

PRE-CONTRACT COST MANAGEMENT: A STUDY ON RISK
MANAGEMENT AND ITS EFFECT TOWARDS COSTS

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A capstone project report submitted in partial fulfillment of the
requirements for the award of the degree of
Master of Project Management

Faculty of Civil Engineering
Universiti Teknologi Malaysia

JANUARY 2018

ACKNOWLEDGMENTS

Alhamdulillah, all praise to Allah S.W.T for His blessings and compassion that has given me the health and strength to complete this research entitled “Pre-Contract Cost Management: A Study on Risk Management and Its Effect Towards Cost”.

I would like to express my deepest gratitude and appreciation to my main supervisor, Sr. Dr. Muzani Mustapa for his expert guidance, understanding, and encouragement during the accomplishment of this study.

Special thanks are also due to my fellow colleagues at Arcadis (M) Sdn. Bhd. and in industry for their helps, supports and understanding throughout my study and completion process of this dissertation.

Lastly, I would like to dedicate this special appreciation to both of my beloved parents, Mohd Kassim Hassan and Ashimah Siran for being supportive and strength all this while. Also, to my dear siblings in giving inspiration throughout the course of my study at Universiti Teknologi Malaysia.

ABSTRAK

Penyediaan bajet sesuatu projek di peringkat pra-kontrak sangat penting kerana ia adalah peringkat di mana pelanggan perlu mengenal pasti sama ada kewangan mereka dapat menampung objektif projek. Sekiranya ia berada di luar anggaran, maka terdapat kaedah bersesuaian untuk menyelesaikannya. Ia merupakan kebimbangan bagi pemilik projek jika risiko yang tidak dijangka akan membawa kepada kos yang besar. Selain daripada masa dan kualiti, jika kewangan pemilik projek lemah, impak daripada risiko mampu memberhentikan projek tersebut. Seramai 150 orang peserta dari firma perunding pengurusan kos dan projek dalam kawasan Selangor dan Kuala Lumpur telah menjawab soalan-soalan yang diberikan dan sesi temuduga berstruktur juga telah dijalankan dengan empat (4) orang pakar. Kajian telah mengenal pasti risiko projek dan impaknya terhadap projek pembinaan. Seterusnya, penyelidikan mendapati bahawa semua risiko projek yang telah dikategorikan dalam risiko Teknikal, Alam Sekitar, Logistik, Pengurusan, Kewangan, Sosio-Politik dan Undang-Undang terhadap kos projek. Data yang dihasilkan menggunakan Indeks Penting Relatif (RII) juga telah mengenal pasti risiko yang mempunyai impak dan kejadian paling ketara terhadap kos. Tambahan pula, kajian ini telah menyelidik strategi dalam menangani risiko yang kebanyakannya terdiri daripada Menghindari, Memindahkan, Mengurangi dan Menerima. Di samping itu, kajian ini juga telah mengembangkan strategi untuk mengurangkan risiko projek yang melibatkan kos seperti melalui rekod dan kawalan pendaftaran risiko, penubuhan pelan pengurusan risiko dan kejuruteraan nilai. Selain itu, risiko yang kerap terjadi dan melibatkan kos serta gambaran keseluruhan pengurusan risiko di Malaysia juga dibincangkan dalam penyelidikan ini. Penubuhan pelan pengurusan risiko dalam organisasi, penilaian risiko semasa pra-kontrak, dan penglibatan ketara oleh badan pengurusan projek adalah sebahagian daripada saranan penyelidikan ini.

