



Analytical Review of Risk Triggers in the Design Phase of D&B Contracts

A. Nazari¹*O. Ahmad Soltani², M. Parchami Jalal³

¹ Faculty of Architecture and Urban Planning, Shahid Beheshti University, Tehran, Iran

² Faculty of Engineering, Mehr Alborz Higher Education Institute, Tehran, Iran

³ School of Architecture, University of Tehran, Tehran, Iran

ABSTRACT: Nowadays, improvement of the project management knowledge and developing the management methods, decrease the probability of the failure of the project. One of the most important processes that affect project goals is project risk management. Identifying and managing the risk triggers is an effective method in project risk management. Many years have passed since this concept was introduced but its application is so limited yet. This research endeavors to develop and make a better understanding of this concept as the main goal. Recognition and managing of this phenomenon help the project risk management process. It makes the best decision for having the right time to adopt a strategy and ultimately it reduced the negative impact of risk-taking on the project. Moreover, the type of contract always plays an important role in the raising of the risk. Therefore, in this study, it is selected to develop a concept of risk trigger phenomenon, in D&B contract which has many benefits and client's tendency. To explain the status and importance of risk triggers, its relationship with several important risks has been qualitatively analyzed. For this purpose, through library studies and existing sources, common risks of these types of contracts and their indicators have been identified and compiled. Moreover, by interviews with experts on risk and risk triggers, some important risks are identified and validated. Finally, a functional table of risk triggers is presented that is a great help to stakeholders in being prepared to respond to the risk triggers.

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1. INTRODUCTION

Despite increasing efforts and significant improvements in methods and techniques, still many projects fail [1]. One approach that impacts the departure of projects from their objectives and can in many cases prevent project failure is the consideration of risk management and consequently risk triggers.

Risk management is a comprehensive set of principles, approaches, and processes for identifying and evaluating the risk that results in planning and responding to that risk [2]. According to Andon, risk management is a good way to reduce the negative effects of risk on the capital involved in the project at the least cost by analyzing and monitoring the risk [3].

One of the factors that can greatly influence the success and goals of any project in different areas, especially in the construction industry, is awareness of risk management, the ability to identify risk and its causes, understanding the effects, and how to respond appropriately. Due to the uncertainty of the risk, studies have shown that many methods of accountability lose their justification because they are not always ready to respond to all risks. After all, it is impossible to be ready to meet all risks. Unless the threshold of an

accident can be identified and consequently more appropriate response with lower costs. In this research, the concept of risk trigger has been evaluated, considering the design-build (D&B) contracts and unique conditions of risk-sharing in this type of contract. This method of execution is chosen to assess the risks and consequently the risk indicators.

According to Haji Kazemi, one of the most effective ways to prevent project goals from failing is to try to identify and respond appropriately to symptoms that are detectable at earlier stages of risk [1]. These signs are called early warning sign. Nicander also introduced early warning sign, signals, or anything that might emerge or prove to be a positive or negative issue in the future, believing it to be a sign of the future [4].

For the first time, Igor Ansoff introduced this phenomenon which is called weak signals. He viewed modern project management as a different approach from the strategy of dealing with surprises in project planning and management. After him, though limited, other scholars have addressed this issue. Among the scholars who have directly explored this phenomenon are Nikander and Kazemi.

As stated in the project management guide, risk triggers can be part of the project management process as long as they provide information on potential project problems

