

INDUSTRIALIZED BUILDING SYSTEM
(IBS): THE PROBLEMS AND STRATEGIES TO
INCREASE THE ADOPTION OF IBS IN
MALAYSIAN PRIVATE SECTOR

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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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ABSTRAK

Umumnya, Sistem Bangunan Industri (IBS) telah dikenalpasti sebagai kaedah yang berpotensi untuk meningkatkan prestasi industri pembinaan keseluruhan. Oleh itu, Lembaga Pembangunan Industri Pembinaan (CIDB) telah mempromosikan penggunaan Sistem Industri Berpusat (IBS) secara aktif di Industri Pembinaan Malaysia 1998. Malangnya, penggunaan IBS untuk projek pembinaan di Malaysia masih rendah jika dibandingkan dengan sasaran CIDB terutamanya untuk swasta sektor. Memandangkan had ini, kajian ini telah dijalankan untuk menilai keberkesanan pelaksanaan IBS semasa bagi industri pembinaan Malaysia melalui pengukuran tahap penerimaan IBS, penentuan masalah sedia ada yang dihadapi oleh industri pembinaan dan strategi untuk meningkatkan penggunaan IBS. Maklumat dan data yang dikumpulkan melalui tinjauan soal selidik dan temubual dengan panel pakar dan akan menganalisis dengan menggunakan indeks purata (AI). Hasil kajian menunjukkan 59% daripada responden mempunyai pengalaman menggunakan IBS serta mahu menggunakan IBS dalam projek seterusnya. Ini bermakna tahap penerimaan IBS lebih tinggi. Tambahan pula, kekurangan pengetahuan dan kesedaran adalah masalah utama untuk melaksanakan IBS dalam industri pembinaan. Oleh itu, strategi dengan latihan dan pendidikan lebih berkesan untuk meningkatkan penggunaan IBS dalam sektor swasta. Tidak semua pengamal dapat menerimanya terutama syarikat dan kakitangan yang kurang pengalaman mengendalikan projek IBS. Adalah disyorkan bahawa institusi yang relevan yang menghasilkan jurutera muda untuk sektor pembinaan mesti menyediakan sukatan pelajaran pada IBS yang merangkumi bidang teknikal, dan semua aspek yang diperlukan untuk pelaksanaan IBS yang berkesan. Ini boleh menjana pelbagai aplikasi IBS dalam industri.

ABSTRACT

Generally, Industrialized Building System (IBS) has been identified as a potential method on improving the overall construction industry performance. Therefore, Construction Industry Development Board (CIDB) has been actively promoting the use of Industrialized Building System (IBS) in Malaysia Construction Industry 1998. Unfortunately, the used of IBS for building project in Malaysia is still low if compared to CIDB target especially for private sector. In view of this limitation, this study has been carried out to evaluate the effectiveness of current IBS implementation for Malaysian construction industry through the measurement of acceptance level of IBS, determination of the existing problems faced by construction industry and strategies to increase the adoption of IBS. The information and data gathered through questionnaire survey and interview with expert panels and will be analyzing by using average index (AI). The result of this study revealed that about 59% of the respondents have experience using in IBS and also about 79% of them would use IBS in their next project. It means the level of acceptance about IBS higher. Furthermore, lack of knowledge and awareness is the main problem to implement IBS in construction industry. Thus, strategy by training and education is more effective to increase the adoption of IBS in private sector. Not all practitioners can accept it implementation especially company and personnel with less experiences in handling IBS project. It is recommended that the relevant institution which produce young engineer for construction sector must provide a syllabus on IBS which cover technical, and all aspect which needed for effective IBS implementation. This can generate wider range of application of IBS product within the industry.

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LIST OF ABBREVIATIONS

AI	Average Index
CIDB	Construction Industry Development Board
CITP	Construction Industry Transformation Programme
CREAM	Construction Research Institute of Malaysia
C&S	Civil and Structure
HRC	Housing Research Centre
IBS	Industrial Building System
IT	Information Technology
KLCC	Kuala Lumpur Convention Centre
MC	Modular Coordinate
M&E	Mechanical and Electrical
MNKT	Majlis Negeri Kerajaan Tempatan
MoW	Minister of Work
PBT	Pihak Berkuasa Tempatan
R&D	Research and Development
UTM	University Teknologi Malaysia

CHAPTER 1

INTRODUCTION

1.1 Background Study

Industrialized Building System (IBS) is defined as a technique of construction where the components are manufactured in a controlled environment either on or off site. Once completed, it will be transported, placed and then assembled into construction works with the least of additional site works (CIDB, 2003). The construction works can be utilized according to some techniques, specifications and dimensions, products, components or building systems which involved prefabricated components and on-site installation. Since the components of IBS are material produced in the factories, the quality control is not compromised on. This also minimize the activities at the site of construction.

