

# **COST and CONTRACT ADMINISTRATION in CONSTRUCTION**

**Divine Perspectives**

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# Chapter 1

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## Costing a Design or Designing to a Cost

Nur Syazwani Mansor and Yahaya Mohd Yunus

### Introduction

The fundamental aim of professionals involved in construction industry is to achieve the target of a project that is to achieve the completion of project within stipulated time frame and budget (Aftab Hameed *et al.*, 2011). Meanwhile, Smith and Jaggar (2007) mentioned that Client, as a person or an organisation, who initiated to construct a project, obviously aims to minimise the cost of project whilst maximising the value.

Constructing a building is not simply doing it in the literal meaning; it involves detailed process, planning and management from the beginning of the project. Many decisions should be made during the inception stage due to complexity of the process, especially the cost planning. As Smith and Jaggar (2007) said, “cost planning forms part of the broad discipline of building or construction economics”. Meaning that, it requires good understanding in cost planning when controlling the project budget.

Ferry, Brandon & Ferry (2007) stated that cost planning is complicated to define concisely as it consists of many procedures and techniques normally used by the Quantity Surveyor (QS) or building economist.

Ashworth (2004) wrote in his book that before the Second World War, an approximate estimate of the building cost is normally produced by the quantity surveyors in England, and the quantities measured from the working drawings were used to produce a Bill of Quantities (BQ), and final account was agreed after project completion on site. However, in early 1950s, the UK Government realised that the cost limits of school project were always exceeded due to many variations made, thus affecting

the cost per pupil. Since then, they proposed that for future projects, cost plan need to be prepared that would help the designer in designing according to the costs allowed.

Like England, Malaysia also practices cost planning in project cost control. In conventional method, the cost would follow the sketch or design produced by the designer during the pre-tender stage. A good cost planning is when the tender figure is closer to the first estimate, ensures the fund is available for the proposed project, and aims to achieve best value at the desired level of expenditure (Ferry, Brandon & Ferry, 2007). However, Aftab Hameed *et. al.*, (2011) cited that Malaysia is still facing some crucial issues and one of them is expenditure exceeding the budget (CIDB, 2008). They also stated that lack of knowledge in management system and lack in ability to avoid cost overruns or control the construction costs will lead to project failure (Sripraset, 2000).

Hence, to avoid the problem from getting out of control, the current practice and technique need to be reviewed to ensure that costs are effectively distributed among the elements of building. Specifically, the method of producing cost estimate of a project based on design or producing a design based on cost plan, has helped the practitioners to ensure that cost of a project do not exceed the cost limit.

The aim of the study is to identify the most effective cost control process adopted by the practitioners in achieving client's requirements, whether '*costing a design*' or '*designing to a cost*'. The following objectives are established in order to achieve the aim:

1. To study the concept of '*costing a design*' and '*designing to a cost*' and compare their similarities and differences.
2. To discover the factors that practitioners consider when choosing either of the two approaches in cost control.
3. To find out the more preferred approach in performing project cost control during design stage.

## The Case for The Study

Anyone intending to construct any building or infrastructure will need to know in advance about the cost of the project and the question that is

## Chapter 2

# Costing for The Preliminaries Section of The Construction

Tan Chin Keng<sup>1</sup>

### Introduction

Preliminaries section at a tender documents specifies the works and obligations that the contractor of a project needs to perform in addition to the actual construction works. There are generally the preliminaries works prior to the actual construction works, e.g. site facilities, temporary works, insurances etc. Preliminaries section needs to be priced by the tenderers as there are cost implications for complying with the requirements under the section. The objective of the study is to determine the percentage of the cost for the preliminaries section to the overall construction cost of various categories of construction projects.

Many researchers have explained on the nature of works under preliminaries and the inclusion of the cost for the works in the total cost for a project. Atton (1982) stated that the section of a bill of quantities classified as "Preliminaries" includes such items as general foreman, setting out of the works, offices, welfare facilities, etc. These items are separately priced by the main contractor's estimator.

Smith (1990) argued that the items in the preliminaries section of a bill of quantities are usually the most difficult and arbitrary of all to price. Indeed, if all the tenderers' priced bills for any one project could be examined, this section would produce the greatest variation in prices

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with each estimator having his own idea as to the scale and extent of the costs involved. The nature and the conditions of contract of every job are different and the items encountered in the Preliminaries are therefore necessarily unique to each particular project.

