

RISK MANAGEMENT BY USING PRIMAVERA

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Abstract : Risk management constitutes identification, assessment and setting preference for risk mitigation. This may include a synchronized and cost effective way of using the materials and resources in an order to minimize the hazards that may arise along with monitoring and controlling the unfortunate events that may occur. Risk can happen due to uncertainty in financial market, accidents, failures in the project, natural factors, legal issues, risk associated with credit etc. Different methods can be applied to manage risk which may range from transferring of the risk to subsequent party, avoiding the risk factor, minimizing the consequences of risk and accepting the effect of risk in few cases. Project requires a special mission which is used by the client to get a viable edge in the market to operate. The past projects do not match the subsequent project due to its uniqueness which ultimately increases the chances of hazards. The characteristics of each project keeps on changing which make it difficult to be imitated. This requires unique skills to manage and accomplish the process.

I. INTRODUCTION

Risk Management is becoming more and more important in the field of civil engineering. One of the main reasons is that more and more projects fail, generating high unplanned costs. Risks can be so expensive that they even can lead to the downfall of a company. To increase the probability of success it is necessary for an organization to understand the potential risks that are involved in all these resources. Risk management is a fundamental component of project management. The Project Management Institute (PMI) lists the management of risk in their Project Management Body of Knowledge as one of nine knowledge areas for project management, along with the management of project scope, cost, and schedule.

Every new product innovation has to deal with risks and with every decision, there are risks associated with it. When starting a new land development project there cannot be a complete understanding of all the components, the technology, people's knowledge and expertise. So risks will be taken and decisions have to be made on how to handle those. To get an understanding of the potential risks they have to be systematically measured, the effects and possible causes of them have to be anticipated and then appropriate methods have to be chosen to deal with them. Once the risks have been identified they can be reduced, removed, avoided or accepted.

II. LITERATURE REVIEW

2.1 O. O. Odimabo, C. F. Oduoza, 2013, Economic growth and socio-economic development are particularly important for developing countries, and the construction industry plays a central role in driving both of these. The general situation observed currently in building construction in developing country such as Nigeria is that the output of a construction company is usually characterised by poor quality work, cost and time overruns. These characteristics originate because a number of risk factors have not been properly taken into consideration in the project planning and implementation stage. Therefore, a focus on risk management is necessary to improve the current project's poor performance. In this research authors aim to establish an exclusive and comprehensible risk management framework which will improve the performance of building construction projects in developing countries. The improved performance will be in the form of achieving successful project delivery within the time frame, minimizing cost overruns and optimizing project quality. In this paper, data is collected by three methods. These are the questionnaire, interviews and case study. In this study, the Delphi method for construction building project risk and the Bayesian belief network is adapted to model risk assessment/management in building construction environments. By analyzing data a Framework for Risk Assessment of Building Projects in Construction Firms is prepared. [1]

2.2 Dr. Haitham H. Al-Shibly, Dr. Basem M. Louzi, et al., 2013, the main objective of this research was to study the impact of risk management on construction projects success. The survey which was directed to the participants was developed according to the research design, approach, and data. This survey includes two major sections. The first section asked about the procedure followed in the organization to manage the risk. In section two, the survey attempts to specify if the project they experienced achieved the success criteria, this was according to 7 criteria factors were defined for construction project success listed in the questionnaire. The distributed questionnaires were 230 questionnaires and got 200 questioners back with a percentage of 87.4%. The results of the current study indicate that there is an impact exists between both Risk identification and Risk assessment on project success, scheduled time, planned budget, and the ability to comply with technical specifications. While there is no impact between Risk assessment and avoiding lawsuits or claims. Also, the study indicates that there is an impact of Risk response on project success, meeting the scope of work, scheduled time, and achieving the quality standards. [2]

2.3 Krantikumar Mhetre, B.A. Konnur et al., 2016, Construction industry is highly risk prone, with complex and dynamic project environments which create an atmosphere of high uncertainty and risk. The industry is vulnerable to various technical, socio-political and business risks. The track record to cope with these risks has not been very good in construction industry. As a result, 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. Risk management is a process which consists of identification of risks, assessment with qualitatively and quantitatively, responses with a suitable method for handling risks, and then controls the risks by monitoring. This paper covers the concepts of risk management and various risk analysis techniques to be used for the one stop solution for all types of hazards most likely to occur during any construction project lifecycle. [3]

