

IMPACT OF DELAYNESS ON CONSTRUCTION PROJECTS

Swadesh Singh Bhadoria,¹ Sohit Agrawal,² Swetank Sharma,² Dr.Mukesh Kumar Pandey,³

B.Tech+M.tech(INT) P.G student, Construction technology & Management, I.T.M University Madhya Pradesh, India.

Asst.Professor DEPT.OF CIVIL ENGINEERING, I.T.M university Madhyapradesh, India.

Professor DEPT.OF CIVIL ENGINEERING, I.T.M university Madhyapradesh, India

Abstract:

This paper deals with the attributes of delay which extremely effect on the residential and multi-stories construction projects in Gwalior City in India. Time delays and cost overruns have become a challenge for civil engineering section of India. . This research theme deals with the analysis of properties of delay & ranking of attributes by RII (relative importance index). Which are extremely effected on construction projects of buildings in India. This study included analysis of delay factors, ranking of factors of delays and also compared among three groups (i.e, Owner, Contractor & consultant). Total 38 causes are identified under 8 major groups. An Interview questionnaire was taken for survey the critical causes of delays in building area. Total 35 respondents included in this research, i.e., 9 owners, 12 contractors and 14consultants.This paper suggest the simplest way to find out the ranking of attributes of delay by RII (Relative importance technique). After determining results of all attributes of delays is that ten factors out of all total are highly effected in the execution of large building construction. They are shortage of labour, delay in delivery of resources on the site, Rework due to errors on the site, delay current payment by owner, poor site management at the site and direction by contractor etc.

Key Words- Analysis of delay's Factors, Survey, Relative important index (RII), Effects of delay.

1.INTRODUCTION

The delay in the construction work department can also be said as the project does not deliver

on the date of completion of the project and also the expansion in the estimated cost project as compare to the actual cost of a project, it means the project is delayed due to delays in time and values overruns. Toward the owner of the project delay suggests that price overruns attributable to lack of production and rentable area. Toward the contractor delay implies that higher overhead price attributable to enlargement in time of project, high material price, machinery and labour price increment.. The procedure of execution of a construction project is subjected to various and unwanted factors which result from many sources. These sources contained availability of resources on site, environment, condition, the performance of various parties, Role of other parties and contractual relationship. Delay means more activities are pending which mentioned within the contract duration of the project.

For various parties definition of delayness in construction project is different such as For owner delay means low income in more time, For consultant delay means more work remaining in less time period etc. so because of delay project cost, material cost, government charges and overall cost are increase. All these factors are related to causes of delay so we can realize the attributes of delays in construction to extend the performance of project. For any construction projects requirement of work is very high so, owner needs planning at which time and price of project is satisfy. This can be listed out by proper -scheduling and by identification of causes of delays. So, it is necessary to explain

the most critical causes of delay which have great effect on the construction project in order to minimize and try to avoid the delays in the construction of multi-stories and residential building project in India.

1.1 Effect of delays

- Time overrun
- Cost overrun
- Dispute
- Arbitration
- Total abandonment
- Litigation

2. Objectives of study:

The main objectives of this present study are as follows:

To study and analyse the attributes of delay in building construction projects from the point of view of owner, contractor and consultant.

To rank the causes of delay by Relative importance index technique (RII).

Try to minimize the causes of Delay.

3. LITERATURE REVIEW

Ashraf Samara and Ghanim A. Bekr (2016) identified the 55 important factors of delay in Jordan which had hardly effected by Time overruns and expansion of cost. They were carried out a survey to identify the critical factors of delay which has stopped the performance of Jordan construction in which 146 respondents are involved. Top ten factors causing delays for public sector projects in Jordan are: (1) inadequate management and supervision by the contractor, (2) client's changes of the design, (3) inadequate planning and control by the contractor, (4) using lowest bid that lead to low performance, (5) changes in the extent of the project , (6) errors in design and contract documents , (7) progress payments are not made in time by the client, (8) Rework due to mistakes during

construction, (9) Changes in the original design and (10) Low level productivity.

