International Journal of Engineering &Technology, 7 (3.12) (2018) 322-325

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Troubled Projects in Construction Due To Scant Risk Management

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Abstract

This paper will focus on troubled projects in construction due to inadequate and insufficient risk management. Inadequate risk management has the ability to severely impact construction project. The main objective of the present paper is to attempt a composition of already known risk management process, at such way that it can be applied by the modern enterprises that deal with the undertaking or/and implementation of constructional work. This paper describes about the main sources for the failure of a construction project such as no initial risk assessment, inadequate documentation and tracking, irregular & incomplete status reporting, failure to define parameters etc. The methodology contains examining existing data, results and created a checklist for all those who are involved in construction project disasters. It can be applied at all stages in the project cycle, from the earliest assessments of strategy to initiation, planning, implementation and closure. Risk management will also provide advantages in better accountability and justification of decisions, by providing a well-suited and robust process that supports decision-making.

Keywords: *Risk, Management, Assessment, Project Cycle, Decision Making.*

1. Introduction

Risk management is the process of forecasting and evaluation of financial risks together by identifying the measures to solve or minimize impacts. The risk includes poor user adoption, unrealized benefits, late-running projects, overspent budgets, unhappy clients, reputational damage, project failure etc.(Mohammed et al.,2016). To manage a particular project, the risk management team should have the knowledge of modern management as well as understanding of the design and construction process. Construction projects have specific set of objectives and constraints such as scope, cost and schedule (Alfredo et al.,2015). These constraints are also called as triple constraint or project management triangle. Design changes and rework are inevitable in a construction project. Change cannot be eliminated but by relating the principles of risk management, the project team is able to expand the effective management of this change (LI Qing et al.,2014).

The purpose of this study is to expose why the construction projects fail due to scant risk management and to suggest the best practices for the recovery. It also defines the pre-signals for the failure of the project, because of deficient risk management and the lack of rescue planning. It undertakes the importance of combining risk management planning into a construction project(Andreas et al.,2017). It can be applied at all stages in the project cycle, from the earliest assessments of strategy to initiation, planning, implementation and closure. In most conditions, projects have clear objectives with understandable vision and specification of their goals. Together this project is the lead to increase the certainty and to completely eliminate the overall risk exposure.

The main aim of the project is to eliminate the inadequacy in risk analysis or management which results most construction companies failing to plan for troubled projects. Thus by facilitating improved business and project outcomes by providing insight, knowledge, ideas and confidence for better decision-making(Xiaohua et al.,2017).

If the risk management is ignored then the following troubles may occur

- Contractual problems
- Quality concerns
- Delays
- Increased costs
- Profit reduction
- Damage to the brand/reputation
- Insolvency

Therefore efficient risk management is mandatory for the successful completion of any construction project.

The various objectives of this project include:

- Collection of data
- Defining the procedure
- Performing analysis
- Revise the analysis
- Draw consequences
- Preparation of report
- Follow-up

The flow chart which represents the various objectives of the project is represented in figure 1.

