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A REVIEW PAPER ON USE OF PROBABILITY AND IMPACT METHOD FOR EVALUATION OF RISK MANAGEMENT IN CONSTRUCTION INDUSTRY

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Abstract – *Risk management is an important step in project success. Risk and uncertainties inherent in the construction are more than other industries. There is a gap between risk management technic and there practical application by construction contractor. So it is very important to manage risk in construction. We can manage risk at construction site by using probability and impact method. This paper present a review of need of risk management in the construction project as a construction projects are characterized as very complex projects, where uncertainty comes from various sources and it have often significant budget thus reducing risk should be priority for each project manager.*

Key Words: Risk, construction industry, management, probability, impact.

1. INTRODUCTION

The technique of risk management is used in various industries ranging from IT related to business, automotive, industry based on pharmaceutical, to the construction sector. Risks along with uncertainties inherent in the industry of construction much more than any other industries. Industries now have become more dedicated about applying risk management techniques in their project. However, in respect of construction industry, the same is not used regularly. Risk is one of the integral components of any project. All projects contain risks of varying size factors. No project is totally free of risks. Improper analyzation of risks and strategies are untrained to deal, thus project is suspected to failures. The process of planning, executing and maintaining all project activities is complex and time-consuming. The whole process requires a myriad of people with diverse skill sets and the coordination of a vast amount of complex and interrelated activities. The situation is made complex by many external factors. The track record of construction industry is very poor in terms of coping with risks, resulting in the failure of many projects to meet time schedules, targets of budget and sometimes even the scope of work. As a result, a lot of suffering is inflicted to the clients and contractors of such projects and also to the general public. Risk in the construction industry is perceived to be a combination of activities, which adversely affect the project objectives of time, cost, scope and quality. Some risks in construction processes can be easily predicted or readily identified; still some can be totally unforeseen. Construction risks can be related to technical, management, logistical or sociopolitical aspects or can be related to natural disasters. In the domain of project management, some of the critical effects of risks are failure to achieve operational requirements and the required quality, non completion of the project within stipulated time and estimated cost.

1.1. LITREATURE REVIEW

Mousa (2005) [1] The objectives of this research have been achieved through a comparative study of closed-ended questionnaires with interviews and a case study in Gaza Strip. The study findings show that the contractors and the owners suffer from lack of innovative methods to prevent or mitigate risks. Contractors and owners according to results do not utilize risk analysis techniques but depend widely on direct judgment in estimating time and cost. The results concluded that the most important risk factors were: financial failure of the contractor, working at hot (dangerous) areas, closure, defective design and delayed payments on contract. On the other hand, owner respondents concluded that the most important risk factors were: awarding the design to unqualified designer, Defective design, Occurrence of accidents, Difficulty to access the site, inaccurate quantities.

Klemetti (2006) [2] In this paper identify the risks that were caused by the network structure and the ways to manage risks in the co-operation of the whole project network. The focus of the study was put on the informal risk management means. The purpose is to emphasize other than legally binding contracts as risk management means. Risk management is thus in direct relation to the successful project completion. This paper describes

a detailed and widely accepted risk management process, which was constructed basically from four iterative phases: risk identification, risk estimation, risk response planning and execution, often managing the risk management process is included. In this paper it was also found that three main components of embeddedness are trust, fine-grained information transfer and joint problem-solving arrangements. All these three components demand longer-term relationships, personal touch and mutually developed working methods, information channels and problem- solving practices. This study was based on the assumption that by understanding better both the relationships in a project network and risks related to the network structure, project risk management can be more effective. The mode of research in this paper was interview and on the basis of that they concluded that three major reasons behind these risks; business practices, lack of know-how and pure risks.

