KONGRES MAAC

# INTERNATIONAL MALAYSIAN ACADEMIC ASSOCIATION CONGRESS SYMPOSIUM 2019

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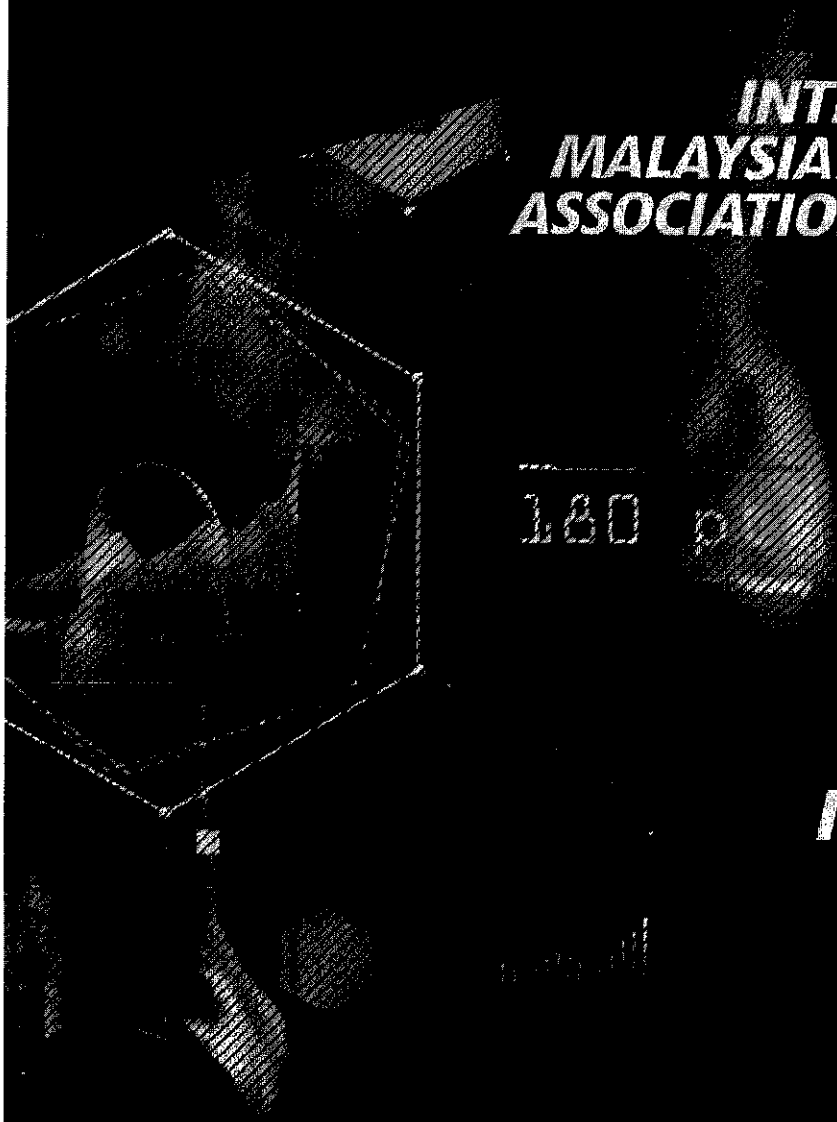

*In Conjunction with*

## INTELLIGENT 19

*Organised by*

KONGRES MAAC

KONGRES PERSATUAN AKADEMIK MALAYSIA

*Sustainability Towards New Era of Industrial Revolution*

Penerbit UTHM

Diterbitkan oleh / Published by:

Kongres Persatuan Akademik Malaysia.
Pusat Universiti Tun Hussein onn Malaysia
86400 Parit Raja, Johor
Tel : 07-453 7496/017 -7336234
Faks : 07-453 6206

# International Malaysian Academic Association Congress Symposium 2019

**Theme:**

Sustainability Towars New Era Of Industrial Revolution

**Venue:**

Politeknik Sultan Mizan Zainal Abidin,

25 - 26 September 2019

**Organiser:**

Kongres Persatuan Akademik Malaysia

# Preface

**Assalamualaikum wr wbth.**

I am really glad to welcome all participants to this program which is the first symposium organized by Malaysian Academic Association Congress (MAAC). I am also honored to acknowledge that even though this is the first symposium organized by MAAC, but there are some international participants who have sent their papers for presentation.

iMAACS 2019 is organized as a platform for researchers, industries and academicians to share their knowledge and experiences. This is important because in order for us to be in the frontier of knowledge, we have to conduct research and creative works. These works are later shared in several mechanisms such as books, documentaries, journals, seminars, conferences and symposiums. Thus, iMAACS 2019 is being planned and organized to give opportunities to all in sharing their knowledge and experiences.

