ISSN:1991-8178

Australian Journal of Basic and Applied Sciences

Journal home page: www.ajbasweb.com

Malaysian Industrialised Building System (IBS): A Review of Studies

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ARTICLE INFO

Article history:
Received 12 October 2014
Received in revised form 26 December 2014
Accepted 17 January 2015
Available online 28 February 2015

Keywords:
Industrialised building system (IBS), Quality, Malaysian Construction Industry

ABSTRACT

In order to keep pace with the globalisation and modernlisation in 21st century, it is a needs for construction players to adopt relevant technology such as Industrialised Building System (IBS). Till date, the adoption of IBS has been actively promoting by Construction Industry Development Board (CIDB). Numerous of effort has been taken, for instance vast of research fund, training, establish standard and other marketing agenda. From literature and industry report, the adoption of IBS was proven beneficial to increase the project quality and productivity and automatically save cost and period of construction project. Yet, the trend of IBS usage in housing projects, especially in Malaysia's northern region like Kedah and Perlis are still achieved the government goal. Thus, this paper highlights the factors causing low usage through a preliminary survey among the developers in that area. The survey is also aimed at identifying a few solutions to increase the application of IBS for the construction industry. Moreover, this paper also outline the characteristics of IBS.

To Cite This Article: Mohd Nasrun Mohd Nawi, Md Azree Othuman Mydin, Faizatul Akmar Abdul Nifa, Wan Nadzri Osman, Herman Shah Anuar, Malaysian Industrialised Building System (IBS): A Review of Studies. ***Aust. J. Basic & Appl. Sci.,*** *9(7): 99-101, 2015*

INTRODUCTION

In Malaysia, construction industry is a major sector as a vital part in development of economic. After twenty years, this industry is still constantly contributes 3 % to 5 % for Malaysian Gross Domestic Product (GDP) (Nawi, 2007). Within years 1995 to 2020, 8,850,554 is a total figure for houses needs in order to cater the Malaysia population. All most half of this figure, about 4,964,560 is referring to new housing. According to as of June 2011 around 70%-80% of a total of 1,214,000 registered workers are foreign workers. Most of them were lack of skill in construction when their first arrive in this county, this condition would affect project productivity and quality of the project. Furthermore, the population increase which has brought about an increased need for housing in Malaysia has made this issue more challenging. This issue is worsened by the local and new Malaysia graduate who are less interested and avoiding to involve in the construction industry. This due to the perception of them towards Construction industry as '3-*D syndrome'* (dirty, difficult, and dangerous) (Kamar, 2011). Thus, the effort to change construction image must be taken by implementation of IBS which is proven providing numerous of advantages (such as save cost and project time, increase productivity and quality project outcome) in order to enhance the construction project development in Malaysia (IEM, 2001; Nawi, 2014).

Industrialised Building System (IBS) has been proven effective approaches in literature and industry as the solution to cater an increasing of housing demand. The effort by Construction Industry Development Board (CIDB) through the IBS Roadmap 2003 – 2010 which hopefully it can urge the members of construction industry to act and adopt the IBS in their each project involved. This guideline are categories into 5 strategy called 5-M which refereeing to Manpower, Material Component Machines, Management Processes Method, Monetary and Marketing).

The Implementation of IBS in Malaysian's Construction Projects:

The history of industrialised building system's implementation in Malaysia has begun with two pilot projects by goverment. The first project was located at Jalan Pekeliling which ivolved the consist of 7 blocks of 17 storey flats, and 4 blocks of 4-storey flats and 40 storey shops lots (IBS Roadmap, 2003). Meanwhile, the second pilot project was took place in Penang which involved of 6 blocks of 17 storey flats and 33 blocks of 18 storey flats along Jalan Rifle Range. Moreover, the project has received an awarded by Hochtief/Chee Seng using the French Estiot System (Din, 1984).

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In order to identify the potential of IBS, a comparison in term of cost, construction speed, and quality between the conventional and IBS has been measured. In term of cost, the first project has recorded 8.1 % higher though conventional method while the second project indicated 2.6% lower. In comparison with speed, both of the project required 27 moth to complete inclusive of time required to set up the recasting factories. Moreover, both of the pilot project was proven yiel a better result in quality through IBS. (Lessing, 2005). Nowdays, according to Badir *et al*, 2002, at least 21 supplier and manufacturers are actively involved in the dissemination of IBS in Malaysia.