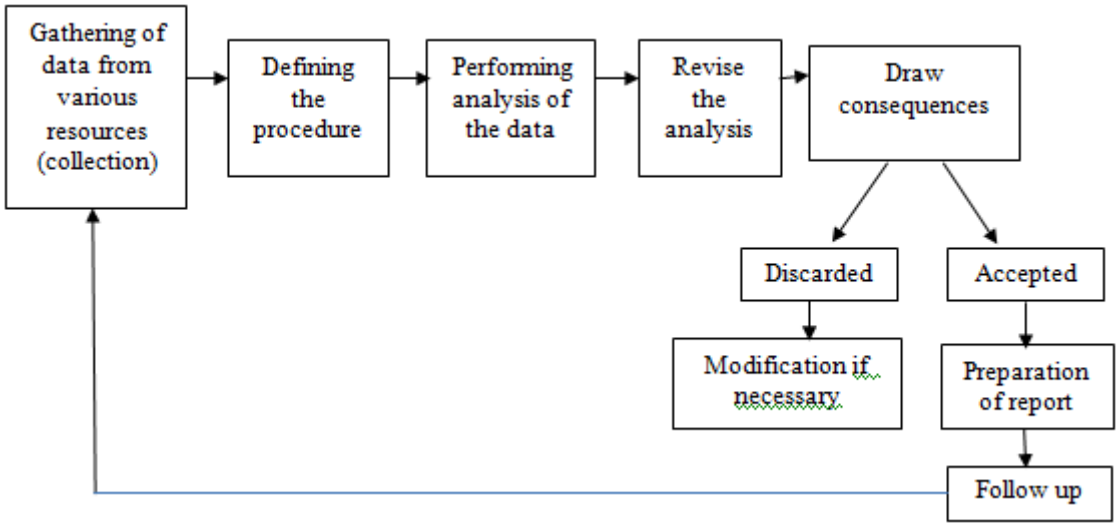

Fig. 1: Flow Chart for Objectives

2. Methodology

The main sources of data which is given as input in this research are gathered from various literatures and a questionnaire survey which contains list of questions regarding the risk management is conducted to a group of qualified personnel in a construction industry. The Data which is gathered from various construction industries via the questionnaire survey is then evaluated by means of statistical analysis. The findings which are obtained from the statistical analysis will be given as input to spreadsheet file which is developed to assist each personnel working in the construction industry which helps them in attaining the efficient risk management process for their upcoming projects.

The Questionnaire consists of set of printed questions with different options of answers (Pawelszymanski, 2017). This was further studied with experimental survey for transparency, usability and importance of information. The survey is broadly classified into three sections. The first section deals with the organization profile, the second section deals with the various risk factors and the third section deals with the handling risks and declaration. About 28 risk factors in 9 different categories are given based upon the experimental study.

Special software SPSS stands for Statistical Package for Social Science is used for performing the statistical operations of the data gathered. Now the current versions of this software are named as IBM SPSS. In this thesis statistical analysis are performed using IBM SPSS version 14.Theflow chartas shown in figure 2, represents methodology.

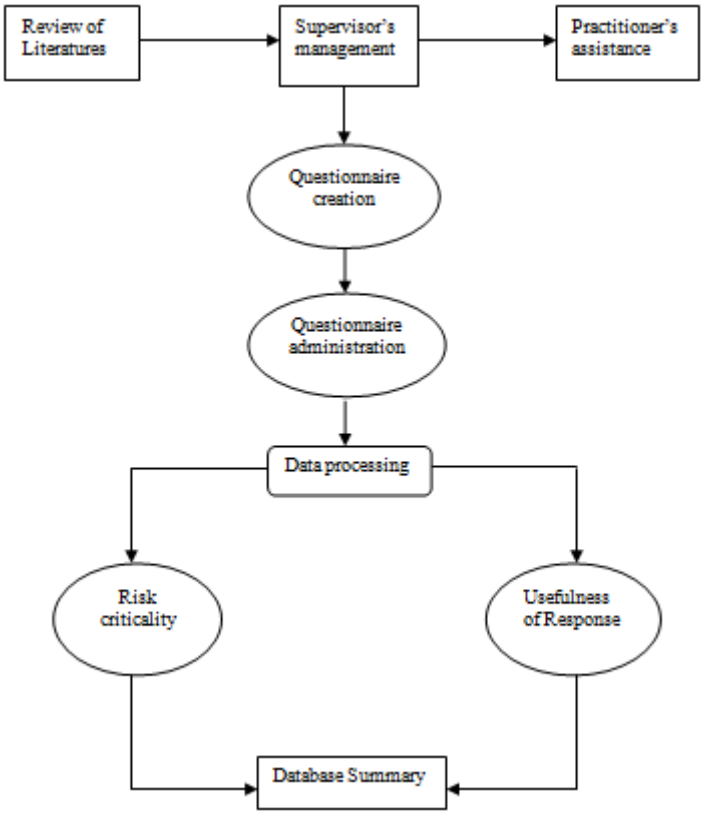

Fig. 2: Flow chart for Methodology

3. Results and Discussions

The data obtained is analyzed with the Statistical Package for the Social and Science (SPSS). SPSS is used extensively in business, government and academia. It is a statistical analysis package and so allows any organization or individual that holds large amounts of data to analyze it and understand it more deeply. At its most simple it is very useful for discovering correlations between different variables. At its most powerful it can be used to make statistically valid forecasts for future events or results. To identify the factors that influences the sustainable practice in their project construction at urban level. Table1 shows the reliability of collected data to further analysis to find the risk of the project(Adam and Göran, 2015, Mohamed et al.,2017).

The results presented in Table 2 shows the factors (like physical risk, environmental risk, design risk, Logistics risks etc.,) and their relationship between them that could influence the dependent variable. The local firm's management system should adopt various available features in the industry to obtain the sustainable practices in construction. Environmental Management System (EMS) which refers to the management of an organization's environmental programs in a comprehensive, systematic, planned and documented manner. It includes the organizational structure, planning and resources for developing, implementing and maintaining policy for environmental protection. Environmental Impact Assessment (EIA) EIA is a universally accepted observable fact for setting off impacts of a project at its preliminary phase and can be valuable to a multitude of industries, utilities, infrastructure projects, institutions, technology transfer projects, policy makers etc. Different types of Impact Assessment risk are as listed below, though they are not limited to: Physical risks, Environmental risks, Design risks, Logistics risks, Financial risks, Legal risks, Construction risks, Political risks and Management risks (Agnieszka and Mariusz, 2015, Alfredo et al.,2014). The variables are used to formulate hypotheses concerning their impact upon the structuring of construction projects and these are studied. Based on the case studies, by involving, these methods for obtaining a feasible report on both sides of the practices. As the presence of the ability in following the better approach towards the sustainability the firm's management can involve own approaches in their projects. Thus involving of these methods can provide a support for the management to implement the practices in their projects.

