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Actualizing Lean Construction: Barriers Toward the Implementation

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ABSTRACT

Lean thinking has been regarded as a success strategy in mass production, realizing cost and time saving while simultaneously improving competitive position in the market. It also can be interpret as a philosophy based on the concept of lean manufacturing. It is about managing and improving the construction process to profitably deliver what the customer need. Despite all the benefits that can be gained by implementing the idea of lean construction, all industry player need to consider the barriers obstructing its application. Through a review of a literature there are numbers of barrier that can be identified. The barriers toward the implementation are discussed in this paper.

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INTRODUCTION

The idea of lean thinking originated in Japanese manufacturing concepts and has spread to other areas such as medical industries, logistic, service industries and construction. Lean thinking had also been introduce into the building construction sector through lean construction. By adopting and understanding this philosophy it can qualify construction companies to maximize profit by maximizing efficiency and eliminating waste of resources [1]. For the sustainable implementation of the lean construction it is paramount for the construction company to identify the factor obstructing its application. A review of literature that are related to lean construction have opened various door in understanding the barriers that hinders its application. Therefore this paper focus on discovering the barriers toward the implementation of lean construction.

Key Principles of Lean Construction:

By reviewing into the various definition explained by various author it can be concluded that lean construction is a strategy that contains the utmost objective to minimize waste by following the continuous waste abolishing process while maximizing the customer's need and preference [2]. Lean construction also can be understood as a concept which focuses on specific aspects that have the capabilities in benefiting to construction industry players. These principles are [3]: waste management, value and value stream, workflows, customer pull and perfection.

Barriers Toward the Implementation:

The lean principles can only be applied fully and effectively in construction by focusing on improving the whole process where all parties have to be committed and work together to overcome obstacles that may arise from conventional contractual preparation [4]. However in order to achieve the successful implementation of lean construction, the barriers are inevitable. In an attempt to understand the barriers, the review on the various literature have enable the authors to identify and generalized the specific barriers into six different categories. Table 1 shows the expected barriers.

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Table 1: Barriers to the lean implementation

Author	Managerial aspect	Financial aspect	Educational aspect	Governmental aspect	Technical aspect	Attitudinal aspect
Bashir *et al* [5]	X	X	X	X	X	X
Achanga *et al* [6]	X	X			X	X
Jadhav *et al* [4]	X	X	X	X	X	X
Dombrowski *et al* [7]	X					
Boyer [8]	X		X		X	
Mostafa *et al* [9]	X		X		X	
CL Alves *et al* [10]			X		X	

(i) Management aspect:

Management operate through functions that are often classified as planning, organizing, leading and controlling. This group of people will reinforce and promote the substantial amount of initiative to the subordinates to participate, drive and control the work and management of each projects [11]. Therefore the success of lean implementation practice will depend on how well they support and motivate the people to work toward each planned goal.

(ii) Financial aspect:

Managing the project's finances is among the complicated job in the construction project management. One of the crucial part is to obtain the source of funding to finance the projects. Substantial amount of funding is needed to obtain a relevant equipment for the project and to hire the lean specialist in order to guide each parties involved in the implementation of lean concept [5].

(iii) Educational aspect:

This factor is crucial for the implementation process to be successful since it provides the practitioner with the relevant knowledge and guidance relating lean construction while improving the communication and integration among each parties [10]

(iv) Governmental aspect:

This factor touches the issue regarding the government policies and their attitudes toward the construction industry players. As asserted by Alinaitwe [12] in the research finding it stated that government bureaucracy, lack of social policies, inconsistency in policies, lack of social amenities and infrastructure, material unavailability and fluctuation in commodities price were among the barriers associated with governmental aspect.

(v) Technical aspect:

According to Kamar *et al* [13] the technical knowledge of a construction project can be derived from the process of training and education. Thus, the personnel will be equipped with the relevant knowledge and have a clear understanding on any technical issues related to the construction work process. An example of technical aspect are lack of technology, complexity of design and construction and lack of specialist.

(vi) Attitudinal aspect:

Jadhav *et al* [4] stressed that as evident from the literature survey attitudinal issues is one of the most cited barriers and each and every barriers are not stand alone. Most of them were said to be related with each other. An example of attitudinal aspect is worker's resistance, lack of perseverance and incompatibility of lean with the company bonus, reward or incentives systems.

Conclusion and Further Research:

This literature review is primarily focused on the barriers toward the implementation of lean concept on various countries in construction sector and secondarily on other sectors. Further review is needed to discover the barriers in the context of Malaysia industrialized building system (IBS). Once the barriers are identified, implementation strategy can be developed. A further research also need to be conducted to identify the interaction among the barriers and between others implementation issue such as work culture of the organization in Malaysia, geographical demographic and policies and procedures.

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