Table 1: Current status of IBS Roadmap implementation (IEM, 2001)

IBS Roadmap 2003; Key Elements	Status Progress (as of 2007)
1. Reducing percentage of foreign worker in a labour policy from the current 75% to 55% in 2005, 25% in 2007, and 15% in 2009.	Still below target
2. Implementation for IBS/ Modular Coordination (MC) through professional courses for architect and others.	Still below target
3. Implementation of IBS/MC in syllabus of architecture, engineering, building courses throughout local university	No
4. Enforce Modular Coordination (MC) on local authorities through Uniform Building By - Law (UBBL).	No
5. Creation of catalogue for building components and standard plans for housing	No
6. Develop an IBS Verification Scheme.	No
7. Enforce utilisation of IBS for 30% of total government projects (building) in 2004 and gradually increase rate to 50% in 2006 and 70% in 2008.	Still below target
8. Introduce buildability programme for all private building and enforcement from 2008.	No
9. Provide tax incentives for manufacturers of IBS components.	No
10. Offer green lane programme for users of standard plans (designed using standard IBS Components and MC).	No
11. To start vendor development programme, training and financial aid.	No
12. Abolish levy for low, low-medium & medium cost houses; and to set 50% levy reduction.	Yes

Furthermore, the government has emphasised the utilization of IBS components in government projects. For instance, The IBS agenda has been highlighted in Malaysia Budget for three years strait (2004, 2005 and 2006). Starting from 2004, any new government has been strictly encourage to have slightly half of their construction element involved IBS. A measurement scale has been developed by CIDB, namely IBS Score Manual. In addition, the government pledged itself to construct 100, 00 units of affordable houses through the IBS approach in 2005 (Hamid, 2008). Moreover, in 2006 any IBS manufacture would be awarded with tax incentive through Acceleration Capital Allowance (ACA). This advantages called ACA enable manufacture to claim any purchasing of steel mould for the purpose for production of precast concrete component within 3 years period (IBS Roadmap, 2003). In attempt to improve the level of IBS adoption in Malaysian construction projects, the government Treasury of Malaysia further issued Treasury Circular Letter, now referred to as SPP 7/2008, to all Malaysian government agencies in November 2008. Under this policy, the government agencies has been required to ensure at least 70 points score of IBS involvement and required to set IBS a part of the contract document for tender (Kamar, 2011). The circular letter took effect immediately. For the monitoring purpose, Coordination Unit (ICU) of the Prime Minister's Department has been assigned directive by the respective agencies namely as National IBS Secretariat [8]. The purpose of this policy is to generate a positive demand for IBS component as well as to promote IBS adoption throughout Malaysia. One of afford to support this policy, a total of 331 projects through IBS technique under 17 ministries has been awarded within October 2008 and May 2010 (Kamar, 2011). Most of the project were focused on development of public infrastructure (public school, higher learning institutions and hospitals) and government offices which is cost around RM 9.6 billion (Kamar, 2011).

Recommendation for Malaysian IBS Improvement:

Based on the researches and some experiences people who involved in the IBS construction system, there are a few suggestions and ideas share together to increase the application of IBS in Malaysian construction industry. From the perspective of academic research, many studies on IBS in the Malaysian construction industry have focused on technical issues (hard issues) such as design structure, material testing, and product development further advocated that there were limited studies related to IBS management or soft issues such as vendor development programmes, readiness of practices, benchmarking, collaborative and integrated design and supply chain processes. Although recently there has been some improvement in research into these issues (soft issues) most of the research is still based on promoting the benefits of IBS instead of investigating relevant issues, such as, fragmentation or lack of integration in more detail, as well as developing some initiative frameworks, guidelines or principles of how to overcome and improve the issues effectively. For example, in identifying a list of CSFs for Malaysian IBS design teams it has contributed significantly to the current body of

knowledge by reducing the existing gap (limitation of integration) in Malaysia construction industry.

Conclusion:

Despite IBS has been proven beneficial to enhance construction sustainability. Yet, the adoption of this system has experience numerous of obstacle such as standardization, disintegration of team and poor skill and knowledge of IBS. In the some developed countries like Japan, U.K. and Australia, Modular coordination already been practiced. To enhance the application of IBS usages in Malaysia, the concept of Modular coordination must be applied. Besides, persue a long term comprehensive policy towards IBS which will create an efficient use of components and encourage a more friendly design from consultants. Moreover, in order to increase the IBS adoption in Malaysia constrcution project, 'integrated project teams' has been adressed as suitable approaches that capable of providing an effective framwork for this system.

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