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Issues in Managing Construction Phase of IBS Projects

Izatul laili Jabar*, Faridah Ismail, Arniatul Aiza Mustafa

Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia

Abstract

There are several issues in managing IBS construction projects which lead to delays, poor qualities and cost overrun. This paper aims to analyze the issues in managing the construction phase of IBS projects that reflects IBS as a non efficient implementation. The issues can be categorized into pre construction, construction and post construction phase. Majority of the issue is under the construction phase. Categorizing the issue will help to increase the contractor's understanding and help them to be prepared in handling the situation that they may encounter during the construction process.

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Keywords: Industrialised Building System (IBS); construction phase; issues

1. Introduction

In Malaysia, the adoption of Industrialised Building System (IBS) can be tracked as early as in year 1960's. However, it is only becoming prominent lately, due to the rapid encouragement efforts made by the Malaysian Government. The method had proven to offer high quality buildings, timely construction completion and cost savings through standardization, specialization and mass production (CIDB, 2003a; Thanoon et al., 2003). Essentially, IBS can be defined as a process of producing building components in a large-scale production either on or off-site, transported or erected into a structure at the site with a minimum site work. During the construction phase, parts of the predicted benefits of IBS adoption are quality and productivity of construction, the reduction of unskilled workers and reliance on manual foreign workers, less wastage, less volume of building materials, speedier construction time, increased

* Corresponding author. Tel.: +603-55-211-262; fax: +603-55-444-545.
E-mail address: izatul_laili@salam.uitm.edu.my.

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environmental and construction site cleanliness, reduced risk by improving health and safety, proper coordination and management. Despite the promotion of rigorous benefits in IBS adoption, industry stakeholders are still skeptical about the IBS usage since issues such as technical difficulties, design conflicts and skill shortages during the construction phase becoming the barriers.

Accordingly, in addressing a knowledge gap in construction level, this paper analyzes the issues in managing the construction phase of IBS projects that reflects IBS as a non efficient application in gaining its benefits. The issues are based on the Malaysian context and supported by worldwide literature. The identified issues will provide a better understanding and a clearer picture on problems that may arise during the implementation of IBS in Malaysia. The examination is through a critical review of available relevant literature on the system from various books and article. This study reviewed 50 existing literatures on IBS in Malaysia and worldwide. The reviewed does not limit to articles published in the peer-reviewed journals but also includes theses and books. In order to develop new findings, the limit of this research is from year 2000 to 2012.

2. Benefits of adopting IBS

Numerous benefits of adopting IBS had been reported by academicians around the world and becoming the driving forces to the construction industry players in deciding whether to use IBS or not (Pan et al., 2007a). The benefits of IBS adoption are summarized in Table 1 as follows:

Table 1. Summary of IBS benefits

Benefits	Explanation
Cost and financial advantages	IBS offers cost saving through: a) Earlier completion time (Kamar et al.,2010; Idrus et al., 2008; Pan et al., 2007; Alinaitwe et al., 2011). b) Repetitive use of system formwork made of steel, aluminium, etc. and scaffolding (Thanoon et al., 2003). c) Less wastage and the usage of building material (Idrus et al., 2008) . d) Reducing site infrastructure and overhead (Kamar et al,. 2010). e) Increased certainty – less risk (Pan et al., 2007) .
Construction speed	IBS construction process is governed by the speed of production and controlled environment of manufacturing facilities (Aburas, 2011), thus the need on fast delivery can easily be met by increasing the production capacity (C. Haas et al., 2000; Nawi et al., 2007).
Reducing labour	Malaysian government aims to reduce the using of foreign labour (CIDB, 2003). The using of IBS component, which is manufactured in centralized factory, automatically will reduce labour requirements at construction site (CIDB, 2011a).
Better quality	Better quality products can be produced with the adoption of IBS as it uses good quality components and involved numerous expertises throughout the process starting with manufacturing, installer, engineers, contractors and others (Kamar et al., 2010; Thanoon et al., (2003; Alinaitwe et al., 2011).
Health and safety measures	IBS application will improve site safety by providing cleaner and tidier site environment (Tam et al,. 2007; Pan et al., 2007; Rahman & Omar, 2006) as the site activities become minimum and indirectly reduce construction hazards (Alinaitwe et al., 2011).
Flexibility	IBS allows flexibility in architectural design, in order to minimize uniformity of repetitive facades. Simultaneously, the flexibility of different system used in IBS construction process produced own unique prefabrication method (Thanoon et al., 2003).
Waste minimization	All IBS components are manufactured from the factory, resulted in less wastage (Idrus et al., 2008; Kamar et al., 2010).
Improving productivity	The application of IBS, will overcome the problems of workers insufficiency which affected contractor's productivity (CIDB, 2010) (Kadir et al., 2005). At the same time it enhances productivity by removing difficult operation off-site and less site disruption (Arif & Egbu, 2010).