Major Mitigation Measures for Delays in Construction Projects

Mohammad Abedi, PhD Candidate, Department of Civil Engineering, RAZAK School of Engineering & Advanced Technology, Universiti Teknologi Malaysia(UTM), International Campus, Email: abedm1385@yahoo.com

Associate Professor Dr Mohammad Fadhil Mohamad, Head of Postgraduate Studies, Faculty of Architecture, Planning & Surveying,#Universiti Teknologi Mara (UiTM),

Email: mfmohammad@salam.uitm.edu.my

Dr. Mohamad Syazli Fathi, Head of Civil Engineering Department, RAZAK School of Engineering & Advanced Technology, Universiti Teknologi Malaysia(UTM), International Campus, Email: syazli@ic.utm.my

Abedi, M., Fathi, M. S. & Mohammad, M. F. (2011). Major Mitigation Measures for Delays in Construction Projects. The First Iranian Students Scientific Conference in Malaysia, 9 & 10 Apr 2011, UPM, Malaysia

Abstract

Developing mitigation measures are to avoid or minimize the magnitude of adverse consequences of delay causes that could threat the project objectives in terms of time, cost and quality. It is also vital to be aware of mitigation measures within the construction industry. The aim of the study reported in this paper is to develop mitigation measures for delays in construction projects. A comprehensive literature review from various sources through books, conference proceedings, the internet, and civil engineering journals was made to carry out the study. The study has found that thirty significant mitigation measures based on the different points of view from literature review. It is hope that this finding will be able to address issues and problems of delays in construction projects along with avoiding or minimizing these delays.

Author Keywords: Project Objectives; Construction Industry; Construction Project Delays; Adverse Consequences; Mitigation Measures.

Introduction

A construction project is commonly acknowledged as successful when the aim of the project is achieved in terms of predetermined objectives that are mainly completed the project on time, within budget and specified quality of the project. One of the most important problems that may occur in the construction project is delays and the significant of these delays varies considerably from project to project. Any disruptions to the project objectives will certainly contribute to project delays with its specified adverse effects on project objectives. Hence, mitigation measures for delays in construction projects are in order to avoid the negative consequences of delays in construction project that could treat the project success that is basically to gain the project objectives that are classically defined by the need to complete a project on time, within the budget, and with appropriate quality.

There are many factors that contributed to causes of delays in construction projects. These range from factors inherent in the technology and its management, to those resulting from the physical, social, and financial environment. Delays can give rise to disruption of work and loss of productivity, late completion of project, increased time related costs and third party claims and abandonment or termination of contract. Delays are costly and often result in disputes and claims. Therefore, mitigation measures will minimize or avoid the adverse consequences of delays in construction projects.

Causes of Construction Delays

There are many factors that contributed to causes of delays in construction projects. These range from factors inherent in the technology and its management, to those resulting from the

physical, social, and financial environment. Assaf et al., (1995) studied the causes of delays in large building construction projects in Saudi Arabia. Four most significant causes of delay from their study were included: approval of shop drawings; delays in payment to contractors and the resulting cash problems during construction; design changes and conflicts in work schedules of subcontractors. The problem of delays in the construction industry is a global phenomenon and the construction industry in Malaysia is no exception. Five most important causes that identified in this study were: (1) contractor's improper planning, (2) mistakes during the construction stage, (3) inadequate contractor experience, (4) inadequate client's finance and payments for completed work and (5) lack of communication between parties (Murali Sambasivan et al., 2007).

Minimizing Construction Delays

The success of construction projects is critically significant for all project participants especially for clients as well as the country economy and in bigger picture it affects contributing to country development. A research by Abdelnaser et al., (2005) concluded that in order to avoid delays during construction stage, you should make proper planning. Nguyen et al., (2004) studied the project success factors in large construction projects in Vietnam. A questionnaire survey was used to collect data from construction professionals. There were sixteen success factors that can be applied as a method in order to minimize construction delays whereas the five most significant methods were as follows: availability of resources; multidisciplinary/competent project team; competent project manager; accurate initial cost estimates and accurate initial time estimates.

