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Assessment of Risk Management at the Design Stage of Construction Projects in Afghanistan

By Mohammad Alem Wardak & Engineer Madiha Salangyar

Kabul Polytechnic University

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Assessment of Risk Management at the Design Stage of Construction Projects in Afghanistan

Mohammad Alem Wardak ^α & Engineer Madiha Salangyar ^σ

Abstract- In this study, as identified above, the identification of the critical factors afterwards how the management and prevention of possible risks in the design phase of the construction project are investigated, rather than the problems and shortcomings encountered in this phase of the project. Successful completion of this research will help us identify hazardous items in the design phase of construction projects, and what steps should be taken to eliminate or minimize these risks.

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I. INTRODUCTION

The importance of this issue is heightened when the Afghan government has prepared long-term plans for the development of approximately one million affordable housing units with appropriate living standards. Due to the findings of the Ministry of Urban Development and Independent Bureau of Local Authorities, Kabul Municipality and UN Habitat Research, Afghanistan's urban population has been increasing from 20% to 24% due to urban migration in the past two years. In the absence of housing, about 1.5 million have been observed over the years. Kabul as the largest center of internal migration represents 10% annual growth over the past decade, also, sources indicate that 78% of citizens seeking housing are in critical condition, according to the above report, housing problems are one of the most serious social issues in Afghanistan, especially in Kabul. So it is imperative that you pay close attention to this issue and develop comprehensive plans for addressing and resolving this issue and manage it properly. In Afghanistan, risk management will be one of the steps that will help to make these programs a reality. Given the importance of this issue, it requires a comprehensive research to identify the sources of risk and how to manage it realistically, the questions of this research are divided into two types of open and closed questions. These two types of questions are considered as questionnaire and interview form. The questions addressed in the questionnaires are quantitative and closed-ended questions that were scored by the participants. Points

are given, that is, by choosing 1 of 5 options, From 1 to 5, respectively, from 5 to 1 enormous.

a) *Research Goals in Brief*

Identifying the sources of risk
Get comprehensive solutions
Prevent similar occurrences in future projects
Accelerate the design phase of future construction projects

b) *When is Risk Analysis needed?*

Risk assessment is useful in many situations.

For example:

1. When planning a project, to help predict and neutralize potential problems.
2. When you are deciding to go with a project.
3. When you plan to increase the level of safety and potential risk management in your workplace.
4. Be prepared for events such as equipment and technology failure, theft, employee illness, or natural disasters.

c) *How to use Risk Analysis?*

To apply the risk analysis, follow these steps:

1. Identify threats
 - 1:1 the first stage of risk analysis is to identify existing and occurring risks. Risks that may be encountered.
 - 1:2 Prepare a list briefly to check that there is a threat or not?
 - 1:3 what are some issues that may harm you?
 - 1:4 Ask people who have different views
2. Risk Assessment
 - 2:1 once you have identified the threats, it is necessary to calculate the probability of the two cases: Threats and their impact. One solution is this: Find the accurate estimate of the probability of occurrence of event, and then multiply this value to the expense of occurrence of the event and doing it right, this will give you a risk value.
 - 2.2 Value of risk = probability of occurrence x cost of occurrence.

As a simple example: Imagine you have identified the risk that rent accommodation to substantially increase: You think that there is 80% chance of this happening next year, because your landlord has recently increased rentals for other businesses. If this happens, next year your business will cost extra \$ 500,000.

Author α: Post-Graduate Student, St. Petersburg State University of Architecture and Civil Engineering Lecturer, Kabul Polytechnic University. e-mail: alem.wardak.kpu@gmail.com

Author σ: e-mail: salangyarmadiha@gmail.com

So the value of the risk of increased rent equals:
 0.8 (probability of occurrence) \times 500000 (fee happen)
 = 400000 (Risk value).

3. How to manage risk

3:1 once you have identified the value of the risk you are facing; you can look for a way to manage it. (Mehta Arjmand, 1396).

4. Divide the risk

4:1 You can also divide the risk with people, Groups, Organizations or other third parties as a result of the possible risks.

