UNIVERSITI TEKNOLOGI MARA

EXPLORING THE IMPLEMENTATION OF CONSTRUCTION WASTE MANAGEMENT (CWM) BETWEEN CONVENTIONAL AND INDUSTRIAL BUILDING SYSTEM (IBS) CONSTRUCTION METHODS IN CHINA

LIU KAI

MSc

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ABSTRACT

The mushrooming of the construction industry in China has generated considerable quantities of construction and demolition (C&D) waste, along with related sustainability and environmental issues. This study aims to examine the development of Construction Waste Management (CWM) practices in China. Specifically, the objectives of this study are to identify the implementation aspects of CWM practices, to compare the concept of CWM practices compared to traditional CWM practices when used an Industrialized Building System (IBS) building methodology and to evaluate the awareness, knowledge, and practices of stakeholders in relation to implementation of CWM practice.The main goal was to evaluate and compare the cost-benefit aspects of the respective CWM practice. A quantitative research approach was adopted, by means of gathering survey responses using a structured survey instrument distributed to 253 construction professionals within Beijing, including contracted site managers, engineers and environmental officers. The data were analyzed using descriptive statistics, chi-square tests, correlation analysis, and Generalized Linear Models (GLM) for analyzing the implementation practices, stakeholder awareness, and regulation compliance. SPSS was used to run descriptive analysis, correlations and regression models to interpret the data collected. The results indicate that IBS projects yield greater waste reduction possibilities due to prefabrication efficiencies, while conventional methods are the predominant practice for convenience, durabilities, and lower upfront costs. This study also indicates that using IBS could be a viable and sustainable solution for managing construction waste in fast-developing cities such as Beijing. Overall, the results have implications for research and have implications for industry by encouraging the use of IBS to improve the current waste management practices and environmental impact of the building industry. Furthermore, the study highlights the need for more training, and supportive policies, for implementation of sustainable construction waste management practices in the Chinese construction practice.

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CHAPTER 1
INTRODUCTION

1.1 Research Background

Construction Industry is one of the huge industries, correspondingly relating to economic growth and urban development, is the industry of construction, in existence in Beijing, China. The built environment of Beijing has undergone so many extraordinary changes in all its centuries-long history: from traditional to modern forms, among which the composition includes both ancient and futuristic structures. Herein is represented the change, which the city has identified to take part in: change, modernity, and creativity. It bestows in itself respect by offering one of the oldest and richest histories of cultural history of any city around the world.

This has led to an increase in output value in each year from 2011 to 2022 in the construction industry of China, as depicted in figure1.1. In fact, with such expansion, almost 31.2 trillion yuan was registered in the building output value of China in the year 2022 - a record all-time high. This is an event or tipping point for the industry that will mark a very high growth trajectory and the most crucial role of it in the economic progress of the country (Statista, 2023). Mainly, these have been induced by rapid development processes such as urbanization, better transportation, and further real estate investment. According to the strategy, 2022 is supposed to be the year in which China's construction sector finally hits the epitome of its performance something that should manifest itself as a key center of the economy for enhanced economic growth and the creation of new job opportunities.