

# IDENTIFY AND ANALYZE THE RISKS THAT ARISE DURING THE CONSTRUCTION OF A HIGH RISE BUILDING.

*Abutayeb Jamalun Nabi*

*Al-Falah University, Dhouj,  
Haryana*

*Mohd Zeeshan khan*

*Assistant Professor  
Al-Falah University, Dhouj,  
Haryana*

*Fozail Misbah*

*Assistant Professor  
RICS SBE, Amity University  
Uttar Pradesh*

## ABSTRACT

*Risk is natural in every construction project, especially (Edmundas Kazimieras Zavadskas, 2010) complex projects like high rise buildings. It is helpful to understand the significant risks in order to assume their possible negative effects on projects. This research (Santoso, 2003) identifies, ranks and categorizes high potential risks in high rise building projects in India. Questionnaire surveys and interviews were conducted on engineers from contracting firms in the city.*

*The result shows that risks related to management and design are the most symbolic in high rise construction projects. It is also revealed that client interference should be avoided or reduced in line-up with good communication and teamwork between contractors and consultants to minimize defects. Contractors also need to give attention to the maintenance of equipment in order to sustain high efficiency levels.*

*The data for this study will be gathering through a detailed questionnaire survey. The questionnaire consists of two sections and first section consists of general questions, the second section carries the list of major risks.*

*This research seeks to identify and assess the risks in high-rise buildings and improve the risks that occur during the construction of high-rise building.*

**Keywords-** *Risks, Risks management, Risks factor, Risk analysis*

## 1 INTRODUCTION

In our country, construction industry is the second largest industry. So, for the progress of our country, high rise buildings which are a major part of construction industry play a very important role for the development of the nation but the risk factor in the business of construction is very high. Hence the risk that is associated with high rise structures also plays a important role in the construction industry. Risk can't be avoided but its amount can be minimise by taking proper allaying methods. As if risks are not properly handled then it can cause huge damage to the project. Therefore correct identification factor and assessment is very important to end up a project in a successful way.

The goal of risk management is to ensure informed decisions are made at the right time and that there is visibility of sources of uncertainty that may impact on the success of a project.

Risk management (V.Sakthiniveditha, 2015) should be at the earliest stages of project development, which will be helpful in developing an understanding of project uncertainty and in developing an appropriate project accident.

If risks are not properly analysed and strategies are not trained to deal with them, the project is likely to lead to failures.

There are number of reason for the introduction of changes on construction works including:  
Inadequate briefing from the client.

- Inconsistent and late instructions from the client
- Incomplete design
- Lack of meticulous planning at the design stage
- Lack of co-ordination of specialist design work

Risk is defined as an exposure to the consequences of uncertainty. It is usually considered as an unwanted event that can be identified and quantified through its impact and probability of occurrence. The classical definition of risk states that

**Risk = Probability x Impact**

- A probability of occurrence of that event.
- Impact of the event occurring (Magnitude of amount loss/gain).

**2. METHODS USED IN STUDY**

The data which is collected from different site, by the means of questionnaire are now analyse by RII (Relative Importance Index)

