EVALUATING THE LEVEL OF AWARENESS ON LEAN THINKING CONCEPT IN CONSTRUCTION AMONG HIGHER LEARNING STUDENTS IN MALAYSIA

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To my beloved mother, father, sisters

and dear Mr. Amir

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ABSTRACT

Lean construction has implemented throughout the construction industry in order to smoothen the construction project and increase the contractor's profit by eliminating waste. There is a study has conducted for determining the barriers in implementing the lean construction approach in Malaysia and the results show that most critical barriers are lack of knowledge on lean concept and lack of commitment from management. According to the literature, there are five important factors that a manager have to focus: improvement culture, self-development, qualification, Gemba, and target management. In terms of knowledge, all parties should know about the lean principles, lean construction techniques and causes of waste. This study focuses on these factors to investigate the level of knowledge on lean construction and leadership factors among the postgraduate students before joining to the construction industry. The results show that although "construction management" students almost know about lean thinking, there is lacked of knowledge among the other postgraduate students from faculty of civil engineering and built environment of UTM. Moreover, "construction management" students are fully aware their commitments in implementing lean construction.

ABSTRAK

Pembinaan Mapan telah dilaksanakan dalam industri pembinaan untuk melancarkan perjalanan projek pembinaan dan meningkatkan keuntungan kontraktor dengan menghapuskan pembaziran. Terdapat kajian yang telah dijalankan untuk menentukan halangan dalam melaksanakan pendekatan Pembinaan Mapan di Malaysia dan hasil kajian tersebut menunjukkan bahawa kebanyakkan halangan kritikal adalah disebabkan kurang pengetahuan mengenai konsep Pembinaan Mapan serta kurangnya komitmen daripada pihak pengurusan. Menurut kajian literatur, pengurus perlu memberi tumpuan terhadap Lima faktor penting: penambahbaikan budaya, pembangunan kendiri, kelayakan, Gemba (bermaksud tambah-nilai) dan objektif pengurusan. Dari segi pengetahuan, semua pihak perlu tahu mengenai prinsip-prinsip pembinaan mapan, teknik pembinaan mapan dan punca-punca pembaziran. Kajian ini memberi tumpuan kepada faktor-faktor ini untuk mengkaji tahap pengetahuan terhadap pembinaan mapan dan faktor kepimpinan dalam kalangan pelajar pasca siswazah sebelum mereka menyertai industri pembinaan. Hasil kajian menunjukkan bahawa walaupun pelajar "pengurusan pembinaan" yang mengetahui tentang pemikiran pembangunan mapan, namun terdapat segelintir kalangan pelajar-pelajar pasca siswazah lain dari fakulti kejuruteraan awam dan fakulti alam bina di UTM yang kurang pengetahuan mengenai pembangunan mapan. Selain itu, pelajar-pelajar dari kos "pengurusan pembinaan" menyedari sepenuhnya komitmen mereka dalam melaksanakan pembinaan mapan.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Construction industry is unique and complex due to the involvement of many parties and consumption of varieties of resources. According to Ballard and Howell (1998), construction covers a variety ranging from the slow, certain, and simple project to quick, uncertain and complex project. Meanwhile, Koskela (1992) stated that construction is unique in the sense of it is one-of kind nature of projects, site production and temporary multi-organization.

However, failure of establishing a good management system in the construction project will lead to many problems that would cause cost of project increases, late completion of project and low quality, which finally reduce the profit of the contractor. In order to overcome this problems, lean construction based on lean thinking has been introduced in this construction sector.

According to Howell (1999), lean construction is one of the new philosophies that been implemented by Toyota in their manufacturing process, which now applied

throughout the construction industry in Forder to smoothen the construction project and increase the contractor's profit by eliminating waste. This statement has been supported by Ballard and Howell (1998) whom also stated the same facts that lean thinking in construction concerned in waste reduction.

Lean construction project is very different compared to traditional construction project management where lean approach aims to maximize performance to the customer at the project level, set well-defined objective clearly for delivery process, design concurrent product and process and applies production control throughout the life of the project (Howell, 1999).

Lean approach breaks the construction project to smaller parts of activities, which will be defined clearly the start and end date for completion of each activity with an appointed person to keep on monitoring all the activities to be completed according to schedule. Lean Construction (LC) is aimed at reducing waste and increasing productivity in fulfilling the client's requirements on the construction industry. In general, lean construction projects are easier to manage, safer, completed sooner, and cost less and are of better quality.