William (1996) explained that preliminaries is the work involved in administering a project and providing general plant facilities and site based services. They are generally site charges but may include additional head office costs, finance charges, special insurances and conditions of contract. Preliminaries may vary by as much as 7 per cent to 15 per cent of the total contract sum depending on the site conditions and what a contractor actually allows and prices in the preliminaries.

Buchan, Fleming and Kelly (1998) highlighted that the preliminaries section of the bill of quantities is the estimator's introduction to the contract. It informs the estimator of the location, size and complexity of the project, and gives details of the conditions of contract under which the project is to be completed. The preliminaries section needs care in pricing, since it is here that the contractor is to cover the cost of operating the site under specified conditions and in accordance with the contractor's plan for the progress of the work and storage and movement of material.

Brook (2008) explained that the preliminaries bill gives the contractor the opportunity to price project overhead. Lee, Trench and Willis (2005) explained that items that are of a general nature and do not necessarily relate to the quantity of permanent work are set out in the preliminaries section for pricing by the estimator as method-related charges, divided into time-related and fixed charges. A time-related charge is one that is considered to be proportional not to the quantity of the item but to the length of time taken to execute the work. A fixed charge is one that is considered to be proportional neither to the quantity of work nor to the time taken.

According to Brook (2008), preliminaries are defined as the site cost of administering a project and providing general plant, site staff, facilities and site-based services and other items not included in all-in rates.

It is observed that not many researchers have explained the percentage of cost for the preliminaries section from the total project cost.



## Chapter 3

# Review on Costs Management in Construction

Zatil Sabrina Noor Azam and Nur Affah Mohyin<sup>1</sup>

### Introduction

Construction industry is one of the significant economic sectors of a country and increasingly contributes to the total gross domestic product (GDP). According to Matthew Tee, the president of Master Builders Association Malaysia (MBAM), as cited by Shan (2013), “the construction industry has fared well in 2012 on a year-on-year basis, with a growth in excess of 20%”. It has shown that the demand for construction industry is increasing from time to time. This situation leads to increasing number of construction companies as well as expanding business of the construction companies to higher level in order to survive in the industry. Therefore, the construction industry has become more competitive.

In order to survive in the highly competitive environment, a contractor must aim for winning the tenders and gain the optimum profit, by bidding for the best price. Basically, the bid cost prepared by the main contractors is the total of its estimated direct activity costs, project overheads, general overheads and profit (Carr, 1988). There is a strong relationship between direct and indirect costs, where both of them are interrelated for estimating purposes, same goes to overhead costs and the profit margin. Greater value of profit margin can be

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achieved if the overhead costs are managed and controlled efficiently (Enshassi, Abdul Rashid and Karriri, 2008).

Practicing the cost management is particularly beneficial in business activities because of the efficient management of capital expenditure in the organizations (Osadi and Okpako-Uyeh, 2010). Moreover, it is useful for either small or large scale of organizations since their main goal is similar, which is to minimize costs and maximize profit. Osadi and Okpako-Uyeh (2010) added that if the cost management is efficiently practiced by an organization, they would realize a great improvement in their business performance. The process will help the organization in reducing any unimportant surplus expenses from the business activities.

In construction industry, cost management is one of the most crucial elements of construction management sought by main contractors (Raymond, 2005). This is due to their main aim to minimize costs in construction development. As reported by Hansen and Mowen (2006), cost management concerns with the amount of expenditure as well as the factors that lead to the particular cost, such as the quality, cycle time, and process productivity. Therefore, cost management involves a full understanding on the cost structure of a company. The contractors must not only be able to determine the costs of products, services, suppliers, clients and other part of interest, but also the short and long term costs of running the activities or projects (Hansen and Mowen, 2006). It is required continuously, either in recession times or in expansion and consolidation times (Osadi and Okpako-Uyeh, 2010). Cost management is aimed to ensure the final cost within a pre-determined budget. Without cost management, a company may lose his financial control, especially when involving the large-scale projects with a tight programme, high uncertainty and unexpected factors (Raymond, 2005).

