



To Study Risk Management in Construction Project for Developing Countries

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ABSTRACT

Risk management has evolved into a sophisticated and important task in virtually all corporations of developed countries and is becoming increasingly relevant for corporate firms in India. Managing risks in infrastructure construction projects has been recognized as a very important management process in order to achieve the project objectives in terms of time, cost, quality and scope. Risks have significant impact on construction projects in terms of its primary objectives. Construction projects which are intricate in nature, uncertainty and risks in the same can develop from different sources. Construction industry is highly risk prone, with complex and dynamic project environments creating an atmosphere of high uncertainty and risk. The industry is vulnerable to various technical, sociopolitical and business risks. The study reveals that Indian firms are aware of the risk management techniques and many of them are using the same to manage various risks. However, all the risks are not managed and the type of ownership control significantly influences the usage of the techniques to manage exchange rate risk and interest rate risk. This paper aims to identify and analysis of risks associated with the infrastructure projects.

Key words : Risk Management, Contractual Project, Risk, Strategy, Contract

I. INTRODUCTION TO CONTRACTUAL RISK MANAGEMENT

Now a day infrastructure of construction projects are exclusive in character and do not provide them to standardization [1]. The construction project has dynamic nature, with many cyclical and seasonal downs and ups. Therefore, each construction project requires a lot of care in handling [2]. In addition, construction action consists a number of agencies specifically consultant, client and contractor. Consecutively to establish the rights, duties, obligations, responsibilities among the different agencies, a contract is necessary to be made between them which will establish a mutual relationship to do a work.

Mainly civil engineering work is performed under contract. In any successful project the contracts are essential as it is difficult, important, costly and lengthy proceedings. The document of the contract can be used as a tool to manage risk by allocating the various risk agencies through the various contracts between them [4]. It is very significant for all the agencies that they are aware at every times of the risk extent exposure or the risks that they have to manage otherwise it may lead to a numeral of disagreements, disputes and disruptions. Major reasons of disagreement and conflict are insufficient and defective contract documentation and also wrong contract arrangements [4].

This paper deals with introduction of the basic risk management in construction contract and aims to identify the problems in critical areas of construction project.

The contractual risk work involves the opportunity of gain that may happen during the course of a project. In determining contract policy, every parties should strive to understand and recognize each other's responsibility. Contract of construction essentially contain many risks that must be assigned in a manner that maximize the probability of successful project completion. In common construction contracts do not have straight apportion risk, but they deal with risk by defining contractual obligations subject to exceptions. The exceptions are based on the definite risk. As a result by way of example, a contractor will usually be responsible for failure to complete by the specified date, unless an event occurs which entitles him to an extension of time.

The area of construction Risk includes [3]

- Construction Exposures & Risks
- Litigation & Claims
- Construction failing Mitigation
- Construction Quality Problem

Strategies of Risk Management are:

- Risk Transfer
- Risk Financing.
- Understanding the legal system

The success of any agreement will depend upon whether it is enforceable in the courts and whether the decisions of the courts are based on policy considerations and existing judicial attitudes. Thus it is not just the Engineering but inter-relationship between Engineering and legal solutions that should be agreed due consideration for eliminating risk out of the project.

II Need of Study and Objectives

The risk management technique is not being used much because of less knowledge and awareness among the people. The track record is also very poor in terms of coping up with risks in projects, resulting in the affection of project objectives. Risk management is adopted to enclose the probable future risks proactively rather than being reactive.

Risk management applies to any project to estimate the most, major, and common risks which cause bad effect on the construction project to complete its objectives. This concept is very less popular technique in the construction industry and subsequently it is necessary to spread awareness of the same.

III Methodology of Risk Management

Generally there is no law that is available entirely for construction industry. Hence it becomes much more important to have a methodology which can reduce risk of all parties involved. Basically no any project can be called completely risk free. Though significant amount of risk can be minimized by carefully drafting the contract document. Prominence here should be given not only in drafting other than also implementing it successfully. The function of a contract supervisor is more fundamental for achieving risk free situation.

