

CAUSES OF DELAY IN THE EXECUTION PHASE OF CONSTRUCTION PROJECTS IN KHYBER PUKHTOONKHWAK PAKISTAN

Muhammad Ali Musarat, Omair Inderyas, Sheharyar Khan, & Dr. Abid Ali Shah,
Department of Civil Engineering, Sarhad University Of Science & Information Technology, Peshawar,
Pakistan.

Email: muhammadalimusarat@yahoo.com

Abstract

Construction phase is the big problem in large construction business in the Islamic Republic of Pakistan. The construction of large industry plays important role for economy growth, development and evolution in the Islamic Republic of Pakistan. Delay causes a wide range of negative impact on construction projects. Current research focuses on the main flaws which impart delay in projects in sight of various industrial stakeholders which are clients, consultants and contractors. Current study is intended to identify and evaluate the factors causing delay and effects of delays in construction projects of Khyber Pukhtoonkhwa, Pakistan. The survey was conducted through validated questionnaire from structured interview and pilot survey to collect the responses on the causes of delay and delay effects. Client, consultants, and contractors were asked by questionnaire on the causes and effects of the delays. To analyze the data, statistical formula used to calculate the importance of the causes and effects of the delay through Relative important index (RII). After the outcome of the research fifteen (15) factors to cause delays and nine (9) factors of the effects of delays are examined. The top ranked of the reasons for the delays is the lack of Fund to finance the project to completion. While the top ranked of the effects of the delays is time overrun. By adding weight to these factors of trust in the people of the province will be restored to the correct way of mega-projects. Also provide these crucial attention factors, projects can be abstained from more than budgeting and will be useful to gain time and work area.

1. Introduction

Development of the construction industry is very important area in developing countries. There are different problems which delays the project duration worldwide. In construction industry, to cover specific data overflow or stack overflow where all the parties have agreed on the deadline for delivery of construction project refers to construction delays. Client, income, productivity, self-reliance on existing facilities, lack of leasable damage refers to construction delays. Efficiency of the construction work is specified by the timely completion of the project. There are several causes to the delay in the time completion of project which leads to the negative effects. It's rare that larger projects completed on set time. Many projects has been suspended or delayed due to the delays effect in KP. In most countries, experience and the literature reveal that the projects must be finalized earlier the project deadline and within set budgeting amount. That's why projects profitability is critical due to delay causes. These issues have been recognized to distress the delays in construction projects, affect the performance of enterprise and the overall country economy. The delays are directly linked to affect the time, quality and cost of a project. A project is known as successful when it's completed on the desired set of time within the

budget. The research is useful to identify the causes perceived by the different stakeholders of the construction industry.

2. Literature Review

Knowing the delays in construction causing something to do later than planned, or for not acting in time something. The delay could affect any activity to work on chronology and results in many problems between the parties Trauner et al. (2009). Delays are widely known as the common risky issues in projects. Because of which the prime duration in terms of money and performance from contractor and client perspective often rows and complaints tip to lawsuits Alaghbari, et al. (2007).

Majid (2006) mentioned that delays can be overcome by adopting the causes for betterment. Many researchers in different countries studied the factors contributed to delaying the project. Delay is a state where different stakeholder together or individually contributed with noncompeting project within the agreed period of contract.

Assaf and Al-Hejji, (2006) examined the delays causes in large building construction projects in Saudi Arabia. They evaluated 73 factors which causes delay. They classified these factors in 9 different groups. Approval of plans, design errors, design changes by owners during construction, monetary problems and slow decision-making process, delays in the payment of contractors, excessive bureaucracy in organization project, owner and underemployment and inadequate job skills were the some of the most important causes for the delay.

Frimpong and Oluwoye (2003) identified the delay causes in the construction of water projects in Ghana. Financial and economic conditions of project and natural materials were the major causes for delays. It was according to client, consultant and contractor's perspective.

The delay in projects occur and appreciate it significantly different from project to project. Some of the projects of the program only a few days back. Some with more than a year of delay. Therefore, it is essential to define the real causes of delay to minimize and avoid the delay in the construction of each project. This debilitating impact on contractors and consultants in terms of growth in hostile relations and mistrust, litigation, arbitration, cash flow problems and a general feeling of fear towards other stakeholders Ahmed et al. (2003).

Al-Moumani (2000) investigated the reasons for the delay in public projects in Jordan, 130 results showed major flaws for the delays in the construction projects regarding late delivery and economic conditions, designers and user changes, weather and site conditions.