ABSTRACT

Budget preparation of a project during pre-contract stage is very crucial because it is the stage where the client need to substantiate whether their objective is within their financial capability. In case that it is beyond their budget, then there are methods to adjust in accord. This is a concern for a project owner if the risks are not being identified and that will bring to a significant cost overrun. Other than time and quality, if the client is not financially strong, the risk impact could even stall the project. A total of 150 participants from cost and project management consultant firms within the area of Selangor and Kuala Lumpur have responded to the questionnaires given and structured interview sessions have also been conducted with four (4) subject matter experts. This paper has identified the project risks and determined its impact on construction project. Then, research found that all project risks that has been categorised into Technical Risk, Environmental Risk, Logistical Risk, Management Risk, Financial Risk, Socio-Political Risk and Legal Risk influence to the project cost. The data generated through Relative Importance Index (RII) has also identified the risk that has the most significant impact and occurrence towards cost. Furthermore, this research has investigated response strategies of the risks which mainly consist of Avoid, Transfer, Mitigate and Accept. Furthermore, this paper also developed strategies in mitigating the project risk that involved on cost such as through the record and control of risk register, establishment of risk management plan, and value engineering. Apart from that, the common risks that involving cost and the overview of risk management in Malaysia are also discussed in this paper. The establishment of risk management plan in organisation, risk evaluation during pre-contract, and extensive involvement of project management bodies are all part of the recommendations of this research.

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

Malaysia has been one of the most strategic locations for foreign direct investment among ASEAN countries. We have seen big corporations from China, Japan, Saudi Arabia, UK, India and many others broaden their businesses by investing in Malaysia. During event of Invest Malaysia 2017, Malaysia Prime Minister, Najib Razak said that, “*we have attracted unprecedented levels of Foreign Direct Investment, which shows the confidence the world has in Malaysia.*” (Bloomberg, 2017) has reported that Chinese companies accounted for 8 billion yuan (RM5.2 billion) in construction projects in Malaysia in 2015. Under the 11th Malaysia Plan (2016 - 2020) allocated a RM260 billion development expenditure, exhibiting a positive growth course for the construction sector. In a year of 2015, Construction Industry Development Board (CIDB) Malaysia has released a book, “*Construction Industry Transformation Programme of 2016-2020*” and they stated that construction industry has a two-times multiplier effect, with more than 120 other industries relying on the industry for their growth and sustainability.

In recent years, construction sector in Malaysia is healthy and shows a steady growth. In 2016, Economic Planning Unit (EPU) of Malaysia recorded Gross Domestic Product (GDP) of RM50.4 billion.

Construction industry is one of the most active industries in the country and it is soaring upwards especially in city center of Kuala Lumpur. The sustainable growth of construction in Kuala Lumpur is back up with heavy infrastructure projects like MRT Sungai Buloh-Kajang Line which has cost RM21 billion (Bernama, 2017). It is expected that the trend of infrastructure spending going up until the year of 2020. Another big project that are still going on in Kuala Lumpur is the KL118 which has a contract value of RM3.4 billion (Bernama, 2016) and also Bukit Bintang City Centre which has total Gross Development Value (GDV) of RM8.7 billion (Zakariah, 2017).

There are huge sum of money involved to materialise the success of urbanisation of Kuala Lumpur and Malaysia as whole. Hence, critical project planning delivery is essential in ensuring successful delivery of planned development. In Chapter 2, this paper will highlight the risks of construction projects and how it affects construction budgeting. This research will concentrate on projects within Kuala Lumpur area as it has the third highest number of ongoing construction projects after Selangor and Johor (CIDB Construction Review and Prospect Report, 2015). This research is also extending its investigation on the strategies adopted in managing project risks to manage construction budget.

1.1 PROBLEM STATEMENT

Construction in urban area can expose to various kind of risks such as technical risks, financial risks, environmental risks, political risks and many more. Department of Treasury and Finance (2009) in Australia stated that in project management perspective, the risk can be on the design. For example, management of the design and design impact. Also, it can be on the availability of manpower, equipment, special material and more others. The risks can either be predicted or unforeseen during the planning stage. On-going projects can be exposed to the flood risk, public accident, unforeseen damage to public utilities, stop work by local authorities, damage to surrounding structures and many more. The critical part of these risks is that it will affect directly to the progress of work. The Department of Occupational Safety and

Health (DOSH) found a 57% rise in construction sector related fatalities nationwide from 2014 to 2015. Anyhow, these risks will impact on the triangle of project success which is the time, cost and quality.

