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Awareness of the Industrialized Building System (IBS) Implementation in Northern Malaysia - A Case Study in Perlis

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Abstract

The Industrialized Building Systems (IBS) can be defined in which all building components such as the wall, slab, beam, column and staircase are mass-produced either in the factory or on the factory site under strict quality control and minimal wet site activities (Warswaski, 1999). This research aims at looking into the current awareness of the IBS usage *and its* exposure method to the relevant population in Perlis, Malaysia. A total of 100 questionnaires were handed out to several parties, namely the Officer's Contractors' Association of Malaysia (20), Public Works Department (PWD) Perlis (20), Repository Development Officer at River Chuchuh, Perlis (10), Lecturers, Engineering students (25) and the public (25). From the methods, 80% respondents have demonstrated an extent of general knowledge about this system. Meanwhile, 40% know about this system in great detail. Gradually, more respondents agree on the implementation of this system taking place in Perlis. Developers are under the impression that the implementation of the IBS is accompanied by high costs. *As the conclusion,* profound awareness of the benefits of using the IBS system is pivotal, as this technique is able to function effectively in the competition-based construction industry today.

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Keywords: ***industrialised building system; awareness; Malaysia; Perlis; engineering.***

1. Introduction

With the 9th Malaysia Plan announced, the country continues to be in pursuit of the development of affordable and sustainable low- and medium-cost housing. However, the country has to brave a difficult task to meet the target of 600,000 to 800,000 housing during this period because the conventional building system currently being practiced by the construction industry evidently cannot cope with the huge demand (Kadir et al, 2006). The Industrialized Building System (IBS) is interpreted as an on-site construction process which includes the application of techniques, products, components or construction system with the involvement of prefabrication component and installation of components structure on-site. These components are designed according to the needs of the designers and to fulfil the objective of achieving high quality construction (Siti Nur Zulaikha, 2008). From these Malaysia Plans, the suitable method thought to be suitable to complete the Plans is the Industrialized Building System (IBS) (Ahmad Razin, 2007). This research studies the current awareness of the IBS usage and exposure method to the population in Perlis, a state in Malaysia.

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2. Methodology

Three approaches have been adopted in this research for reliable and relevant data gathering. The approaches are as follows:

i. Questionnaire distribution
ii. Literature review.

The distribution of questionnaire is an approach to decide on the current awareness of the adoption of the IBS. The quantitative approach, in short, is a systematic form of posing questions, where corresponding parties are obliged to complete the questionnaire by answering one or more answers from a list of given alternatives. For the qualitative approach, semi structured or non-structured questions are given. Semi-structured questions require the respondents to complete a list of questions based only on their experiences and opinions. As for the non-structured questions, the respondents have to explain their answers in a subjective manner.

Face-to-face interviews were carried out with different respondents at several locations and times. One purpose of the interview is to capture the information that is not contained in the questionnaires. Interviews also enable researchers to delve deeper into the topics that become the emphasis in the questionnaires.Result and Discussion.

3. Result and Discussion

The data were collected from all areas in Perlis. Each part carries their own question criteria in order for the data to carry some systematic answers. In specific, for Part 1, there is the Introduction of theIndustrialized Building System (IBS), for part 2 it is about The awareness of Industrialized Building System (IBS) in Perlis. The next part deals with The Opinion About An awareness of Industrialized Building System (IBS) in Perlis. A total of 100 questionnaires were handed out to the Officer's Contractors' Association of Malaysia (20), Public Works Department (PWD) Perlis (20), and Repository Development Officer at River Chuchuh, Perlis (10), Lecturers, Students of Engineering courses (25) and the general public (25).

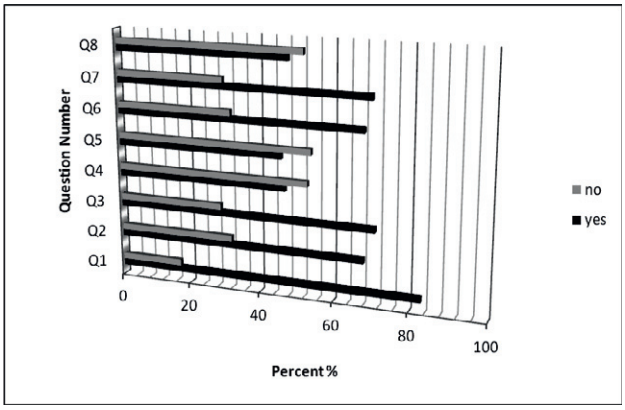

Fig. 1. Part 1-Introduction of Industrialized Building System (IBS).

Figure 1: Part 1 embodies the basic knowledge about the awareness of the Industrialized Building System (IBS). This part illustrates eight basic yes or no questions, for instance 'Do they know about this system'? , 83% ticked yes and the rest (17%) answered no. This is because the IBS had once been an important issue in the printed media and gradually becoming the main topic in the mass media for several years that followed.

For the second question, it is 'have they been disclosed on this system'. We have discovered that 68 % of the respondents chose 'yes' on this question and 32% had picked the other answer. This is because the majority of them have been made familiar to the idea of the IBS. Most of them are engineers, contractors, consultants, JKR employee, lecturers in this course and people in charge of the IBS development, which well explains why they are familiar with the system and its functions.

The third question concerns with getting the data intended. 'Have you ever noticed this system being implemented, directly or indirectly?'. From Figure 1 generated, we have found that 71 % of respondents had ticked yes while 29 % had

chosen 'no'. If respondents had said 'yes' to this question, it is possible that they have been exposed to this system, by way of noticing it being implemented inside any course or through the mass media or directly on-site. For those answering otherwise, this is because they are not really exposed to this system. So, most of them are denied the knowledge and need to learn about this system in greater detail.