According to (Thanoon, Peng, Kadir, Jaafar, & Salit, 2003a) the implementation of IBS is not new in Malaysia. It started since 1960's which is 50 years ago. The Ministry of Housing and Local government had started applying the first implementation of IBS for the project low cost high rise apartments in Jalan Pekeliling, Kuala Lumpur.

The Malaysian government had given a lot of various efforts to establish IBS system in construction industry. One of the efforts is establishment of IBS Roadmap (2003-2011) that has been endorsed by the government as the blueprint for the industrialization of the Malaysian construction sector. The main objectives in introducing IBS at that time were to reduce the dependency on foreign labours and to increase productivity and improving construction quality (Zawawi, 2009).

According to (Yusof, Musa, & Samsudin, 2016), Construction Industry Development Board (CIDB) had lunched 2nd Roadmap (2011-2015) to replace the current roadmap and it will be focusing on private sector of adoption of IBS. Moreover, the newly is introduced Construction Industry Transformation Programme (CITP) 2016-2020 where it is a plan of strategic collaboration with the industry's key stakeholders including the Ministry of Works (MoW), Ministry of Urban Wellbeing, Public Works Department, Housing and Local Government and Construction Industry Development Board (CIDB). It helps to transform the construction industry into a modern, towards sustainable sector, highly productive and highlighted the importance of IBS towards the Malaysian construction industry (CITP, 2017a).



Figure 1.1: IBS Roadmap

Moreover, Industrialized Building System (IBS) has been introduced to help the construction industry in Malaysia to become more systematic and mechanised methods. Since our country is facing rapid urbanization and population growth, the number of construction activities especially for housing industry in Malaysia is higher of demand. Thus, with developments of the IBS, it's potential to overcome the shortages of housing accommodation in this country (Mohamad, D., Ramli, M.Z., Danuri H.N, Sapuan, 2016). The key objectives looking to be fulfilled include the acceleration as well as the increase of affordable housing of substantial quality here in Malaysia (Mydin, Sani, & Taib, 2014).

1.2 Problem Statement

The construction industry in Malaysia has led to implement IBS as a method to a better construction quality. The implementation of IBS is the most suitable system to overcome the several problems in construction industry. For constructor, having a proper planning, procurement and co-ordination through IBS project can give a lot of benefit in term of reducing construction time and labour cost.

Industrialized Building System (IBS) can improve the quality of projects, reduce construction time and cost labour but the implementation of IBS system in Malaysia are still below the target. In the press statement by CIDB general manager of the IBS and mechanization division, technology development sector Noraini Bahri in 31 December 2015 state that the adoption in Malaysia is remain slow which is only about 42% of public projects and 70% of private projects in the country using IBS technology (Lee R, 2015). Moreover, when the target of the IBS Roadmap 2011-2015 is to have all public projects to obtain an IBS score of 70 or more, the effect to the IBS usage in public projects fell below expectation with only 24% of public projects valued at above RM10 million have an IBS score of 70 or more. For the latest update in 2016, Work Minister, Dato Fadillah Yusof said that about 69% of government projects used IBS, while the adoption rate by the private sector is still low at around 14% according to CIDB (Idris A, 2016).

There are lot of efforts governments to encourage the use of IBS in the construction sector but still don't have a good response by them. This is because Malaysian contractors are immune to the conventional way of building and they are unwilling to make transition to IBS. Besides that, there is thought by (K. Kamar, Hamid, & Alshawi, 2010) that IBS need to be a process that required synchronization in design, manufacturing and construction. It will focus on supply chain, planning, project management, standardization and repetition (K. Kamar et al., 2010). Hence, there is need to have systematic identification and assessment of risk that will contribute significant success of projects.

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