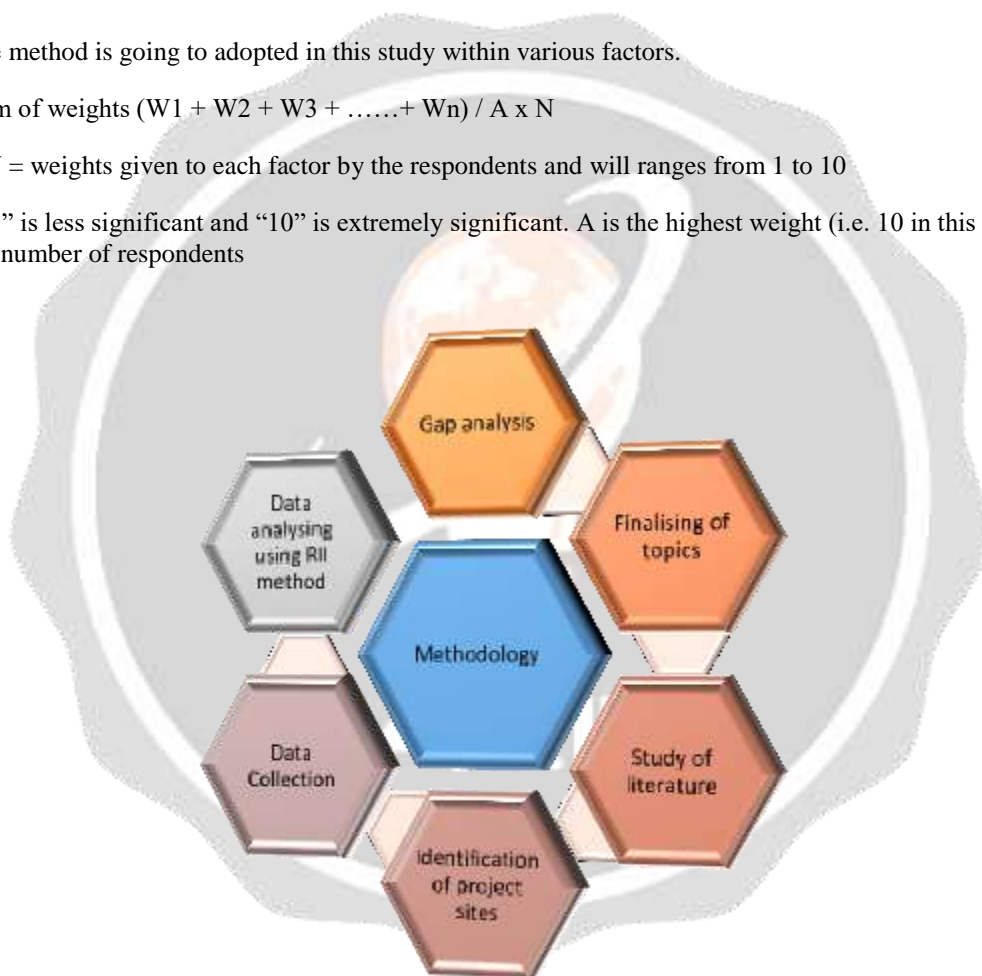
RII method (Thaheem, 2014) helps to determine the relative importance of the various causes and effects of delays.

The same method is going to adopted in this study within various factors.

$$RII = \text{Sum of weights } (W_1 + W_2 + W_3 + \dots + W_n) / A \times N$$

Where W = weights given to each factor by the respondents and will ranges from 1 to 10

Where “1” is less significant and “10” is extremely significant. A is the highest weight (i.e. 10 in this case), and N = total number of respondents



