EXAMINATION ON RISK MANAGEMENT ANALYSIS FOR CONSTRUCTION INDUSTRY

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ABSTRACT

Construction projects are intricate, uncertain & risky that causes delay. Construction projects are facing several risks it will affect the project on schedule & cost. Risk management is practiced in many industries. Many industries enable a risk management plan in their projects for better performance and profits. No project is free from risks. Projects from the construction industry are different in size which involves different types of risk. The project aims to identify the risk and provide the best solutions. Some of the risks determined in the project are defective design, financial issues, delay in permitting, availability of drawings, changes in codes & drawing changes in the scope of work, payment delay, accidents during construction. We aim to identify risk management practices in the construction industry & it helps to mitigate risk in construction industries

Keywords: Risk Management, Construction Industry

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1. INTRODUCTION

1.1. General

The risk has become a part of our day to day life. One such area is the construction industry. Projects within the construction sector are categorized as fragmented, temporary & complex which brings upon risk exposure. Risk can be described as the likelihood of an event multiplied by its extent. A risk management plan will aid a construction industry to consider the various risks before they happen and reduce their influence on the project. The benefits of risk management are to provide good labor conditions and to protect from events that will cause damage to both the company and the environment.

1.2. Strategies and Process

Risk Management involves the procedure of conducting risk planning, risk identification, risk analysis, and observe risk on a project. Risk management aims to optimize time, cost, and quality

The Project Risk Management processes are:

Plan Risk Management— The risk management plan is important in the construction industry. It helps to optimize risk in construction projects. There are several tool and techniques to plan risk more efficiently that describes how risk ` activities will be performed.

Identify Risks— Risk is identified based on practices in the construction industry so that project managers are listed out based on previous project experience. Based on the study we have identified some risks are defective design, financial issues, delay in permitting, availability of drawings, changes in codes & drawing changes in the scope of work, payment delay, accidents during construction, and cost overrun in project

Plan Risk Responses— A risk management plan is prepared based on the outcome of a questionnaires-based survey in the construction project.

Perform Qualitative & Quantitative Risk Analysis—After the risk management plan is laid out, we have to identify risk & rank according to its priority based on the questionnaire survey in the construction projects. The major risk is identified by performing quantitative and qualitative methods like probability branching, primavera risk analysis tools, etc

Implement Risk Responses—It is the process of executing risk responses using various tools and techniques.

Monitor Risks—The above-identified risk are monitored throughout the project for project managers to run project effectively

1.3. Risk Approach

Below are the various risk approaches

Risk Avoidance- Risk avoidance is to get rid of the risk by using previous risk analysis from several completed projects.

Risk Reduction- While planning and designing the project we can brainstorm with a client, architect, project managers, structural designer and reduce the risk before the implementation of the project

Risk Transfer- Risk can be transferred to the third party and transfer the ownership to bear the risk by agreement, warranties& bonds.

Risk Acceptance- Risk acceptance involves embracing the risk. It can be categorized into active and passive Active: Risk can be predicted and prompt action can be taken by management using time and resources so the risk could be mitigated in the initial stage. Passive: This involves a realization of risk after its occurrence. So, we have to accept the risk, bear the loss and solve accordingly.

2. LITERATURE REVIEW

2.1. Literature Study – National Scenario

Patel Ankit Mahendra, (2013) Risks have a vital impact on construction comes in a phrase of it. Construction comes that area unit tangled in nature, unpredictability & risks from a different origin. After the risk is found, assessment is performed qualitatively and quantitatively, response with an appropriate technique for handling risks, so management the risks by examination. It is based on risk management practices and provides the best solutions

A. Suchith Reddy (2015) has inspected risk and its outcome within the construction field and also the process needed for risk management. The outcome of risk is evaluated in the project and the various tools and strategies applied to manage risk in the construction industry.

Chaitali S. Pawar et al. (2015) The risks in the construction industry have been predictable as a vital management procedure to accomplish the project goal in terms of price, time, scope, and quality. Qualitative risk analysis finds out the importance of the elaborate risks. It provides a quick and distinct illustration of risk. The chance assessment matrix is framed in line with the collision of risks on consumer & contractor as a result of each section of the contract could also be re-modulated. The study recommended a couple of ideas to moderate construction project risks.