Chan and Kumaraswamy (1998) examine the reasons for the delay in building Hong Kong as told by client, consultant, and contractor, examined the factors that affect efficiency. Survey showed variances in views of relative importance of factors containing late delivery and economic conditions payment for work performed, late delivery and economic conditions poor contract management, material shortages, improper planning and changes to site conditions.

Mezher and Tawil (1998) the causes of the slowdown in the construction sector in Lebanon from the point of view of owners and contractors and architectural firms. It was found that the owners are more concerned about the financial entrepreneurs is the most important advisors of contractual relations and issues, project management is the most important reason for the delay.

Odeyinka and Yusif (1997) examined the reasons for the delay in construction projects in Nigeria. They classified the causes of delays as contributors in the project and external factors. Include delay of discrepancies in client orders and slowly making process and cash flow problems. Delays on contractor specific: financial difficulties, problems with materials management, planning and scheduling problems and on-the-spot checks and equipment management problems and a lack of manpower.

3. Research Methodology

Relevant literature review was carried out to identify the causes of delay. Once the causes were identified, structured interview was done to change the causes as per the environment of Pakistan. After structured interview questionnaire was developed on likert scale and pilot survey was carried out. After the pilot survey questionnaire was randomly distributed among the main stakeholders of construction industries who are contractor, consultant and client to get the relevant feedback from them. After the collection of data different statistical tests were performed on SPSS and MS Excel to check the reliability, normality and Relative importance index of the gathered data.

3.1 Data Collection

This chapter shows the results of questionnaire data, collected and analyzed using SPSS and MS Excel. Questionnaire emails, posts, personal contacts and conveyed through interviews. The total number of questionnaires distributed to both the contractor and clients are 110 sets containing 101 sets of contractors and clients. 92% percent of the surveys are distributed, while consultants consist of 10 percent of the survey have been distributed as shown in figure 1. The total is divided by 110 sets questionnaire on both clients and contractors at their meeting and 20 is divided by consultants.

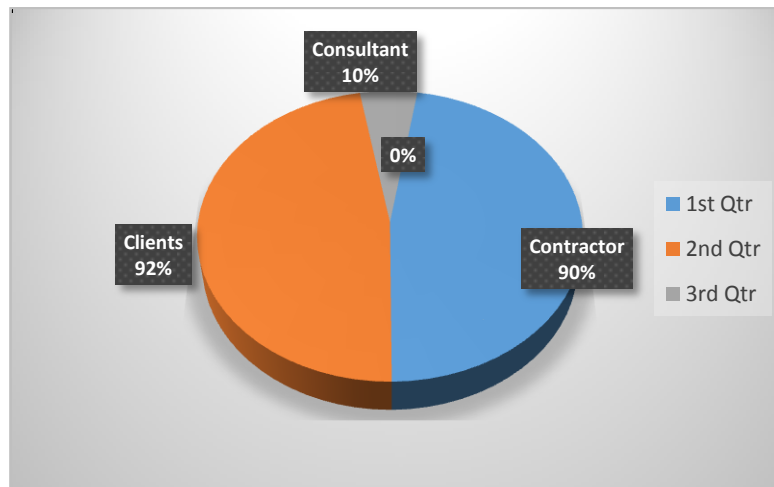


Figure 1 Respondents Percentage

3.2 Analysis of Results

The purpose of analysis is to evaluate the causes influencing the project delays as mentioned below:

3.2.1 Cronbach's Coefficient Alpha Method

This method is based on reliability of data stored, Likert scale used to check. If its value is 0.7 or higher goes out, this indicates that the data are adequate for further study. The Cronbach alpha value for this study as given in table 1 and 2, using SPSS is 0.71 and 0.734.

Table 1: Case Summary: Cronbach's Alpha Value (Factors Causing Delay)

Case		N	%	Cronbach's Alpha	0.71
	Valid	102	102		
	Excluded ^a	0	0	Number of Items	15
	Total	102	102		

a. List wise deletion based on all variables in the procedure

Table 2: Case Summary: Cronbach's Alpha Value (Effects of Causing Delay)

Case		N	%	Cronbach's Alpha	0.73
	Valid	102	102		
	Excluded ^a	0	0	Number of Items	9
	Total	102	102		

a. List wise deletion based on all variables in the procedure

3.2.2 Normality Test

General data collected for testing normally, parameter or no parameter data to find distributed or not to be executed. Since the sample size is at least 2000 Shapiro-Wilk test normal test normal distribution of the data collected shall be carried out. The beginning of the value data value 0, which is less than 0.05 are necessary criteria as a whole. Data General parametric statistical techniques for use can be consumed. Shapiro Wilk a test result not parametric test for further analysis, the necessary data is not distributed normally shown in table 3 and 4.

