International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 10 | Oct 2019 www.irjet.net p-ISSN: 2395-0072

PROJECTS IN CONSTRUCTIONS DUE TO INADEQUATE RISK MANAGEMENT

[1]Eshetu Mathewos

[1]Head of Civil, Department of Civil Engineering, Wolaita Sodo University, Wolaita Sodo,

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Abstract - *The management of construction projects requires knowledge of modern management as well as understanding of the design and the construction process. Construction projects have a specific set of objectives and constraints such as a required period for completion. In addition, they are a costly undertaking so many people, in an effort to reduce the cost, become penny wise and pound-foolish. Change is inherent in construction work. The majority of the projects fail to meet deadlines, cost and quality targets. This is not too surprising considering that there are not known perfect engineers, anymore than there are perfect designs or that the forces of nature behave in a perfectly predictable way. Change cannot be eliminated, but by applying the principles of risk management, engineers are able to improve the effective management of this change. This project represents study of projects in constructions due to inadequate risk management*

Key Words: Construction project management, Risk management, Constraints, Problem Statement

1. INTRODUCTION

In construction projects, each of the three primary targets of Cost, Time and Performance are likely to be subject to risk and uncertainty. Many people, in order to make change in the project with minimum cost, get the project into trouble. The lack of risk management, even an insufficient risk analysis, can put construction projects in jeopardy. 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.

2. NEED ASSESSMENT

In this thesis, stakeholders include main contractors, sub-contractors, suppliers, and Project Managers who undertake construction projects. This thesis will provide stakeholders with Identification of problems due to insufficient and inadequate risk management. Understanding how inadequate risk management can cause problems in construction projects, how we can prevent these problems and A tool or a set of recommendations to recover from this failure.

3. PURPOSE OF THE STUDY

The purpose of this research is to reveal why the construction projects, and generally all projects, fail due to inadequate risk management and what are the best practices for the recovery. In addition, the author's goal is to define pre-signals for the failure of a project, because of insufficient risk management and the lack of recovery planning. Projects, by their nature, are unique and many of the more interesting ones are complex. They frequently take place over an extended period and demand the engagement of a wide range of resources, including people, finance, facilities, materials, and intellectual property. In most circumstances, projects have defined objectives or an end-state that provides those involved in them with a clear vision and specification of their goals.

4. PROBLEM STATEMENT

The lack of a risk analysis or management has results to most construction companies failing to plan for troubled projects and make real the three variables of a project; time, cost and scope. This study will be very interesting for the author's workplace because it underscores the importance of incorporating risk management planning into a construction project. This study will try to reveal best practices and how they can be applied to the author's workplace.

5. METHODOLOGY OF THE PROJECT

The main sources of input data for this research are the data gathered from the literature and through a questionnaire survey administered to a group of qualified practitioners in the construction industry. The data collected from the construction industry via the questionnaire survey is then processed by the means of statistical analysis for the purpose of generalizing its findings, as much as possible, to the entire construction industry rather than the targeted sample. Following, these findings will be an input to a simplespreadsheet file developed to aid the contractors working in the construction industry in preparing effective risk management processes for their new projects.

6. REVIEW OF THE LITERATURE

The review of literature includes books, journal articles, magazines articles, and internet articles on Risk Management in Construction and Troubled Projects, in order to support efficiently the present thesis document. Specifically, the research is divided in fourareas of Risk Management for discussion. These four (4) areas are: Project Risk Management, Risk management in construction project, Troubled Risk management in construction and How to turnaround a project in success Risk management is one of the most critical factors in project management practices to verify a project is successfully completed. But, what does "risk" mean? In the last publication of Project Management Book (PMI,2004, p. 238) is given the following definition for the risk: "Project risk is an uncertain event or condition that, if it occurs, has a positive or a negative effect on at least one project objective, such as time, cost, quality".

Kaplan (1997, p.410) expressed risk "as a mathematical combination of an accident's event probability of occurrence and the consequence of that event, should it occur". Having defined the meaning of risk, the next step is to determine the meaning of Risk Management process. Risk Management process is a formal process, via which we can achieve identification, analysis and response to risks, throughout the lifecycle of a project, in order to obtain the optimum degree of risk elimination, mitigation and control (Wang and Dulaimi, 2004). Thus, risk management is in direct relation to the success completion of a project. There is a detailed and widely expressed literature about accepted risk management process.

A simple, common and systematic approach to risk management, suggested by Turnbaugh (Turnbaugh, 2005), has three basic stages. Failure or, equally, opportunities. Same authors believe that risks are caused by lack of uncertainty and that uncertainty is more prevalent in the early project phases. Since, it is very difficult to predict all factors at the beginning of a project, yet to take decisions; there is a risk that the results of those decisions will be different than is expected. The definition of risk according to Project Management Institute, PMI (PMBOK, 2004) states that risk should consider both the positive and negative effects of a project objective. This is a broad view of risk that includes the terms of threats and opportunities, but is something that can work in theory and fail in practice. Risks and uncertainty could be addressed either as random or epistemic.

