Towards a Risk Management Framework for Libyan House-Building Projects

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Abstract:
Time and cost overrun problems are commonplace throughout the world in the construction industry. Libyan House-Building Projects experience the same dilemma and often to a greater extent. This is attributed to both unexpected and expected factors in which risk and uncertainty were not effectively dealt with. Focus on risk management is therefore necessary to improve the current project’s poor performance. The purpose of this study is to provide an exclusive and comprehensible risk management framework to improve the performance of the construction project management process in Libyan House-Building Projects through investigating and analysing time and cost overrun causes. Also, to establish a potential and comprehensive risk response to eliminate or mitigate the major threats in these types of projects. The proposed framework will be developed to critically reflect a synthesis of the international risk management frameworks, the available literature regarding time and cost overrun factors, and expert’s professional knowledge and expertise of working in the Libyan Construction Industry.

Key words:
Cost and Time Overruns, Libya, Risk Management Framework.

1. Introduction

The construction industry is one of the most dynamic, risky and complex businesses (Kangari, 1995; Mills, 2001). However, the industry has a very poor reputation for managing, with many major projects failing to meet deadlines, cost, and quality targets (Thompson and Perry, 1992; Smith et al, 2006). These projects are often influenced by variations in weather, productivity of labour and plant, and quality of material etc. All too often, risks are either ignored, or dealt with in a completely arbitrary way; simply adding 10 percent contingency onto the estimated cost of a project is typical (Thompson and Perry, 1992; Smith and Bohn, 1999). In a business as complex as construction, such an approach is often inadequate, resulting in expensive delays, litigation, and even bankruptcy (Mills, 2001).

Risk management is therefore an important part of the decision-making process of all construction companies as it determines the success or failure of any project. Successful decisions are made against a predetermined set of objectives based on knowledge, data, and information, whereas decisions that are made without a logical assessment of project-specific criteria may lead to difficulties in project delivery. Thus, risk and uncertainty can potentially have damaging consequences for all construction projects. The ineffective handling of risks can be damaging not only to the contractor, but also to the project as whole. Risk can affect productivity, performance, quality, and the budget of a project. Risk sometimes cannot be eliminated, but it can be minimized, transferred or retained (Smith, et al., 2006).

Since their origin in the 1970s, Libyan House-Building Projects (LHBP) in the Libyan Construction Industry (LCI) have continuously faced great difficulties in controlling time and
cost overruns. An example of the industry’s poor performance can be found in the Project of Constructing 2870 Housing Units in Tripoli. The project was started in the late 1980s to be completed within five years. As of February 2008, the project has not been completely delivered yet, and has incurred incredible cost increases. A recent report conducted by the Public Committee of Project Monitoring and Follow-up (2004) in Libya showed that time and cost overruns are a common problem in the LCI. Therefore, this research aims at improving the present project's poor performance in LHPB. Hence, the core objectives of this study are:

- To determine the current level of project performance measures (time, cost, and quality) in the Libyan House-Building Projects;
- To identify the major risk factors that have a significant effect on project performance measures in LHPB;
- To provide a risk management framework for a systematic and structured assessment of these risks within LHPB;
- To establish a potential and comprehensive risk response to eliminate or mitigate these major threats in LHPB.

2. Libyan Housing Sector

Before the oil discovery in the mid-1960s, the country did not have any housing problem despite the small number of houses. This is attributed to the fact that the overwhelming majority of Libyan people were nomads, shepherds and wanderers following the rain with their animals, therefore they lived in temporary tents rather than permanent houses. After the oil revolution, the Libyan economy started to flourish, and urban development, especially, in coastal cities began. The immigration of people to these cities commenced, as the chances for jobs became available. Moreover, emigrants from neighbour countries such as Egypt, Tunisia, Algeria, and many other countries have moved to Libya looking for better job opportunities. As a result, the demand on housing units has rapidly increased.

It is obvious that the housing sector in Libya is a relatively young industry. It grew considerably only in the early 1970s (after the Al fateh Revolution in 1969). However, this industry plays an important role in the country’s economic development. Before the United Nations sanctions on Libya in 1992, the average spending on the housing sector contributed about 11.1 percent of the Gross Domestic Product (GDP) (Sheibani, 2004). In 1970 alone, the expenditure on the housing sector contributed 25.7 percent of the GDP (Planning Secretariat (cited in Sheibani, 2004)). Therefore, it is very important to the Libyan economy to manage house building projects effectively and efficiently.

