

LITERATURE REVIEW ON CAUSES OF DELAY IN BUILDING CONSTRUCTION PROJECTS

MISS.P.M.PETHKAR¹, PROF.B.V.BIRAJDAR²

¹ Department of Civil Engineering, Tatysaheb Kore Institute of Engineering and
Technology Warananagar, Pin-416113, M.S., India.

² Head of Civil Engineering Department, Tatysaheb Kore Institute of Engineering and
Technology Warananagar, Pin-416113, M.S., India.

ABSTRACT- Delay in Building Construction Project is one of the most common problems. Delay can be defined as time overrun or extension of time to complete the project. Delay is situation when the actual progress of a construction project slower than the planned schedule or late completion of the projects. The causes of delay in Building Construction Projects are taken from the pass literature review. The literature reviews are summarized and the delay framework is constructed based on literature review summary.

Keywords: Construction, Building, Delay, Time, cost.

INTRODUCTION

Construction industries are a growing industry in all over world. In Nigeria, time and cost overruns have been identified as the most important factors responsible for abandonment and contractor's failure (Elinwa and Uba 2001). Although the Indian construction industry has gained far more importance in recent times because of opening up of Indian markets and the arrival of megaprojects for infrastructure development, the performance of Indian construction projects. A study conducted by Infrastructure and Project Monitoring Division of Ministry of Statistics and Programme Implementation (<http://www.mospi.nic.in>) reports that out of 646 central sector projects (which are of order of more than \$4.45 million) Costing around \$50 trillion and average project duration of 6 to 7 years, about 40% are behind schedule and the delay ranges from 1 to 252 months. The schedule overrun in percentage terms as on December 2003 was reported to be 40.23% while the figure for the same as on December 2004 was reported to be 39.9%. (K.C.Iyer and K.N.Jha 2006). Delay gives increase to disturbance of work and loss of productivity, late completion of project increased time related costs, and third party claims and abandonment or termination of contract. It is important that general management keep track of progress to reduce the possibility of delay occurrence or identify it at early stages. (Saleh Al Hadi Tumi 2009) . Delays are insidious often resulting in time overrun, disputes, litigation, and complete abandonment of projects (Sambasivan and Soon, 2007) . Many projects are such a nature that the client will suffer hardship, expense or loss of revenue if the work delayed beyond the time specified in the contract (clough, 1986).

OBJECTIVE OF THE STUDY-

The main objective of this study is to identify the major causes of delays of building construction projects using a questionnaire survey. The primary aim is to identify the perceptions of the three main parties regarding the causes of delays and to suggest possible ways of minimizing them.

LITERATURE REVIEW-

Frank D.K.Fugar and Adwoa B.Agyakwah-Baah (2010) studied the "Delays in Building construction projects in Ghana". The study sought the relative importance of the factors that cause delays in building construction projects in Ghana, from that study showed that all the three groups of respondents generally agreed that out of a total of 32 factors the top ten influencing factors in causing delay arranged in descending order of importance are: [1) Delay in honoring certificates. 2) Underestimation of the costs of projects. 3) Underestimation of the complexity of project. 4) Difficulty in accessing bank credit. 5) Poor supervision. 6) Underestimation of time for completion of projects by contractors. 7) Shortage of materials 8) Poor professional management. 9) Fluctuations of prices/rising cost of materials. 10) Poor site management.] In this study 32 factors were categorized into nine major groups and were ranked. The result shows that clients, consultants and contractors all agreed that the financing group of delay factors was the most influential factor. Material factors were considered the second most important factor causing delay in construction projects followed by scheduling and controlling factors and suggested some remedies for delay.

N.Hamezah, M.A.Khoiry, I.Arshad, N.M.Tawil and A.I.Che Ani (2011) "Causes of construction Delay-Theoretical framework" In this paper the formwork are develop from are develop from three different author. The result of his study is as follow : Financial difficulties and economic problems, Financial problems,

JOURNAL OF INFORMATION, KNOWLEDGE AND RESEARCH IN CIVIL ENGINEERING

Supervision to late and slowness in making decision, slow to give instructions, Lack of materials on market, Poor site management, Materials shortage on site, construction mistakes and defective work, Delay in delivery of materials to site and slowness in making decisions.

Proper coordination is critical to the success of construction projects. In this paper studied two variables that affect coordination effectiveness: quantity and quality, as well as their relationships with coordination effectiveness and project performance. The analysis result indicated that coordination quantity. (Andrew S.Chang and Fang-Ying Shen 2014).