Mohammad Saiful, Bambang Trigunarsyah and Sadi Assaf (2015) evaluating the 79 different significant factors of delays in the construction of multi-stories building and residential building in construction industry of Bangladesh. They were conducted a survey to identifying the causes of delay in large large building construction projects in which 70 respondents participated i.e, (owner, consultant, contractor) by using importance index method. About their results, they concluded the lack of experience construction manager ,lowest bidder selection, improper planning & scheduling ,lack of proper working management are the most critical causes of delay which are highly contributed to occur delay in construction project..

4. RESEARCH METHODOLOGY

- LITERATURE COLLECTION
- REVISION OF LITERATURE
- IDENTIFICATION OF DELAY'S CAUSES& EFFECTS
- QUESTIONNAIRE PREPRATION
- QUESTIONNAIRE SURVEY
- ANALYSIS OF CAUSES BY (RII) TECHNIQUE

4. DATA ANALYSIS APPROCH

Table -1: significant Causes of delay by RII Method

S.NO.	No.of Groups	OWNE R RII	R A N K	Contra ctor RII	R A N K	Consul tant RII	R A N K
1.	contracto r	0.78	1	0.59	8	0.77	1
2.	consultan t	0.64	5	0.71	4	0.51	8
3.	project	0.66	4	0.79	1	0.72	2
4.	owner	0.50	7	0.76	2	0.56	7
5.	labour	0.68	3	0.72	3	0.68	3
6.	Design	0.55	6	0.60	7	0.65	5
7.	material	0.71	2	0.61	6	0.62	6
8.	equipme nt	0.48	8	0.65	5	0.66	4

No.	Critical Cause of delay	RII
1	Rework due to errors during construction	0.851
2	Inadequate planning and scheduling of project by contractor	0.846
3	Original contract duration is too short	0.811
4	Delay in material delivery	0.794
5	Shortage of labour	0.789
6	Poor site management and supervision by the contractor	0.777
7	Inadequate contractor’s work experience	0.771
8	Difficulties in financing project by contractor	0.766
9	Delay in progress payment by owner	0.754
10	Shortage of equipment	0.743

(i). Relative Importance Index technique:

By exploitation the Relative Importance Index technique to the ranking of causes of delay is easy with compare to alternative. The same method is taken in this present study within three groups which are owners, consultants or contractors. The grading of five-point scale 1 for (very low importance) to 5 for very high importance) is considered and converted into relative importance indices (RII) for each factor as follows:

$$RII = \frac{\sum W}{A * N} \quad (0 \leq RII \leq 1)$$

Where:

W – is the response weight given to each attribute by the personnel and range vary from 1 to 5, (where “1” is “very low importance” and “5” is “very high importance”);

A – is the highest weight (i.e. 5 in this case) and;

N – is the overall number of stakeholders.