For example: When you cover your office building or company property list with insurance of the third party, or when you partner with another organization at the beginning of product development, you have shared the risk with them (Mehta arjmand, 1396).

5. Accept risk

5:1 Your last choice is risk acceptance. This is usually the best option for situations where risk cannot be avoided or mitigated, When the potential risk loss is less than the cost of insurance to prevent risk, or when the potential benefit is at the risk of accepting the risk.

6. Risk control

6:1 if you have chosen a risk-taking solution, there are ways to reduce the impact. Past experiences are

effective ways to reduce risk. Experienced managers do risky things in smaller and more manageable dimensions. You can use the results of previous tests to identify the location of the risk and take preventive action before performing large-scale work.

Research Methods: We are trying to clarify the facts and find ways to bring us closer to the goal. The research method of this article is divided into two sections.

1. Questionnaire
2. Interview

The two sections are divided into 5 departments and projects with 60 expert participants. Participants in the two sections of the questionnaire and interview presented their opinions separately. The data were analyzed using SPSS software. Choosing this app to get right and accurate statistics and numbers is intended to make the results work and useful.

1. *Questionnaire:* The questions raised in the questionnaires are as follows.
 1. Which of the following is the main cause of the crisis (risk) in the design phase of construction projects?

Table 1

No.	Value	Very low	Low	Medium	Much	Very much
	Number	1	2	3	4	5
1	Lack of unit management in the project					
2	lack of coordination of the project team					
3	Lack of cooperation from related departments or presidency					
4	Lack of work ethics (managerial)					
5	Internal competition (Negative competition)					
6	Lack of transformation management (inability to lead new ways in the project)					
7	Appointing non-technical people in charge					
8	The planning team imbalance in knowledge					
9	Management weaknesses in not recognizing project strengths and weaknesses					
10	Appointment of people with low knowledge level					
11	Change and renewal of plan					
12	Lack of planning and communication in the project					
13	Lack of office facilities to carry out project work					
14	Sophisticated design and detail (Details) inadequate about it					
15	Delay in drawing and issuing drawings					
16	Lack of risk management in projects					
17	Conflict in project priorities					
18	Poorly organized office project					
19	Involvement in many projects at the same time					
20	Vandalism, disruption and unforeseen side effects					
21	Lack of attention to cultural issues and social norms in building design					
22	Inadequate design and plan information for accurate estimation and planning					

23	The lack of a specific timeline for the regular development of design					
24	Poor control of the design flow and its development					

2. Which of the following is the most critical factor in the risk-taking phase of project design?

Table 2

No.	Value	1	Very low	Low	Medium	Much
			2	3	4	5
Number		1	2	3	4	5
1	Waste of time					
2	Monetary inflation					
3	The rising prices of materials (market risk)					
4	Exchange rate fluctuations					
5	Delays in project					
6	Canceled project					
7	Poor management's perception of the country and lack of confidence from donors in the future					
8	Failure by donors to read interior design processes					
9	The emergence of the deteriorating security situation					
10	Political changes					

2. Interview: The questions in the interview section are as follows:

1. What causes the design process in construction projects to be compromised?
2. What suggestions do you propose to prevent or minimize the crisis during the design phase of construction projects?
3. How to manage the crisis in the design phase of construction projects?

The main research issues are as follows:

What causes the design process in construction projects to be compromised? These two divisions are made up of a total of 60 special partners.

This analysis was performed using Statistical Package for Social Science (SPSS) software. Variable statistics using SPSS software are distributed in the following table and chart.