Apart from the sharing process, the opportunity to present will also be able to enhance the participants skill and competency to conduct presentations.

In this symposium, there are papers presented from 4 main clusters which are Engineering and Technology, Teaching & Learning (Physical), Teaching & Learning (Digital) and Social & Entrepreneur.

The organizer hope that all participants will benefit from the Symposium and on behalf of the organizing committee, I would like to thank Politeknik Sultan Mizan Zainal Abidin (PSMZA) especially director Politeknik Sultan Mizan Zainal Abidin Dungun, Universiti Tun Hussein Onn Malaysia (UTHM), UTHM Holdings Sdn Bhd, Malaysian Academic Association Congress (MAAC) and staff PSMZA who have been working hard in preparing this program. Last but not least, I would also like to thank all reviewers in ensuring that all papers are of an acceptable standard and quality.

**DATO' PROF. ENG. DR. MOHD IDRUS BIN MOHD MASIRIN**
Chairman
Malaysian Academic Association Congress (MAAC)

# List of Publication

# Issues and Challenges Face By The IBS Component Manufacturer

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**Abstract.** The Malaysian construction industry plays a vital role in the country development. The IBS system is compulsory to the construction industry so that IBS manufacturer in Malaysia are able to accommodate IBS demand and supply today considering that issues, challenges and current trend . The aim of this project is to examine the supply and demand of IBS system among manufacturer in Malaysia. The objectives of this study are to identify issues, challenges, analyse trends and develop recommendations for improvement of supply and demand of the IBS components manufacturer registered with the Construction Industry Development Berhad thirty one (31) questionnaires set using five point Likert scale method has been collected among IBS components' manufacturers in Malaysia. Collected data were being analysed using frequency distribution and average index method. From the findings, the reluctance of stakeholders to convert from conventional systems is the most important issues. Meanwhile the challenges in supply and demand are insufficient financial incentives to switch IBS system in construction methods. The findings also show that supply and demand by the construction sector is the most important trends towards the production of IBS and the government must be promote innovation and creativity in IBS as recommendation for improvement of the supply and demand IBS. Also, continuous promotion and the increase of the construction project using IBS system can boost a uniform supply and demand among IBS manufacture.

**Keywords:** IBS, supply, demand, manufacture and construction industry

## Introduction

Construction sector based on Industrialised Building System is one of the innovation in building technologies nowadays. CIDB has organized variety of programmes and promotes the application of Industrialised Building System to modernise and to improve the quality of construction in Malaysia. Therefore, the usage of Industrialised Building System component manufactured and tested in factory could attract local workers' interest in increasing the effective level of productivity, safety and high quality [14]. Construction Industry Development Board (CIDB) will put focus on increasing the application of IBS among developers and manufacturers to boost the productivity and help manufacturers to produce building design using standardised components. Government introduced Construction Industry Transformation Programme (CITP) on 2016 until 2020 to accelerate the development of industry to fill market demand, ways to transform construction sector based on knowledge, expand productivity, practising sustainable behaviour and internationalization [7].Hence, this paper will look into the supply and demand of IBS by the CIDB registered manufacturer.

## Problem Statement

The construction industry is an important branch in the economy. The use of advanced technologies such as the IBS is an effective way and the government must encourage it to be used more and more developers and contractors. IBS is one way to speed up construction. If the usage of Industrialized Building System required to developers, IBS factory in Malaysia maybe not sufficient to cover the

demand and supply at present. Otherwise, if the IBS is not used by all developers, it can lead to rising construction costs. Therefore, the issue of supply and demand in IBS will be serious [10].With the current developments, it appears the government intends to apply the IBS in the construction industry widely across the country to be able to reduce the price of the house. However, the question of whether the significant issues of demand and supply in the IBS currently under investigation as CIDB promote the use of these components among developers and contractors aim to drive productivity in the construction sector. According to the review authors, these studies were not discussed by the researchers before. Even CIDB study related issues of supply and demand in 2008 and 2012 could not reflect the current situation. Therefore this study is necessary to answer the issues, obstacles, and ways to improve the flow of supply and demand components IBS registered under CIDB.

