

## Causes of Delays in Construction Projects in Faryab/Afghanistan

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### ABSTRACT

One of the most important goals in construction projects management is to complete the project in a certain time. Projects success can be considered as doing work at a reasonable cost, quality and at the right time and delay is one of the most important and frequent phenomena in construction projects and in terms of cost, quality and time has a negative impact on project success.

From in-depth literature studies, twenty-three causes of delay were identified. Questionnaires were then developed and sent to 50 carefully selected construction industry stakeholders including: clients, contractors, and consultants in Faryab/Afghanistan.

In this research, the causes of delays in construction of Maimana city urban asphalt road 32.805 km projects have been identified. Numerous factors such as: insecurity, corruption, low experience of the contractors technical team, late payment of invoices by the project owner, poor management and monitoring of the site by the contractor and Contractor's joint venture can cause delays in projects.

**Keywords-** Construction Projects, Delay Causes, Faryab

### I. INTRODUCTION

Delay is one of the major issues in the construction industry. Trauner et al. (2009) defined that delays in construction cause a number of activities not to be performed on time, and cause activities to be performed after the planned time, or not performed on time.(9)

Delay can affect any activity of work in a schedule and results in many problems between parties.

According to Al- Khalil & Al-Ghafly (1999), delays have adverse effects on project stakeholders, such as project owners, contractors and designers. Delays for the project owner will reduce the provisions and for the contractor will increase costs, additional building materials, labor costs for employees because the project takes more time than planned.(1)

To complete the projects on time, the implementation of infrastructure projects in each region will increase the welfare and economic indicators in that region.

Maimana city urban asphalt road 32.805 km project, as one of the largest urban infrastructure projects, is one of the national projects that directly affect Public health is related to the community, which requires a heavy budget and a long time to implement. Therefore,

delays in such projects, in addition to causing irreparable economic damage, cause more pollution of weather, surface waters and, of course, create a crisis in the environment and endanger public health.

Therefore, proper and efficient planning and management is necessary to be able to operate the projects in the estimated time, estimated cost and appropriate quality. Thus, reviewing and identifying the causes of delays and prioritizing and determining the impact of each of them on the main objectives of the project, time, cost and quality can be a great help to project management to do future projects better and a suitable solution for provided control and reduction of these delays.

### II. PROBLEM STATEMENT

One of the most important issues that need special attention today is the issue of optimal project management, and delay is one of the most important and frequent phenomena in projects and in terms of cost, quality and time has a negative impact on project success. Prolongation of construction projects, in addition to spending more financial resources for reasons such as inflation and rising prices, reduces the quality and impossibility of timely operation of projects. Also, by using the results and identifying the causes of delays that are likely to occur in these projects, effective planning can be done before the start of the project to prevent the occurrence or minimize their impact on the main objectives of the project. Unfortunately, in Afghanistan, less knowledge has been used in the implementation of projects.

The main purpose of this study is to investigate, identify and prioritize the causes of various delays in the Maimana city urban asphalt road 32.805km project in the area covered by Faryab province public Works directorate, Maimana city, and considering the direct effect of delays on cost and quality of the project, the impact of each These delays on the time, financial and quality goals of the project have been studied and studied in order to provide appropriate solutions to reduce or eliminate these factors.

### III. RESEARCH BACKGROUND

Delays in projects due to their special complexity are undeniable. Due to the direct relationship between project execution time and cost, increasing

execution time often leads to increased costs, so delays in project completion cause severe damage to project objectives. In order to investigate the subject of research after defining the delay, the types of delays are classified.

**Delay:** Any deviation from scheduled agreements due to internal and external factors of the system is called a delay.

**Project Delays:** The difference between the estimated time to complete a project and the actual completion time is called a project delay. This delay will be equal to the sum of the delays of the existing activities on the critical routes.

Turner et al. (2009) and William Ackerman & Eden (2003) define delays in doing work longer than expected. (9)

Assaf and Hejji (2006) have defined the definition of delay from different points of view of the employer and the contractor.(7)

According to the contractor, delay means an increase in overhead costs, inflation of equipment prices and an increase in manpower wages, and from the employer's point of view, a decrease in revenue and profits.

