IDENTIFYING THE CONTRACT RISKS IN SELECTION OF CONTRACTOR

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ABSTRACT

Objective: The study aspires to identify the contract risks that affect contractor selection.

Research Method: Data for the study was gathered by conducting structured interviews of industry personnel working in various sectors (public, private, etc.) with extensive knowledge, expertise, and experience in academia and construction.

Findings: Based on the average index value of the risks, it was found that escalation, liquidated damages, drawings, termination of the contract, defects liability period, retention money, health and safety are extremely significant risks that can affect the project performance. Besides these, 22 risks are reported as very significant risk, and 11 risks are moderately significant risks.

Originality: The study findings are helpful for selecting the appropriate contactor for successful projects.

Keywords: Contract Management, Contract Risks, Construction, Pakistan

1. INTRODUCTION

Many problems would be avoided if contract specialists (and EMPLOYERS) grasped the concept of risk in the construction industry. As a result, contracts would be much more balanced and many disputes would be avoided or easily resolved amicably. Construction projects are sensitive to a pervasive matrix of hazards and risks. Therefore, understanding the notion of risk and knowing how to appropriately manage the risk matrix generated when a construction project is launched is critical for individuals working in the construction business (Ospina-Alvarado et al., 2016).

A construction contract is a common agreement between two entities (persons/organizations/parties). It is a legal document that defines the limits and conditions of binding, duties and rights over each other, and the risk-sharing system (Shash and Habash 2020). The construction sector in Pakistan is expanding due to increased demand for building, roads, infrastructure, and repair and restoration work, among other things. As a result, the construction industry (C.I.) contributes to economic and infrastructure expansion, which aids in developing countries. As a result, the construction industry always contributes significantly to economic development (Memon et al. 2010), reflected in the country's Gross Domestic Product (GDP). Furthermore, any country's development is also replicated in the opportunities available to its building sector (Haq, 2015).

Due to its uncertain nature, construction projects often face several issues (Rahman et al. 2022), and for successful projects, Project implementation is the most important stage of any building project. Contractor selection methods now available have been frequently condemned as biased and insufficient. These methods do not consider the contractor's ability in terms of time, cost, quality, or safety regulations. The selection is viewed as a decision-making problem with numerous variables, including the application sector, selection criteria, method selection, and the number of decision-makers. However, choosing contractors based on the company's genuine needs is critical to meeting the client's objectives. As a result, more research into the

effectiveness of the selecting technique is required. The study is necessary to observe the effects of various selection factors on the project's perceived success.

Clients typically seek out experienced contractors that can complete construction work within a stipulated budget, time and schedule, and quality. The project's success is determined by these characteristics, which are straightforward to quantify concerning the project's goals. Aside from these factors, the client's pleasure is crucial to the project's success. After a contractor or vendor has been chosen, the contract administrator oversees its completion before handing it over to the contract manager. Contract management is concerned with what occurs after a contract has been signed. Contract management entails deciding how much of an organization's human, financial, and technical resources will be allocated to specific initiatives. As a result, a contract manager determines how the organization will ensure that it performs what it agreed to do in a contract with another party while simultaneously ensuring that the other party fulfills its responsibilities. Administrative activities connected to contract management include 1) soliciting bids, 2) analyzing bids, 3) awarding contracts, 4) implementing contracts, 5) measuring finished work, and 6) computing (Haq, 2015).

Pakistan's construction industry is critical to the country's economic development. In 2016, the construction business grew by 14.6%, compared to 4% increase from 2012 to 2015. In 2017, the construction industry experienced a 9% increase. According to Pakistan's 2017 economic assessment, changes in such a massive business will have a negative impact on projects (Hanna and Iskandar, 2017). Therefore, selecting an appropriate contractor and contract for successful projects is essential. Several risks in the contract documents can affect the proper contract selection. Hence, this paper focuses on identifying the risks in contacts. This will help the client to develop proactive strategies to select appropriate contact types and set the conditions of the contract to achieve successful projects.