For that reason Risk Management requires:

- Classification of the particular risks
- Assessment of the legal and engineering responses to allow the risk

For reasons of this study, the researches methodologies are used in arrange to analysis data, collect data and report on findings and results. The research methodology chosen for this risk management project comprised comprehensive literature review, followed by open interviews and distributing questionnaire surveys to the different agencies i.e. contractor, client, consultants of the projects. In this study purpose for data analysis, methods applied qualitative risk analysis. Shown in Figure 1 the basic research methodology flow chart as used for this study.

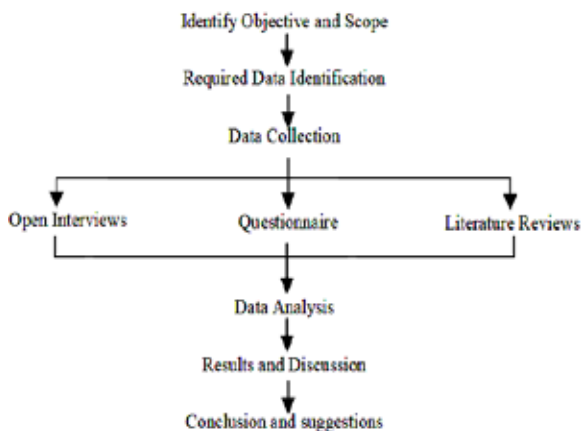


Figure1. Basic Research Methodology Flow Chart

IV. CONCEPT AND RISK OF MANAGEMENT IN Contract

The risk is the probability of variation in the incidence of an event, which may have either positive or negative consequences [5]. Risk management can also be classified as an event that may or may not happen and can lead to higher costs, the project extension, and failure to quality norms/requirements, satisfy information failure requirements/ norms and failure to satisfy specified organizational Risk Management [7]. The scenery of risk is such that the risk for one person may be a prospect for another. This completely depends on, from whose point of view the project is being judged i.e. a possible range outcomes, individual consequences and probability [6].

Construction projects have a profusion of risks, contractors cope with, and owners pay for. When mounting a contract strategy it is significant for the client to communicate his objectives to the contractor to make sure that the most appropriate risk-sharing strategy is preferred [8]. The risk management is best placed with that party concerned in the project management who is best capable to manage the factor which gives rise to it [4].

Risk connected with construction can be broadly categorized given to table 1:

Table 1: Types of Risks

Types of Risks	
Technical Risks: Incomplete Design Inadequate Specification Inadequate Site Construction Procedure Change in Scope	Financial Risks: Delay Payment Unacceptable Estimation Low Market Demand Exchange rate Fluctuation High Material Cost
Risks of Physical: Structure damage Equipment damage Injuries to Labor Material and Equipment theft and fire	Risks of Organization: Contractual dealings Experience of contractor Participant Attitudes Communication
Risks of Construction: Productivity of Labor Disputes of Labor Condition of site Failure of Equipment	
Risks of Environmental: Natural Disasters Weather Implication	

V. FACTOR AFFECTING RISK MANAGEMENT

History: New projects are more flat to risks as they are unusual from the other projects. Older projects have high probability of success against risks since they are similar to other projects which has been done before.

Management Stability: It means the whole management is share the same ambition or objective for any project. Consequently, it will be advantageous to achieve the objectives of the project with much ease. Likewise unstable management causes disturbance to the project objectives.

Staff experience and expertise: If the any project staff is sufficiently experienced and with special expertise the possibility of quality, cost and other objectives can be achieved.

Size of Team: Considering larger teams of any project, there are more chances of incidence of problem because of miscommunication.

Availability of Resources: When the project is presented with a good amount of resources then the answer to the problem will be good. For the reason that if the project is available with greater quantity of resources than it can deal with different risks with simplicity.

Compression of Time: When the plan of the project is highly compacted there are more chances of occurrence of risks in projects. If more time is existing for the project, then it can be coped up by mitigating risk impact on the project.