*Corresponding author's email: anazari@sbu.ac.ir



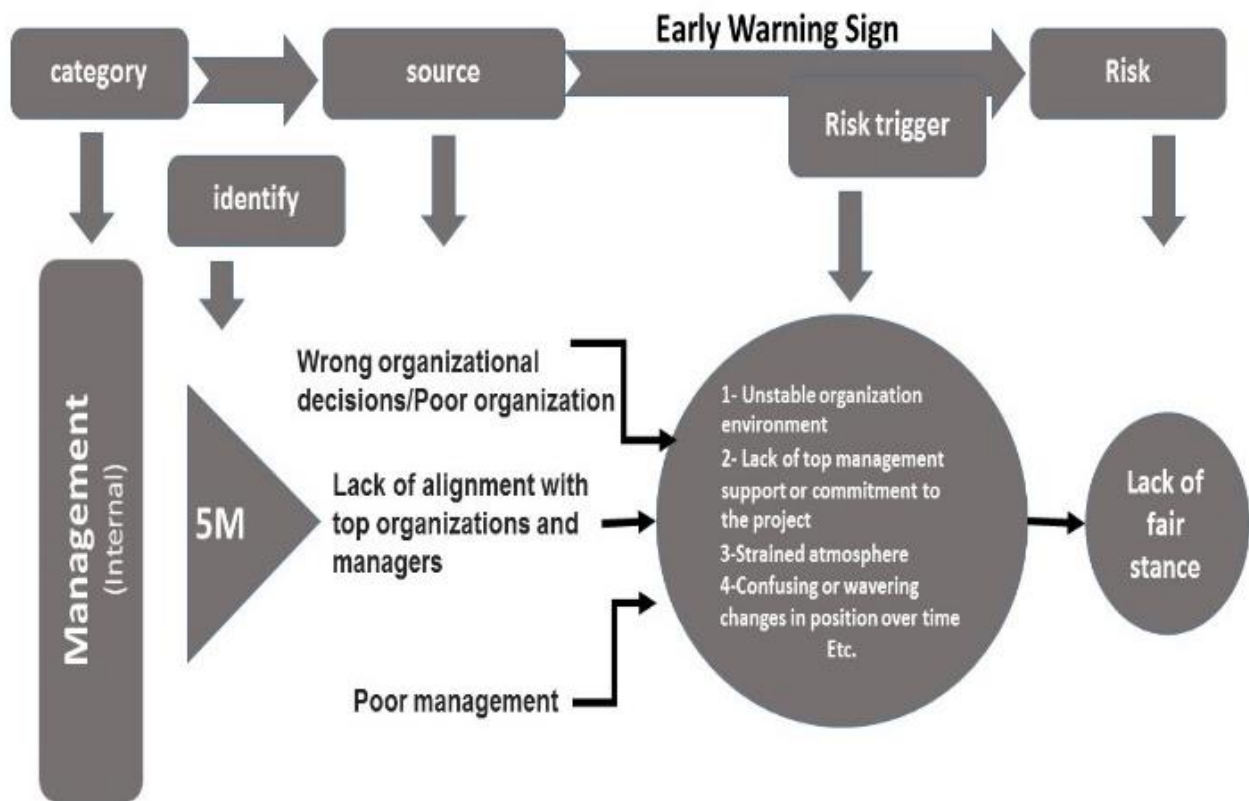


Fig. 1. Identifying risk and risk trigger relationship

[5]. To understand the place of risk triggers in the process of identification and accountability, it is necessary to first consider the purpose of risk management. According to the project management guide, the purpose of project risk management is to increase the probability and risk effect of a positive impact and to reduce the probability and risk effect of a negative impact [6].

Finally, it cannot be conclusively claimed that the source of the identified risk necessarily results in risk and incident. While it can be safely claimed that project monitoring throughout its lifecycle can detect alarms that report an incident. As a part of the risk management process, it is vital to choose and implement the right response at the right time to prevent risk and prevent its consequences [7].

This research seeks to develop the concept of risk trigger, while defining and explaining its status and importance in different cases, introducing the methods presented so far in identifying and utilizing it concerning several high and significant risks. The D&B contracts and their relationship analysis provide a list of risks, origins, and triggers for this contractual model.

2. METHODOLOGY

In this paper, to achieve the research objectives, while exploring the documents, standards, articles, books for concept development, through library studies, a list of common D&B contract risks and their indicators has been identified. By utilizing experts in a variety of ways, such as semi-structured interviewing or brainstorming, as well as

utilizing past project experiences, relationships of risks and their triggers have been investigated in several high-risk cases and continued to enhance the validity of findings. A questionnaire and Likert spectrum were used for validation and functional table of risk indicators.

3. RESULTS AND DISCUSSION

To achieve the goals of the study, the present study has investigated several articles focusing on the risks that may affect the design phase of the contract are concluded. Firstly risks are extracted and then identical or repetitive risks are eliminated and a list of 51 common risks affecting design phases of the project are identified in the design-build contracts. In this paper, after classifying the risks with the 5M method¹ to increase the reliability of the findings among the risks obtained by further replication criteria in different articles, one risk is selected for each category. These 5 categories of risks include (1) Unclear contract clauses (related to the contract risk category), (2) Frequent design change (related to the technical category), (3) Lack of fair stance (related to the management category), (4) Client representative fails to perform duties (related to the stakeholder), and (5) Planning approval delay (related to the environmental category). Each category contains several risks that are analyzed by statistical and frequency analysis. This has been one of the criteria for identifying higher risk. Both taking into account the impact

¹ Used in risk management to analyze causes and consequences based on five causes: 1) Man power, 2) Methods, 3) Machine, 4) Material, and 5) Environment.

of risk and paying attention to the possibility of research on risk triggers and their multiplicity helped choose a risk from the risks extracted. In addition to the limited resources and quantitative research that have been done in this area, this paper provides a list of early warning signs compiled in the same way as existing sections after editing and removing duplicates. The following is an exploration of the relationship between the two lists by utilizing knowledge in various ways, such as using past project experience or brainstorming. Identifying the origins of each risk using the causal chain approach has helped to identify the relationship between risk and trigger, resulting in five tables containing the risk, its origins, and its associated common risk triggers (Fig. 1).

To achieve the goal of the research, using the list of risk indicators for every 5 categories of risks according to the following form which is for the risk management category, and analyzing the relationship of risk and its indicators by interviewing experts in the first step and completing the questionnaire in the next step, the final results have been obtained.

4. CONCLUSION

Research shows how recognizing and understanding this phenomenon can have an impact on the goals and success of a project in different cases.

While presenting a conceptual model for risk identification, and trigger, the study shows that very limited risk triggers have been evaluated and evaluated in previous researches.

It also became clear that the right response at the right time to the risk indicator could have an effective role in achieving the project goals.

The concept of risk trigger has been identified and elaborated by presenting a practical example of the significant risks involved in the design-build project, categorized into five groups.

A review of previous research papers, findings, and a summary of these have provided a list of common and influential risks to the design phase of the design and build contracts. A list of early warning sign has also been extracted from various studies.

Since the results and the methods used are quite qualitative, it is recommended to quantify the findings by using statistical/mathematical techniques.

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