Y. Frimpong et al. (2003) by examining the opinions of Ghana employers, consultants and contractors, the problems of monthly payments by organizations, contractors' management weaknesses, raw material supply, poor technical performance and the constant increase in initial prices are the most important reasons for delays in Construction projects stated.(3)

Duy Long et al. (2004) with emphasis on the impact of geographical variables during the implementation of projects and also collecting the views of groups involved in the implementation of Vietnam development projects, incompetence of designers and contractors, change of managers and poor forecasts, Social and technical issues such as land and buildings and inappropriate techniques and tools were introduced as the most important causes of delays in construction projects, respectively.(2)

Manavazhi et al. (2007) in Nepal also examined the factors causing delays in the implementation of 22 highway projects, respectively organizational weaknesses, negligence and shortcomings of suppliers of raw materials, government laws and regulations and the existence of delays in the transportation system. The main causes of the delay were announced.(4)

Ndekugri et al. (2008) In a study conducted in Egypt in the field of construction industry in Egypt, the most important factors causing delays were listed in the following order: Contractor liquidity problems, change in project scope And interventions made by the employer, lack of proper financing of the project by the employer.(5)

Odeh and Battaineh (2002) discuss the reasons for the delay in construction projects in Jordan. Employer interventions, contractor insufficient experience, financial and payment problems, labor force effectiveness, late

decision making, improper planning and subcontractor problems are the most important reasons for delays in this research.(6)

- Long et al. (2004) examined the problems of large construction projects in Vietnam. He divides the problems into five main categories: incompetent designers and contractors, inaccurate estimation and poor change management, technical and social issues, workshop-related issues, and inappropriate tools and techniques.(2)

Assaf and Sadiq (2006) conducted a study on the reasons for project delays in Saudi Arabia from the perspective of the employer, contractor and consultant. The most important reasons known from the contractor's point of view include delays in payments by the employer, delays in reviewing and approving design documents by the consultant, errors and defects in design documents, late equipment supply, and inflexibility of the consultant and late decisions of the employer.(7)

Tumi et al. (2009) identified the causes of delays in the construction industry in Libya. 6 main reasons for improper planning delays, lack of effective communication, design errors, lack of materials and equipment, late decision making and financial problems have been identified.(8)

#### IV. SUMMARIZING AND PRESENTING THE CONCEPTUAL MODEL

According to the library research and the results obtained from research conducted by domestic and foreign researchers (a total of 60 articles including 18 foreign articles, 19 domestic articles related to before 2011 and 23 internal articles from 2011 onwards) of the 23 factors identifying the effective delay in construction projects mentioned in these articles, due to the fact that for data analysis by AHP phase to phase hierarchical method, 23 factors affecting the delay as an analysis option and due to the problem The extent of the calculations makes it very difficult to study them, and it can even be said that prioritizing these factors in a very time-consuming phase to phase hierarchical method greatly increases the errors, so considering these cases and also considering that these factors It has an overlap with each other and these factors can be combined to reduce the options in terms of all the factors. Therefore, according to the above, the seven main factors that have been identified in this study and were selected as the most important factors to cause delay in order to prioritize them in phase to phase hierarchical analysis are:

1. Client financial problems
2. Changes and errors in design
3. Contractor Weakness management
4. Client change order
5. Insufficient experience of contractor
6. Contractor financial problems
7. Contractor's joint venture problems

In a similar action, the criteria that researchers have presented to prioritize the factors affecting the delay in their research have been in the form of three criteria of

time, cost and quality, which according to the above cases, the conceptual model of the present study is presented as follows:

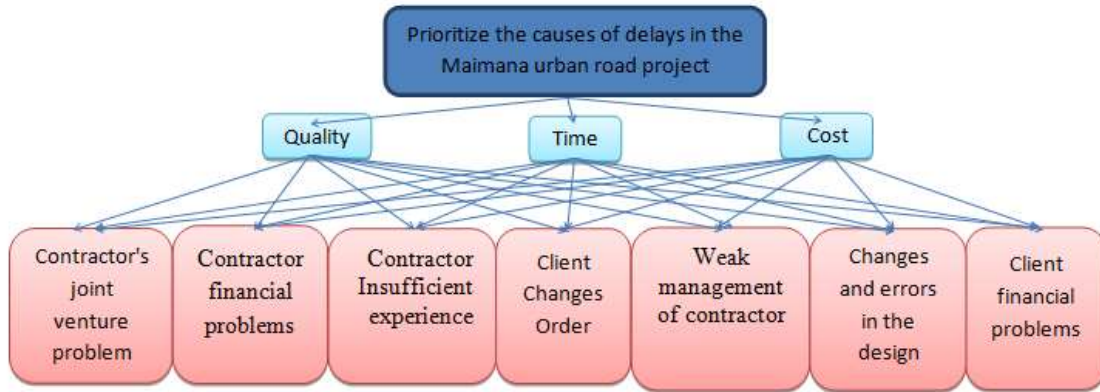


Figure1: Conceptual model of research according to AHP method

V. RESEARCH METHOD

The choice of research depends on the goals and nature of the research and its implementation possibilities. The present research is descriptive-analytical and applied in terms of purpose. In order to collect data in this research, two methods were used; library and field. Information has been collected through library research, study and review of articles presented in seminars and journals across the countries about the problems of development projects and review of documents of projects of the urban asphalt road Companies.

Then, in order to determine the importance and prioritization of the factors affecting the delay of the urban asphalt road project, a questionnaire was designed

according to the phase to phase expert questionnaire format and provided to 15 experts including 5 employers, 5 consultants and 5 project contractors. One of them have a doctorate degree and 14 of them have a master's degree and are senior managers of their collection and have a history of more than 20 years. A questionnaire containing the criteria and options specified in the conceptual model of the research.

In this study, in order to analyze the information obtained from the data obtained from the expert questionnaire, AHP phase to phase hierarchical analysis method has been used. However, in this study, the 2009 Gammas table was used to obtain phase to phase numbers and the Baldwin method was used to rank. According to AHP phase.

Table 1: Verbal expressions for pairwise comparisons to express degree of importance (Gammas 2009)

Phase to phase number	Language variable	Phase to phase number scale
1	Equal	1:1:1
2	Very little superiority	1:2:3
3	Slightly superior	2:3:4
4	Superior	3:4:5
5	Good	4:5:6
6	Fair	5:6:7
7	very good	6:7:8
8	Excellent	7:8:9
9	Absolute superiority	8:9:10

VI. RESULTS

In general, by analyzing the data and studying the previous research and collecting related information

and categorizing the information obtained from the answers obtained from expert questionnaires, the most important factors affecting the delay in Maimana city urban asphalt road 32.805km project can be identified in

five The category includes delays due to the performance of the employer, consultant, contractor, equipment and

manpower, and various rules and regulations and is summarized in the following table:

**Table 2: Reasons for delays in construction projects**

Row	Group	Reasons for delays in construction projects	Row	Group	Reasons for delays in construction projects
1	Client	Weak performance in coordination between (contractor, consultant Client)	13	Contractor	Prioritize the execution of the work and select the contractor due to the low price offer
2		Excessive change orders from the Client	14		Weakness in the executive management of the contractor
3		The Client makes a slow decision	15		Lack of planning or weakness in project planning and control (contractor)
4		Client financial problems	16		Insufficient contractor experience
5		Client technical weakness in controlling and reviewing studies Performed by a consultant	17		Contractor financial problems
6	Consultant	Low accuracy volume estimation	18	External laws and regulations and factors	Delay and poor performance of contractors except
7		Design change or design error	19		Changes in government regulations and laws and regulations
8		Managerial and technical weakness in the monitoring device	20		Contractor's joint venture problems
9		Insufficient experience and poor qualification of consulting engineer (monitoring team)	21		Unknown underground factors that were not predictable during the study period
10	Equipment and manpower	Lack of skilled manpower	22		Weather and weather conditions
11		Weakness in technology	23		High inflation in the country
12		Lack of materials and unavailability and lack of equipment	24		

According to Table 2 and data analysis in this study, in order to prioritize seven factors affecting the delay event, AHP phase to phase hierarchical analysis method was used. For this purpose, to calculate the final

weight of each option, the average method was used. Baldwin method has been used arithmetically and for ranking and the results of this ranking is specified below.