## Aim and Objectives of Study

The aim of this study is to examine the extent of the supply and demand of the IBS component by the manufacturer registered with the CIDB. To achieve the goal of the study, the objectives of this study are:

1. To identify the issues of demand and supply of the Industrialised Building System (IBS) components.
2. To identify the barriers that exist in the supply and demand of the Industrialised Building System (IBS) components.
3. To generate the recommendations for improvement of demand and supply of the Industrialised Building System (IBS) components by the manufacturer.

## Literature Review

Construction sector based on IIBS is one of the innovation in building technologies nowadays where the usage of IBS component manufactured and tested in factory could attract local workers' interest in increasing the effective level of productivity of component also could ensure the safety and quality of component in controlled situation with high quality. This is due to the component will be tested before transferred to construction sites [13]. Conventional method that is applied by stakeholders requires high cost and unable to meet the demands of consumers within short period and uniform construction quality [14]. The issue of dividing one organisation during construction project is carried out. This due to high request towards construction project. Division occurs either internally or externally. This strategy came out due to less communication and feedback, low sense of identity and confrontation culture during construction process of a building. Thus, inefficiency happened during construction of the building. IBS is a high construction method.

Former studies show skills and experiences are lacking in this field compared with conventional method [11,13].Besides, it is difficult to obtain approval of a building from local authorities due to zero uniformity in the concept of modularity, designs and installation of components [16]. Statistic shows fluctuation in market for the demand in public housing projects compared to developed countries[13]. Sustainable development is an activity that would give advantages for future generation on par with rapid development in construction products to produce innovative products [16]. Construction projects in private sector exceeding RM 50 million and government projects exceeding RM 10 million compulsory to apply IBS. Construction industry needs to encourage usage of automation and robots to reduce labours in construction. Government should also encourage the production of construction products made in "housing Modular" to increase industrial level and government should encourage creative innovation such as mould system to withstand the need of IBS [11]. In addition, ensure the usage of "Modular Coordination" in designs of IBS components and introducing Open System for construction sector in Malaysia to obtain uniformity in building components [2].

## Methodology

Methodology used in this study is distribution of questionnaire survey. The questionnaires were distributed in order to meet all the four objective of the study. Thirty one sets of questionnaires were distributed. The questionnaire consists of five sections. Section 1 is the general information on the company. Section 2 is to identify issues supply and demand components IBS registered with the CIDB, section 3 is to identify challenges that exist in the supply and demand components IBS registered with the CIDB, section 4 is to analyze trends supply and demand components IBS registered with the CIDB and section 5 is to develop recommendations for improvement of supply and demand components IBS registered with the CIDB. The distribution of the questionnaire was conducted e-mail and by hand.The questions provided are based on the Likert Scale of five ordinal measures of agreement towards each statement. The data obtained from questionnaire survey were analyzed using average index.

## Result and discussion

This study was conducted to examine supply and demand of IBS component by the CIDB registered manufacturer. Questionnaires sets were distributed to 31 respondents. The results from the questionnaire obtained are discussed below based on the objectives of the study. The result is divided into five parts.Figure 1 shows respondent's percentage distribution under type of organization. Analysis results indicated as 29 people (94 percentage) respondent's position as manufacturer, 1 respondent (3%) are from contractor and 1 respondent (3%) are from project manager.

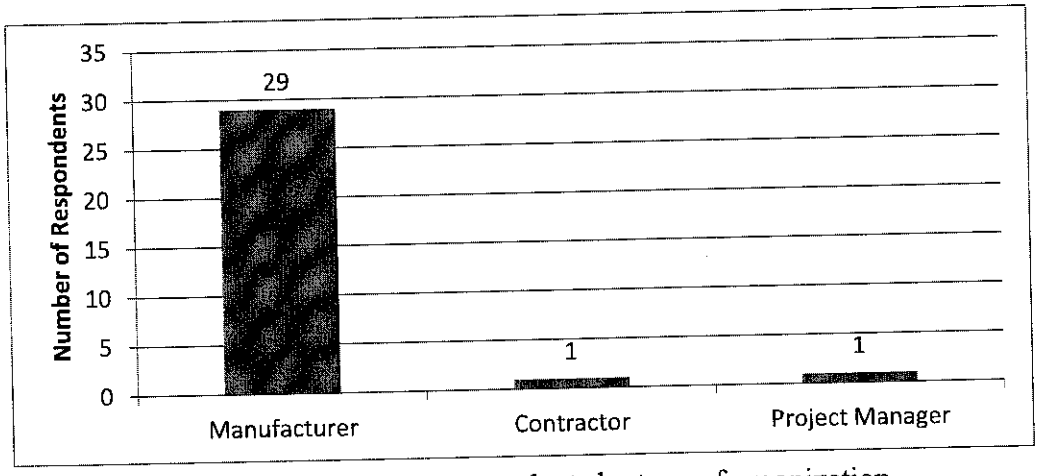


Figure 1: Respondents by type of organization

Figure 2 shows respondents under working position are manufacturer, sales manager, owner company and project manager. 6 respondents (19%) from manufacturer, 9 respondents (29%) from working sales managers and 9 respondents also from owner company and lastly 7 respondents (23%) working as project manager.