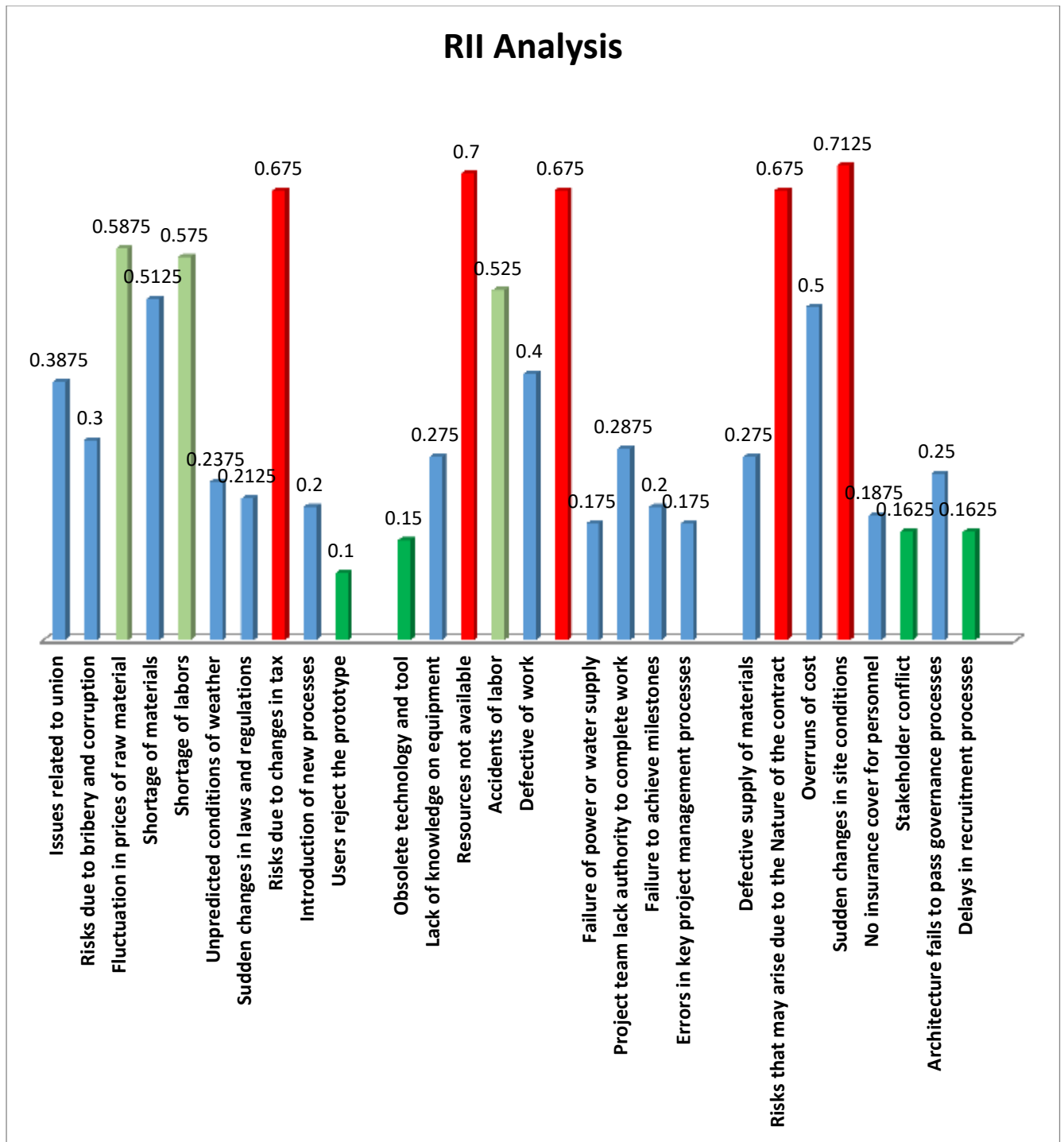
**3. DATA ANALYSIS**

External Risks	RII analysis
<b>Issues related to union</b>	0.3875
<b>Risks due to bribery and corruption</b>	0.3
<b>Fluctuation in prices of raw material</b>	0.5875

<b>Shortage of materials</b>	0.5125
<b>Shortage of labors</b>	0.575
<b>Unpredicted conditions of weather</b>	0.2375
<b>Sudden changes in laws and regulations</b>	0.2125
<b>Risks due to changes in tax</b>	0.675
<b>Introduction of new processes</b>	0.2
<b>Users reject the prototype</b>	0.1

<b>Project Risks</b>	<b>RII analysis</b>
<b>Obsolete technology and tool</b>	0.15
<b>Lack of knowledge on equipment</b>	0.275
<b>Resources not available</b>	0.7
<b>Accidents of labor</b>	0.525
<b>Defective of work</b>	0.4
<b>Risks that arise due to agreement of unrealistic deadlines in contract</b>	0.675
<b>Failure of power or water supply</b>	0.175
<b>Project team lack authority to complete work</b>	0.2875
<b>Failure to achieve milestones</b>	0.2
<b>Errors in key project management processes</b>	0.175

