

# A Study on Delay of Construction Projects in India

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**Abstracts**—For the development of a country the construction industry is the main ingredients for an economy. In India, most of the projects are executed through contracts which are generally not easy to comprehend even by professionals. Construction delay is one of the serious continual problems in the construction industry, thereby exceeds initial and estimated costs & it has an adverse effects on projects success in terms of time, cost, quality and safety. This paper reports on the aspects of the cause of delay, severity & trying to provide a better understanding of the key issues that need attention if improvements are to be made in delay claims resolutions.

**Keywords:** Constructions Delay, Time overrun, construction in India

## 1. INTRODUCTION

With the advancement of technology and large requirement of infrastructure in developing country like India, there has been increase in size and complexities in the nature of projects. Construction industry creates physical assets in a number of sectors of the economy. Construction sector has two segments :*(i)* Buildings, such as residential, institutional, commercial & industrial; and *(ii)* Infrastructure such as roads, dams canals, rails, airports, power systems, & urban infrastructure etc. The construction sector contributing around 8 % to the nation's GDP (at constant price) in the last five years, increasing from 7.67 lakh crores in 2012-2013 to 13.59 lakh crores in 2016-17 as per as Twelfth plan period. It is the second largest industry after the agriculture. Most of the construction works are carried out through contracts. There are shortcomings in the present contracting procedure pointed out by various industry bodies. The procedures are costly and difficult for both the project owner as well as the contractors. The word delay can be defined as time overrun or extension of time to complete the project.

Delay is a situation when the actual progress of a construction works is slower than the planned schedule or late completion of projects. Delay is classified into two types: Non-excusable & Excusable. When the contractors are responsible for the cause of the delay, known as non-excusable delay. Excusable delay is further classified as compensable and non-compensable delay. Compensation is required when the owner is the major cause of the delays. E.g. change in the scope of

works and the owner's failure to grant site access. When neither the owner nor the contractor is responsible for the delay then it is known as excusable-non-compensable delay. Examples include severe weather, by the act of god or by a third party.

The primary objective during the construction process is to complete the project on time and within the budget, while meeting established quality requirements and other specifications. However, in some cases, delays during the construction can create huge cost damages and resulting the project parties taking legal action against each other through a construction claims. To measure the performance of projects, the no. of projects achieved their goal and no. of projects that doesn't is analyzed. To improve the performance of project if we could control the single most important factor of scheduled delay, the cost escalation can be ultimately contained. This paper studies performs the ongoing and completed mega project.

## 2. LITERATURE REVIEW

Many studies and articles were passed on the causes of delay in construction projects,

Kumaraswamy et al. [1] studied the causes of construction delay in Hong Kong; they found that there was a difference in the perceptions as to cause of delay by different groups of participants in building and civil engineering works.

Assaf et al. [2] discussed the change in order by the owner during construction, delay in payment, ineffective planning and scheduling; difficulties in financing on the part of the contractor caused delay in works. They outlined 73 main causes of delay in large construction projects and delay factors are assembled into nine major groups with different levels of importance to different parties.

Baldwin et al. [3] gives the cause of delay due to severe weather, shortage of labour supply, subcontracting system.

Al-Barak [4] discussed the main cause of failure in construction industry in Saudi Arabia are the lack of experience, poor estimation practices, bad decisions in

regulating company policy, and national slump in the economy.

Noulmanee et al. [5] investigated causes of delays in highway construction in Thailand and conclude that delay can be caused by all parties involved in projects; main causes come from inadequacy of sub-contractors, organization that lack of sufficient resources, incomplete and unclear drawing and deficiencies between consultants and contractors.

Mezher et al. [6] conducted a survey of the causes of delays in the construction industry in Lebanon from the viewpoint of owners, contractors and engineering firms. It was found that owner had more concerns with regard to financial issues, contractors regarded contractual relationships the most important, and consultants considered project management issues to be the most important causes of delays.

Herbsman et al. [7] studied the effects of delay on cost & quality.

Mansfield et al. [8] studied the causes of delay and cost overrun in construction projects in Nigeria. They showed that the most important factors are financing and payment for complete works, poor contract managements, change in site conditions, shortage of materials, and improper planning.

### 3. METHODOLOGY ADOPTED

The objective of this study is to identify the major cause of delay in the construction project and assess the relative importance of these causes, from the aspects of construction contractors and consultants. The study was performed on the basis of questionnaire, divided into two main parts. Part I related to general information for both the company and respondent. Both contractors and consultants were further requested to answer the questions pertaining to their experience in construction industry. Part II includes the list of identified causes of delay in construction industry on the basis of questionnaire distributed randomly to contractors & consultants working in construction projects, response were collected & analyzed.

