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A Review Paper on the Study of different types of Risks involved in a Construction Project with respect to Seismic Zones in India

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***Abstract:** This study mainly discusses the critical Seismic risk factors and its assessment techniques through comparative study of various construction projects. About 14 relevant articles published over the last 10 years have been reviewed.. According to the Indian Seismic Code IS: 1893-2007, about 60% of India's lands areas fall under the threat of moderate-to-severe earthquakes. Many cities in India fall under the high seismic zones and have huge population and also there is a trend of increasing due to lack of employment opportunities in rural areas. Many people in these areas live in low to high rise building. Unfortunately these existing buildings are not earthquake resistant, and they did not follow the existing building code. This is because of poor construction practices and lack of awareness about earthquakes. These buildings are currently operational and need to be assessed and upgraded to minimize seismic damage and improve life safety for future earthquakes. These reviews are helpful for reducing different types of risks in construction project India with respect to seismic zones mainly in Lucknow (Zone III), Gorakhpur (Zone IV), Allahabad (Zone II) and Guwahati (Zone V).*

***Keywords:** Seismic Risk, Construction Risk, Life cycle of construction project, Risk Management, Risk Event.*

I. INTRODUCTION

Seismic risk is an uncertain event or condition that, if it occurs, has a negative effect on a project objective and human life. Seismic risk management is the systematic process of identifying, analyzing, and responding to project risk. The purpose of this paper is to review and bring various experts precautions discussions about different risk factors in construction project in different seismic zones in India. There is an urgent need to assess the seismic risks of buildings in urban areas of India as an essential component of a comprehensive earthquake disaster risk management policy. Effective risk management planning provides: An increased awareness of the Consequence of risk, a focus for a more structure approach to risk management, better risk information transfer between those concerned with and those responsible for such matters and reduced long term loss expenditure and hence corresponding increased profit.

II. LITERATURE REVIEW

A. According to krantikumar Mhetre, B.A. Konnur [1]Risk is perceived as a negative term, even though in theory it can have two dimensions. Risks are being managed every day in the industry, but not in such a structured way as the literature describes. Risk management is a technique that should be applied within an industry to achieve the goals of the industry. It is necessary to spread awareness and create interest amongst people to use risk management techniques in the industries

B. Aitwar Vishambar, Sontakke Kaustubh, Patel Kartik, Ashwini Salunkhes[2] studied cases from construction project.The flow chart of the different activity for better planning of risk management is necessary. Effective risk management process encourages the construction companies to identify and mitigate the risks and later if those risks managed effectively they can efficiently enjoy financial savings, and greater productivity, improved success rates of new projects and better decision making

C. According to N. V. Patil, Dr. P.G. Gaikwad [3] identified the risk in construction during the lifecycle of project many and different types of risk are encountered which can be termed as major or minor risk depending on the severity they have. In this study risk severity has very high rating in feasibility, design and technology stage of project. Proactive approach need to used than reactive, which possible only by understanding and implementing risk management principal. Mitigation measure can be worked out in advance, ensure the probability of successful project within the stipulated time and cos

D. A.Suchith Reddy[4] conducted a case study on construction industry. Risk management is strongly linked with the production phase. Majority of the risk processes are executed during this phase and the most active group being the contractors, have great

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influence on the risk management process. The owners and contractors pay little effort and time to assess and strategically plan for known, unknown or probable risks. If we don't have a proactive risk management process then problems that take place in a project could increase the delays and costs

E. B.A.K.S. Perera, Indika Dhanasinghe and Raufdeen Rameezdeen[5] studied cases from construction industry. In the study the risk of defective design, late approvals, late handling over of the site, tentative drawing and unforeseen site ground condition had thwarted the contractor on many occasions. A few risks that were not relevant to the two cases under study

F. Dr. Nadeem Ehsan, Ebtisam Mirza, Mehmood Alam[6] highlighted the perception of risk by contractors and consultants is mostly based on their intuition and experience. The most utilized risk response measures are risk elimination and risk transfer. However, the respondents have revealed that these practices cause the problems of delays, low quality and low productivity in projects.