2. LITERATURE REVIEW

For the success of any construction work, contractor selection is very imperative phase. A selection criterion is involved in judging and measuring the potential of contractors. First, contractors' skills are judged and calculated (Soomro et al. 2020). The relationship and cooperation between the contractor and the client should be considered while choosing a contractor. This cooperation and confidence between them would aid in the proper and peaceful completion of the project. The contractor's previous technical experience with the projects would be advantageous in terms of pricing, quality, and timeliness. To quantify their economic growth, any country's physical expansion is dependent on the advancement of construction sector projects such as bridges, roads, and buildings. As a result, completing the job successfully is critical. A suitable contractor should be chosen for this. Contractor selection entails evaluating and categorizing many contractors who are both financially sound and technically skilled. In accordance with a set of decision criteria, a selection criterion is used to judge and measure contractors' potential. The talents of contractors are appraised and calculated to do vital tasks (Hatush and Skitmore 1997). The following are the most typical criteria used in contractor selection:

- **Technical Capacity:** The project contractor's activities must be technical. This is to obtain prequalification (Hatush and Skitmore, 1997).
- **Experience:** One of the most crucial requirements for selecting a contractor is having completed similar jobs previously (Hatush and Skitmore, 1997).
- **Management Capacity:** The contractor's capability is demonstrated by the planning, organization, and management of the project (Hatush and Skitmore, 1997).
- **Financial Stability:** The total financial situation and competence must be considered (Hatush and Skitmore, 1997).
- **Past Performance:** The contractor's previous performance should be taken into account. Project managers with a high level of self-confidence are

evaluated on their abilities to handle time, quality, and cost (Enshassi et al. 2013)

- **Past Relationship:** Clients must obtain all of the contractor's information and compare it to previous affiliations that contribute to construction operations (Enshassi et al. 2013).
- **Reputation:** The project manager must have an opinion on how far contractor behavior should be allowed to go (Enshassi et al. 2013).
- **Occupational Health and Safety:** To ensure long-term viability, contractors must have an effective risk management system that starts with the nature of the task (Hatush and Skitmore, 1997).
- **Quality:** To meet the client's needs while spending the least amount of money possible (Hatush and Skitmore, 1997).
- **Organizational Skills:** It aids productivity by allowing time, resources, and task to be managed more effectively. It gives them a working atmosphere. It directly reduces an individual's stress level (Hatush and Skitmore, 1997).
- **Current Workload** relates to the ongoing project's current workload (Hatush and Skitmore, 1997).
- **Equipment:** It is concerned with the project's required equipment or the availability of project equipment that meets the requirement. It also refers to the most up-to-date and advanced equipment that is easier and safer to use (Palaneeswaran and Kumaraswamy, 2000).
- **Human Resources:** Selecting, recruiting, including employs, providing orientation, training, and development, appraising employs' performance, providing benefits, motivating employs, deciding compensation, ensuring employs' safety, welfare, and health, and ensuring compliance with labor laws are all responsibilities of human resource management (Palaneeswaran and Kumaraswamy, 2000).
- **Project-specific Requirements:** Some specific requirements must be met in order for the project to be successful. Project-specific requirements paint a clear picture of the work that must be completed. They're designed to align the project's resources with the organization's goals. The advantages of gathering project requirements include cost savings, increased project success rates, improved stakeholder communication, and effective change management (Ng and Skitmore, 2001).
- **Business Location:** A business's location is where it is located; it refers to a local site where all of the requirements can be met successfully. To determine the cost of a business, it is necessary to do a cost analysis. Therefore, for business purposes, the optimum location is required. In addition, the owner would have to consider the benefits that each place provides in terms of public and private control (Ng and Skitmore, 2001).
- **Bid Amount:** The contract is offered at a set price, known as the bid price. It refers to the amount of coating that has been applied. Because the asking price is more than the lowest bid price, it is counted as the lowest price (Enshassi et al. 2013).

A comprehensive literature review was carried out to identify common risk associated with the contract as summarized in table 1.

Table 1: Mapping of Contract Risks

No	Contract Risks	PEC (2020)	PPRA (2020)	SPPRA (2020)	FIDIC (1992)	NHA (2020)	Moazzami et al. (2011)	Antoniou et al. (2012)	Maqsoom et al. (20219)	Valitova et al. (2018)	Mousakhani et al. (2018)	Pakkala (2002)	Al Khalil (2002)	Ibbs et al. (2003)	Mahdi and Alreshaid (2005)	Oyetunji and Anderson (2006)	Mohamed (2014)	Allen (2015)	Purba and Prastowo (2020)	Enshassi et al. (2013)	Idrus et al. (2011)	Frequency
1	Bid Security	√	√	√	√	√		√	√		√	√		√		√		√	√	√	√	15
2	Past Performance	√	√	√	√		√	√		√		√	√	√		√	√	√	√			14
3	Current Performance	√	√	√		√	√	√	√	√	√	√		√		√	√	√		√	√	16
4	Historical Financial Worth	√	√	√		√		√	√	√		√		√		√	√	√		√	√	14
5	Machinery Worth	√	√	√			√			√	√	√	√		√	√			√	√		12
6	Personnel Capacity				√	√		√	√		√		√	√		√		√	√			10
7	Mobilization Advance to Contractor	√	√			√	√	√		√		√		√	√		√	√	√			12
8	Performance Security	√	√	√					√	√	√		√		√	√			√	√	√	12