Imbeah et al (2009) [3] This paper demonstrates the usefulness of the Advanced Programmatic Risk Analysis and Management Model APRAM originally developed for the aerospace industry, for managing schedule, cost, and quality risks in the construction industry. The usefulness of APRAM for construction projects was demonstrated by implementing APRAM for an example based on an actual building construction project and comparing the results with other risk analysis techniques. The results show that APRAM simultaneously addresses cost, schedule, and quality risk together in a coherent, probabilistic framework that provides the information needed to support decision making in allocating scarce project resources. In this paper the risk-based decision support tools available to construction managers fail to adequately address risks relating to cost, schedule, and quality together in a coherent framework.

Zou1 et al. (2010) [4] In this paper the aim is to develop a risk management maturity assessment model for construction organizations. This paper describes the development process of a Web-based RM3 risk management maturity model, including its contents, its validation and testing, as well as its applications. The RM3 developed has five attributes namely, management, risk culture, ability to identify risk, ability to analyze risk and application of standardized risk management process. These attributes are measured against four levels: initial, repeated, managed, and optimized. It is found that the proposed RM3 was suitable and useful. Using the RM3. Furthermore, it is found that the weakest attribute was "analyzing risks" followed by "application of standardized risk management process." It is therefore necessary to provide more training on qualitative and quantitative risk analysis to construction personnel and to develop and apply standardized enterprise risk management. It was concluded that the proposed RM3 was suitable for construction organizations to assess their risk management maturity levels and find ways for improvement. Implementing risk management in construction projects and organizations may bring a number of benefits and therefore it was necessary to have risk management as an integral part of a construction organization's management practice. This risk management maturity model RM3 can be used by construction organization for assessing and understanding their risk management maturity level, and develop strategies to improve their risk management practice. Based on literature review of this paper five attributes were chosen for the RM3 which are designed to test different aspects of an organization's risk capabilities, including: Management people and leadership capability in relation to risk;

Organizational risk culture;
Ability to identify risks;
Ability to analyze risks; and
Development and application of standardized risk management process.

The RM3 was applied to different construction organizations in the industry for testing and validation to gain a broad understanding of the current risk management maturity level of the industry and to propose a best suitable risk management model for it. The model can be used the organization level i.e., the organization as a whole_. It can also be used internally to compare risk management maturity and capability between different departments and project teams. Based on these research findings, it could be claimed that the RM3 developed in this research was user friendly, comprehensive, practical, and useful for construction organizations.

Martin Th.et.al. (2014) [5] This paper introduces a new, scientifically developed and in practice tested approach for implementing risk management in organizations in the construction industry. This paper has two main objectives: (1) raising

awareness about the inherent and often undervalued complexity of implementing risk management and (2) providing a route to implementing risk management in infrastructure projects. The innovative approach focuses on developing organizational conditions for effectively, cost-efficiently, and routinely applying risk management by balancing three dimensions: (1) the risk management method, (2) the project organization, and (3) the individual human factor.

It was the result of an organizational design science research and based on comprehensive literature surveys, as well as field research. Experts in the disciplines of risk management, innovation management, and change management, from academia and the professional practice.

Narendra Dudhe (2016) [6] In this study, they were try to identify, classify various risks from given set of contractual documents of construction projects and perform a qualitative risk analysis and thereby suggests methods to mitigate the developed risks so as to optimize the process and bring considerable changes in the result set.

Risk management process is applied to the above mentioned problem and all the risk was classified and treated in the following classes as mentioned below:

Risk Identification and Classification
Risk Assessment
Risk Response
Risk Control

In this paper qualitative risk analysis technique provides an effective insight and thus provides us with a crystal clear idea of the risks involved in infrastructure construction in India. The contract documents were used as a tool to determine and control (manage) risk by allocating risks to various agencies through various contracts. To minimize the chances of failure or the project work failing to perform i.e. showing under-performance, risk management policy must be implemented and evaluated at regular intervals of the work plan for any project especially in India.

In this paper it was also found that clients, designers, contractors and government bodies must work cooperatively from the feasibility phase onward to address potential risks in time. The analysis and findings in this paper also present valuable data for the Indian government and local construction agencies to have an in-depth understanding of the risk environment in construction in Pune city of India. Such understanding is very important for implementing further effective.

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BIOGRAPHIES

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