

MANAGEMENT FOR CONSTRUCTION PROJECT:- VARIOUS ASPECTS OF DELAY

Shashank Sharma¹(Student), Aabhas Arora²(Student), Dr.Vineet Bajaj³(Co.Author)

¹Student B.E., (CE), SRM University Modinagar, Uttar Pradesh, India

²Student B.E., (CE), SRM University Modinagar, Uttar Pradesh, India

³Associate Professor, Department of Civil engineering, Amity University, Noida, Uttar Pradesh, India

Abstract- Delays in construction are common in construction industry and create major problems and hindrance in project performance. This research presents the result of questionnaires survey conducted to list out the significant factors contributing to delay in construction projects. In India, construction projects are heavily affected by the delays, if anybody doesn't know the factors that causes delay then they cannot be succeeded. Construction companies have several objectives i.e to complete the project within given time limit, within fixed budget and good quality of work. For completion of these objectives, one should know the factors which causes delays in construction.

Key Words- Project performances, Hindrances, Survey, Delay factors, questionnaires

1. Introduction- In construction work, delays means more time consuming beyond completion date of the project which is given to contractor and other parties for delivery of it. For various team members like owner, contractor, engineer or consultant the definition of delay is different.

For owner delay means loss of money through lack of production facilities and rentable space. For contractor delay means higher overhead cost because of longer time of project higher material cost, machinery and labour cost increases. For consultant delay means lot of work load in less time limit moreover to execute more work in less time can affect quality and safety of work.

All above factors are related to cause of delay, we can find the cause of delay in construction industry to increase the performance of project. For construction project the working capital requirement in very high so the owner needs planning that at which time and activity he have to spend this much of money to fulfill the requirement.

If we don't understand the delay cause we will keep losing our precious time and money. By understanding the delay cause and practicing all the steps which can counteract these delays we can give a contribution to civil engineering as well

as an owner can save his money and time, a contractor can earn more profit which will affect even labour as his daily wages will come in time, work flow and cash flow will be smooth.

1.1 Objectives-The main objectives of study are:-

1. To find out the delay causes for residential construction project, offices building project, institution building.
2. To help the project team members to minimize the effect of delay by planning from all aspects and by considering the source of delay.
3. To suggest the remedies on some of the most crucial delays factors so that practicing them make us less vulnerable to time and money loss.

2. Research Methodology- The methodology for this study taken from conferences study, books, some literature search and international journals. All the factors are finally placed in a questionnaire survey so that respondents who were included in daily activities of construction can respond to the survey effectively.

These causes were categorized in nine main groups as: Contract related, Owner related, Contractor related, Consultant related, Design related, Material related, Equipment related, Labour related, and Force major depending on their nature and mode of occurrence. By this one can get to know the clear picture of different delays occurs in different groups as mentioned above so that one can work in their respective jobs and arena to avoid the delays as much as possible.

2.1 Data Collection-Data was collected from various construction firms around Delhi, Rajasthan and Haryana to segregate the cause of delay. The architects, contractor and developers of various firms in these cities were targeted for survey. A questionnaire was prepared for all the parties involved in construction work and asked them to rate their cause of delays. This helped us to get more widespread delay

factors which affect the construction more adversely as compared to other factors of delays.

2.2 Data Analysis-For the analysis, several construction experts were targeted i.e owner, contractors, consultants and engineers. According to their review the data was analyzed by RII method.

After analysis those causes of delays were selected which were above 0.8

This data was analyzed by RII method.

$$RII = \Sigma W / (A*N)$$

No	Critical Causes of delay	RII
1	Quantity and quality of labours against requirement	0.95
2	Delay due to transporting material to site	0.94
3	Absence of good supervision or lack of planning and scheduling by contractor	0.92
4	Work on hold due to improper methodology executed	0.90
5	Rework due to improper methodology implemented	0.89
6	Change in work order or addition of extra item by owner during construction	0.87
7	Delay due to slow decision making process	0.86
8	Delay due to lack of information or misunderstanding of information from owner to other parties	0.84
9	Delay due to lack of information or misunderstanding of information from contractor to other parties	0.84
10	Time period may less as compared to actual requirement	0.82

3. Conclusions- We observed that once the decision is taken there is no time loss is doing that particular activity. If the material is available no delay will be there. Some problems are there which affects almost all type of sites greatly i.e quantity and quality of labour. This problem is the wide spread problem dealing with labour and producing good output within quality parameters is not an easy job. Other most wide spread problem after labour factor is transport of material hinderence. Reason of this problem is false on time delivery promise by the transportation owner and incapability of transporting vehicle to carry heavy weight material leads to break down the vehicle which results in unexpected delay. Other factors of delay are

controllable factors which we can control if we pay proper attention towards them and make efforts to avoid them. But two delay factors as discussed above are nearly incurable because labour is same across the country and one can not be too strict with them to obtain desired output and transporting vehicle break down is unexpected and can happen anytime.

We can avoid the other delays as much as possible if we are clear about their causes and if we take certain preventive measures to avoid the occurrences of delays. The aim of this paper is to identify the delay factors and to address the most significant factors which causes delay.

According to above finding, following preventive measures are suggested to avoid or minimize the affect of delay so that time, money and efforts can be saved as much as possible.

1. The quantity and quality of labour can have major impact on the activities in construction. Inexperienced or unskilled labour is futile and may cause accidents during construction.
2. Estimation of material in upcoming activites should be done effectively and place the order to supplier by considering the time margin so that transportation delay can be encountered.
3. Site management and supervision should be done effectively. Administrative staff should be well sufficient and experienced so that they can make necessary arrangement to complete all the activities on time with quality, safety and within estimated cost.
4. Work to be executed should be firstly consulted from the senior team members and consultants so that time can be saved if any alternation is required.
5. Approval of drawings or design documents should not be late as it can lead to delay in progression in work and payment should be done to contractor on time so that he can maintain the flow of money and finance the work effectively.
6. Official meetings should be arranged frequently between prime parties of project so that possibilities of misunderstanding the information could be avoided and further planning can be done effectively.

1. Contract

- Legal controversies between parties.
- Less time period required against actual time period required.

2. Owner

- Shortage of cash flow from owner.
- Delay to hand over the site.
- Delay in approving the specification.

3. Contractor

- Shortage of cash flow from contractor.
- Dispute between contractors and other parties.
- Low efficiency of work from contractor.
- Delay in site preparation and arrangement.

4. Consultant

- Delay to check the activities by the consultant.
- Rigidity of consultant
- Controversies between consultant and engineer.
- Lack of experience of consultant.

5. Design

- Error in design document.
- Lack of details in drawing.
- Difficulty in project design.

6. Materials

- Delay due to type of material changed during construction.
- Destruction of material in urgency.
- Delay due to fabrication of material apart from standard specifications.

7. Equipments

- Malfunction in equipment during operation or unskilled operator.
- Unavailability of required equipment at site.

8. Labour

- Low efficacy of labour.
- Controversies among labour

9. Location

- Subsoil condition.
- Receiving permissions from government authorities.

10. Force Majors

- Hazards during construction like heavy rain, storms etc.
- Lack of basic needs to start the construction site (water, electricity connection, sanitary facilities for labour and staff).
- Interruptions from locals or neighbours.