1. Lack of Unit Management in Projects
2. The lack of coordination of the project team

Table 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	1	4.3	4.3	4.3
	Medium	3	13.0	13.0	17.4
	Much	8	34.8	34.8	52.2
	Very much	11	47.8	47.8	100.0
	Total	23	100.0	100.0	

Table 4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very low	1	4.3	4.3	4.3
	Low	4	17.4	17.4	21.7
	Medium	3	13.0	13.0	34.8
	Much	7	30.4	30.4	65.2
	Very much	8	34.8	34.8	100.0
	Total	23	100.0	100.0	

Table 5

Lack of Work Ethics (Managerial)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very low	2	8.7	8.7	8.7
	Low	7	30.4	30.4	39.1
	Medium	8	34.8	34.8	73.9
	Much	4	17.4	17.4	91.3
	Very much	2	8.7	8.7	100.0
	Total	23	100.0	100.0	

Table 6

Internal Competition (Competition Negative)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very low	2	8.7	8.7	8.7
	Low	5	21.7	21.7	30.4
	Medium	3	13.0	13.0	43.5
	Much	7	30.4	30.4	73.9
	Very much	6	26.1	26.1	100.0
	Total	23	100.0	100.0	

It is also considered for each factor of the table, which totals 24 tables, then check the validity of the questionnaire was using Cronbach's alpha coefficient.

$$\alpha = \frac{K}{K - 1} \left(1 - \frac{\sum_i \sigma^2}{\sigma^2} \right)$$

In this formula (k) the number of questions, and (σ^2) is the variance of each question. The Cronbach's alpha coefficient is used to measure the one-dimensionality of attitudes, judgments, and other items that are not easy to measure.

Internal Reliability	Cronbach's alpha coefficient
Excellent	$\alpha \geq 0.9$
Good	$0.9 > \alpha \geq 0.8$
acceptable	$0.8 > \alpha \geq 0.7$
Questioned	$0.7 > \alpha \geq 0.6$
Poor	$0.6 > \alpha \geq 0.5$
unacceptable	$0.5 > \alpha$

Case Processing Summary			
		N	%
Cases	Valid	23	100.0
	Excluded ^a	0	.0
	Total	23	100.0

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

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Lack of unit management in the project	81.00	223.545	.042	.904
The lack of coordination of the project team	81.52	201.625	.625	.893
Lack of cooperation from related departments or projects	82.09	198.901	.745	.890
Lack of work ethics (managerial)	82.39	204.613	.622	.893
Internal competition (competition Negative)	81.83	198.877	.652	.892
Lack of transformation management (inability to lead new ways in the project)	81.09	204.174	.654	.893
Appointing non-technical people in charge	81.04	212.771	.422	.898
The scheme imbalance in knowledge	81.96	210.316	.432	.898
Management weaknesses in not recognizing project strengths and weaknesses	81.26	201.929	.692	.892
Appointment of people with low knowledge level	81.65	206.874	.537	.895
Change and renewal of plan	82.04	199.862	.589	.894

Lack of planning and communication in the project	81.39	210.794	.515	.896
Lack of office facilities to carry out project work	82.13	211.846	.385	.899
Sophisticated design and detail (Details) inadequate about it	81.78	207.178	.573	.895
Delay in drawing and issuing drawings	81.57	216.075	.276	.901
Lack of risk management in projects	81.83	214.787	.241	.903
Conflict in project priorities	81.83	203.332	.678	.892
Poorly organized office project	81.61	204.704	.495	.896
Involvement in many projects at the same time	82.52	210.715	.316	.901
Vandalism, disruption and unforeseen side effects	81.74	208.747	.545	.895
Lack of attention to cultural issues and social norms in building design	82.13	206.573	.478	.897
Inadequate design and plan information for accurate estimation and planning	81.70	200.676	.661	.892
The lack of a specific timeline for the regular development of design	81.35	213.964	.339	.899
Poor control of the design flow and its development	81.57	216.530	.367	.899

II. CONCLUSION

Considering the statistics of the risk among the 24 risk identified by the researcher in the design phase of construction projects and distributed to questionnaires specialists in related fields, there are 6 types of high risk that are listed below:

- Lack of unit management in the project
- Lack of transformation management (inability to lead new talents in the project)
- Appointing non-technical people at the helm
- Management weaknesses in not recognizing project strengths and weaknesses
- Office of thick organization
- Organizing team's lack of coordination

Important Factors from the Interview:

- Lack of unified management and planning
- Lack of assessment of possible risks
- Lack of detailed study of lands and topography of the area
- Failure to examine religious, cultural and climatic conditions of the country
- Lack of economic planning in projects



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