Complication: When the project is extremely complex there is more likelihood for the occurrence of problem in the project [9].

VI. COMMON SOURCES AND MAJOR PROCESS OF RISK MANAGEMENT IN CONSTRUCTION

The common sources of risks in construction industry are listed below [9]:

- Changes in project requirements and scope
- Design omissions and errors
- Ineffectually defined responsibilities and roles
- Unsatisfactorily skilled staff
- Insufficient contractor experience
- Improbability about the basic relationships between project participants
- Latest technology
- Unfamiliarity with confined conditions
- Compel majeure

Four basic processes of Risk Management:

- a. **Identification of Risk:** It is determination of most probable risks affecting the project and documentation of characteristics of every risk.
- b. **Quantification of Risk:** Consideration of risks and the probable interactions of risks with project actions to evaluate the possible outcomes of the project.
- c. **Response development of Risk:** Meaning of response steps for opportunities and threats associated with risks.
- d. **Response control of Risk:** Generally response to the changes implemented to eliminate risks throughout the project duration.

IX. RISK IDENTIFICATION TECHNIQUES

Identification of risk can be done by using following techniques [10]:

1. **Brainstorming:** Brainstorming is one of the most popular techniques. Usually, brainstorming is used for idea generation; it is also very helpful for risk identification. All appropriate persons connected with project gather at one place. There is one catalyst who is briefing about different aspects with the participants and then after note down the factors. Before closing it the catalyst review the factors and reduce the unnecessary ones.
2. **Delphi Technique:** Delphi technique is almost related to brainstorming but basic different is the participants in this do not know each other and they are not at the same place. They will recognize the factors without consulting other participants. The facilitator as in brainstorming sums up the known factors.
3. **Expert/Interview view:** Experts with sufficient knowledge in a project can be a huge help in avoiding similar problems over and over again. All the members or the relevant persons in the project can be interviewed for the recognition of factors affecting risk.
4. **Past Experience:** Past experience from the same type of project, the equivalence can be formed for recognition of the factors. While comparing the characteristics of projects will give approaching about the common factors.
5. **Checklists:** Checklists are simple but very useful predetermined lists of factors that are probable for the project. The check list which contains the risks list identified in projects undertaken in

the past and the responses to those risks which provide a top start in risk identification.

X. RISK CONTROL, ADVANTAGES, LIMITATION

Control of Risk is the final step of the process. Subsequent to we have implemented response actions, we must record and track their effectiveness and any changes to the project risk profile. Responses in use in risks should also be documented for prospect reference and project plans.

• Advantages of risk Managements are subsequent [10]:

- Success of objectives
- Shareholders dependability
- Decrease of capital cost
- Less uncertainty
- Value creation

• Limitations of risk Management [10]:

Basically the event of unacceptable assessment of risks, important time can be wasted in dealing with risk fatalities which are unlikely to occur. If more time is exhausted on the assessment and management of unlikely risks, then important possessions can be diverted which otherwise could have been very beneficial. Improbable events can occur, but if the probability of the risk occurrence is too low, then it is better to keep the risk and deal with the result if the risk in fact occurs.

CONCLUSION:

Technique of Risk management infrequently used by the participants in construction projects in developing countries. The participants apply to handle the risks with an casual approach. This technique is not working because of less knowledge and awareness among the construction. The risk management technique should be implemented into any construction project at the primary stage of the project to get maximum benefit of the technique. Therefore, there is prosperous need to have a well-documented method which should be a one stop solution to all hazards that are likely to occur during project life cycle. Present should be more strong approach towards risk management instead of the present irregular approach towards the risks.

Proper risk management techniques and analysis are rarely engaged by construction owing to the lack of experience and knowledge in the area. The awareness of risk by contractors and consultants is frequently based on their intuition and experience. The majority utilized risk response measures are risk transfer and elimination. Though, the respondents have exposed that these practices cause the problems of low quality, delays and low productivity in projects.

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