Random risk means that we can estimate it using probabilities but it still has random outcomes, ot predictable. This type or risk can occur because of natural unpredictable variation. According to Pitz and Wallsten (2000, p. 26) "the knowledge of experts cannot be expected to reduce random uncertainty although their knowledge may be useful in quantifying the uncertainty."

An epistemic risk or uncertainty is due to lack of knowledge about the behavior of the system. The epistemic uncertainty can, in principle, be eliminated by sufficient study and, therefore, expert judgments may be useful in its reduction (Oakley and O' Hagan, 2003, p.123). An epistemic uncertainty is thus an "unknown event from an unknown set of possible outcomes" (Hillson, 2003, p.88). Another and perhaps less complex explanation can be found in the philosophical view of decision theory (Hansson, 1994), which mentions that risk is somewhat calculable, since it has to do with probabilities; whereas uncertainty as no previous history relate to probabilities.

Risks and uncertainties are handled everyday on a construction project. A dynamic risk is a risk where there is a possibility to gain something in the end, whereas a static risk has only losses in the outcomes. (Flanagan and Norman, 1993). From all the above, we can consider that in the early stage of a project, there is a high degree of uncertainty, which decreases when we have a high degree of background knowledge. It is however essential to mention that a Project Manager should always be aware both of random and epistemic uncertainty, because they both have great impact in the project outcome.

7. RESPONDENTS IN THE SURVEY

The respondents are recognized experts in their fields with at least 10 years of construction experience. 80% of the respondents had a long-term construction experience of between 15 to 35 years and 90% had completed tertiary education. Almost 70% of the respondents were in the age group between 35 to 55 years old, with the average group The survey has been done in large construction industries with main object the public sector projects. There are two main types of projects: Public/Private partnership (PPP) and Private Finance Initiative (PFI). The first one refers to contractual agreements created between a public organization and private organization that allow for greater private sector contribution in the delivery of projects.

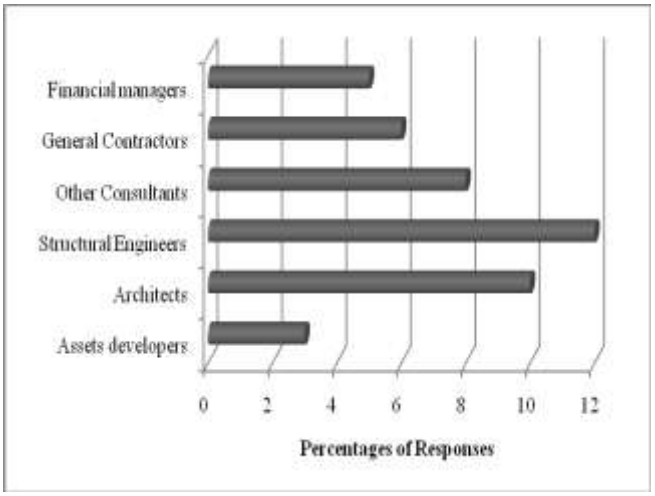

Fig 1. Characteristics of Responses

8. COMMENTS ON THE QUESTIONNAIRE

Some projects are doomed to fail regardless of recovery attempts. The chances of failure on any given project may be greater than the chances of success Failure can occur in any life cycle phase; success occurs at the end of the project

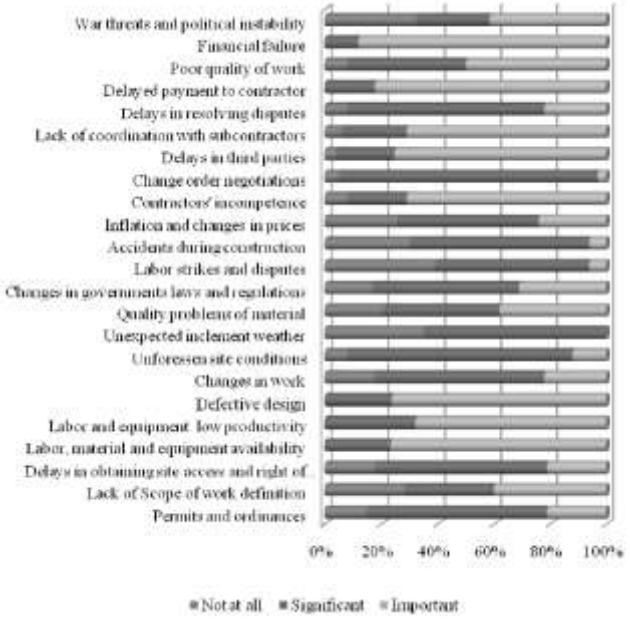

Fig 2 Risk significance of the survey

Troubled projects do not go from "green" to "red" overnight

There are early warning signs, but they are often overlooked or misunderstood Most companies have a poor understanding of how to manage troubled projects Not all project managers possess the skills to manage a troubled project

