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Time delay and cost escalation in construction works

Ankit Jaiswal, Dennies Thomas, Rahul Kushwaha, Ravikant Mahato

(Civil Department, Viva Institute of Technology, India)

Abstract : *The objective of the present study was to measure the effects of delay in construction projects like cost-overrun, time-overrun, litigation and project abandonment. Data on the study variables has been collected through a structured questionnaire. Statistical tool One-Way ANOVA has been applied for data analysis and inference. It is found that delay in construction projects significantly lead to cost overrun, time overrun, litigation and project abandonment. The findings of the study also provide significant insights to the construction industry so that they may formulate strategies in order to avoid delay and its consequences. Moreover, the recommendations and limitations are discussed in the conclusion part of the study.*

Keywords - *Construction Projects, Delay, Cost overrun, Time overrun, Litigation, Abandonment.*

I. Introduction

The Delay in construction projects is a major problem facing the whole world. Completion of construction projects contributes to global economic development by the effective use of cost and time as a whole, which solely results in saving the cost for the country. Factors which cause delay in the construction projects also have some effects on the overall project to some extend. When there is delay in construction projects, the scheduled time for the completion of the project is extended. This results in cost overrun. Main reasons for cost overrun in the construction projects include the delays in the delivery of materials to the project sites, revision and approving of design documents, delay in getting approval, delay in sub-contractor work and the conflicts in sub-contractor schedule, changes made by the owners, contractor's inadequacy during work and poor planning are the main causes of cost overrun.

II. METHODOLOGY

For this research, a questionnaire survey approach has been adopted to find the impact of various attributes on delay in the Indian construction sector drawing from various international researchers mentioned above. A survey of construction professionals representing various stakeholders involved in construction projects in India was conducted. Heterogeneity of respondents is an important criteria in capturing the impact of various attributes on construction delay.

1. Assessment
2. Determining factors & Preparing Questionnaire
3. Collecting Response
4. Analysis

1. Assessment

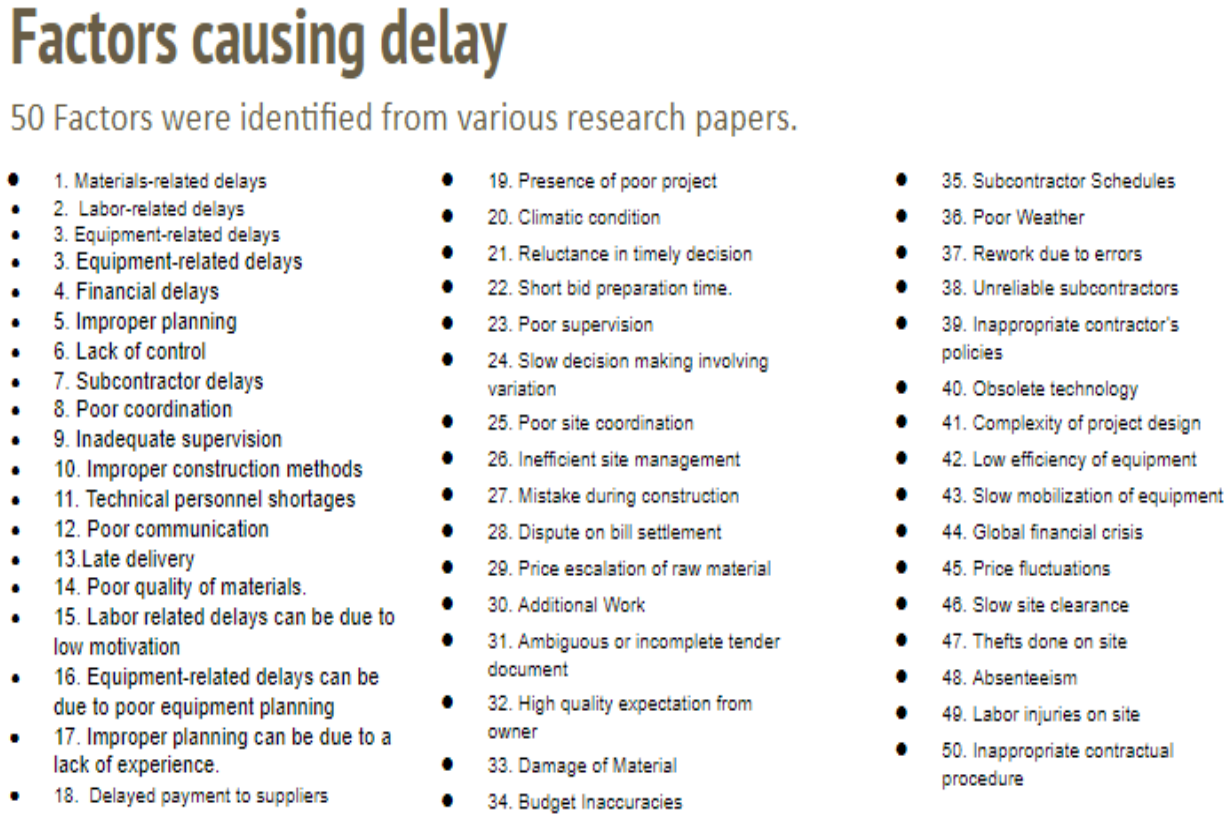
Initial stage in this project is to find the proper factors affecting the delay in the construction industry. Later it was acknowledged that the issues can be arranged according to various factors responsible for causing such issues. The factors can be related to the client, contractor or either parties. In India, most of the issues are related to poor quality control issues. This review helps to understand the factors and the practical approach to those factors.

