



DEVELOPMENT OF RISK MANAGEMENT MODEL FOR THE UNDERGROUND CORRIDOR CONSTRUCTION FOR METRO RAIL

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ABSTRACT - *This project deals with a method of measurement of project risk. Project risk management primarily comprises cost and schedule uncertainties and risks associated with each activity of the project network. We have identified the major risk sources and quantified the risks in terms of likelihood, impact and severity in a complex infrastructure project for the construction of an underground corridor for metro railways. A case study of the underground metro corridor in the capital city of an emerging economic nation of South Asia has been considered for this research work. The methodology for this work was framed based on the response extracted from the experts who were associated and involved in various metro railway projects. Managing risk and safety are critical activities in the increasingly complex railway environment. Demonstrating that risk and safety have been managed effectively is increasingly important in many rail regulatory regimes. Developing organization's competence in these areas will allow you to improve the way risk and safety is managed within your organization or projects, and also helps you to meet regulatory and contractual requirements in an efficient and effective way. Based on the various factors collected from the literatures, a preliminary questionnaire was framed and currently it was distributed to various Engineers who were employed in metro rail way projects. After collecting down the response the dates has to be analysed using SPSS (version 20) and Risk Priority Number (RPN) has to be extracted.*



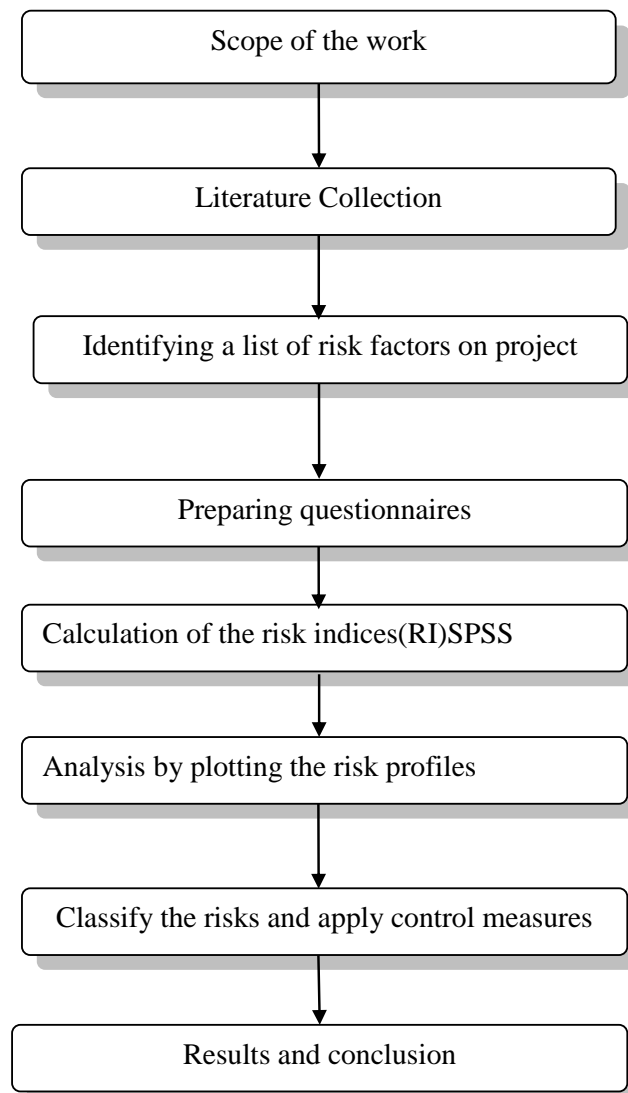
1. INTRODUCTION

Project management is the application of knowledge, skills, tools, and techniques to project activities in order to meet the expectations from a project. Risk is defined as ‘The uncertainty inherent in plans and possibility of something happening that can affect the prospects of achieving, business or project goals’. Project risk management includes the processes concerned with identifying, analyzing, and responding to project risk. Managing risk is an integral part of good management, and fundamental to achieving good business and project outcomes and the effective procurement of goods and services. Construction industry is a highly fragmented industry. It needs to communicate on a large scale with other related businesses such as material and equipment suppliers, vendors, subcontractors and clients. Now construction is becoming bigger and bigger and the risks involved are also increasing with a steady speed. In this project Risk management is an essential and integral part of project management in major construction projects. For an infrastructure project, risk management can be carried out effectively by investigating and identifying the sources of risks associated with each activity of the project. These risks can be assessed or measured in terms of likelihood and impact. The major activities in underground corridor construction consist of feasibility studies, design, traffic diversion, utility diversion, survey works, shoulder piling and king piling works, timber lagging works, soil and rock excavation, construction decks, steel struts, rock anchors, subfloor drainage, waterproofing, permanent structure works, mechanical and electrical installations, backfilling and restoration works. We have developed a questionnaire survey and personally interviewed experts from the underground corridor project. In this process, identified the risks at various phases of the project starting from the feasibility phase to the completion of the project.

2. Objective and Scope

- To identify risks involved during the construction project of a company.
- To identify the major risk factor in construction project through questionnaire survey.
- To prepare a model which will serve as guideline and explain how various risks can be entered and managed using management software.
- To create an efficient risk management system in the construction project.

3. Methodology



4. SOURCES OF RISK IN CONSTRUCTION PROJECTS

- ✓ Misunderstanding of contract terms and conditions
- ✓ To understanding the contractor



- ✓ Design changes and errors
- ✓ Poorly coordinated work
- ✓ Poor estimates
- ✓ Poorly defined roles and responsibilities
- ✓ Unskilled staff
- ✓ Natural hazards
- ✓ Political and legal problems

5. GENERAL RISKS IN CONSTRUCTION INDUSTRY

- Business risk
- Financial risk
- Completion risk
- Project risk
- Price risk
- Resource risk
- Technology risk
- Operating risk
- Political risk
- Casualty risk
- Environmental risk
- Approval risk
- Exchange rate risk
- Interest rate risk
- Insolvency risk
- Project development risk
- Site risk

6. MAJOR ACTIVITIES FOR UNDERGROUND CORRIDOR CONSTRUCTION

- Feasibility studies
- Design
- Technology selection
- Traffic diversion
- Utility diversion
- Survey works



- Shoulder / King piles
- Soil excavation
- Rock excavation
- Fabrication and erection
- of construction decks
- Fabrication and erection of steel struts
- Timber lagging
- Rock anchor installation
- Shotcreting & rock bolting
- Subfloor drainage
- Water proofing
- Diaphragm wall construction
- Top down construction
- Permanent structure
- Mechanical / Electrical installations & services
- Backfilling & restoration works

7. MAJOR PROCESSES OF PROJECT RISK MANAGEMENT

- Risk Identification
- Risk quantification
- Risk response development
- Risk response and control

8. RISK FACTORS

- Design Risk
- Technical Risk



- Logistical Risk
- Miscellaneous Risk
- Material/Equipment Risk
- Political Risk

9. CONCLUSION

Thus all the necessary factors with respect to risk management in metro rail projects has been formulated and questionnaire has been designed and the questionnaire will be distributed to the corresponding persons who are working in metro rail projects and by making use of SPSS software the response collected from the distributed questionnaire will be analyzed and appropriate suggestion and recommendation.