2.4 A. Suchith Reddy, 2015, The Study investigated to acquire an overall idea about risk and its consequences in construction field and the process required for its management. The effect of risk on assessment of a project is discussed along with the tools and methods adopted to manage risk in construction industry. The objective of the research topic “Risk Management in Construction Industry” is to explore the effective way for implementation of risk management in construction industry, to consider the different types of risk management techniques applied to alleviate risk, to identify the use of implementation of the risk management, to determine the factors that can influence the applications of risk management in the project life cycle, wherein to categorize the principles adopted in Risk Management. He has conducted a survey on the following aspects of it, a) Identify, characterize, and assess threats involved in the construction industry b) Assess the vulnerability of critical assets to specific threats. c) Determine the risk (i.e. the expected consequences of specific types of attacks on specific assets). d) Identifies ways to reduce those risks. e) Prioritize risk reduction measures based on a strategy. [4]

III. METHODOLOGY

In this project work, prepared questions for survey by identifying factors which require in primavera for matrix formation. By studying some research papers on risk management in construction industry, residential building from Pune is chosen for case study. Total 10 people are respondent for this survey and 28 general risks are considered. Ranking is done on the basis of 5 options viz. (Very high, High, Medium, Low, Very low).

Procedure of work:

Step 1: Rank the probability, schedule and cost as per very high to very low.

Step 2: Analysis of response and calculate probability score.

Step 3: Risk categorization

Step 4: Risk result wise factor count.

In this analysis probability is taken as per filled in survey report and impact is taken from cost. From probability and impact calculation probability score is identified. By using probability score average of each risk category is taken. After taking average risk categories are ranked as per high, medium and low.

IV. RESULTS AND DISCUSSION

In questionnaire survey risks are ranked as per their occurrence and their impact as per probability, cost and schedule.

Table 4.1: RESPONDENT SHEET OF HIGH RISE BUILDING (Average taken from survey)

Risk Factors	Type (Threats or Opportunity)	Probability	Cost	Schedule
1) Time				
Logistical risk	T	H	H	L
Centring work not completed in time	T	M	L	M
Financial problems of firm	T	VH	VH	VH
Windows are not ready to fix	T	H	M	M
2) Quality				
Not proper supervision	T	L	L	L
Proper mixture of material	T	VH	M	M
3) Project Management				
Improper selection of site	T	H	H	H
Planning and designing	T	M	L	M
Government rules and regulations	T	M	M	M
Rera effect on booking	O	M	M	H
4) Contract				

