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INVESTIGATION AND CONTROL OF MAJOR RISKS ON CONSTRUCTION SITES

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ABSTRACT

Risk management in construction industry is not at all an easy process. Because risk causes different problems in cost, quality and time. If risks are not managed properly, sequence of works will get affected in construction sites. This paper clearly explains about six types of risks, their causes and serious issues faced by Contractors, Project managers and engineers. Hence questionnaire has been prepared to find out the root causes of risks and where it comes from..Experts shared their views and some ideas through interview to reduce the risks. Thus risks are identified, quantified, and suggestions have been given to minimize or control the risks.

Key words: Risk management, Construction industry.

INTRODUCTION

To being an owner of a small construction or contracting business is a dream for many people. Construction is a very high risk business. Implementing project quicker than the standard duration is always not easy task to management. Many construction projects have failed to achieve the time, cost and their aim.

The Proprietor, companies, consultants, bankers and economic institutions, sellers & suppliers, each has their own fears of facing risks in conducting the business. The magnitude of the risks is undefined at times.

Construction projects are unique always and risks arise from a number of different sources. Risk is said as any action or incidence which will affect the success of project objectives. We all know that we cannot avoid risks but proper maintaining the risks can be controlled.

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Some of the important definitions are as follows:

Risk: Risk is said as the combination of both chance of an event and its outcome. Risk is a deviation from the expected.

Risk analysis: Systematic use of information that is to identify the causes and to estimate the risk. Risk analysis gives a basis for risk evaluation, risk mitigation and risk acceptance.

Risk evaluation: Method used to compare the estimated risk against given risk criteria to determine the significance of the risk. Risk evaluation helps to assist in the acceptance or mitigation result.

Risk mitigation: Method of selection and implementation to modify risk. It is simply said as improvement and lessoning.

Risk acceptance: Decision to accept a risk. Risk acceptance depends on risk decisive factor.

Risk assessment: General process of risk analysis and risk evaluation.

Risk identification: Process to find, list and typify the elements of risk. Elements may include source, occurrence, outcome and chance.

Risk avoidance: Decision not to become involved in or action to withdraw from a risk situation. The decision may be taken based on the final result of risk evaluation.

Risk communication: Exchange or sharing of information about risks. The information may relate to existence, nature, form, probability, severity, acceptability, mitigation or other aspects of risk.

Risk estimation: Process used to assign values to the probability and consequence of risk. Risk estimation may consider cost, benefits, stakeholder concerns, and other variables, as appropriate for risk evaluation.

Risk criteria: Risk criteria may include associated cost and benefits, legal requirements, socio economic and environmental aspects, concerns of stake holders, priorities and other input to the assessment.

Risk reduction: Actions taken to decrease the probability, negative consequences (or) both.

Risk management: Risk is said as combination of both probability of an event and its consequence. Risk is a deviation from the expected.

Risk Management process is –

1. Risk Management planning
2. Risk Identification/Classification
3. Risk Assessment/Evaluation

   Qualitative Risk Analysis

   Quantitative Risk Analysis
4. Risk Response planning & scheduling
5. Risk Control/Monitor

Construction industry is weighed down with risks more than any other industry. The industry is prone to various types of risks; the projects will be destroyed if there is no care. When these risks are not managed or tackled effectively, the industry will undergo poor performance which is exactly the situation. There are many types of risks occurs in our construction industry but in this paper six types of risks are discussed in detail,

Fig. 1: Types of risk

Scope of risk management

- To avoid expensive disruption and delays to the project.
- It gives knowledge to risk in projects, which allows assessment of contingencies that actually reflect the risk and which also tend to discourage the acceptance of financially unsound projects.

- The target of this thesis work is not to list out risks that the construction industry is facing but to find out the key risks by ranking that can significantly influence the delivery, quality and safety of construction project.

EXPERIMENTAL

Materials and methodology

In this research paper, main focus has been made on the general concepts of the risk management. Questionnaires were prepared for the engineers, project managers and contractors to find out the major risks in construction management. Risk identification has been done through the questionnaire. Then the main root causes for the risks were identified and the suggestions have been arrived from the Experienced Engineers/Contractors. Few project reports were also reviewed and investigated the reports and interviewed with experienced engineers. The end results has been compared with, the reports, answers to the questionnaires and with the interview done with the engineers. Finally suggestions and recommendations were given to control or minimize the risks.

