Maximize Profit by Implementing Inventory Management in Construction Industry

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DECLARATION BY THE CANDIDATE

I (Leong Hui Shan, I160101608) confirm that the work in this report is my own work and the appropriate credit has been given where references have been made to the work of the other researchers.

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Abstract

Construction inventory management is essential for construction projects to maximize the company's profit. Material costs account for 50% to 60% of the total project cost therefore a good control of project inventory can increase project profits. Effective inventory management can increase project efficiency because materials are available when needed. However, ineffective inventory management is still a common problem in the Malaysian construction industry. Ineffective inventory management can cause project delays and fail to meet client requirements. Construction companies not only face losses but also create a bad reputation for the company. Although advanced inventory technologies such as radio frequency identification (RFID) or smart tags have been introduced into the construction industry to improve the efficiency of inventory management. However, for some reasons, most Malaysian construction companies still refuse to adopt advanced inventory technology, especially small and medium sized construction companies. Most small and medium construction companies still rely on inventory techniques to manage their project inventory, such as ABC analysis, EOQ analysis and S-curve. Inventory techniques have greatly related to inventory management because inventory techniques will affect the efficiency of inventory management. The wise use of inventory techniques can also significantly improve project inventory management. Therefore, the aim of this research is to explore an effective inventory management system to maximize the profit of the construction company. In this study, the factors leading to ineffective inventory management will also be determined. In addition, this research will also study various types of inventory management techniques and the effectiveness of using inventory management techniques on projects to maximize profits. Literature review and questionnaire survey were conducted to obtain data for this research. Data analysis will involve the mean score calculation. The research will benefit construction parties who intend to improve or adopt inventory management techniques to maximize company profits.

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Chapter 1

Introduction

1.1 Background of Study

Profit maximization is the primary goal of every construction company. If the project is completed on time and material waste is reduced, the profits of the construction company can be maximized. As we all know, construction projects often exceed budget and time. Every construction company tries to practice smart methods and find ways to reduce project costs and maximize company revenue. Construction materials account for most of the project cost, nearly 50% to 60% of the project money is allocated to the inventory in the construction project (Soni, 2016). Therefore, material management plays a vital role in any construction project. It involves planning, purchasing, receiving, handling, inventory control and ensuring that materials are delivered to the site at the right time, in the right quantity and at a reasonable cost. This research will focus on inventory management.

Inventory management represents a key role in successful construction materials management. Inventory in construction refers to the item or resources keeps in stock by construction contractors or companies uses to install or construct buildings such as raw materials, tools, manufactured goods, plants and equipment (Liwan, 2013). The primary goal of the inventory control system is to forecast the quantity and time of material replenishment. The objective of inventory management is:

- Prevent material shortage
- Reducing the purchase cost of materials
- Optimize storage cost
- Maintaining sufficient stock
- Enhancing cash flow

The establishment of the inventory system is to maintain a count of each material issue from the inventory and place an order for more stocks when the inventory reaches a predetermined level or reorder level. Construction companies need to finance inventory, which will cost money to purchase, deliver, waste and lease storage space. An effective inventory management system can increase the opportunity to reduce the overall project cost and make the project progress

smoothly. However, an ineffective inventory management system will cause project delays, cost overruns, material shortages or unavailability, and client dissatisfaction.

1.2 Problem statement

Donayvi and Flanagan stated that the most common problem faced by Malaysia small and medium-size companies is poor inventory management that affects the performance of the organization. They also emphasized a few common issues that happen on-site due to the ineffectiveness of the inventory system. For example, materials cannot be ordered on time, delivered at the wrong time, over-ordering, incorrect material orders, and double handling of materials (Donyavi, 2009). Most of the Malaysia construction company still faces problems of project delays and losses due to the carelessness and inefficiency of inventory management.

In additional, K.C Iyer and K.Jha point up poor material management and inventory control is one of the major factor causing construction project delay (Iyer, 2003). According to research conducted by Arijeloye, proper control of materials in construction projects can increase project productivity by 6% or more and avoid delays of 8% to 10% (Arijeloye, 2016). Since materials are available to use when needed, project productivity is improved, which also reduces labour time.

Most of the companies have difficulty meeting the client's needs because they have not adopt inventory control in their project. As the project size expands, the company's demand will increase. For contractors to fulfil the client's needs, they must maintain an excellent inventory management throughout the project (Nanaware, 2017) .Moreover, poor inventory control will lead to ineffective procurement of materials, which will lead to excessive inventory in the warehouse (Freeman, 1993). Because the project inventory is bundled with project funds, excess inventory will affect the cash flow of the project (Freeman, 1993). In order to minimize the losses of construction companies, especially during the economic downturn, it is crucial to identify an effective inventory control method.

However, due to the fragmented and long supply chain, most of the small and medium-sized construction company have not adopted advanced materials management methods. Not same as large construction companies, small and medium-sized company do not have the ability and capability to use complex information technology to manage their labour and materials on projects (Donyavi, 2009). Therefore, the purpose of this study is to explore an effective inventory management technique in Malaysia to maximize their company profit.

1.3 Research Goal

1.3.1 Research Aim

To explore an effective inventory management system to maximize the profit of construction company.

1.3.2 Objectives

- To identify the factors that influence the effectiveness of inventory management in the Malaysia construction industry.
- To study various inventory management techniques in the Malaysia construction industry.
- To investigate the effectiveness utilisation of inventory management techniques on the project to maximize profit.

1.3.4 Key Questions

Based on the problem statement, several research questions have been posed, which comprise:

- What are the factors influencing the effectiveness of inventory management in Malaysia construction industry?
- Which type of inventory management techniques widely using by the Malaysia construction industry?
- How to effectively use inventory control techniques in a construction project to maximize profit?

1.4 Significant of Study

Effective inventory management can significantly reduce construction waste, delay project progress and prevent project financial problems. The significance of this research is to make construction personnel aware of material inventory control to minimize losses face by the small and medium-sized construction company.

This study will identify various inventory management techniques used in the Malaysian construction industry. It helps to determine suitable inventory management techniques for use in construction projects and beneficial for construction personnel in the project planning. It can assist in determining the amount of inventory required to complete the project work. Accurate planning of construction materials can enable contractors to provide reasonable tender prices. This prevents contractors from losing profits due to improper material management.

Also, this research will help contractors manage their project storage areas. Often, construction sites do not have enough space to store inventory, especially for large projects. Some necessary materials also need to be stored in the right way. For example, steel bars will rust once they are exposed to rainwater. In this case, the contractor will rent another storage area or warehouse to store inventory. All these inventories will be stored until it is needed. Therefore, it is vital to manage inventory to prevent excessive inventory from crowding in the warehouse and reduce the rental fee for the storage area.

This study will also discuss the issues and impact of inventory control in construction projects and introduce the interaction between inventory control and company profitability. It can give consciousness to construction workers of starting smart and effective inventory control in construction projects. As a result, the materials will be ordered and delivered to site on time, reduce labour hours, increase project productivity, prevent a material shortage and increase company profit.