Srinivas. K (2015) examined a study on risk assessment ranking reports on infrastructure enhancements within the Indian industry. Risk management may be a proactive technique to get the complete edges of the necessary programs that are initiated in each enterprise. The appliance of higher risk management practices aims to attain a full profit. The analysis was performed out for the chosen project by considering half-dozen doable risks in numerous phases of the project, that square measure capable of inflicting an unnecessary lag within the completion of the project. Various factors of the intense risks listed and supported the feedback obtained from the participants and also the RSI was firm for every of the 35 risk factors and a building project is subjected to risk and mitigating steps have to be compelled to be taken to scale back the chance impact to a manageable level if the threats tend to be uncontrollable.

Danish Ali et al. (2016) Once risk is located, a quantitative or qualitative assessment of risk is carried out and the best process to handle risk is chosen. A survey is conducted among the person to develop and mitigate risk.

S M Abdul Mannan Hussain et al. (2017) Economic process and socio-economic development square measure significantly necessary for developing countries. Construction comes square measure started in complex and vigorous environments leading to high unpredictability and risk. Project management literature describes extensively acknowledged risk management techniques, that is from four stages: risk identification, risk estimation, risk response designing and execution, risk management.

Mayank Kumar Singh et.al, (2017) Construction industry is susceptible to risk creating an environment of high unreliability and risk. The business is in the endangerment of various industrial and trading risks. The objective of this analysis is to spot significant ongoing risks and uncertainties among the business through literature survey and intends to form a foundation for forthcoming study for the development of a risk management structure to be acquired by stakeholder.

Ms. M Sivagami et.al, (2019) virtually each construction project faces some variety of risks throughout several stages. This affects project purpose in terms of your time, cost, quality, and performance as an entire or partially. There's an instantaneous relationship between procurement sort and risk management during a construction project. This paper deals with this relationship in some procurement choices and relies on form survey and interviews from authors.

S. Keerthana et.al, (2019) Construction comes area unit started very vital and dynamic setting which ends up during a bigger variety of uncertainties and risks, that demand time constraints. Currently day's construction industries area unit ever-changing their state of affairs by every day basis supported their wants and uncertainties that prevail everywhere the globe. From the previous works of literature, the various risk is taken into consideration. SCENARIO

2.3. Literature Study - International Scenario

Ekaterina Osipova (2008) The analysis focuses to consider risk management within the different procurement options. The study has addressed various construction projects performed

in Sverige and it includes a form survey and a series of interrogation with different stakeholders in the construction field. The outcomes of it show a scarcity of a repetitive approach to risk management, which may be a deficiency in current procurement practices.

Nerija Banaitiene et al. (2012) The construction industries are affecting unemployment and monetary loss. This has led to a change in the behavior of the clients and construction companies. This leads to upgrade quality, performance, and reduce price, and the need for project methodologies and management that can constructively manage project risk. This paper illustrates the research in Lithuania's construction projects that aim to analyze the risk analysis and risk management process

Shahid IQBAL et al. (2014). This research is established on the discovery of a questionnaire-based survey on risk management in construction in West Pakistan. 2 kinds of risk management methods are analyzed preventive approach and remedial approach of risk in the project. The study uncovers that monetary problems, a mishap on-site, and faulty style area units are major risks. The study facilitates the preparation of a schedule and smart coordination to facilitate managers to target vital areas in the project and reduce risks

Agnieszka Dziadosz et al. (2015) This analysis enhances the decision-making process and avoids project mistreatment from a Multi-Aspects perspective. It provides 3 different methods. This technique is established on the extended perspicacity of a choice maker. The investigation was completed on the method, that finds the kind of utilized information so it affects the standard outcome. The analysis issues, that area unit the canvas of application of the mentioned process doesn't seem to be reciprocally interconnected. They gift different features of alternatives of the investment method.