It is noted that the contractors have to control the costs as well as maintain the quality of their products or services (Assaf et al., 2001). However, the annual business volume, client base and profit performance for a company in construction industry is not constant and unpredictable for the long term (Eksteen and Rosenberg, 2002). On the other hand, even though the production volumes are unstable, the general overhead costs are still constant since it involves an estimation of the costs that are not clearly associated with particular projects. This will lead to low profit

## Chapter 6

# Investigation on Reliability and Validity of Life Cycle Cost (LCC) Data Inputs of Building

Mohd Fairullazi Ayob and Khairuddin Abdul Rashid

### Introduction

There are many different expressions<sup>1</sup> used to refer to the ultimate cost or total cost of building ownership. The difference in wordings and expressions to symbolize total cost of building ownership have caused ambiguity and confusion among the practitioners to select the right term and technique to compute total cost of building ownership in the industry. Although the expressions used are interchangeable, the Life Cycle Cost (LCC) is preferred as it is widely used in the practice and better known to represent the total cost related to the building ownership throughout the study life.

Although the definitions of LCC are many, the most basic definition of LCC that is used in the present research is the total discounted cost of building ownership throughout the study life. It represents an economic assessment of an asset, expressed in terms of total costs related to the building ownership which connects the initial capital cost with operating and maintenance costs, replacement costs, financing costs, and the cost or benefit of the building at the end of the study life. Study life is the analysis period determined by the client

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<sup>1</sup> These include “terotechnology”, “costs in use” (CIU), “life cycle cost (LCC)”, and “whole life costing” (WLC) (Schade, 2007; Khairani, 2009; Kirk and Dell’Isola, 1995; Brandon, 1995; Mohammed Kishk et al., 2003a, 2003b; Boussabaine et al., 2006; Levander et al., 2009; Nor Azizah and Zainal Abidin, 2010).

based on the interest in the ownership of the building. The study life of the present research is forecasted less than any reasonable building life of physical life, functional life, technological life, legal life, social life and economic life (BS ISO 15686-5, 2008).

The LCC studies are performed to provide major cost factors and potential cost saving. The outputs of LCC studies are used to advise the clients or building owners in determining the most optimum cost of asset ownership, and comparing cost-effectiveness of mutually exclusive alternatives (Mohammed Kishk, Assem Al-Hajj and Pollock, R., 2003a, 2003b; RTO-SAS-069, 2009; Bakis et al., 2003). LCC calculates the whole cost in the acquisition of the building, rather than solely focus on the initial costs. In the conventional practice, the costs for each phase of the building life cycle are calculated separately with no interaction to one another. Hence, the long term economic savings in the ownership of the building could be difficult to achieve because more capital may be required to pay for ongoing operation and maintenance works in keeping the building in a good performance and excellent working condition. A poor financial performance may be encountered by the building owner or client when the increase budget of total ownership cost is overshadowed by the hidden cost of maintenance, operation and replacement, etc. Figure 6.1 illustrates in a graphic the adverse effect of

### Total Cost Visibility

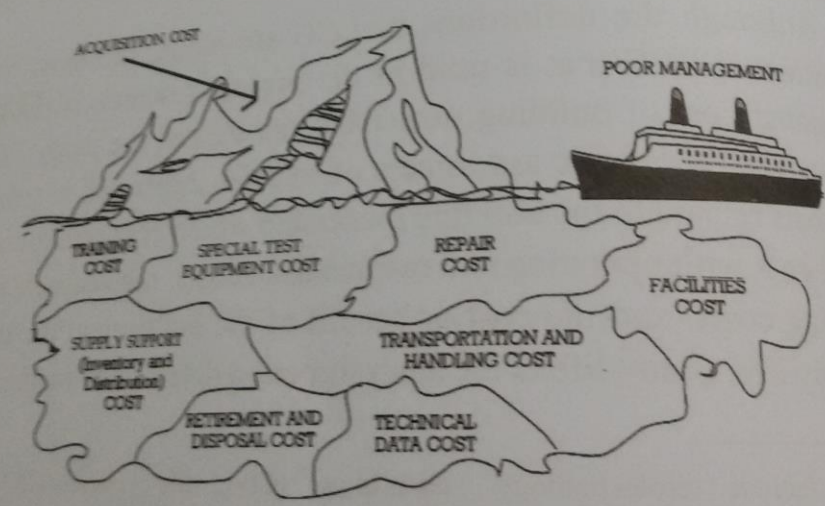


Figure 6.1: The iceberg effect  
Source: (HM Treasury, 1992, pg.2)