Malaysia in recent years has been impacted economically due to the weakening Ringgit and drop of oil prices. For the construction sector, the weakening ringgit has resulted in an increase of 20-25% of construction cost (Yeong, 2015). It is getting more challenging for construction industry in Malaysia due to increase in building materials and equipment, foreign labour levies, stringent regulatory requirements and many more. RL Bersepadu (RLB) in their Malaysia Report of Construction (June, 2016) suggested that building tender prices in Kuala Lumpur are anticipated to increase by about 1.0% to 2.0% in 2016.

Other than time and quality, cost is major part of project success criteria. It must be budgeted carefully to ensure the smoothness of a project. Flyvberg et al. (2002) found that all project types whether it is infrastructure or building, the actual costs are 28% higher than the estimated cost in average. Another research carried out by Jackson (2002), it is found that one third of the clients grumbles that their projects had cost overrun. Project risks can be one of the factors of escalation of price in construction project. The stand that identification of the influence of cost overrun risk factors in a project can lead to a better control on project cost overrun (Creedy (2004), cited by Endut et al., 2015).

This study provides insight on how the cost risk management during pre-contract stage has been carried out. Pre-contract stage commonly consist of *Inception, Feasibilities Studies, Scheme Design, Detail Design* and *Tendering*. The rationale of pre-contract planning on project cost is the flexibility for the client to set a reasonable amount of budget for the project. For example, if they found that it exceeds the limit due to risk or other things, there is still time for design or strategy of construction can be changed. It also benefits to the consultants to do a cross check on tenderer's proposal whether they have considered the risk in their cost submission.

Cunningham (2015) has concluded that one of the reasons of cost overrun is inadequate contingency estimate due to poor risk assessment during pre-contract stage. To determine a realistic contingency margin, Ali (2005) holds that this must be estimated using the estimating or risk management process. Cost risk assessment is relatively connected with cost planning because it usually is done during pre-contract stage. The identification of risk process will form the basis whereby risks, uncertainties, limitations, policies and plans for the control and allocation of risk are established (Potts, 2008). Cunningham (2015) also found that cost planning at the pre-contract stage is important because it can ensure that the successful tenderer's does not exceed the client's budget.

1.2 RESEARCH QUESTIONS

The research questions are:

- a) What are the project risks and the impact on construction projects?
- b) What are the project risks that influence to the project cost?
- c) How to develop strategies in mitigating the project risk?

1.3 AIM OF RESEARCH

The aim of this research is to study on risk management and its impact towards cost. Apart from that, this paper also aims to develop strategies during pre-contract stage in mitigating project risk that attributes to the increase of project cost.

1.4 RESEARCH OBJECTIVES

Based from the issues highlighted in the earlier section, this research aims to explore the relationship between project risk management and cost control management. The followings are research objectives:

- a) To determine project risks and its impact on construction projects.
- b) To refine project risk that influences the project cost.
- c) To develop strategies in mitigating the project risk.

1.5 SCOPE OF RESEARCH

In this research, the scope of research mainly focuses on Kuala Lumpur and Selangor, Malaysia. The study is also focus on the practice of project management consultancy and cost consultant firms towards risk management. The main purpose is to study risk management and the impact. Then, to identify strategies to mitigate the cost risk during pre-contract stage for projects of infrastructures, high rise buildings, residential and more.

1.6 SIGNIFICANCE OF STUDY

Kang et al. (2015) concluded in their paper by claiming more theoretical studies and practical applications in the academic and industry are required. In addition, they said more active approaches in promoting risk management is vital to produce more progressive outcomes in construction industry. Since it is still in the initial stage, more studies are considerably highly relevant to contribute to the growth of local construction industry.