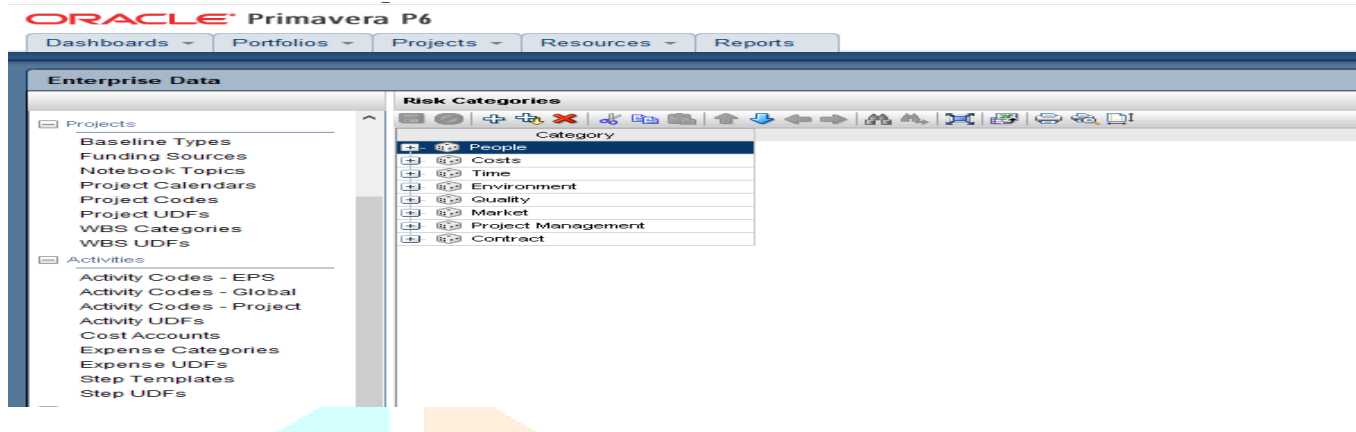
Change in contractors demand	T	M	L	M
Not using selected material	T	L	L	L
5) People				
Health and safety of labours	O	H	VL	H
Strike of labours	T	VH	VH	VH
Thieves on site	T	M	M	M
Lack of skilled labour	T	L	M	L
Line out of blocks is improper	T	M	M	M
Unskilled labours doing electrical work	T	M	M	M
Scaffolding not properly tightened	T	M	L	M
Clients demands are different	T	VH	M	VH
6) Market				
Change in rates of material	O	VH	H	VH
Constraint of availability of concrete	T	M	M	M
7) Environment				
Water percolation while excavation	T	L	VL	L
Heavy rain while construction	T	M	M	M
8) Cost				
Different soil conditions	T	M	H	M
Availability of resources	T	H	H	H
Damage of blocks	T	L	L	L
Damage of electrical wires	T	M	M	M

Table 4.2: Risk categories and their ranks

Risk Category	Result
Time	H
Quality	L
Project Management	M

Contract	L
People	H
Market	H
Environment	L
Cost	H

As per these results and discussions risks are identified as per high to low.



The screenshot shows the Oracle Primavera P6 Risks of Demo interface. The main window displays a table of risks with columns for ID, Name, Type, Status, Owner, Category, Probability, Schedule, Cost, and Severity. Below the table is a 'Probability and Impact Diagram' which is a matrix showing the relationship between Probability (Very High, High, Medium, Low, Very Low) and Severity (Severity 1 to Severity 5). The matrix cells are color-coded to represent risk levels.

Probability	Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Very High	6	12	18	36	72
High	4	7	14	28	56
Medium	3	5	10	20	40
Low	2	3	6	12	24
Very Low	1	1	2	4	8

V. CONCLUSION

1. This research is unique in a way that a project case study is used to develop a better understanding using the realistic data compared with formulated model of risks.
2. A stepwise case study is elaborated in the light of the guidelines. From the results of the case study of building construction at Pune, it showed that the forecasted results are approximately accurate as per their experience.
3. In case study, high risk categories are time, people, market, cost which are highlighted in red colour. Medium risk is identified project management and low risks are identified as quality, contract and environment.
4. Out of eight main categories four categories are under high risk, one is under medium risk and three are under low risk.
5. Future scope of the project is wide as same model can be applied in similar constructions to avoid risks. The model can be easily modified and applied in any construction risk involving attributes to analyze the most critical attributes causing risks to the construction of building.

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REFERENCES

- [1] O. O. Odimabo, C. F. Oduoza, Risk Assessment Framework for Building Construction Projects' in Developing Countries, International Journal of Construction Engineering and Management 2013, 2(5): 143-154 DOI: 10.5923/j.ijcem.20130205.02
- [2] Dr.Haitham H. Al-Shibly, Dr.Basem M. Louzi, Mohammad A. Hiassat, The impact of risk management on construction projects success from the employees perspective, INTERDISCIPLINARY JOURNAL OF CONTEMPORARY RESEARCH IN BUSINESS, AUGUST 2013 VOL 5, NO 4
- [3] Krantikumar Mhetre, B.A.Konnur, Amarsinh B. Landage, Risk Management in Construction Industry, International Journal of Engineering Research, Volume No.5, Issue Special 1 pp : 153-155, ISSN:2319-6890(online),2347-5013, 8 & 9 Jan 2016
- [4] A. Suchith Reddy, , Risk Management in Construction Industry - A Case Study, International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Issue 10, October 2015, ISSN(Online) :2319-8753 ISSN (Print) : 2347-6710