<b>Internal Risks</b>	<b>RII analysis</b>
<b>Defective supply of materials</b>	0.275
<b>Risks that may arise due to the Nature of the contract</b>	0.675
<b>Overruns of cost</b>	0.5
<b>Sudden changes in site conditions</b>	0.7125
<b>No insurance cover for personnel</b>	0.1875
<b>Stakeholder conflict</b>	0.1625
<b>Architecture fails to pass governance processes</b>	0.25
<b>Delays in recruitment processes</b>	0.1625



**Conclusion:**

According to the methodology, the literature has been reviewed from the various journals and different papers regarding risk assessment in the construction industry. The risks factors are identification based on the literature collected and by consulting the experts, based on this the questionnaires were prepared. Various structural systems within each category of the new classification have been described with emphasis on innovations. As far as the engineers concerned lack of knowledge of arbitration has the maximum risk rating and other risks are material shortage, shortage in supply of electricity, poor quality of procured materials, loss due to fluctuation of interest rate, accident in site sub-contractor related problems, error in drawings, improper verification of contract documents, and competition from other companies.

The fundamental data concerning the project risk in the construction phase of the building project were collected and analyzed. The assessment and management of risk can be improved after collectively combining quantitative and qualitative methodologies to determine the risks.

#### Future Scope:

- Impact of these risks factor are further analyze to reduce the impact on projects.
- The critical risk rating factors are need to be further research on suitable measure to minimize the impact on the project

#### REFERENCES:

- Sakthiniveditha, V., & Pradeep, T. (2015). A Study on Risk Assessment In The Construction Of High-Rise Buildings. *International Journal of Science and Engineering Research (IJOSER)*, 3(2), 0–4.
- Zou, Y., Kiviniemi, A., & Jones, S. W. (2017). A review of risk management through BIM and BIM-related technologies. *Safety Science*, 97, 88–98. <http://doi.org/10.1016/j.ssci.2015.12.027>
- Chileshe, N., & Boadua Yirenkyi-Fianko, A. (2012). An evaluation of risk factors impacting construction projects in Ghana. *Journal of Engineering, Design and Technology*, 10(3), 306–329. <http://doi.org/10.1108/17260531211274693>
- Yen, C. J., Cheng, D. R., & Lee, Y. F. (2012). The research on the corrective maintenance service for water supply and drainage system in high rise office building-taking one case as an example, (1), 393–402.
- Verma, H., Verma, N., & Professor, A. (2017). A Study on Risk Assessment and Safety Management in the Construction of High-Rise Buildings 1\*. *International Journal of Engineering Development and Research*, 5(1), 2321–9939. Retrieved from [www.ijedr.org](http://www.ijedr.org)
- Kaming, P. F., Olomolaiye, P. O., Holt, G. D., & Harris, F. C. (1997). Factors influencing construction time and cost overruns on high-rise projects in Indonesia. *Construction Management and Economics*, 15(1), 83–94. <http://doi.org/10.1080/014461997373132>
- Kim, S., Kim, S., & Yang, J. (2016). Extraction and Analysis of Construction Phase Risk Factors in High-rise Construction Project. *Korean Journal of Construction Engineering and Management*, 17(2), 90–98. <http://doi.org/10.6106/kjcem.2016.17.2.090>
- Tsai, T.-C., & Yang, M.-L. (2009). Risk Management in the Construction Phase of Building Projects in Taiwan. *Journal of Asian Architecture and Building Engineering*, 8(1), 143–150. <http://doi.org/10.3130/jaabe.8.143>
- Hsu, D. J., Sun, Y. M., Chuang, K. H., Juang, Y. J., & Chang, F. L. (2008). Effect of elevation change on work fatigue and physiological symptoms for high-rise building construction workers. *Safety Science*, 46(5), 833–843. <http://doi.org/10.1016/j.ssci.2007.01.011>