Table 3: Shapiro Wilk Test Results (Factors Causing Delay)

Code	Sig.	Code	Sig.
CD1	0	CD3	0
CD2	0	CD4	0
CD5	0	CD6	0
CD7	0	CD8	0
CD9	0	CD10	0
CD11	0	CD12	0
CD13	0	CD14	0
CD15	0		

Table 4: Shapiro Wilk Test Results (Effects of Causing Delay)

Code	Shapiro-Wilk Test
	Sig.
ED1	0
ED2	0
ED3	0
ED4	0
ED5	0
ED6	0
ED7	0
ED8	0
ED9	0

3.3 Kruskal Wallis Test

Kruskal Wallis test table 5 and 6 here show much greater importance ($0.61 > .05$), which means that the success of the construction projects relating to the factors that cause the delay changed the perception of artists not major differences between categories. Kruskal Wallis test result (the factors that cause delays) below:

Table 5: Kruskal Wallis Test Result (Factors of Causing Delay)

Code	Asymp. Sig.
CD1	0.61
CD2	0.57
CD3	0.51
CD4	0.49
CD5	0.48
CD6	0.45
CD7	0.43
CD8	0.4
CD9	0.39
CD10	0.37
CD11	0.36
CD12	0.34
CD13	0.32
CD14	0.3
CD15	0.26

The Kruskal Wallis Test Result (Effects of Causing Delay) below:

Table 6: Kruskal Wallis Test Result (Effects of Causing Delay)

Code	Sig.
ED1	0.61
ED2	0.59
ED3	0.56
ED4	0.45
ED5	0.41
ED6	0.34
ED7	0.29
ED8	0.12
ED9	0.11

3.4 Factors Causing Delay in Construction Projects

Respondent's factors rank 1 to 5 to a scale. Forty-four recognized factors and into five groups as shown in table 7 and top five ranked in figure 2. Importance level and order rank was calculated using Relative importance index (RII) through MS Excel.

Table 7. Factors Causes of Delay of Projects to build Rankings

#	Factors causes of delay	RII	Rank
1	Lack of fund to finance the project to completion	0.81	1 st
2	Slow decision making	0.8	2 nd
3	Fluctuation in prices of building materials	0.76	3 rd
4	Mistake during construction stage.	0.77	4 th
5	Equipment availability and failure	0.78	5 th
6	Mistake and discrepancies in contract document	0.76	6 th
7	Bad weather.	0.75	7 th
8	Lack of effective communication among the parties involved	0.72	8 th
9	Labour strike.	0.71	9 th
10	Changes in drawings	0.7	10 th
11	Variations	0.67	11 th
12	Lack of adequate information from consultants	0.66	12 th
13	Project management problem	0.58	13 th
14	Inappropriate overall organizational structure linking to the project	0.56	14 th
15	Contractor's insolvency	0.55	15 th

Figure 2: Group Wise Ranking

3.5 Effects of Const Delay

The factors resulting in delays effect is shown in table 8 and figure 3 below:

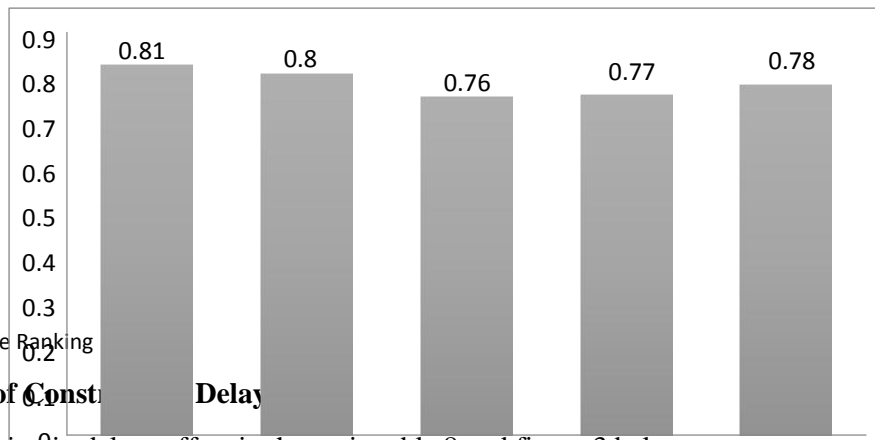
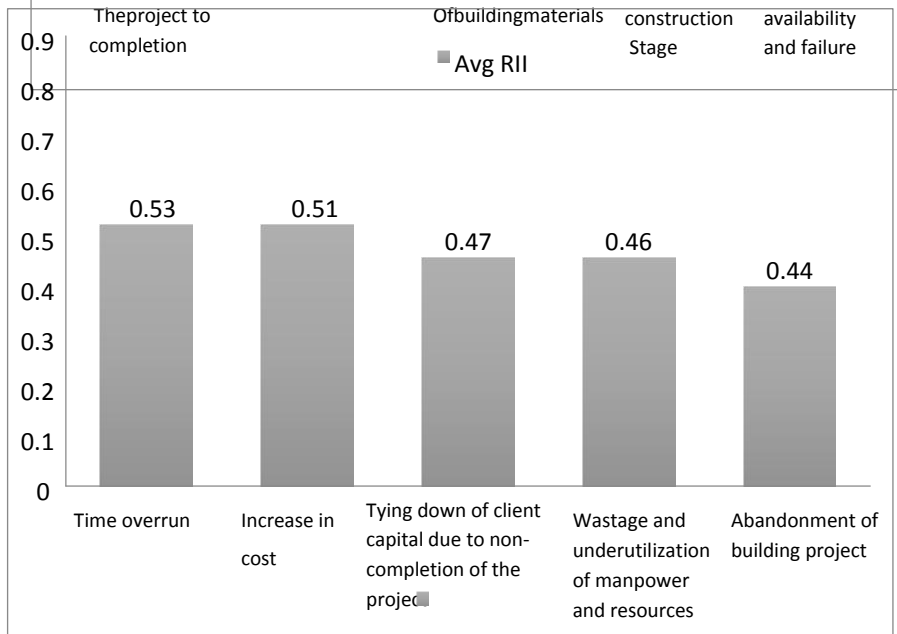


Figure 3: Ranking of



Group Wise Factors

Table 8. Effect of

Result of Delays

#	Factors causes of delay	RII	Rank
1	Time overrun	0.53	1 st
2	Increase in cost	0.51	2 nd
3	Tying down of client capital due to non-completion of the project	0.47	3 rd
4	Wastage and underutilization of manpower and resources	0.46	4 th
5	Abandonment of building project	0.44	5 th
6	Reduced profit	0.42	6 th
7	Dispute between parties involved Litigation	0.39	7 th
8	Arbitration	0.34	8 th

4. Conclusions

The research done by these factors are made on the basis of the following results:

- Appropriate monitoring by qualified professionals will overcome the effects of delay from the starting phases to end.
- Increase in cost and time overrun directly affects the construction projects.
- Definite project interval had substantial effects due to delay which can be overcome by controlling all the mentioned causes.

References

- [1] Twyford, J. (2007). Liquidated Damages: A Comparative Study of the Law in England, Australia, New Zealand and Singapore. *Journal of Professional Issues in Engineering Education and Practice*.
- [2] Othman, A.A. (2006). Factors Influencing the Construction Time of Civil Engineering Projects in Malaysia, *Engineering Construction and Architecture Management*.
- [3] Odeh, A.M. & Battaineh, H.T. (2002). Causes of Construction Delay: Traditional Contracts. *International Journal of Project Management*.
- [4] Majid, I.A. (2006). Causes and Effects of Delays in Aceh Construction Industry. Master of Science in Construction Management. University Technology Malaysia.
- [5] Naha, N.E. (2008). Project Delay in Construction. Degree of Civil Engineering (Construction Management). University Technology Malaysia.
- [6] Sambasivan, M. & Yau W.S. (2007). Causes and Effects of Delays in Malaysian Construction Industry. *International Journal of Project Management*.
- [7] Manavazhia MR, Adhikarib DK. Material and Equipment Procurement Delays in Highway Projects in Nepal. *International Journal Project Management*.
- [8] Bassioni, H.A. & El-Razak (2008). Causes of Delays in Building Construction Projects in Egypt. *Journal of Construction Engineering and Management*.
- [9] Theodore J. Trauner Jr. et al. (2009). Types of Construction Delays. *Construction Delays*.