Meanwhile, Siang and Ali (2012) found that risk management essentially influences the success of project performance as risks arise in construction projects have impacts on the project performance. Thus, given that cost is one of the major impacts to the successfulness of project, this research is learned to be as one of the

pragmatic approaches to the development of project management discipline in Malaysia.

Consequently, this study is valuable especially for the project managers, quantity surveyors, or any construction personnel that particularly involves in project management, commercial and contractual management as well as clients in the construction industry. Thus, this study intended to investigate the project risks that contributes to the cost impact. Finally, this study is also ambitious to promote the importance of risk management in the course of construction.

1.7 RESEARCH METHODOLOGY

The proposed research methodology for the study comprises of three stages namely:

Stage 1 – Set out a Title and Objectives of Research

The stage consists on selecting the title of research which is Pre-Contract Cost Management: A Study on Risk Management and Its Effect Towards Costs. Then from the selected title, aim and objective of this research will be identified. By having the aim, objective and scope of research, all these will put the research more specific and detail.

Stage 2 – Data Collection

- a) Literature review will be carried out to identify research problems and variables. The review mainly on; type of project risks in construction industry, project risks that influence on cost, cost considerations during estimation process, strategic tools and techniques of risk management plan.

- b) Personally administered questionnaire: By using Morgan and Krejcie (1970) formula, A total of 150 questionnaires will be distributed to cost consultants and project managers of selected companies within the area of Selangor and Kuala Lumpur. Morgan and Krejcie (1970) formula as shown below:

$$S = \frac{X^2 NP(1 - P)}{d^2(N - 1) + X^2 P(1 - P)}$$

Where:

S = Required sample size

X = Z value (e.g. 1.96 for 95% confidence level)

N = Population size (number of QS and PM firms in Kuala Lumpur)

P = Population proportion (expressed as decimal) (assumed to be 0.5 (50%))

d = Degree of accuracy (5%), expressed as a proportion (.05)

- c) Structured interview: An interview with subject matter experts such as project director, project manager and senior cost consultant of Quantity Surveying and Project Management firms. Cross analysis between questionnaire survey and interview findings will be carried out to test research's findings outcome validation and to balance out the weaknesses from each approach.

Stage 3 – Data Analysis

The details and information collected from the literature review and questionnaires will be interpreted into figures, charts, and tables. The findings will be simplified into the terms that can be understood. Relevant tools or software such as Microsoft Excel are used to conduct the analysis and findings.

Stage 4 – Findings and Recommendations

In this stage, findings and recommendations will be highlighted and created. The findings in the studies will be in view of the project risks located in Kuala Lumpur, the project risks that conceivably increase project cost, and the strategies to control the risks. The last part of the third stage is the recommendation that will come out of this research.

