

RISK MANAGEMENT IN THE CONSTRUCTION INDUSTRY

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Abstract - The construction industry has marked rapid growth all over the globe and innovative techniques have been added in the last 20 years. But at the same time, the construction industry is at high risk because of the dynamic nature of the project environment. So risk management becomes an important perspective for project success. The objective of my paper is to demonstrate and understand the fundamentals of risk management through a brief suggestion of a literature review on risk management in the construction industry. The study signifies risk management effectiveness by approaching risk management into four parts: Risk Identification, Risk Assessment, Risk Response Planning, and Risk Control.

Key Words: Risk, Risk Management, Construction Industry, Project Manager.

1. INTRODUCTION

Risk has adverse effects on construction projects such as time, cost, scope, and quality and because of the rapid change in the construction industry in the last 10 years, projects are faced with more risks and uncertainties than ever before. In the past few months, COVID-19 has had a huge impact on the economic activity of the construction industry, for example, the overall impact of COVID-19 on the construction sector in India has been estimated at Rs 30,000 crore per day, an analysis by KPMG revealed and now it becomes more important for a project manager to efficiently work on the already developed risks and to minimize the loss.

Risks developed in the construction industry can be summed up in two parts: Internal Risks (Technical risks, Management related risks, Contract risks, etc) and External Risks (Environmental risks, Socio-political risks, Economy fluctuation risks, etc). Because of the lack of communication and lack of understanding of responsibilities throughout the chain of command leads a project to various failures like a quality compromise, an increase in costs, or unusual delays in completion of the project. Risk is a chance of a negative event happening which might put one or more objectives of the project in danger. Chance cannot be completely eradicated but the negative impact of it on the project can be minimized or held by risk management and taking a proactive stance towards it. Risk management is the process of recognizing, understanding, prioritizing, and developing a response for the control of risk to reduce the hazardousness and damage to the project. Risk management helps us to reach the milestone of the project within the determined objectives such as resources, cost, time, quality, safety, and scope.

2. LITERATURE REVIEW

Due to changes in the environment of the project life cycle in recent years including globalization, outsourcing, fluctuation in the economy and now the COVID-19, risk management has turned an important perspective of the project planning. If risk management is not considered from a proactive stance in the project planning it may lead to business loss. A simple risk event statement is if 'X' occurs, then project objective 'Y' will be affected. The purpose of risk management is to minimize the likelihood or impact of negative events. Being prepared for many of the things that come up, as their teams work towards project completion is the best approach to managing project risks and its changes. As a project manager, he/she utilizes 90% of his time communicating from creating documents, presentations to the meetings facilitated. It becomes necessary to have efficient communication throughout the chain. Inappropriate communication can lead to higher risks whereas a well-planned communication can make the difference between a GOOD PROJECT and a GREAT PROJECT.

2.1 Factors affecting risk:

- a) History
- b) Management Stability
- c) Staff expertise and experience
- d) Team size

- e) Resource availability
- f) Time compression
- g) Complexity
- h) Monetary policy

2.2 Types of risk:

- a) Technical risks: -site investigation
 - incomplete design
 - insufficient specifications
 - uncertainty over the availability of materials and resources
 - construction methods
- b) Logistics risks: -availability of transportation facilities
 - availability of resources
- c) Management-related risks: -experience of contractor and project manager
 - hiring of unskilled labourers
 - ineffective communication
- d) Environmental risks: -weather and seasonal implications
 - natural disasters
- e) Financial risks: -availability and fluctuation in exchange rate
 - increase in cost of resources or materials
 - delays in payment
 - inflation
 - taxes
 - low demand
- f) Socio-political risks: -availability of employment
 - requirement of permits and approval
 - occurrence of corruption
 - stakeholders
 - change in law and regulation

2.3 Common Sources of risk in Construction Project:

- changes in project scope and requirements
- design errors and omissions
- inadequately defined roles and responsibilities
- insufficient skilled staff
- subcontractors
- inadequate contractor experience
- uncertainty about the fundamental relationships between the project and participants
- new technology
- unfamiliarity with local conditions
- force majeure

3. Process of risk management in the construction industry

C.B. Chapman and D.F. Cooper defined risk as, “exposure to the possibility of economic or financial loss or gains, physical damage, or injury, or delay as a consequence of the uncertainty associated with pursuing a course of action.” The process of risk management can be methodically approached by breaking it down into four parts:



3.1 Risk identification:

Risk identification can be reached out as governing the most probable risks affecting the project and validation of factors of each risk. Risk identification has major dependence on the managerial experience of the project manager. Reviewing and assessing project documents-WBS, activity lists of cost, time, resources, and so on can be a valuable tool in risk identification. SWOT(strength, opportunities, weaknesses, and threats) matrix analysis is also a useful tool for identifying risks. Another helpful tool is reviewing similar projects carried out in the past which may divulge risk events that might affect the current project. Some of the efficient methods of risk identification are as follows:

Brainstorming, Interviews, Delphi method, Root cause analysis, Questionnaires, Expert systems, etc.

3.2 Risk analysis:

Risk analysis is the process of calculating the causes and effects of determined risks by assessing and combining the probability of their occurrence and impact. Risk analysis allows the decision making process of the managerial department to be more certain. Time and price become an important component while analysing and assessing the risk factors. A systematic way for risk analysis can be achieved by following technique:

Qualitative analysis	Quantitative analysis
Direct judgement	Probability analysis
Ranking option	Sensitive analysis
Comparing option	Scenario analysis
Descriptive analysis	Simulation analysis

(Source: Ward and Chapman, 1997)

3.2.1 Goals of Quantitative and Qualitative Analysis

- It evaluates the probability of the occurrence and the numeric value of the impact of the risk.
- This techniques give us the best decision for risk management when the conditions and the outcomes of the risk are uncertain.

3.3 Risk Response Planning

Planning of risk response is the process of developing options and actions to strengthen the opportunities and reduce the threats to project objectives. Risk response takes the risk into account by the priority and ranking of the risks developed in risk analysis. Risk response can be done by following two ways:

Proactive response- Avoid, Transfer, Share, Accept or Mitigate risk.

Reactive response- Form a contingency plan.

3.4 Risk Control

Risk control is the process of implementing the risk response plan and monitoring and reviewing the effectiveness of the response developed. Response developed for the control of risk should be fully documented for future reference and project plans.

3.5 Benefits of Risk Management:

- It gives a better view on unmanaged risks and how to avoid or lessen the impact of the risk on project objectives.
- It reduces the surprises to be faced.
- It increases the level of control over the project.
- It puts a better value of the project in the market.

3.6 Recommendation:

- It is project managers duty to understand, analyse and be held responsible for the risk faced by the project organising.
- It is the project manager's duty to choose the best suitable contract for the project.
- The project manager should have proper communication and understanding with the upward department (senior manager, owner) and downward department (contractors, sub-contractors, staff).
- The managerial department of the organising should provide appropriate level of control over the risk that it faces.
- Monitoring and evaluating the effectiveness and efficiency of risk management of the project is an integral part of management reporting as a risk treatment option.

4. CONCLUSION

Risk management used in a systematic way by breaking it down into four parts, provides an effective means for managing a complex project efficiently and to achieve the project objectives like time, money, quality and scope. The approach of the project manager towards risk management is very important and hence it could reflect in the success of the project and in gaining profits. And all this leads us to a direct relation between systematic approach to the risk management and the project success.

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