RESEARCH ARTICLE

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A Study on Awareness of Risks and Risk Management Practices among Contractors in Buldhana District

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ABSTRACT

This research focuses on the study of different risks which occurs in road construction projects. Further it tries to identify the awareness level and relevance of those risks and its management among the civil contractors in Buldhana district. Focusing on broader construction risks, the research deals only with specific risks concerning the civil contractors as they form the baseline of the construction projects

Keywords: Risk management, Risk awareness, Risk identification, Risk assessment, Risk response, civil contractors.

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INTRODUCTION

Civil construction projects occupy major portion of financial budget in India. In India the most preferred method of undertaking civil construction projects is by allotment through tender process. At the base level of this tender process most of the work is being done by civil contractors hence the study focuses on awareness of risks and the ability to handle risks among civil contractors in Buldhana district.

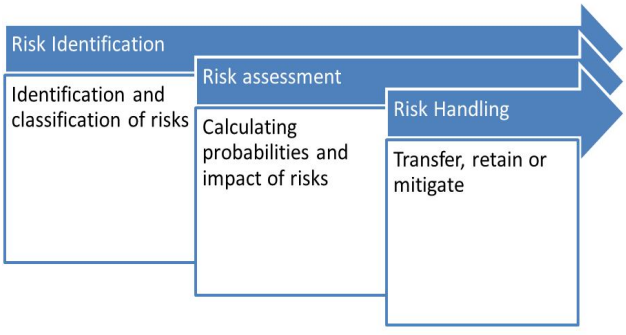

Figure 1: Risk Management Steps

Figure 1 shows steps in risk management process in construction projeects as recommended by PMI 2013 [1]

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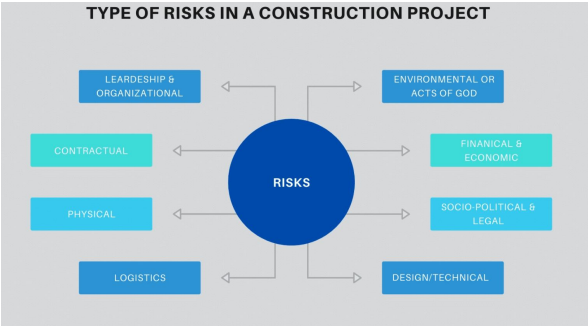

Figure 2: Types of risks in construction projects

Figure 2 represents different types of risk faced by civil contractors in a construction project.

With reference to the broad categories of risks as stated in above figure a pilot study was done to identify critical risks in road construction projects faced by civil contractors and the following risks were identified to be crucial for the research:

- Time overrun on part of subcontracting parties
- Delay in schedule
- Irregular Client interference in Design
- Execution risk owing to local factors
- Irregular Client interference in Scope other than Design
- Improper communication with stakeholders
- Inefficient Labours
- Strikes
- Noncooperation between structural and Design workers
- Restricted availability of site
- Unsuitable climatic conditions
- Variations in the cost of procurement
- Govt. officials Red tapes
- Unavailability of Govt. officials causing delay
- Payment delay from investors
- Payment delay from Govt.
- Improper cash management
- On-site safety measures
- Legal regulations
- Budget overrun

The research assumes risk handling process model as follows:

The risk originating in the construction projects would be either a.ignored or b. mitigated or c. transferred to other party.