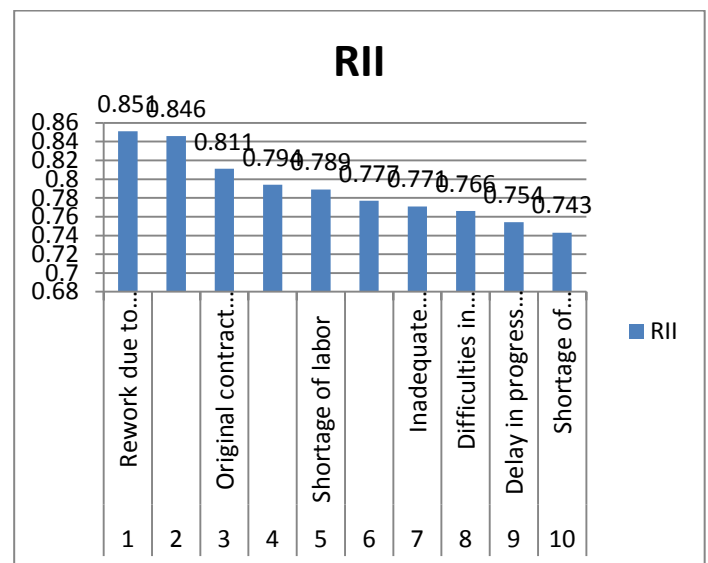


Figure -1: significant Causes of delay by RII Method

Table 5.2 : Ranking of group of causes of delay by All three Parties

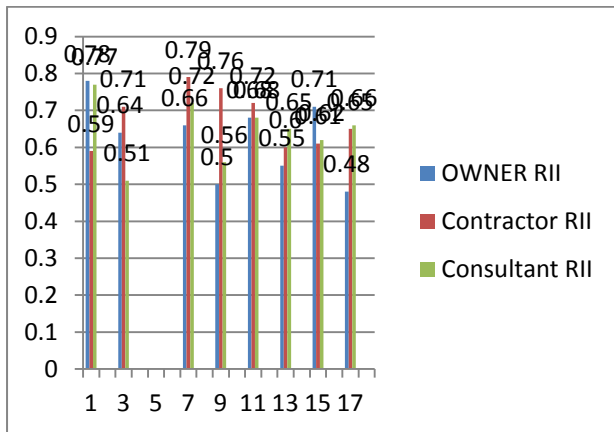


Figure-2 : Ranking of group of causes of delay by All three Parties

6. Conclusion

The first step in reducing the delays in infrastructure construction project is to understand the root causes of the delay. This results provide a listing of root causes and issues that are directly responsible for most infrastructure construction project delays. Additionally, it is found that fundamental principles must be adopted before significant improvements can be made. The data were collected from the following construction Infrastructure companies.

According to results, some factors have found that which are highly effected on the construction projects Rework due to mistakes, Inadequate planning & scheduling of project by contractor, Original contract duration is too short, Delay in material delivery on site, Shortage of labour , Poor site management & supervision by contractor, Inadequate contractor’s experience, Difficulties in financing by contractor, Shortage of equipment, Delay in progress payment by owner .

7.Recommendation

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

7.1. Contractor’s Should Consider The Following Factors

Shortage and low productivity of labor: enough number of labors should be assigned and motivated to improve productivity.

Financial and cash flow problems: contractor should manage his financial resources and plan cash flow by utilizing progress payment.

7.2. Consultant’s Should Look To The Following Factors

Reviewing and approving design documents 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;

Inflexibility: Consultants should be flexible in evaluating contractor works. Compromising between the cost and high quality should be considered.

7.3. Owner’s 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.

Reduce the frequent changing in orders during construction to neglect delays.

8.REFERENCES

1. Hemanta Doloi, Anil Sawhney, K.C.Iyer, Sameer Rental (2012).Analysing factors affecting daelays in Indian construction projects International journal of project management 30,479-489
2. Mamta Rajgor, Chauhan Pares, Patel Dhruv, Panchal Chirag. RII&IMPI: Effective techniques for finding delay in construction projects. International Research Journal of Engineering&TechnologyVolume:03.Issue:01|JAN-2016.
- 3.YawFrimpong,JacobOluwoye,LynnCrawford.Causes of delay and cost overruns in construction of ground water projects in developing countries in Ghana International journal of project management21(2013),321-326.
- 4.Siddesh K Pai,Mr.J.Raj Bharath. Analysis of critical causes of Delay in Indian Infrastructure Projects.

International journal of Innovative Research & Development VOL2:Issue:March-2013.

- 5.Mega Desai, Rajiv Bhatt. Critical causes of Delay in Residential Construction Projects: Case Study of Central Gujarat Region in India. .International Research Journal of Engineering Trends and Technology Volume:4.Issue:4|April-2013
- 6.Murat Gunduj, Yasemin Nielsen, Mustafa Ozdemir. Quantification of Delay Factors Using the RII Method for Construction Projects in Turkey. Journal of Management in Engineering(2013),29(2):133-139.