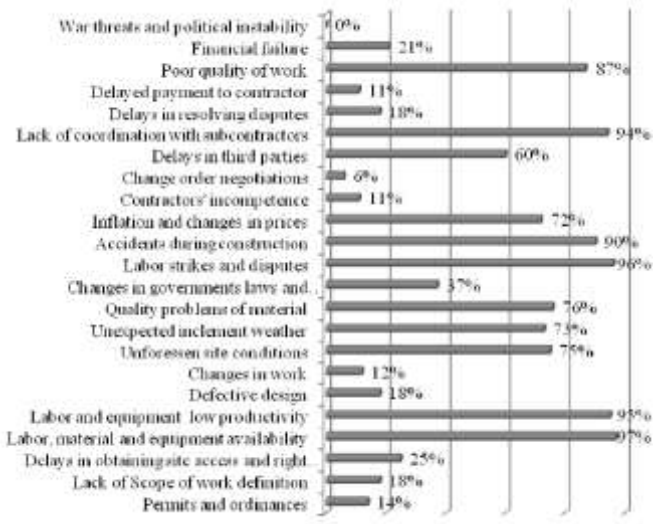

Fig 3 . Risk allocation to Contractors

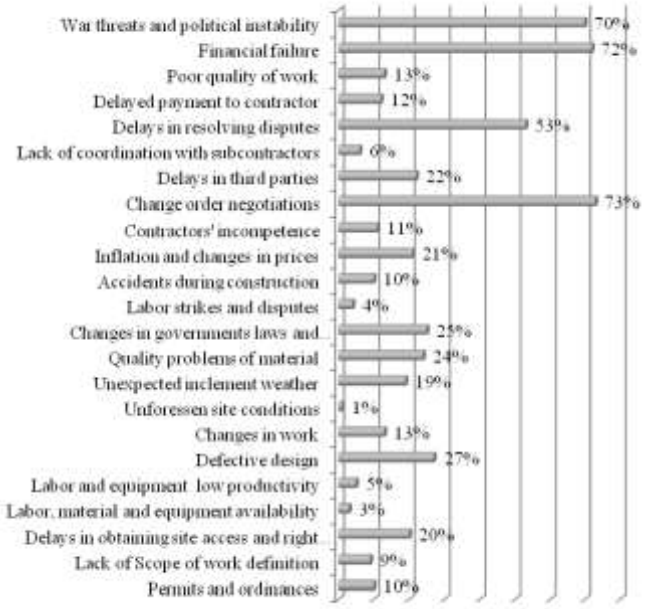

Fig 4 Shared risk allocation

9. DISCUSSIONS AND ECOMMENDATIONS

Many people have a theory that there are no obstacles in a project, only opportunities. Perhaps the most valuable merit in a troubled project is the chance to learn from it. Unfortunately, people who have been involved in a disaster, prefer to forget it the sooner. This is a terrible waste of experience, because the lessons you'll take can help you to improve your knowledge and can easily help you avoid the next disaster. Any organization who has been involved in a disaster should take a list of lessons learned in the end, including the following parts:

The causes.

What was done well?

What was done badly?

What could have been done to prevent the disaster?

What could have been done to improve the results?

How can it be avoided next time?

It is very important to jog our memory that if we want to learn from a disaster, we must avoid having blame culture inside the organization; otherwise the identification of root causes for the problem will not be attainable. The defensive behaviour will not help to discover the truth for the problem. There are four main guidelines in order to recover a project. These are; do nothing, start the project from the beginning, declare crush, assess and carry on. Of course, there is always the alternative of getting it exact in the right place. It is important to mention that all these four strategies are not

supported by all projects. In some cases, we must use other methods to approach the phases of the project. We should keep in mind that just because the project is in trouble does not mean that everything in it goes wrong. A common point which applies to all these strategies is to keep away from getting lawyers implicated as a means of resolving a disaster unless if they are considered necessary. As in divorce, once lawyers are actively involved in a dispute, it is implausible to come across a harmonious and victorious ending.

10. RISK MANAGEMENT AND CONTROL

Thoughtful and strategic risk management primarily maximizes the effect of positive events and minimizes the negative effects, thus increasing the chance of project's success. Effective actions are possible if we have developed a proper project management cycle. Properly adopted scheme not only help make difficult and controversial decisions but above all provide invaluable information to investors on what action to take and according to which scheme to achieve the best results with minimal effects of 'negative' risk.

11. CONCLUSIONS

This paper has presented a brief description of a research effort which is underway at this moment and has the purpose of creating a knowledge-based approach to risk management in construction projects. The motivation of this research is the very limited application of risk management in Chilean construction projects as has been reported by previous research work and the urgent need to improve this function in both, owners and contractors. The results expected from this research will help owners and contractors to have a more systematic and formal approach to risk management and to make use of their own knowledge and experience as well as international best practices.

In conclusion, risk management in a project is not limited to noting down all the pros and cons or putting a label 'negative risk' on each disturbing and causing thrill of positive emotions event. Management is a complex, long- lasting and far-reaching process that begins long before the investment and sometimes lasts even after its completion. To wisely manage risk does not mean to avoid it but to identify it correctly and determine all associated opportunities and hazards.

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