Table 1: Reliability Test and Validity Test Analysis

Risk Factors	N	Mean	Standard Deviation
Occurrence of Accidents	33	1.1212	.33143
Supplies of Defective Materials	33	1.6364	.69903
Labor and Equipment Low Productivity	33	1.6970	.72822
Difficulty to Access the Site	33	1.4242	.50189
Unexpected Severe Weather Condition	33	1.5758	.56071
Occurrence of Natural Hazards	33	1.2727	.45227
Defective Design	33	1.2727	.57406
Inaccuracy in Quantity Calculations	33	1.2727	.57406
Lack of Consistency in Schedule	33	1.5455	.56408
Labor Material and Equipment	33	2.0606	.49620
Scope of Work defining	33	2.1212	.59987
Accuracy of Project Plan	33	2.3333	.59512
Changes in Prices	33	2.2727	.76128
Late Payment to Contractor	33	2.0303	.72822
Financial Failure	33	1.9697	.98377
Demonitarization	33	2.0606	.74747
Permits and Regulations	33	2.2121	.78093
Labor Strikes	33	1.5455	.61699
Third party Delays	33	2.3030	.76994
Delays in Resolving Disputes	33	1.9697	.76994
Change Order Negotiations	33	2.0000	.70711
Changes in work	33	2.0606	.65857
Government Acts	33	2.2727	.87581
Legislations	33	2.1515	.83371
Project Complexity	33	1.5455	.66572
Coordination with Sub Contractors	33	2.0000	.70711
Resource Management	33	1.7879	.73983
Communication	33	1.8788	.78093

Table 2: Friedman Analysis

Physical Risks

Rank	Name	Mean Rank	Standard Deviation
1	Occurrence of Accidents	1.53	.32280
2	Supplies of Defective Materials	2.23	.69452
3	Labor and Equipment Low Productivity	2.24	.72529

Environmental Risks

Rank	Name	Mean Rank	Standard Deviation
1	Difficulty to Access the Site	2.00	.49705
2	Unexpected Severe Weather Condition	2.20	.56061
3	Occurrence of Natural Hazards	1.80	.44344

Design Risks

Rank	Name	Mean Rank	Standard Deviation
1	Defective Design	1.89	.56061
2	Inaccuracy in Quantity Calculations	1.89	.56061

3	Lack of Consistency in Schedule	2.23	.56211

Logistics Risks

Rank	Name	Mean Rank	Standard Deviation
1	Labor Material and Equipment	1.87	.52979
2	Scope of Work defining	1.97	.61767
3	Accuracy of Project Plan	2.16	.59832

Financial Risks

Rank	Name	Mean Rank	Standard Deviation
1	Changes in Prices	2.87	.75111
2	Late Payment to Contractor	2.41	.73855
3	Financial Failure	2.32	.98292
4	Demonitarization	2.40	.73613

Legal Risks

Rank	Name	Mean Rank	Standard Deviation
1	Permits and Regulations	2.80	.80961
2	Labor Strikes	1.73	.61220
3	Third party Delays	3.03	.75035
4	Delays in Resolving Disputes	2.44	.78108

Construction Risks

Rank	Name	Mean Rank	Standard Deviation
1	Change Order Negotiations	1.47	.68599
2	Changes in work	1.53	.63906

Political Risks

Rank	Name	Mean Rank	Standard Deviation
1	Government Acts	1.54	.88593
2	Legislations	1.46	.83314

Management Risks

Rank	Name	Mean Rank	Standard Deviation
1	Project Complexity	2.10	.66017
2	Coordination with Sub Contractors	3.00	.71712
3	Resource Management	2.40	.72944
4	Communication	2.50	.76929

4. Conclusion

Risk management in construction field is a significant part in making decisions. A well planned risk management inspires the construction companies to categorize, measure and to study risk control and risk reduction policies. The construction companies which manage the risks effectively gains business savings, productivity, increased success rates of several new projects and healthier decision making. This paper governs the key factors of risk in construction industry. A total of 28 risk factors are analyzed through the experimental survey. Thus the research results show that the approach of risk management provides a most efficient, accurate & structured decision support tool and also the risk management structure can be improved further by means of qualitative and quantitative methodologies.

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