House-building projects throughout the world face a variety of challenges concerning time and cost overruns. Of course, Libyan House-Building Projects have the same challenges and often to a greater degree. The lack of sufficient experience of Libyan contractors in executing house-building projects has been an ongoing problem since their start in the early 1970s. This has been proven by the reports of The Public Committee of Projects Monitoring and Follow-Up – The Division of Projects and Contract Management (The Public Committee of Project Monitoring and Follow-up, 2004) and also by most of the court cases between contractors and owners; in Libya the government is generally the client for all house-building projects. Effective risk management has become a major problem that confronts this industry and as a result affects the entire Libyan economy.

3. The Current Status of Risk Management in Libya

In view of the current practice of risk management in the Libyan Construction Industry it is evident that neither qualitative nor quantitative risk analysis techniques have been utilized. The Public Committee of Project Monitoring and Follow-up report (2004) revealed that most
Libyan local contractors have failed continuously to achieve the project goals of time, cost, and quality. Hence, Libyan construction firms must understand the construction risks they are subject to, so that they can reflect the risk impacts in the expected projects durations and costs, and plan the mitigation actions more effectively. This study is intended to be a first step towards enhancing the risk management process for contractors working in the Libyan House-building projects.

4. Research Methodology

The research methodology is the systematic and orderly steps taken towards the collection and analysis of data (Collis and Hussey, 2003). Developing a framework for a systematic and structured assessment of risk and uncertainty that can help contractors and project managers working in LHB P to better understand the main causes of project underperformance, and hence, control the major risks associated with projects is the main goal of this research. This framework will be considered to essentially reveal a combination of the international risk management frameworks, the available literature regarding time and cost overrun factors, and expert’s professional knowledge and expertise of working in the Libyan Construction Industry. The plan that provides the necessary steps for carrying out this research is shown in figure (1) “the proposed research design” and a brief explanation of the research methodology which has been adopted in this study is summarized below.

This study tries to understand and explain a phenomenon based on opinions and subjective aspects. Therefore, the research philosophy which will be adopted in this research is the phenomenological paradigm. The rationale for choosing this approach is that the topic under investigation is not well understood in the Libyan Construction Industry, and better understanding will be fundamental to improving the risk management of Libyan House-Building Projects.

Orton, (1997) claimed that, informally most researchers readily admit that research is a function of both inductive and deductive analyses. The use of induction and deduction is also supported by Bryman and Bell (2003) who argue that grounded theory is an iterative process which includes elements of both induction and deduction. Further, Saunders et al. (2007) point up, ‘not only is it perfectly possible to combine deduction and induction within the same piece of research, but also it is often advantageous to do so’. Thus, both approaches (inductive and deductive) will be utilized in this research.

When examining the type of research questions of this particular research, it is evident that it contains exploratory “what”, “how”, and “why” questions, since it is intended to develop a theory. Exploratory “what” questions are generally favoured by any of the research strategies and “how” and “why” questions are generally favoured by case studies, histories, and experiments (Yin, 2003). However, it should be mentioned that even though each research strategy has its distinctive characteristics, there are large overlaps among them (Yin, 2003). In this particular research, the nature of the study requires the researcher to obtain information from experts and professionals working in the Libyan Construction Industry based on opinions and subjective judgement, hence, a survey strategy would be appropriate for this research.

Deciding on which method of research to follow, depends on the purpose of the study and the type and availability of information which is required (Naoum, 2007). For the purpose of this study, the data will be gathered and analysed qualitatively as well as quantitatively to support and give more validity and reliability of the study.

Hence, the group expert evaluation and contractors’ survey will be used as the main sources for data collection in this particular research. Semi-structured interview is the best method for data collection of this study as it aims to subjectively obtain information and risk assessments based
on experience of professionals working in the Libyan Construction Industry. Thus, data will be collected from random samples of small and medium contractors working in Libyan House-Building Projects.

5. The Proposed Risk Management Framework

Construction projects are unique in terms of design, construction methods, personnel, location, etc. Variations in these factors will induce different types of risk factors into construction projects. In addition, risk factors could come from many different directions, such as social, legal, economics, environmental, political, and technological sources. Therefore, any international risk management framework can hardly accommodate all these factors since it must be exclusively applicable for the situations for which it was developed. Hence, developing a Libyan Risk Management Framework is undoubtedly required. In this research, the literature related to international risk management frameworks developed by professional institutions (CIRIA, 1996; APM, 1997; ICE, 1998), those that are concerned with time and cost overrun causes (Perry and Hayes, 1985; Al-Khalil and Al-Ghafl, 1999; Santoso et al., 2003), and knowledge of professionals and experts working in the Libyan Construction Industry are synthesised in order to develop the Libyan Risk Management Framework. A brief explanation of this framework is described as follows: the risk management process is broken down into
Risk management always starts with risk identification, which may be considered the most important phase of the risk management process (Baker, 1998). Its purpose is to compile a list of risks affecting construction projects. Many researchers (Perry and Hayes, 1985; Al-Khalil and Al-Ghafly, 1999; Santoso et al., 2003) have given an extensive list of risk factors generated from different sources. These factors are generalized to cover those experienced by various parties. This study, however, focuses on investigating risk factors from the contractor’s perspective. Therefore, the major risk factors that affect construction firms executing Libyan House-Building Projects were extracted and considered. In addition to the literature review, these factors were also compiled based on interviews and discussions with government authority representatives, contractors, and consultants.