2. Determining factors & Preparing Questionnaire
The thirty three most crucial factors were adopted from the literature. As the factors were identified from the literature, a practical approach was needed to arrange the factors according to their impact. The response of people associated with the construction industry plays an important role in determining the importance of the factors. Hence a questionnaire survey was prepared, with all the factors listed. A total of one fifty responses were recorded.

3. Collecting Response
The responses were compiled and average of responses were calculated. For better explanation a horizontal graph was created with the factors on the X-axis and the importance of factors ranging from 0 to 5 on the Y-axis. Where 0 indicates low impact and indicates high impact.

4. Analysis
Once the data was collected, it has to be further verified that the probability of the people answering the survey was true. Hence the Analysis Of Variance (ANOVA) is adopted for ranking the factors and determining the most severe impact.
The delay factors were summarized into three major categories:
● Production Elements (PE) includes: Labor, Materials and Equipment related factors.
● Internal Environment (IE) includes: Consultant, Contractor and Owner related factors.
● External Environment (EE) includes: Weather, Government Regulations and Other reasons.
A one way analysis of variance ANOVA is to be conducted among the means of responses from the three groups to check for any significant differences among the groups perceptions regarding the importance of the various delay causes. The mean values under the three groups, F statistics, and the P values at which hypothesis of equality of mean values across different groups could be rejected is to be calculated.

III. Figures and TABLES



Factors considered from Literature

Factors categorized

IV. Conclusion

The stated objective of this paper is to identify the causes of delay that produce the greatest effects and the extent to which these effects can be controlled in the private construction industry. A literature review was conducted to identify the causes of delay stipulated in the literature. The importance index of each cause is calculated as an average of the frequency indices of each cause. Total 50 causes of delay were identified through research. The identified causes are combined into three categories. The following points can be recommended by all parties to minimize and control delays in construction projects:

Consultants should look to the following points:

- Should not be late in reviewing and approving the given documents and drawings.

Contractors should consider the following factors:

- Should try to increase the productivity of labor as far as possible and take efforts to motivate it.
- Financial and cash flow problems should be managed by the contractor with proper financial planning beforehand.
- Efficient coordination between contractors and subcontractors is a must.

Owners should give special attention to the following factors:

- Check for resources and capabilities, before awarding the contract to the lowest bidder.
- Efficient cash flow to contractors on part of the owner's responsibility.

References

[1]Doloi et al(2011), "Analysing factors affecting delays in Indian construction projects" International Journal of Project Management 30 (2012).

[2] K.C. Iyer, K.N. Jha(2005), "Factors affecting cost performance: evidence from Indian construction projects" International Journal of Project Management 23 (2005).

[3] S. Shanmugapriya1, Dr. K. Subramanian, "Investigation of Significant Factors Influencing Time and Cost Overruns in Indian Construction Projects" Volume 3, Issue 10 October 2013.

[4] Ahmed Senouci (2016), "Time Delay and Cost Overrun in Qatari Public Construction Projects" Creative Construction Conference 2016, CCC 2016, 25-28 June 2016.

[5] Nabil Al-Hazim, Zaydoun Abu Salem, Hesham Ahmad, "Delay and Cost Overrun in Infrastructure Project in Jordan" 7 th International Conference on Engineering, Project , and Production Management.

[6] Abdulelah Aljohani, Dominic Ahiaga-Dagbui, and David Moore (2017), "Construction Projects Cost Overrun" International Journal of Innovation, Management and Technology, Vol. 8, No. 2, April 2017.
\[7] N. Hamzaha , M.A. Khoirya , I. Arshada , N. M. Tawilb, "Cause of Construction Delay - Theoretical Framework" The 2nd International Building Control Conference 2011.
[8] Michal Ghuszak (2015), "Construction Delays in clients opinion - multivariate statistical analysis" Creative Construction Conference 2015.
[9] Vaibhav Y. Katre1, Dr. D.M. Ghaitidak, "Elements of Cost and Schedule Overrun in Construction Projects " Volume 12, Issue 7(July 2016).
[10] Abdussalam Shibani, Kumar Arumugam "Avoiding Cost Overruns in Construction Projects in India" Management Studies,August 2015,Vol.3.
[11] T. Subramani1, M.Kannan, P.Vinoth, K.mohan Doss, S.Priyanka, March - April 2018,"Cost Escalation and Delays in Construction Industry Using SPSS " Volume 7.
[12] Swapnil P Wanjari and Gaurav Dobariya, "Identifying factors causing cost overrun of the construction projects in India" Vol. 41, No. 6, June 2016.
[13] Kodwo Amoa-Abban Seth, "Cost overruns in Building Construction Projects: A Case Study of a Government of Ghana Project in Accra", Vol.4, No.24, 2014.
[14] SAVITA SHARMA1 & PRADEEP K. GOYAL, May 2014, "Cost Overrun Factors and Project Cost Risk Assessment in Construction Industry", Vol. 3, Issue 3.
[15] Jafri S. Jongo, Dennis N. G. A. K. Tesha, Raymond Kasonga, Justine J. Teyanga1, Kenan S. Lyimo, "Mitigation Measures in Dealing with Delays and Cost Overrun in Public Building Projects in Dar-E-Salaam", Tanzania.