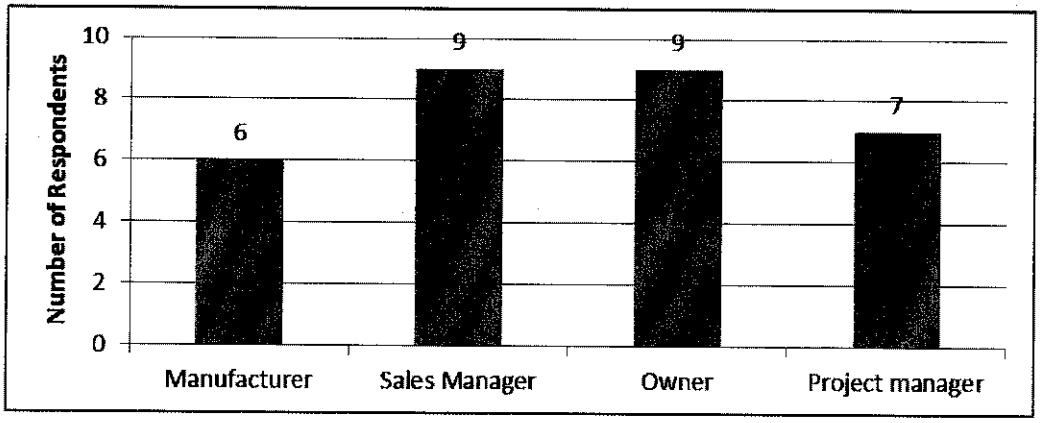


Figure 3: Respondent's distribution according position in company

The respondents under working experience needs to choose three (3) ranges of working experiences. Respondents working experience is widely affect the outcome of analysis. Respondents with high working experience might have high expertise regarding the IBS implementation compare with respondents with less working experience. Out of 31 respondents, 2 respondents (6%) are having less than 2 years, 5 respondents (16%) 2 to 5 years, 6 respondents (20%) are having 5 to 10 years and 18 respondents (58%) are having more than 10 years of working experience.

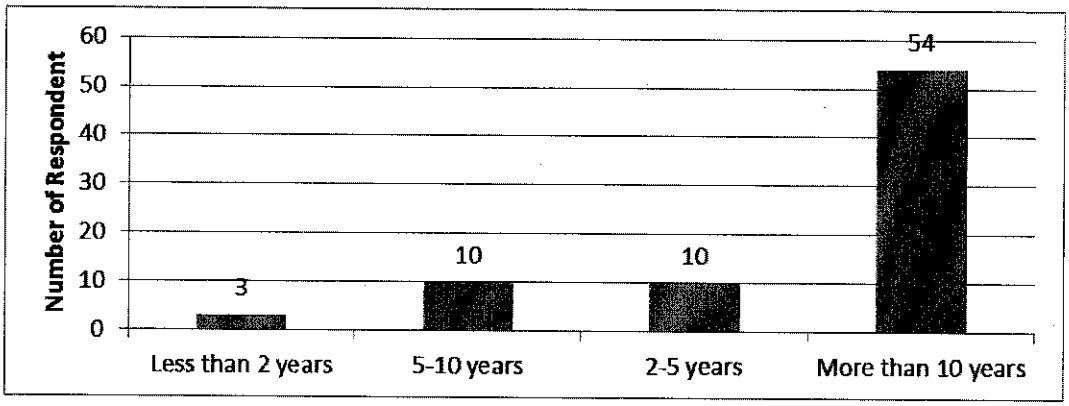


Figure 4: Respondents Percentage Accordingly Work Experience

Figure 5 shows IBS product type which manufactured by company. Analysis result shows 8 companies manufactures pre-cast concrete system, 3 company manufactures block system, 1 company manufactures wooden frame system. Furthermore, 4 company manufactures steel frame system, 3 company manufactures formwork system and 12 company manufactures innovative system. This shows company which manufactures innovative system gives highest respondents.