9	Work Program	√	√			√	√	√				√		√		√			√			09
10	Method Statement	√		√	√				√	√	√	√	√		√				√	√		11
11	Health & Safety			√		√	√	√		√			√	√		√			√	√		10
12	Drawings	√			√	√			√	√	√	√	√		√	√				√	√	12
13	Escalation	√	√		√	√	√	√		√	√	√		√	√	√	√	√				14
14	Integrity Pact	√	√			√	√	√		√		√		√	√			√		√		11
15	General Performance	√	√	√					√	√	√		√		√	√			√	√	√	12
16	Third Party Insurance	√	√	√	√	√		√	√		√	√		√		√		√		√		13
17	Liquidated Damages		√	√	√		√	√		√		√	√	√		√	√		√	√	√	14
18	Site Visit	√	√	√		√	√	√	√	√	√	√		√		√		√		√	√	15
19	Sealing and Marking of Bids	√	√	√		√		√	√	√		√		√		√	√	√		√	√	14
20	Right to Accept and Reject	√	√	√		√		√	√	√		√		√		√	√	√		√	√	14
21	Defects Liability Period	√	√	√			√			√	√	√	√		√	√			√	√		12
22	Retention Money				√	√		√	√		√		√	√		√		√	√			10
23	Minimum Amount of IPC	√	√			√	√	√		√		√		√	√		√	√	√			12
24	Engineer Representative	√	√	√	√	√		√	√		√	√		√		√			√	√	√	14
25	Contractor Representative	√		√	√				√	√	√	√	√		√			√	√			11
26	War and hostilities	√	√		√	√	√	√		√	√	√		√	√	√	√	√				14

27	Pre Bid Meeting	√	√	√	√	√	√	√	√		√	√		√		√		√	√	√	√	16
28	Housing of Labor	√	√	√	√		√	√		√		√	√	√		√	√	√	√			14
29	Alcoholic Liquor or Drugs	√	√	√		√		√	√	√		√		√		√	√	√		√	√	14
30	Use of Country Materials	√	√	√	√	√		√	√		√	√		√		√		√	√	√	√	15
31	Organization Chart	√		√	√				√	√	√	√	√		√			√	√			11
32	Hire of Contractor Equipment	√	√		√	√	√	√		√	√	√		√	√	√	√	√				14
33	Payments to Subcontractors	√	√	√	√	√		√	√		√	√		√		√		√	√	√	√	15
34	Arbitration	√	√	√	√		√	√		√		√	√	√		√	√	√	√			14
35	Notice to Contractor	√	√	√		√	√	√	√	√	√	√		√		√	√	√		√	√	16
36	Termination of Contract	√	√	√		√		√	√	√		√		√		√	√	√		√	√	14
37	Secure Advance on Materials		√		√	√		√	√		√		√	√		√		√	√		√	12
38	Subcontractors	√		√	√				√	√	√	√	√		√			√	√			11
39	Monthly Progress Report		√		√	√		√	√		√		√	√		√		√	√		√	12
40	Signing of Contract	√	√			√	√	√		√		√		√	√		√	√	√			12

3. DATA COLLECTION

Data collection was carried out qualitatively by interviewing the experienced practitioners handling construction projects. A total 13 respondents were interviewed. Interviews were conducted with the help of a structured questionnaire prepared based on the 40 contractual risks identified from the literature review, as explained above in table 1. First, the respondents were interviewed to identify the significance level of the risk. The identification was done based on the five-point likert scale as 1 for not significant, 2 for slightly significant, 3 for moderately significant, 4 for very significant and 5 for extremely significant. Then, the participant's responses to each factor were recorded and statistically analyzed using a formula adapted from (Memon et al 2014).

$$AI = \frac{\sum(1x_1 + 2x_2 + 3x_3 + 4x_4 + 5x_5)}{\sum x_1 + x_2 + x_3 + x_4 + x_5}$$

Where

X1 = Respondents' no who marked for "not significant"
X2 = Respondents' no who marked for "slightly significant"
X3 = Respondents' no who marked for "moderately significant"
X4 = Respondents' no who marked for "very significant"
X5 = Respondents' no who marked for "extremely significant"

4. RESULTS AND DISCUSSION

Collected data from experts during interviews was analyzed statistically to assess the significance level of the risks with the help of SPSS and Microsoft Excel. The significance levels of the risks were evaluated based on the following criteria as in table 2.