LITERATURE REVIEW

Iqbal S, Choudhry R M, Holschemacher K, Ali A and Tamoðaitienë J studied "Risk management process in construction projects" and the objective of their paper was to understand awareness level regarding risk management practices [2]. They concluded the method of risk management is sparingly applied because of fewer know-how and awareness among the people. Wang S Q, Dulaimi M F and Aguria studied "Risk management framework for construction projects in developing countries" and developed an essential tool to assess the level of risk associated with the highway project under study in the bidding phase in order to take preventive actions [3]. This research highlighted the importance of having proper assessment of risk other focusing on the inefficiency of bidding process. Liu J, Zhao X and Yan P studied- "Risk paths in international construction projects: Case study from Chinese contractors" and found that risk management has to be followed by the all firms to maintain the decorum of construction site and organization [4]. The current literature clearly highlights the importance of identification of critical factors due to which cost and time overrun happens in a given construction projects. These factors have a dependency on geographical factors. Hence in this research the focus is on identification of various types of risks and risk management practices particular to road construction projects in Buldhana district and studying if the civil contractors are aware of the same. As derived from literature review the risk management framework of risk identification, assessment and handling would be used for the purpose of risk management.

Research novelty: Instead of focusing on broader construction risks, this research deals only with specific risks concerning the civil contractors as they form the baseline of the construction projects.

RESEARCH QUESTION

1. What kind of risks a civil contractor faces in construction projects?
2. What are the risk management practices followed by civil contractors?
3. What is the awareness level of civil contractors regarding risk management practices in road construction?

RESEARCH OBJECTIVES

1. To study different risks faced by civil contractors in construction projects.
2. To study implementation of risk management practices by civil contractors in construction projects.
3. To study awareness level of the civil contractors regarding road construction projects in Buldhana District.

RESEARCH HYPOTHESIS

Ho1: The civil contractors in Buldhana district are aware of the different types of risk identification practices followed in the construction projects.

Ha1: The civil contractors in Buldhana district are not aware of the different types of risk identification practices followed in the construction projects.

Ho2: The civil contractors in Buldhana district are aware of the different types of risk assessment practices followed in the construction projects.

Ha2: The civil contractors in Buldhana district are not aware of the different types of risk assessment practices followed in the construction projects.

Ho3: The civil contractors in Buldhana district have same preference for risk response practices.

Ha3: The civil contractors in Buldhana district do not have same preference for risk response practices.

RESEARCH METHODOLOGY

Population and sample

The population for the research includes registered civil contractors in Buldhana district. Government sites such as www.mahapwd.com and www.cpwd.com have been used to obtain the list of civil contractors. Estimated population hence obtained from these sources is of the range 350-400 civil contractors. Using Kregcie and Morgan sample size table the sample size required for the given populated is set at 200[5].

Data and sources of data

Secondary data regarding identification of risks in construction projects, number of registered civil contractors has been collected from journals, books and official web resources. Primary data including awareness level of risks and risk management practices was collected by submitting questionnaires to civil contractors. Opinion of employees of Public Works Department was also considered to reaffirm the conclusions with the results obtained.

Method of sampling and theoretical framework

The research is conducted using probability sampling where. 260 random civil contractors were sent a questionnaire and the first 200 have been used as the sample. The design of the research can be understood in two parts- Firstly identification of risks and risk management practices was conducted and in the second part results from the same study was applied to the civil contractors of Buldhana District.

Statistical tool and techniques used

Identification of risks and risk management practices was studied using descriptive statistics. To draw conclusions regarding the awareness level of civil contractors the research has employed inferential statistics. The significance level regarding the same was studied with the help of chi-square test.

RESULT AND DISCUSSION

Improper cash management has been identified as the prime risk and this is followed by the risks concerning unavailability of Govt. officials. Delay of funds from Government and execution risks due to local factors are also significant risks identified in the research. With significance rank of 5 the payment delay from investors is another identified risk.

Table-1 : Probability of risk occurence

Risks Particular	Average Probability
Timeoverrun on part of subcontracting parties	0.4
Delay in schedule	0.6
Irregular Client interference in Design	0.3
Execution risk owing to local factors	0.6
Irregular Client interference in Scope other than Design	0.35
Improper communication with stakeholders	0.5
Inefficient Labours	0.25
Strikes	0.3
Noncooperation between structural and Design workers	0.25
Restricted availability of site	0.35
Unsuitable climatic conditions	0.3
Variations in the cost of procurement	0.4
Govt. officials Red tapes	0.65
Unavailability of Govt officials causing delay	0.6
Payment delay from investors	0.5
Payment delay from Govt	0.45
Improper cash management	0.75
On-site safety measures	0.3
Legal regulations	0.35
Budget overrun	0.3

Table-1 shows the average likelihood of occurrence of a particular risk by civil contractors in a road construction project.