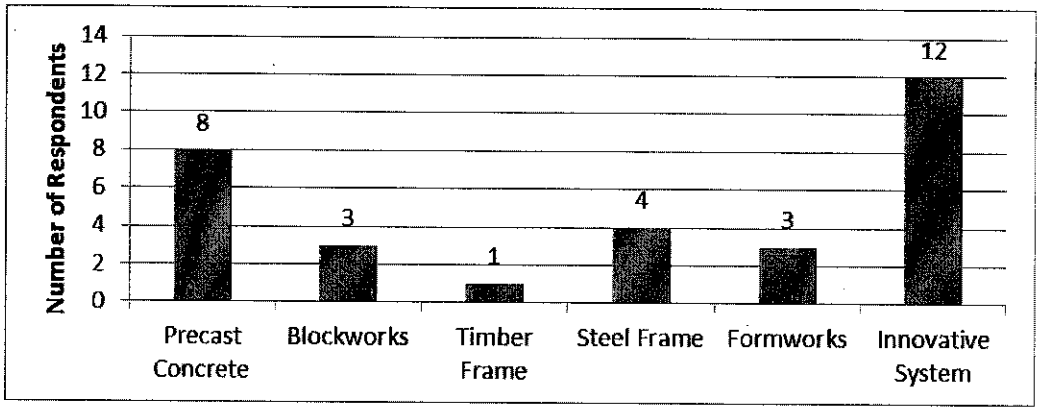


Figure 5: Respondent Distribution According IBS Product Type

Objective one was conducted to identify issues supply and demand components IBS registered with the CIDB. In literature review, issues conventional method that is applied by stakeholders requires high cost and unable to meet the demands of consumers within short period and uniform construction quality [14]. Based on 31 sets of data collected from the surveys, below are the results about the position issues supply and demand components IBS registered with the CIDB. The result is shown in table 3 issues of demand and supply of the IBS which obtained from respondent which the reluctance of stakeholders to convert from conventional systems which average value about 4.10, an alternative approach is to use an IBS project for affordable housing about 3.81 and 3.71 is a involvement of IBS producers in the early phase of development of construction project is limited. Furthermore, agreed issue from respondent is consumers are feeling unsure and unsafe with housing based on IBS because users lack information about the benefits of using IBS systems as opposed to conventional with average rate of 3.61. Objective two was to identify challenges that exist in the supply and demand components IBS registered with the CIDB. In literature review, lack of cooperation between each other and effects the quality and communication in implementing IBS projects [2].The result is shown in table 3 challenges for agreed category which obtained from respondent which financial incentives which not enough for switch to IBS construction method which average value about 4.0. While, lack of knowledge in building designing IBS in designer circle about 3.97 and 3.81 is a challenge for lack of supply skilled worker in IBS. Furthermore, agreed challenge from respondent is lack of enforcement by authorities which related with average rate of 3.68. Objective three is to generate the recommendations for improvement of demand and supply of the IBS components manufacturer. In literature review, Government should also encourage manufacturers to much better innovation system to provide housing modularly [5]. Based on the result, there are three suggestions for improvements in the highly agreed category obtained from the respondents, the government should encourage innovation and creativity in the IBS which is an average of 4.58. While the average rate of 4.52 is to provide exposure to local workers in the IBS and to impose conditions on using the IBS in government projects.

## Conclusion

The issues important in the supply and demand likes reluctance of stakeholders to change the conventional system to IBS, IBS project for affordable housing as an alternative approach, the involvement of IBS producers at early phase of development of construction projects is quite limited, consumers are unsure and unsafe with the housing concept of the IBS as users are less informed about the benefits of using the IBS than conventional and the number of contractors specifically for the IBS is limited.The challenges of supply and demand IBS as insufficient financial to change the IBS construction method, lack of knowledge on design of IBS among designer, lack of supplier of IBS and lack of enforcement by relevant authorities.The recommendations for improvement as the government should promote innovation and creativity in the IBS, implement the requirement of IBS usage in government projects, provide exposure to local workers about IBS, the implementation of the IBS act as a benchmark to produce developed countries, keep and used uniform design and complete the project according to completion period, produce quality and environmentally friendly products, create quality value and aesthetic value to customers, encourage manufacturers of IBS towards innovative systems, the government needs to launch forums, latest techniques and online portals to spread international product trends in the implementation of the IBS, sustainable construction emphasis, increase the manufacturing branch of the IBS in the rural areas, encourage automation and robotic to reduce modular construction labour and producing components using recyclable materials.

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