RESULTS AND DISCUSSION

Answers for questionniare by the experts

Technical risk

In the chart 2, Percentage of technical risk – the main causes for risks identified in, Estimation details, Proper site investigation & Design process.

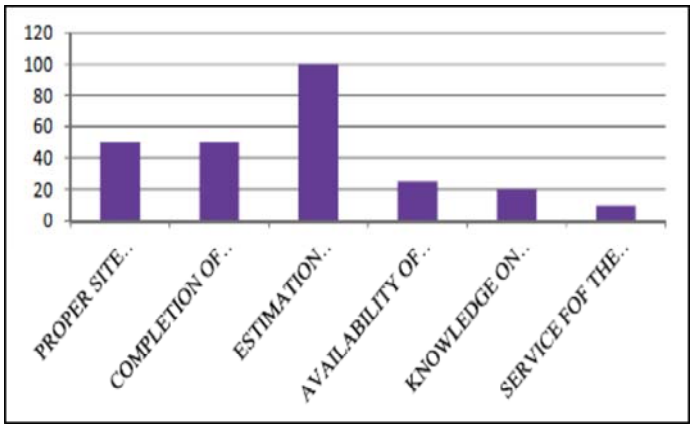

Fig. 2: Percentage of technical risk

Financial risk

In the chart 3, Percentage of financial risk – the main causes for risks identified in, Delay from clients, Amount more than expected and Increase in price of raw materials.

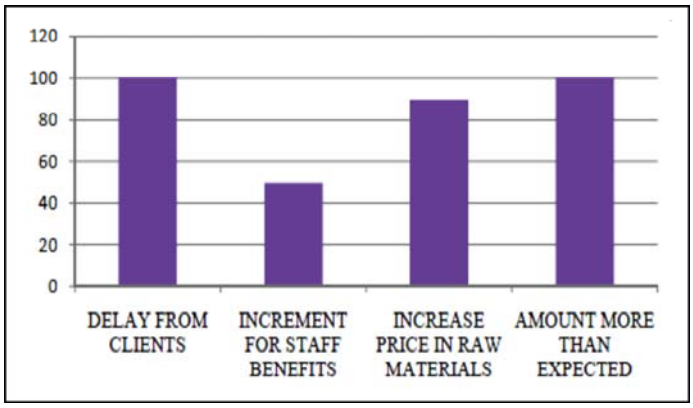

Fig. 3: Percentage of financial risk

Construction risk

In the chart 4, Percentage of construction risk – the main causes for risks identified in, Safety of workers and Communication between the labours.

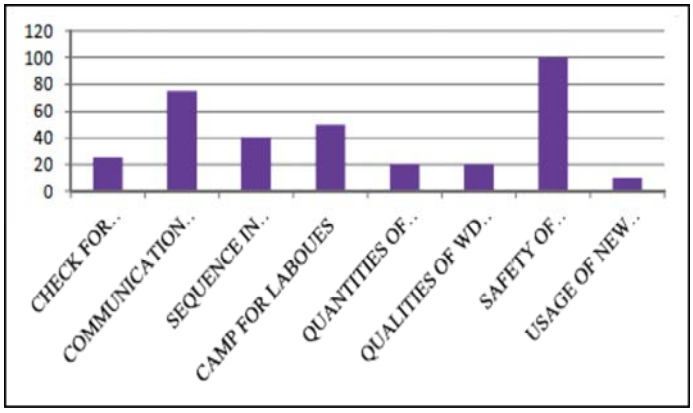

Fig. 4: Percentage of construction risk

Political risk

In the chart 5, Percentage of political risk – the main causes for risks identified in, Pressure from political parties and Local bodies compulsion.

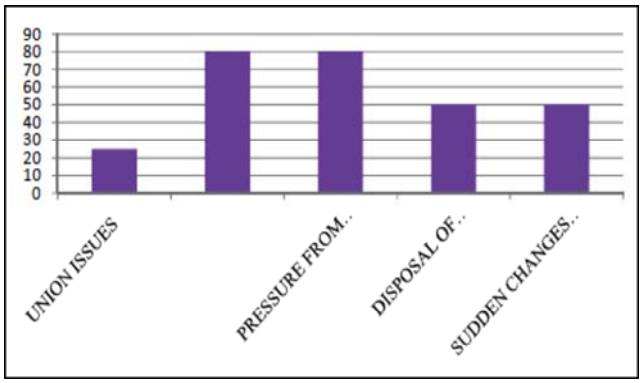

Fig. 5: Percentage of political risk

Environment risk

In the chart 6, Percentage of environmental risk – the main causes for risks identified in, Natural disaster and Weather and seasonal changes.