**Table 3: Reasons for delays in construction projects**

Ranking of factors affecting project delays		
Option	Summary of comments	
	Preference	Ranking
Client financial problems	0.45	1
Contractor financial problems	0.22	2
Contractor's joint venture problem	0.11	3
Client change order	0.03	4
Design change and error	0.06	5
Weak contractor management	0.09	6
Insufficient contractor experience	0.10	7

According to Table No3, the financial problems of the employer have the greatest impact on the occurrence of delays and have the first priority, followed by the financial problems of the contractor and the Contractor's joint venture problem in the second and third categories, respectively.

The order of the employer's changes and changes and design errors are in the fourth and fifth ranks, and the least impact is due to the weakness of the contractor's management and insufficient experience of the contractor.

Meanwhile, the three factors of the employer's financial problems, the contractor's financial problems

and the Contractor's joint venture problems have a much greater impact and multiplication than other factors affecting the delay in the Maimana city urban asphalt road 32.805km project.

In analyzing the data obtained from expert questionnaires and identifying the most important factors as well as prioritizing their importance and impact on the delay in the project of Maimana city urban asphalt road 32.805 km project in examining the impact of these factors on cost, quality and project time according to the amount The importance of the following items was identified, which is summarized in the table below.

**Table 4: Importance of criteria in terms of the effects of delay factors**

Comparison of criteria preference		
Criteria	Collect comments	
	Preference	Ranking
Cost	0.6	1
Quality	-0.17	2
Time	-0.36	3

According to Table 4, it can be stated that the factors affecting the delay of Maimana city urban asphalt road 32.805km project have the greatest impact on the cost of projects in terms of time and quality, and the importance of costs added to the project is the first priority and for those involved. The project and its managerial and executive factors The importance of increasing the financial burden and additional costs imposed on the project due to delays, the main factors of which were identified and ranked in this study, is more important than the other two criteria, quality and time.

Complete according to the opinion of all experts and also expressed separately by the opinion of the employer, consultant and contractor experts.

Considering the calculation of the relative weight of the cost, time and quality criteria obtained by the arithmetic mean method and according to all experts, and according to the comparison between them by the Baldwin method, their preference over each other has been determined that the cost criterion is preferable. 0.6 has the most impact and degree of preference and has about 7 times the time and 6 times the quality has the



advantage and also the quality with the preference - 0.17 after the cost has the highest preference and about 2 times the time has the preference and in the meantime the time with the preference - 0.36 It has the lowest priority.

In general, it was shown that according to experts working in the field of responsibility of the employer, consultant and contractor, the cost is the most influential among the indicators, and then quality has the most impact and is at the end of time, so In Maimana city urban asphalt road 32.805km project, the cost criterion is much more important than quality and time.

## VII. CONCLUSION

A large number of Public Construction projects in Afghanistan are not implemented on time; due to several factors delay arises, so the construction projects fail to meet their contract time and project delay negatively impacts the development process of the country. The objective of this research was to identify the main causes of delay that affect Construction projects in Maimana/Afghanistan. Construction delay is a critical function in construction projects. Construction delay in this study is explained through literature review and field survey. Through in-depth literature review 23 causes of delay were identified, the factors combined into seven groups.

In this research, the causes of delays in construction of Maimana city urban asphalt road 32.805 km projects have been identified. Numerous factors such as: insecurity, corruption, low experience of the contractors technical team, late payment of invoices by the project owner, poor management and monitoring of the site by the contractor and Contractor's joint venture can cause delays in projects.

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