay factors relevant to clients is shown in the table below.

Table 1. Delay Factors relevant to Consultants

S.No	Causes of Delay	% of People agreed	% of People not agreed
1	Economic ability/ Economically arrangement for the project	300	-
2	Not definite about material	285	15
3	Late payment of bills	250	50
4	Specified sequence of completion	220	80
5	Previous working relationship	200	100
6	Possible changes to initial design	80	220
7	Unclear perception of demand	70	230

After the grading and scoring, the most important factor relevant to contractors is lack of acquiring new equipments, on which 70 % respondents agreed. The grading and scoring of delay factors relevant to contractors is shown in the table below.

Table 2. Delay Factors relevant to Contractors

S.No	Causes of Delay	% of People agreed	% of People not agreed
1	Utilising Material in construction	180	120
2	Lack of equipments, tools, machineries, etc	210	90
3	Terms and relationship b/w subcontract or and employees	180	120

Table 3. Delay Factors relevant to Consultants

S.No	Causes of Delay	% of People agreed	% of People not agreed
1	Completeness and timeliness of project information	240	60
2	Provision for ease of communication	210	90
3	Build ability of design	180	120
4	Previous working relationships	210	90
5	Not completely understand the client Requirements	240	60
6	Less detail in drawing	240	60

Table 4. Delay Factors relevant to Labor

S.No	Causes of Delay	% of People agreed	% of People not agreed
1	Locality of labors	210	90
2	Labors personal conflict	180	120
3	Less Productivity of labor	210	90
4	Shortage of Labors	180	120
5	Injuries of labors	180	120

After the grading and scoring, the most important factors relevant to consultants are low productivity level of work,

on which 70 % respondents agreed. The grading and scoring of delay factors relevant to project conditions is shown in the table below.

From the Grading and Scoring , the most prominent factor that causes the Delay to a construction project is said to be the "Economically arrangement for the project".

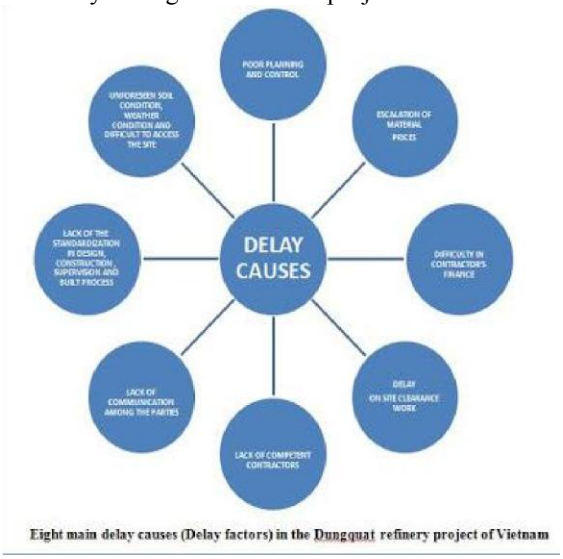

Fig 1 : Concurrency of Delay as well as Disruptions in Construction Projects

By grading and scoring, the most important factors relevant to consultants are completeness and timeliness of project information, priority on construction time and missing of some details in drawings, on which 80 % respondents agreed.

Table 5. Delay Factors relevant to Project Conditions

S.No	Causes of Delay	% of People agreed	% of People not agreed
1	Location	210	90
2	Function or end use (Office, residential industrial)	180	120
3	Complexity	180	120

A. Critically Assessment Criteria Of Delay

The delay factors are assessed by the critical assessment criteria. The table 8 shows the assessment criteria such as mean delay factor range, mode and critical index.

B. Delay Factors

Delays are also caused by some fundamentals and things which go wrong during the construction project. A sign of delay in work is when contractor do not takes care of the schedule. Delay in completion of project is also caused by equipment breakdowns and labor disputes. The major factors due to which delay occur are client problem, service provider problem, sources problem nd universal problem.

The client related factors are concerned with client's type, individuality, experience, financial status, awareness, organization, construction complexity, confidence, extent and risk dealing {13}. The contractor related factors are concerned with the contractor's cash flow, site management, experience, subcontractors, supervision, information flow and control system. Resource problem are more often related with dealer, late delivery of equipments, deficiency of workers, non efficient equipment use during construction, late delivery of materials, inflation, low quality material etc. General problem which faced during the project are environmental problem, weather problem, ground problem, natural disasters like earthquake, flood etc.

IV. CONCLUSION AND COMMENDATIONS

A successful construction project is accomplished when the project is completed and hand over to the owner within time, costs, specifications and quality required and to the satisfaction of stakeholders. Thus, completing a construction project on time is vital as it secure the rights of the participating parties on the project. When a project is delayed, it will cause the resources employed to be exceeded as what has been planned.A clear and thorough client brief is considered the most useful strategy for reducing variations. Contingency allowances may be incorporated for inevitable variations. These allowances may be better quantified by using risk analysis techniques. Strategies should also be formulated to mitigate the impact of such inevitable variations after obtaining the consultants' advice, together with the contractors' inputs, on their cost and time implications. Value management techniques may be useful both when developing the design from the brief at the conceptual design stage, as well as in limiting any variations to those that are absolutely essential. Delay also occurs due to external factor like change in government, regulation and location etc. Client must be mentally and financially strong for starting a new project due to which we can reduce delay in projects.

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