Risk classification is an essential step in the risk management process, as it aims to categorize the various risks that may affect construction projects. Many approaches have been suggested in the literature for classifying risks. (Tah and Carr, 2000; 2001) use a risk-breakdown structure to classify risks into those that are related to the management of internal sources and those that are prevalent in the external environment. Also, they claim that external risks are relatively uncontrollable, and internal risks are those, which are relatively controllable and vary.
between projects. The internal risks are further broken down into local and global risks. The local risks are those related to individual work packages or categories within a project, whilst the other are global to an individual project and cannot be associated with any particular work package.

(Eaton, 2003) defines risk in construction as a potential event, either internal or external to a project that, if it occurs, it may cause the project to fail to meet one or more of its objectives. Also, Eaton (2003) suggested that risk factors should be classified as: Social; Legal; Economic; Environmental; Political, and Technological.

This research will adopt a combination of the hierarchical risk-breakdown structure of Tah and Carr, and the risk classification of Eaton with some modifications to suit the purpose and nature of the study. Hence, risk factors are classified as Internal and External to a project. However, this particular research will focus only on the external risk factors that affect Libyan House-Building Projects since the causes of internal risk factors are prone to be unique to individual project, and hence, any examination of these risks will not inform the development of Libyan risk management framework.

In viewing the literature on time and cost overrun causes in the construction industry, it is noticeable that numerous risk factors belong to the technological sources; therefore, this research will further classify this category. Hence, technological risks are grouped to: Labour; Material; Equipment; Client, Contractor; Sub-Contractors; Material Suppliers; Design Firms; Consultancy Offices, and Government Agencies as illustrated in figure(3).

5.2. International Risk Management Frameworks

Recently, the construction-related professional institutions, The Institution of Civil Engineers (ICE), The Association of Project Management (APM), and the Construction Industry Research and Information Association (CIRIA) have individually taken the initiative to develop frameworks for systematic project risk management. Their goals are to provide the construction industry with a structured, practical, and comprehensible approach to handling risks, and more significantly, to promote the general use of a systematic approach to manage risks more effectively. These frameworks will be examined to gain an understanding of the essential steps required for successful risk management, hence, acquire the knowledge for building the Libyan Risk Management Framework.

5.3. Experts and Professionals Knowledge

In this particular research, the nature of the study requires the researcher to obtain information from experts, professionals, and contractors working in the LCI based on their experience and subjective judgement, hence, one-to-one interviews, and group expert review are thought to be appropriate for this purpose. Therefore, an individual discussion is first conducted with professionals and highly experienced human experts, working in the LCI, who are able to think creatively and imaginatively to assist in developing the Libyan Risk Management Framework. Afterwards, group expert discussion sessions, with the same group, will be carried out to reach a consensus about developing the Libyan risk management framework, validate the risk identification phase, obtain qualitative assessments based on their experience, and hence plan risk valid responses.

6. Conclusion

Libyan House-Building Projects are continuously plagued by time and cost overrun, and poor performance has often been the result. Hence, the intention of this work is to provide a structured, systematic, and comprehensive framework for in-depth understanding the root
causes of project poor performance, and accordingly minimizing factors that cause time and cost overruns. While it may be unrealistic to believe that all causes of time and cost overruns can be brought under control, it would be sensible to determine the most important factors so that efforts can be made to control these factors. A planned research methodology has been developed, and a comprehensive Libyan Risk Management Framework is being evolved.

This paper outlines the proposed study. It commences with an introduction to the study, research aim and objectives. It reviews the Libyan Housing Sector, then, it examines risk management practice in the Libyan Construction Industry. In addition, it presents an overview of the research methodology. The paper concludes by presenting and discussing the proposed risk management framework. An individual and group discussion sessions will be conducted among professionals and experts working in the LCI to elicit knowledge and experience which will help, with the literature, for developing the Libyan Risk Management Framework.

![Risk-Breakdown Structure](image-url)

Fig. 3. Risk-Breakdown Structure
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