Table 2: Evaluation Criteria for Assessing Significance Level

Scale	Indexing Value	Level of Significance
1	1.00 < AI < 1.50	Not significant
2	1.50 < AI < 2.50	Slightly Significant
3	2.50 < AI < 3.50	Moderately Significant
4	3.50 < AI < 4.50	Very Significant
5	4.50 < AI < 5.00	Extremely Significant

The results obtained from the analysis of the data are presented in table 3.

Table 3: Results of Data Analysis

S #	Contract Risk	Scale					N	Average Index AI
		1	2	3	4	5		
1	Current Performance	0	0	2	6	5	13	4.23
2	Pre Bid Meeting	1	0	3	7	2	13	3.69
3	Bid Security	1	0	1	4	7	13	4.23
4	Escalation	0	0	1	0	12	13	4.84
5	Engineer Representative	1	2	4	3	3	13	3.38
6	Use Of Country Materials	0	2	4	4	3	13	3.61

7	Arbitration	0	0	2	3	8	13	4.46
8	Notice To Contractor	0	1	2	5	5	13	4.07
9	Liquidated Damages	0	0	1	0	12	13	4.84
10	Site Visits	0	5	6	0	2	13	2.92
11	Organization Chart	1	4	4	2	2	13	3
12	Historical Financial Worth	0	1	2	6	4	13	4
13	Mobilization Advance	0	2	2	1	8	13	4.15
14	Drawings	0	0	0	2	11	13	4.84
15	Sealing And Marking Bid	2	2	6	1	2	13	2.92
16	Right To Accept And Reject	1	2	2	4	4	13	3.61
17	Subcontractors	1	2	4	5	1	13	3.23
18	Monthly progress report	0	2	2	6	3	13	3.76
19	War And Hostile	1	5	2	2	3	13	3.07
20	Housing Of Labor	1	3	3	3	3	13	3.30
21	Alcoholic Liquor	1	3	4	3	2	13	3.15
22	Hire Of Equipment	0	4	1	4	4	13	3.61
23	Termination Of Contract	0	1	0	2	10	13	4.61
24	Secure Advance On Materials	0	0	1	6	6	13	4.38
25	Past Performance	0	1	1	4	7	13	4.30
26	Performance Security	0	1	2	1	9	13	4.38
27	Work Program	0	0	2	4	7	13	4.38
28	Method Statement	0	2	1	5	5	13	4
29	Signing Of Contract	1	1	2	5	4	13	3.76
30	Third Party Insurance	0	1	2	7	3	13	3.92
31	Defects Liability Period	0	0	0	2	11	13	4.84
32	Retention Money	0	0	2	2	9	13	4.53
33	Minimum Amount Of IPC	0	4	1	3	5	13	3.69
34	Contractor Representative	1	2	5	2	3	13	3.30
35	Payment To Subcontractors	0	4	2	4	3	13	3.46
36	Machinery worth	0	3	2	6	2	13	3.53
37	Personnel capability	0	1	1	4	7	13	4.30
38	Health And Safety	0	0	0	5	8	13	4.61
39	General Performance	0	0	3	5	5	13	4.15
40	Integrity pact	0	7	3	2	1	13	2.76

Table 3 shows the average index value of each risk as perceived by the practitioners involved in handling construction activities. The results indicate that only seven (7) risks have an average index value above 4.5 and can be considered an extremely significant risk. On the other hand, twenty-two risks are very significant risk with an average index value in between 3.5 to 4.5. The remaining eleven risks are moderate risks that do not severely impact the project. These findings will help the practitioner develop proactive strategies in achieving successful projects.

5. CONCLUSION

This study identified the significant contractual risks involved in a construction project. The study was carried out quantitatively by conducting structured interviews with 13 experienced practitioners working in the construction industry and having

contract management experience. The data was analyzed statistically, which showed that seven risk as escalation, liquidated damages, drawings, contract termination, defects liability period, retention money, health and safety are extremely significant risks that can affect the project performance. Besides these, 22 risks are reported as very significant risks, and 11 risks are moderately significant risks.

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