1.2 Research Background

Based on Guo (2009), Construction management and technology are the two key factors influencing the development within the construction industry. Over the past 40 years, although several new and advanced technologies have been applied to construction projects, the efficiency within the industry has remained quite low.

One of the new management philosophies that have been considered in the construction industry is that of lean thinking. Lean construction has the goal of meeting customers' needs while using less of everything, a term created by the International Group for Lean Construction (Gleeson and Townend, 1993) in United Kingdom. This refers to the application of lean production principles and practices in design-construction processes to maximize value and to reduce waste (Howell and Ballard, 1998).

Sustainability has been defined as economic development that meets the current customers' need without compromising the opportunity and ability for future generation needs. In materializing this effort, the construction industry is urged to move from traditional, labor consuming, energy inefficient and waste generated method of construction to more environmentally friendly, energy efficient and less waste generation of the construction environment. Pratt (2000) stated that Malaysian projects in the last decade were not cost and function effective. On certain construction projects, the budgets were overstepped, longer construction period and quality of the end products were poor (Ibrahim et al., 2010).

In Malaysia other than Lim (2008), among other pioneer researches on lean construction was conducted by Abdullah et al. (2009). The study concluded that the application of lean construction is limited due to the nature of the construction industry, which is very unique, high risks and one-off. Lim (2008) added earlier that its knowledge has been widely accepted by the stakeholders. It was indicated that there is a need for more holistic approaches such as incorporating the other important aspects to the lean construction key concepts towards sustainable and better future environment.

1.3 Problem Statement

According to Ibrahim and Ong (2003), construction is known as a very reluctant industry to accept changes to its current practice because of the belief that construction industry is completely different in nature. However, with the problems that industry inherits such as lack of focus to customers, lack of quality, and adversarial relationship among team members, inefficient project communication and project delay force the industry to reconsider its current practice.

Various studies on the construction industry have been conducted to develop the best practice that is not only capable of improving organization profit but also assists in producing a systematic work process which will encourage the optimal use of resources. Concurrently, the emergence of the lean construction concept is seen as a current approach that can be used to produce best practices because it was viewed as an effort to bring construction industry towards a more optimum productivity level with the efficient usage of resources as well as to produce the maximum value. Through the concept of waste elimination and value enhancement in a construction project, this approach is seen as being able to create a process of implementing activities in the project in a systematic and effective manner.

Based on Lim study (2008) in Malaysia, the use of the lean construction concept in the industry is still considered as a new approach. In fact, its application within the construction firms throughout the country is very limited. Even with the scarce numbers of research done towards the application of the lean concept in the Malaysian construction industry, it has indirectly shown that the usage of this concept is still unpopular within the country's construction firms even though these firms engage learned and skilled academic professionals in construction processes as well as being aware of the change and improvements that are occurring within the construction industry, whether it is from the aspects of technology, implementation methods, management and others.

1.4 Aims and Objectives

This study aims to appraise the level of awareness of lean thinking as a sustainable approach in postgraduate level of construction management program in higher learning in UTM. To achieve the aim of this study, following objectives have determined:

1. To identify the lean thinking concept, principles and techniques in construction.

2. To determine the most important barrier factors in implementing lean construction within the Malaysian construction industry.

3. To evaluate level of knowledge of students on lean construction and level of awareness of lean leadership among postgraduate students based on the findings in objective 2.

1.5 Scope and Limitation

This study focus on Malaysian construction industry in implementing the lean construction concept. Emphasis is given to evaluate the level of knowledge and the factors related to management support and commitment among the Built Environment and Civil Engineering students in UTM.

1.6 Significance of Study

Nowadays, the construction firms attempt to increase their productivity and improve their efficiency in fulfilling the client's requirements by adopting a positive approach to solve the arising problems, in the initial stage of the projects. One of the most appropriate construction management approach is lean construction.

The significance of this study is in the reason that lean construction is a new construction management approach in Malaysia and majority of current professionals don't have adequate perception of lean concept and lean implementation in construction industry. Moreover, construction industry embraces an increasing number of construction academics who will get professional position in a near future. Thus, it seems crucial to investigate the probable barriers which might occur in implementing lean construction, for the parties associated with construction industry, to remedy the situation.

It is obvious that finding the barriers of implementing lean construction and its major causes, play a critical role in the first step to facilitate and enhancing the efficiency of performing this new approach. This study is conducted to indicate the major barriers and also the factors which affect the most important barriers of lean implementation, "lack of understanding the concept of lean construction" and "lack of commitment and leadership from top management" to point out future possibilities to improve in these areas.

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