Table 1: Past literature

Year	Title of Research
2005	Time–Cost Relationships in Australian Building Construction Projects (Peter E. D. Love; Raymond Y. C. Tse; and David J. Edwards)
2006	Construction Delays and Their Causative Factors in Nigeria (Ajibade Ayodeji Aibinu and Henry Agboola Odeyinka) The study analyzed quantitative data from completed building projects to assess the extent of delays, and data obtained from a postal questionnaire survey of construction managers to assess the extent to which 44 identified factors contributed to overall delays on a typical project they have been involved with. The findings showed that the factors could be prioritized.
	Critical Factors Affecting Schedule Performance Evidence from Indian Construction Projects (K. C. Iyer and K. N. Jha) This paper identified 55 attributes responsible for impacting performance of the projects in India.
2008	Causes of Delay in Building Construction Projects in Egypt (M. E. Abd El-Razek; H. A. Bassioni; and A. M. Mobarak)
2010	Causes of Delay in the Planning and Design Phases for Construction Projects (Jyh-Bin Yang and Pei-Rei Wei) This paper study identified the delay causes and analyzed the importance and frequency of delay using the relative importance index.
2011	Cause of Construction Delay – Theoretical Framework N. Hamzaha, M.A. Khoirya, I. Arshada, N. M. Tawilb and A. I. Che Anib
2013	Analysis of Causes of Delay and Time Performance in Construction Projects (Pablo González; Vicente González, Ph.D.; Keith Molenaar, Ph.D., M.ASCE; and Francisco Orozco, Ph.D.)
	Quantification of Delay Factors Using the Relative Importance Index Method for Construction Projects in Turkey (Murat Gunduz, Ph.D., A.M.ASCE; Yasemin Nielsen, Ph.D.; and Mustafa Ozdemir)
2014	Effectiveness of Coordination Methods in Construction Projects (Andrew S. Chang and Fang-Ying Shen)

RESEARCH METHODOLOGY

The various researchers adopt questionnaire survey method for data collection with personal interview or postal replay of consultant, contractor, owner Of construction projects. In research study they are prepared questionnaire by taking personal interview and identified various causes of delay. This delay factors are used for research work and given rating for for each delay factor eg.(1-Very low importance,2-Low importance,3-Medium importance,4-High importance,5-Very high importance).

DATA ANALYSIS

For data analysis various researchers used RII (Relative Importance Index) to determine the relative importance of the various causes of delay.

CONCLUSIONS AND RECOMMENDATIONS

As per the past literature survey Delay can be avoided or minimized when their causes are clearly identified. The aim of this paper is to identify the delay factors in construction projects because delays are considered to be serious problem in the construction industry. From past literature survey some Most Important Factors causing delays is identified they are (Inadequate contractor experience, Ineffective project planning and scheduling, Poor site management and supervision , design changes by owner or agent during construction, Late delivery of materials, Unreliable subcontractors, Delay in performing inspection and testing, Unqualified workers, Change orders, Delay in site delivery, Delay in approving design documents, Delay in progress payments, Slowness in design making, poor communication and coordination with other parties, Unexpected surface and subsurface conditions (Soil)).

Also some Least Important Factors Causing Delays are (Slow site clearance, Loss of time by traffic control and restriction at job site, personal conflicts among workers, Problems with neighbors, strike, poor use of advanced

engineering design software, change government regulations and laws, Project complexity, price fluctuations, Accidents during construction, Escalation of material prices, Slow mobilization of labor).

According to observed various causes of delay researchers are suggested, the following recommendations can be made as ways to minimize and control delays in construction projects:

1. Contractors should pay more attention to preparing effective planning and scheduling. During construction, planning and scheduling may be revised if necessary conditions occur. Only a project that is well planned and scheduled can be well executed.
2. Site management and supervision should be done correctly. Administrative staff should be assigned to make necessary arrangements to complete projects within the specified time while meeting quality and cost requirements.
3. Owners may demand design changes during construction, but only to the extent that no adverse effects occur with respect to mission-critical activities.
4. Delivery of construction materials to a site should not be late so that work may be executed in the planned order.
5. Generally, large projects may entail having many subcontractors working under main contractors. If a subcontractor is capable and reliable, the project can be completed on time as Planned. If the subcontractor underperforms because of inadequate experience or capability, the project may face delays. The use of many subcontractors may lead to a high risk of delays.
6. Inspection and testing by consultants is an important activity during construction since poor quality inspection may result in lower quality of work.
7. The quality and experience of the labor force can have a major impact on projects. Unqualified workers may lead to inefficient work and cause accidents during construction.
8. A change order is work added to or deleted from the original scope of work of a contract, which may alter the original contract amount or completion date. Change orders often lead to claims and disruption of work due to inadequate analysis of the project in its initial stages. Also, contract conditions corresponding to change orders should be carefully understood.
9. Delays in deliveries to construction sites, approval of design documents, and progress payments are delay factors caused by owners. Sites should receive deliveries as soon as possible after a project is awarded. Design documents should be approved promptly; otherwise, work progress could be delayed. Progress payments should be made on time to contractors to finance the work.
10. Owners should make decisions as quickly as possible so as not to prevent projects from being completed on time.
11. Since many parties are involved in a project (client, consultant, contractor, and subcontractors), communication and coordination with other parties is a crucial factor in the timely completion of the project. Effective communications avoid most delays. Proper communication and coordination channels between the various parties should be established during each phase of construction. Problems with communication may result in misunderstandings and, therefore, delays in the execution of the project. Finally, similar studies could be performed in specific types of construction projects, such as utility construction projects, pipeline construction projects, and dam construction projects. Detailed studies could be carried out to estimate the probability of delay (which is very important for project success and should be taken into account before the bidding stage) in construction projects by developing and utilizing the findings of this study.

REFERENCES:

- [1] Ajibade Ayodeji Aibinu and Agboola Odeyinka (2006) "Construction Delays and their causative factors in Nigeria", Journal of Construction Engineering and Management, Vol.132, No.8, Page No.667-677.
- [2] Jyh-Bin Yang and Pel-Rel Wel (2010) " Causes of delay in the Planning and Design phases for Construction Projects" Journal of Architectural Engineering , Vol.16, No.2, Page No.80-83.
- [3] K.C.Iyer and K.N.Jha (2006) "Critical Factors Affecting Schedule Performance: Evidence from Indian Construction Projects", Journal of Construction Engineering and Management, Vol.132, No.8, Page No. 871-881.
- [4] Andrew S.Chang and Fang-Ying Shen (2014) "Effectiveness of Coordination Methods in Construction Project", Journal of Management in Engineering.
- [5] Pablo Gonzalez, Vicente Gonzalez, Keith Molenaar ph.D. M ASCE and Francisco Orozco ph.D. (2013) "Analysis of causes of delay and times performance in construction projects", Journal of Construction Engineering and Management.
- [6] N.Hamzah,M.A.Khoiry ,I.Arshad ,N.M.tawil, and A.I.Che Ani (2011)"Causes Of Construction Delay-Theoretical Frame work",Procedia Engineering 20 (2011) 490-495.
- [7] M.E.Abd El-Razek ,H.A.Bassioni, And A.M.Mobarak (2008) "Causes of Delay in Building Construction Projects in Egypt " Journal of Construction Engineering and Management, Vol.134, No.11, Page No. 831-841.

- [8] Murat Gunduz, Ph.d,A.M.ASCE, Yasemin Nielsen,Ph.d and Mustafa Ozdemir (2013) “Quantification of Delay Factors Using the Relative Importance Index Method for Construction Projects in Turkey ” Journal of Management in Engineering, Vol.29, No.2, Page No. 133-139.
- [9] Peter E.D.Love , Raymond Y.C.Tse, and David J.Edwards (2005) “Time-Cost Relationships in Australian Building Construction Projects ” Journal of Construction Engineering and Management, Vol.131, No.2, Page No.187-194.
- [10] H. Abdul-Rahaman, M.A.Berawi, A.R.Berawi, O. Mohamed, M.Othman, and I.A.Yahya (2006) “Delay Mitigation in the Malaysian Construction Industry” Journal of Construction Engineering and Management, Vol.132, No.2, Page No. 125-133.
- [11] Youngiane Kim, A.M.ASCE, Kyungrai Kim, A.M.ASCE, and Dongwoo Shin (2005) “Delay Analysis Method Using Delay Section” Journal of Construction Engineering and Management, Vol.131, No.11, Page No. 1155-1164.
- [12] Cecilia Gravina da Racha and Sergio Luiz Kemmer (2013) “Method of Implement Delayed product Differentiation in Construction of High-Rise Apartment Building Projects” Journal of Construction Engineering and Management.
- [13] Thillai A.Rajan, Govind Gopinath and Monalisa Behera (2013) “PPPs and Project Overruns: Evidence from Road Projects in India” Journal of Construction Engineering and Management.