Pawel Szymanski (2017) Effective risk management will involve discovery and categorization of risk and very extensive analysis. The Discovery of project risks based on the project critical and its diversity could influence the project and estimating the chance of its incidence on the project. These circumstances are often classified into 3 categories: assurance, uncertainty, and risk They are 3 types of investors: risk preference, neutrality toward risk, and pure risk aversion and its measure. The conclusion of risk discovery and analysis of the project is a series of events showing the cause and the instance of an incident, and evaluate the impact on the atmosphere

Zakari Tsigaa et al. (2017) Proactive management of risk assist to escalate the success rate and deduction of price. The paper introduces a greenhorn tool for implementing the possibility management practices incomes. The tool allows the member to know a project, and to investigate risks during a project design using a different procedure like risk manifestation and town technique

2.4. Summary of Literature Review

Table 1

SI. No.	TOPIC	AUTHOR	JOURNAL/ BOOK	YEAR	REMARK
1.	A Study of Risk Management Techniques for Construction Projects in Developing Countries	Patel Ankit Mahendra, Jayeshkumar R. Pitroda, J. J. Bhavsar	International Journal of Innovative Technology and Exploring Engineering	October 2013	This study helps us to apply the risk management technique which includes well - documented procedures and it helps us to resolve all types of hazards most likely to occur in any construction project
2.	Risk Management in Construction Project	Shahid Iqbal, Rafiq M. Choudry, Klaus	Technological and economic	November 2014	The paper aims to know about different construction practitioners, toward different types of risk and management plan

		Holsechmac, Ahsan ALId Jolanta Tamostin	development of Economy		accordingly. In the paper, we came to know the most effective techniques in preventing/mitigating different types of risk.
3.	Risk Management in Construction Industry - A Case Study	A. Suchith Reddy	International Journal of Innovative Research in Science, Engineering and Technology	October 2015	A survey is conducted on the following aspects and its Identify, characterize, and risk involved in the construction industry Assess the vulnerability of critical assets to specific threats. Determine the risk (i.e. the expected consequences of specific types of attacks on specific assets, identifies ways to reduce those risks and risk is Prioritize to reduce risk measures based on a strategy
4.	Risk Management Strategies in Construction Companies in India	Danish Ali , Alvin Harison	IJIRST– International Journal for Innovative Research in Science & Technology	March 2016	The paper aims to know about various risks in the construction industry and a survey is taken in many construction industries. Some risk management plans are suggested to overcome to provide a risk-free environment. Its help the managers, Engineers, Architects, and stakeholders to consider risk and plan accordingly to overcome from cost and schedule of projects
5.	Risk Management in Construction Project As Per Indian Scenario	Mayank Kumar Singh, Shumank Deep, Rajeev Banerjee	International Journal of Civil Engineering and Technology	March 2017	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 and business risks. Thus, the people working in the industry bear various failures, such as, failure of abiding by quality and operational requirements, cost overruns and uncertain delays in project completion. It can be said that an effective systems of risk assessment management for construction industry
6.	Risk management in construction projects	Pawel Szymanski	2nd International Joint Conference on Innovative Solutions in Construction Engineering and Management:	April 2017	From the study risk management should be identified. The management should be based on checking the maximum benefits of these decisions, using all the tools of mathematical and analytical. Detailed analysis, will account all aspects of escorts, including even stakeholder analysis will allow us to effectively risk manage what the future will translate into benefits for our project

Inference: From table 2.4 Risk management is needful in many industries, especially in the construction industry. Many industries are not conscious of the risk management plan and it should be implemented in many industries Risk discovery and management techniques are scarcely used in the construction industry. From the literature study, we understand that risk management practices are done based on questionnaires survey in the construction industry. Based on Questionnaires survey analysis result scoring matrix is done or using probabilistic branching to avoid risk more efficiently.

3. CONCLUSION

This paper, help us to understand the basic concepts of risk management. From the literature study, we understand many tools and methodologies are used for risk management. Risk management helps the construction industry to forecast from schedule and cost overrun in projects. Some of the risks we have discovered are the risk of bad quality material, inaccurate

estimation of quantities work, cost overrun, poor competence & productivity of labor, poor coordination with subcontractor, poor performance of sub-contractor, and inadequacy of insurance. Through the analysis, we understand that weather and natural disaster plays the major role of risk in the construction industry which affect the schedule and cost in the project. In further research, we try to discover risk ranking and scrutinize risk-related reliability for clients, architects, and contractors to supervise risks efficiently and we will be laying out a risk management plan using primavera risk analysis software for project managers to work more productively.

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