Aibinu and Jagboro (2002) in their research identified two methods to minimize or if possible eliminate time overrun that were: acceleration of site activities and contingency

allowance. According to Odeh and Battaineh (2002), they recommended on improving the situation of construction project that the major method were: enforcing liquidated damage clauses and offering incentives for early completion. The significant minimization methods from Koushki et al., (2005)that was identified in their study for the minimization of time delays and cost overruns would require: ensure adequate and available source of finance until project completion; select of a competent consultant and a reliable contractor to carry out the work.

Findings

Based on the literature from the project success factors and minimizing delays in construction project, a total of thirty methods have been identified in order to avoid or minimize construction delays as shown in Table 3.1

Table 3.1**:** Methods of avoiding or minimizing delays in construction projects

NO	Methods of Avoiding or Minimizing Delays
1	Accurate initial cost estimates
2	Adopting a new approach to contract award procedure by giving less weight to prices and more weight to the capabilities and past performance of contractors
3	Perform a preconstruction planning of project tasks and resource needs
4	Selection of a competent consultant and a reliable contractor to carry out the work
5	Allocation of sufficient time and money at the design phase
6	Availability of resources
7	Commitment to projects
8	Competent project manager
9	Comprehensive contract documentation
10	Ensure adequate and available source of finance until project completion
11	Frequent progress meeting
12	Enforcing liquidated damage clauses

13	Offering incentives for early completion
14	Hire an independent supervising engineer to monitor the progress of the work
15	Multidisciplinary/competent project team
16	Use up to date technology utilization
17	Absence of bureaucracy
18	Accurate initial time estimates
19	Adopting new approaches to contracting such as Design-Build (D/B) and
20	Construction management (CM) type of contracts
21	Awarding bids to the right/experience consultant and contractor
22	Clear information and communication channels
23	Developing professional and skillful of human resources in the construction industry through proper training and classifying of craftsman
24	Effective strategic planning
25	Ensure timely delivery of materials
26	Proper emphasis on past experience
27	Community involvement
28	Systematic control mechanism
29	Acceleration of site activities
30	Contingency allowance.

Conclusion

Developing the mitigation measures in construction projects has been recognized as a significant process in order to avoid or minimize the negative consequences of delay causes.

This study thus provides the professional parties such as clients, contractors, consultants and designers involving in construction projects to select appropriate strategies that may be adopted to avoid or mitigate the adverse consequences of delay causes in construction projects that could threat the project objectives in terms of time, cost and quality by focusing on the mitigation measures that have been provided for this propose.

References

Abdelnaser O., Peter J.N., Mahmood A., Hussin A., and A H. Aziz. (2005). Causes of construction delays: case studies in Langkawi Island, Malaysia, Paper presented at International Conference on built environmental in Kuala Lumpur, Malaysia, organized by University of Malaya.

Aibinu, A. A. and Jagboro, G. O. (2002). The effects of Construction Delays on Project Delivery in Negerian Construction Industry. International Journal of Project Management, Elsevier, **20**, 593-599.

Assaf, S.A., Al-Khalil, M. and Al-Hazmi, M. (1995). Causes of Delay in Large Building Construction Projects. Journal of Project Management in Engineering ASCE, **2**; 45-50.

Koushki.P.A, Al-Rashid.K and Kartam.N. (2005). Delays and Cost increase in the Construction of Private Residential Projects in Kuwait. Journal of Construction Management and Economics, **23** (3), 285-294.

Murali Sambasivan and Yau Wen Soon. (2007). Causes and effects of delays in Malaysian construction industry. International Journal of Project Management, **25** (5), 517-526.

Nguyen, L.D., Ogunlana, S.O. and Lan, D.T.X. (2004). A Study on Project Success Factors in Large Construction Projects in Vietnam. Journal of Engineering, Construction and Management, Emerald, **11** (6), 404-413.

Odeh, A. M. and Battaineh, H.T. (2002). Causes of Construction Delay: Traditional Contracts. International Journal of Project management, Elsevier, **20**, 67-73.