Table-2 : Impact of risks

Risks Particular	Avg. Impact (out of 10)
Timeoverrun on part of subcontracting parties	7
Delay in schedule	5
Irregular Client interference in Design	4
Execution risk owing to local factors	6
Irregular Client interference in Scope other than Design	7
Improper communication with stakeholders	5
Inefficient Labours	3.5
Strikes	4
Noncooperation between structural and Design workers	7
Restricted availability of site	7
Unsuitable climatic conditions	6
Variations in the cost of procurement	8.5
Govt. officials Red tapes	5
Unavailability of Govt officials causing delay	7
Payment delay from investors	7
Payment delay from Govt	8
Improper cash management	9.5
On-site safety measures	5
Legal regulations	7
Budget overrun	8

Table-2 shows the average impact of a particular risk faced by civil contractors in a road construction project. The impact has been calculated based on increase cost of the project and delay in project duration.

Table-3 : Significance of risks

Risks Particular	Avg. Impact (out of 10)
Timeoverrun on part of subcontracting parties	2.8
Delay in schedule	3
Irregular Client interference in Design	1.2
Execution risk owing to local factors	3.6
Irregular Client interference in Scope other than Design	2.45
Improper communication with stakeholders	2.5
Inefficient Labours	0.875
Strikes	1.2
Noncooperation between structural and Design workers	1.75
Restricted availability of site	2.45
Unsuitable climatic conditions	1.8
Variations in the cost of procurement	3.4
Govt. officials Red tapes	3.25
Unavailability of Govt officials causing delay	4.2
Payment delay from investors	3.5
Payment delay from Govt	3.6
Improper cash management	7.125
On-site safety measures	1.5
Legal regulations	2.45
Budget overrun	2.4

Table-3 shows the significance scores or criticality scores of different risks identified in a road construction project. The significance has been calculated as multiple of probability of occurrence of a risk and its impact in case of its occurrence.

Table-4 : Ranking of risks

Risks Particular	Rank
Timeoverrun on part of subcontracting parties	9
Delay in schedule	8
Irregular Client interference in Design	18
Execution risk owing to local factors	4
Irregular Client interference in Scope other than Design	11
Improper communication with stakeholders	10
Inefficient Labours	20
Strikes	18
Noncooperation between structural and Design workers	16
Restricted availability of site	11
Unsuitable climatic conditions	15
Variations in the cost of procurement	6
Govt. officials Red tapes	7
Unavailability of Govt officials causing delay	2
Payment delay from investors	5
Payment delay from Govt	3
Improper cash management	1
On-site safety measures	17
Legal regulations	11
Budget overrun	14

Table-4 ranks different risks based on their significance scores. The risks have been ranked by considering the most significant identified risk as rank1 and so on.

CONCLUSION

The most significant risks faced by civil contractors concerning Unavailability construction projects were identified systematically. Observed frequency of awareness of different risks by civil contractors is significantly higher than the expected one. Using chi-square test it is established that the civil contractors are aware of the different risks associated with construction projects. Chi-squares values for the awareness of risk identification practices and risk assessment practices were also significant. Hence it is concluded that the civil contractors are aware of the risk identification and assessment practices. However no general consensus exists among civil contractors in their response to risk handling practices. The study suggested failure to have a proper plan for risk handling and insufficient theoretical front exposure is linked to improper risk handling. Hence it can concluded that training of civil contractors concerning theoretical and practical aspects so that they could handle risks faced in construction projects in a better way is important. The conclusion of this research could be used in understanding appropriate training requirements for the civil contractors so as to manage the construction risks.

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