### 4. CAUSES OF DELAY

The most frequent causes of delay as per as the owners, contractors & consultants are listed below. From the owners point of view most frequent causes are related to both contractors and labors. From the points of view of contractors the most causes of delay are related to the owners. Generally it is seen that most owner award the lowest bidder to execute their projects, the lowest bidders are unqualified contractors with shortage of resources and low capabilities, which lead to low performance and cause delay in project completion.

The most severe cause of delay as seen by the owners are as follows:

- Difficulties in financing project by contractor
- Unqualified workforce

- Change of orders by the owners during construction
- Inadequate contractor's experience
- Low productivity of labors
- Delay in progress payments
- Original contract duration is too short
- Ineffective planning and scheduling of project by contractor
- Shortage of labors

The most severe causes of delay as per as the contractor are as follows

- Delay in producing design document
- Delay in reviewing and approving design documents by owner
- Change of orders by the owners during construction
- Difficulties in financing project by contractor
- Slow in decision making process by owner
- Late procurement of materials
- Suspension of work by owner

Delays causes as per as consultants are as follows

- Ineffective planning and scheduling of project by contractor
- Poor qualification of the contractors technical staff
- Poor site management and supervision by contractor
- Delay in material delivery
- Delay in progress payments
- Inadequate contractors experience
- Shortage of labor
- Change of orders by the owners during construction

There are many causes which are common between them, such as delay in progress payments by the owners, Ineffective planning and scheduling of project etc. only one cause of delay is common between all parties, which is "change orders by owner during construction". All of them are agree that following causes are the least important in delay of construction:

- Change in government regulations
- Effect of social and cultural factors
- Accidents during construction
- Traffic control and regulations at site

## 5. EFFECTS OF DELAY

Different types of effects arising due to delay and extension of project works are as follows:

- Compensation of imposed tax by owner due to delay attributed to contractor.
- Reduce the efficiency of available economic resources.
- Reduce the competitiveness of the economy.
- Claim for price an increase of resources by the contractor when the work is not completed in time and extensions are to be allowed because of owner's default.
- Limit the growth potential.
- Claim for loading of resources by the contractor due to delay by owner.
- Whenever, a contractor does not do the work with due diligence or his rate is slow, the running bill amount may be withheld leading to claim for interest on withheld payment.
- From the finance point of view, if owner delays in payment of completed work it is going to affect the further work of project.

## 6. RECOMMENDATIONS & CONCLUSIONS

The following points can be recommended by all of the participants in order to minimize and control delays in construction projects:

Owners should give special attention to the following factors:

- Pay progress payment to the contractor on time because it impairs the contractor's ability to finance the work.
- Minimize change orders during construction to avoid delays.
- Avoid delay in reviewing and approving of design documents than the anticipated.
- Check for resources and capabilities, before awarded the contract to the lowest bidder.

Contractors should pay attention to the following factors:

- Shortage and low productivity of labor: sufficient number of labors should be assigned and be motivated to improve productivity.
- Financial and cash flow problems: contractor should manage his financial resources and plan cash flow by utilizing progress payment.
- Planning and scheduling: they are continuing processes during construction and match with the resources and

time to develop the work to avoid cost overrun and disputes.

- Site management and supervision: administrative and technical staff should be assigned as soon as project is awarded to make arrangements to achieve completion within specified time with the required quality, and estimated cost.

Consultants should look to the following points:

- Any delay caused by the consultant engineer in checking, reviewing and approving the design submittals prior to construction phase, could delay the progress of the work.
- Consultants should be flexible in evaluating contractor works.
- Compromising between the cost and high quality should be considered.

Finally, Design engineer should focus on the following issues:

- Producing design documents on time & set a schedule to complete design documents on time, otherwise result in a delay of work completion.
- Mistakes and discrepancies in design documents are common reasons for redoing designs and drawings and may take a long time to make necessary corrections.

To improve this situation, we have to conclude in this research must be addressed by a joint efforts of all the participants in the construction industry so as to create a technically planned system where all the participants co-ordinate in the most successful way. Therefore, in order to minimize the construction delay the important points are: To adopt a new approach to contract award procedure by giving less weight to prices and more weight to capabilities and past performance of the contractors. Adopt new approaches to contracting, such as construction management (CM) & design-build type of contracts. These help to reduce delay by limiting owner interference, improving the design & improve the contractual relationship among all of the participants to the projects.

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