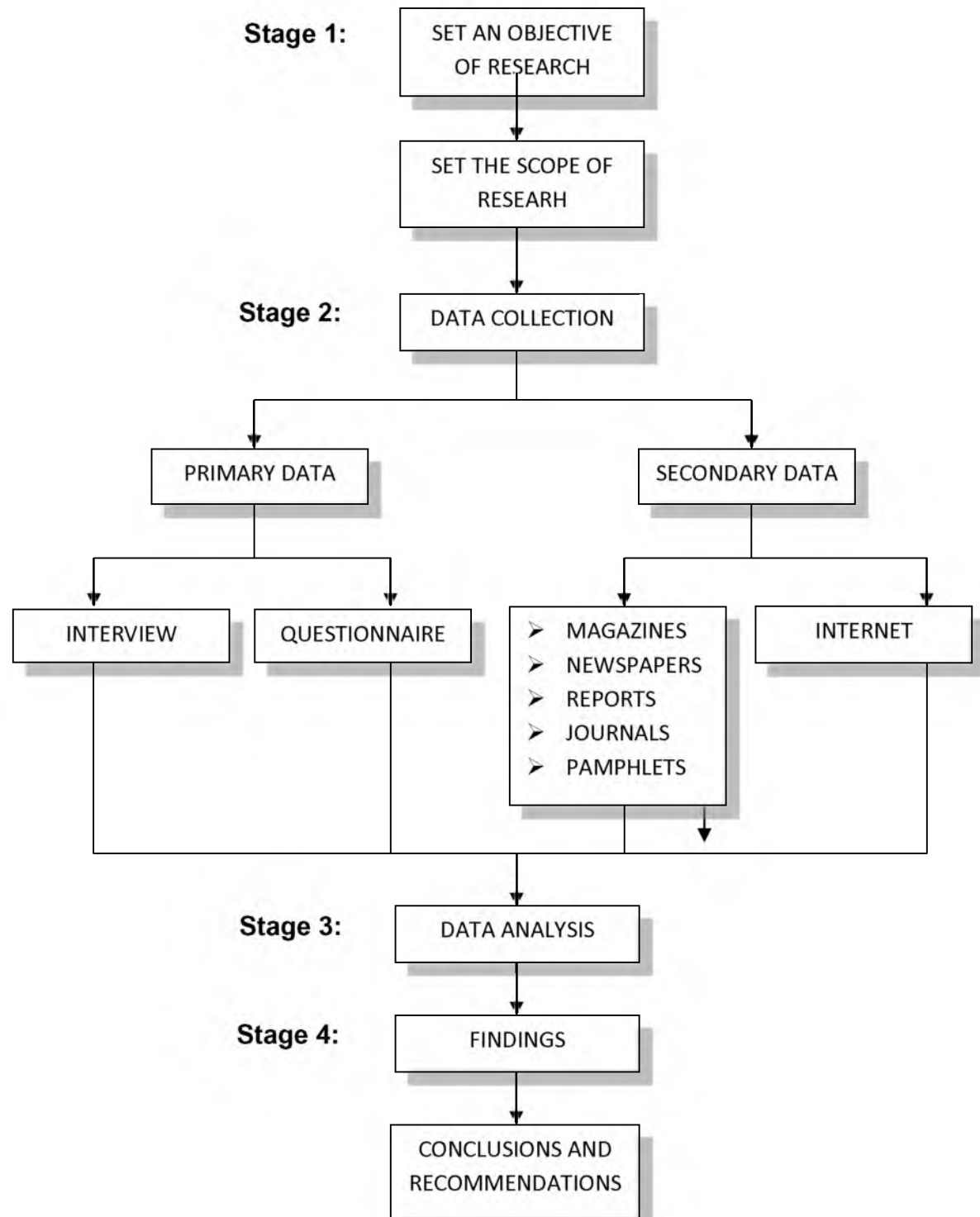


Figure 1.1: Research Methodology of the Study

1.8 OUTLINE OF THE THESIS

1.8.1 Chapter 1: Introduction

This chapter describes the introduction, problem statement, objectives, aims, scope of study and the methodology used for the research.

1.8.2 Chapter 2: Overview of Cost Risk Management

This chapter will explain the definition of risk management, the general process, the relationship with cost risk management. Then, it will also explain about pre-contract stage. In addition, this chapter will also further on how risk management being practice in Malaysia. After that, it follows with types of project risk, factors of risk, how risk will impact on project cost and the standpoints on why cost increase in project should be avoided. Last but not least, the tools and techniques to control or mitigate risks that affecting the cost will also be covered in this chapter.

1.8.3 Chapter 3: Research Methodology

This chapter elaborates the process and the procedures of research methodology which are applicable for the study of this research.

1.8.4 Chapter 4: Data Analysis and Findings

This chapter covers the level of agreement to the cost impact of construction project risks. It also covers the strategies to mitigate project risks.

1.8.5 Chapter 5: Conclusions and Recommendations

This final chapter will be the summarisation of all the findings and observations. The conclusions and recommendations will be given for the study that been carried out.

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