G. Mr.Satish K. Kamane, Mr. Sandip A. Mahadik[7] concludes that the success of every project depends on how efficiently and effectively .Risk avoidance may include a review of the overall project objectives leading to a reappraisal of the project as a whole. Depends on how efficiently and effectively the uncertainties are handled. Risk management will not remove all risks from the projects. Its main objective is to ensure that risks are managed most effectively. The formal risk analysis and management techniques are rarely used by construction industry due to lack of knowledge and expertise

H. Engineer Rinaj Pathan, Prof. Dr. S. S. Pimpliar[8] provided a case study on construction project to describe and facilitates the study of the financial viability of project as affected by the concession period, as demonstrated in the case study ,Also he described the project background, the project contractor, the financing of the project, the risk involved in each phase the method used to limit the risk, the problem encountered the current status of the project, as well as an overall assessment

I. T.H. Nguyen, G. Bhagavatulya and F. Jacobs[9] indicated that several of the risks highlighted have a high impact even if the probability of occurrence is low like the bankruptcy of a contractor. Another important understanding from the research is that the designer is critical to the success of a project. An improper or an incomplete design can have a sizable impact on the schedule and cost of a project. It is also understood from the research that project management teams are not effective in terms of keeping communication channels with project stake holders and incapable of formulating the correct strategies when projects are not in good health

J. Prof A. A. Talukhaba, Mr J Okumbe[10] stated that the risk identification techniques most commonly used by the two types of companies are brainstorming and documentation review. The risk assessment technique employed by the indigenous construction companies is the risk management probability method whereas the multinational construction companies used the probability and impact matrix. The two types of companies further utilised 95 provision of insurance as their risk response strategy. The indigenous companies made use of risk transfer as a strategy for handling risk while the multinational companies adopted risk reduction as their strategy.

K. Yadav Ashwini Ashok, Prof. B.V.Birajdar[11] concluded that the management framework proposed by his project will be easier to apply than others. It incorporates the findings from this research and provides step-bystep guidelines for foreign companies who intend to invest in India's infrastructure projects in the future. It also has the potential to help national, provincial, and city government to examine their approach to and services in support of infrastructure projects.

L. Jie Li (Dongnan University, Nanjing, China) and Patrick X.W. Zou[12] (Faculty of The Built Environment, University of New South Wales, Sydney, New South Wales stated that a procurement method for large scale infrastructure projects has been used in many countries. To achieve a successful project, the lifecycle risks are identified based on the literature review and classified according to project stages. The advantages of in terms of its objective measurement make it suitable for systematically assess the risks in infrastructures projects. The conceptual model of proposed in this paper was verified by an illustrative example to be effective and efficient for assessment of risks in infrastructure projects. It is concluded that using lifecycle perspective to identify, classify and rank the risks associated in infrastructure project is feasible and using to assess the risks are effective and objective

M. Anil Kumar Gupta, Dr. M.K. Trivedi, Dr. R. Kansal[13] considered a long concession period and fluctuating risk profile of construction project it is suggested to set up a regular to the construction project which could be oversee the fast changing overall socio economic environment and suggest measure to lessen risks in the upcoming project; could intervene issues could not be addressed within the agreemen

N. Nerija Banaitiene and Audrius Banaitis [14]conducted the study on effective risk management process encourages the construction company to identify and quantify risks and to consider risk containment and risk reduction policies. Construction companies that manage risk effectively and efficiently enjoy financial savings, and greater productivity, improved success rates

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of new projects and better decision making. The research results show that the Lithuanian construction company significantly differ from the construction companies in foreign countries in the adoption of risk management practices. To management the risk effectively and efficiently, the contractor must understand risk responsibilities, risk event conditions, risk preference, and risk management capabilities.