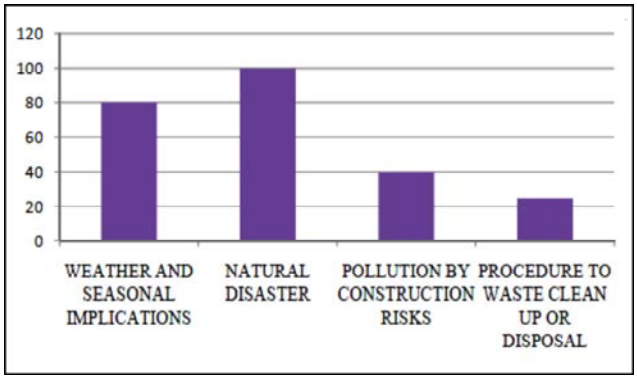

Fig. 6: Percentage of environmental risk

Management risk

In the chart 7, Percentage of management risk – the main causes for risks identified in, Industry related problems & Use of WBS to help identify project risk.

Results by the experts through interview.

Overall percentage on risks

In the chart 9, Overall percentage of risk – Construction risks are more, Technical and Financial risks are in the next level. Hence construction risks have to be in proper control otherwise the project will fail.

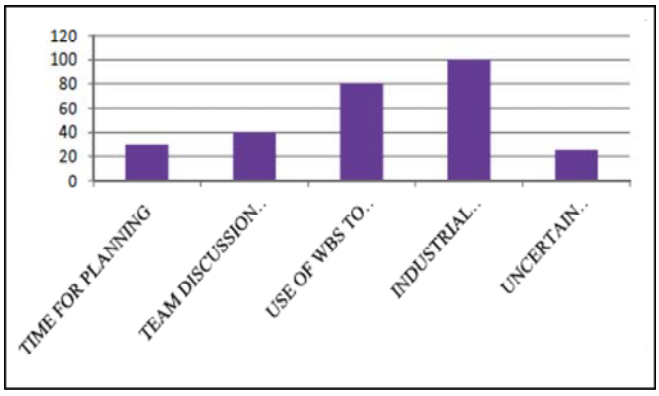

Fig. 7: Percentage of management risk

Fig. 8: Flowchart illustrating risk by experts

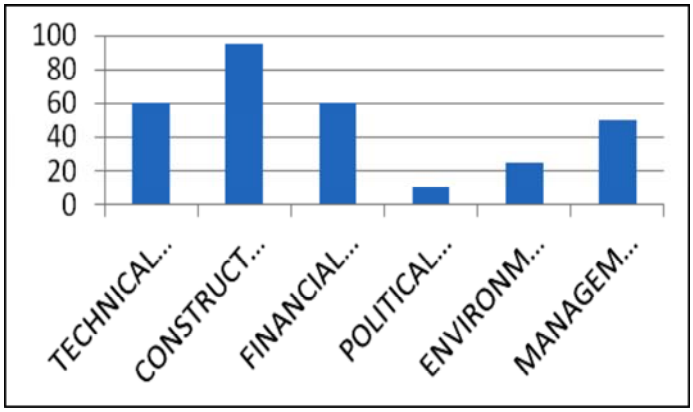

Fig. 9: Overall percentage of risks

CONCLUSION

The following are the recommendations to control the risks,

By proper risk management system it is easy to reduce the risks. This kind of management process to be done at the initial stage itself to get maximum benefit.

Delay in the project is also the main risk in construction industry; this may affect the project directly or indirectly. The delays in projects are caused because of lack of communication, shortage of supply of materials, design errors, slowness, equipment damage, injuries, and faulty work and missed deadlines. The delays can also be caused by slow decision making and financial issues.

Lack of skilful workers is the major risk faced by almost all the companies. This is because, due to high demand in the market, the skilled workers are migrating between companies very often.

Political risk is considerably very low for the large firms when compared to other risk. Political risks vary from place to place.

Environmental risk is also very low. Large companies are accepting that there are few environmental effects due to global phenomena and it cannot be nullified, but can be reduced.

Overall Financial, construction and technical risk are high when compared to other risks.

Hence risks cannot be stopped but it can be minimized or controlled by proper monitoring the projects.

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