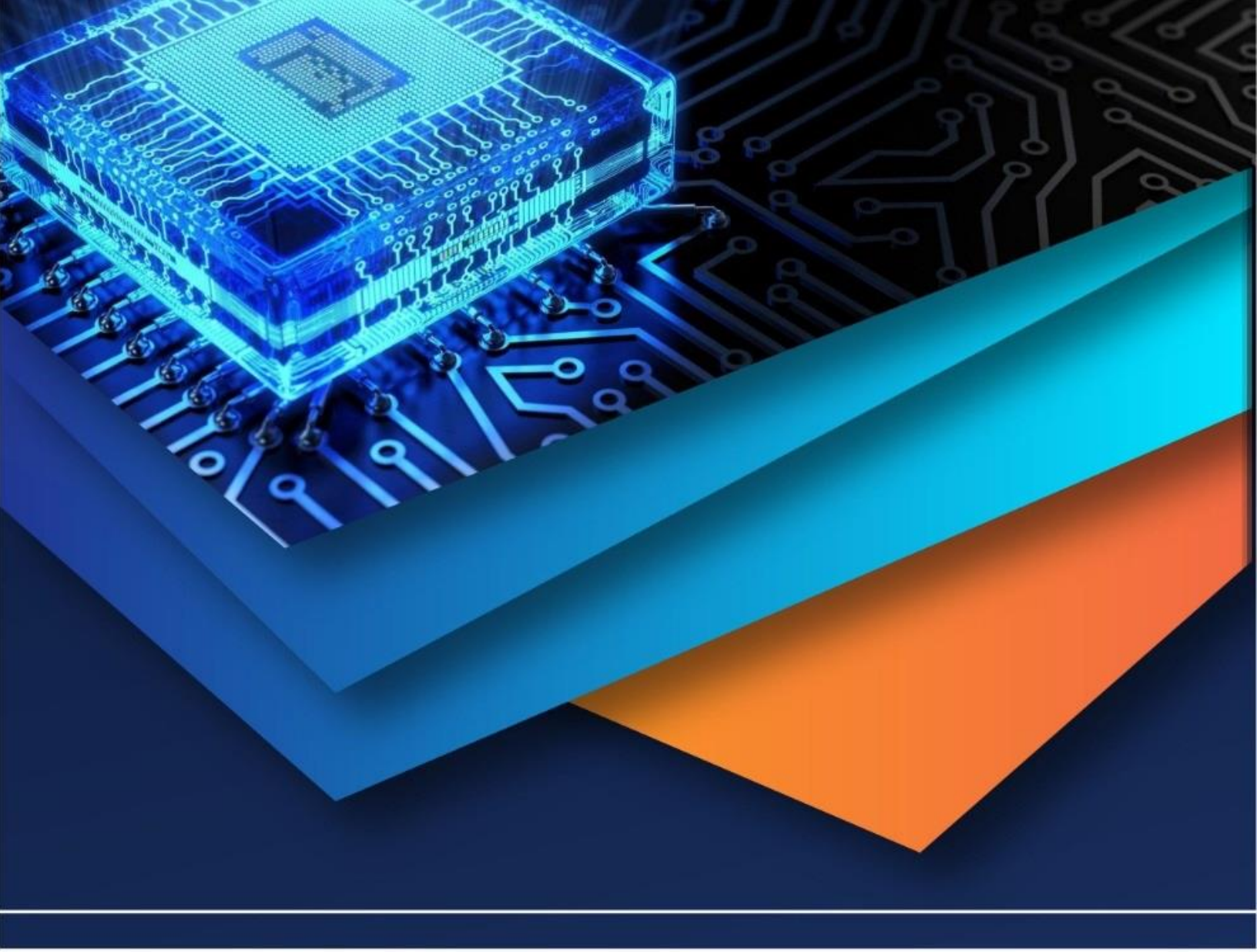
III. CONCLUSION

The method of seismic risk management is sparingly applied because of fewer know-how and awareness among the people. The track record is also small when handling seismic risks in projects, resulting in it affecting the project goals. This paper shows an elaborate review of the risk management process (analysis, identification and respond) of published literature. It is mainly focused on the development of risk process most especially in different seismic zones in India. Diverse contributions towards investigating various techniques are also discussed. In past studies, different sources of construction risk have being identified. Various approaches for classifying seismic risk have been recommended in the literature. Management can understand better the nature of risks by categorizing the risks. There are various ways for categorizing risk to achieve different goals. To some, in construction projects, risk can be categorized largely into external risks and internal risks while others classify risk in more elaborate categories. These categories depend on the situation of the project and the surrounding environment. This research work is considered a fraction of a comprehensive research project that is aimed at revaluating construction risk management process and facilitating the elimination of the existing gap between theory and practice of construction risk in different seismic zones in India mainly in Lucknow (Zone III), Gorakhpur (Zone IV), Allahabad (Zone II) and Guwahati (Zone V).

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