For the fourth question 'have they ever carried out a project which deploys this system?'. We have found out that about 47% respondents had carried out an IBS-based system, while 53 % had stated otherwise. For the former, the deployment of this system is because they have followed the IBS short course organized by the CIDB, or they have used this system for their projects before. For the latter, there is a likelihood that many of them have had no opportunity to adopt this system. It is worth noting here that this system is new for them as they have been very comfortable using the conventional system for years.

For Question 5, 'have they followed the Industrialized Building System (IBS) introductory course previously?'. 46 % from respondents admitted to have attended the course, while 54 % never attended this course. Those who attend such courses are JKR employees, contractors, site consultants and those working inside the construction field.

The sixth question informs us that 68% from the respondents know the process in this Industrialized Building System (IBS), while 32% do not know any Industrialized Building System (IBS) operations. Most respondents have learned about this Industrialized Building System (IBS) implementation through the powerful media.

Question eight 'Do they know that this Industrialized Building System (IBS) has many advantages?'. 70 % from total respondents had replied 'yes' (perhaps they are thinking that this Industrialized Building System (IBS) surely have many advantages when it is launched in Perlis), while 30 % had answered 'no' to this question.

The final question-'Is this system suitable to be practiced in Perlis? We have found that 48% from all respondents agreed that the Industrialized Building System (IBS) is suitable to be practised in the state. Additionally, 52% stated that this process is not suitable to be implemented in Perlis. This may be explained by the fact that the factory for the Industrialized Building System (IBS) is too distant and subsequently, it will increase the delivery cost.

From this situation, it is conclusive that a great many Perlis citizens still are not familiar with the Industrialized Building System (IBS), and most Perlis communities still need to be exposed to this system. Therefore, we recommend that this system can reach out more to urban, rural and remote areas of Perlis to improve the development construction sector in this state.

The secondary part of the questionnaire is about an observed Industrialized Building System (IBS) awareness level in this state, unravel the Industrialized Building System (IBS) consumption level in this state, and to address these questions the questionnaire part comes in six questions.

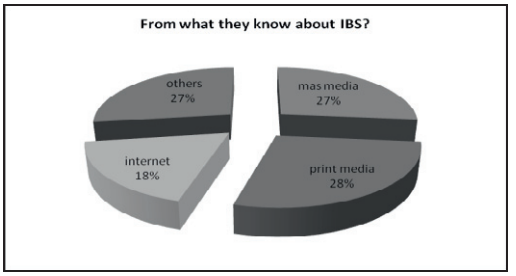

Fig. 2. Part 2-From which resource do they know about the IBS?

Question 1 (Fig.1. Part 2)-'from which resource do they know about the Industrialized Building System (IBS)'. 28% had named the mass media as the main resource and 27% had selected other resources. The Internet was another answer, selected by only 18%. The Printed Media was more favoured than the others because of its easy availability in newspapers, magazines, articles and brochures. The mass media and other forms of resources are the second higher because these respondents would obtain the information from the television and radio, also from friends in their chit-chats, and maybe from their visit to other places. The Internet was the last to be selected because it can be assumed that the people may not know how to use the technology . However, of course, this does not speak for the state's teenagers, government and technology-savvy people who use Internet frequently and to meet specific purposes (work demands and for entertainment, for instance).

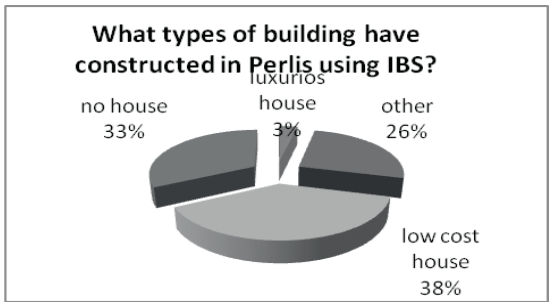

Fig. 3. Part 2- What types of building have been constructed in Perlis using the IBS?

For Question 2 (Fig.2. Part 2)-'-'what types of building have been constructed in Perlis using the Industrialized Building System (IBS)?, 38% stated low-cost houses, 33% said there was no housing-type that uses this method, 26% answered 'others' and 3% named luxurious house as the kind of building which adopts the IBS in this state.

It has been found that most respondents know what Industrialized Building System (IBS) is about, but they were not able to tell the exact percentage that can represent the requirement of the Industrialized Building System (IBS). The Government had announced earlier that any building which adopts 70% or more elements of the Industrialized Building System (IBS) can be taken into account as one that has applied the Industrialized Building System (IBS) approach.

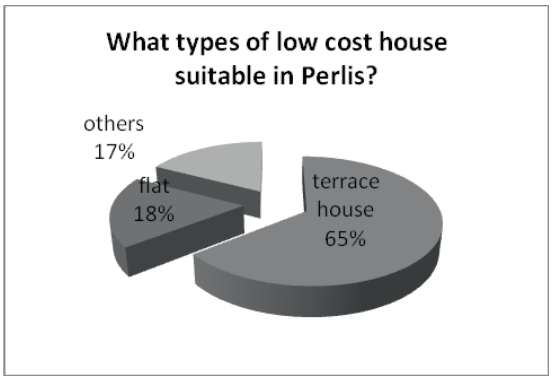

Fig. 4. Part 2- What types of low cost houses are found to be suitable in Perlis?

Question 3 (Fig.3. Part 2) which is 'what types of low cost houses are found to be suitable in Perlis?', reveals that 65% did state terrace houses, 18% state flats and 17% named 'other types'. Most of the low-cost houses in this state are built in the form of terrace houses to suit the status of living of the majority of the citizens who have low and medium level of income.

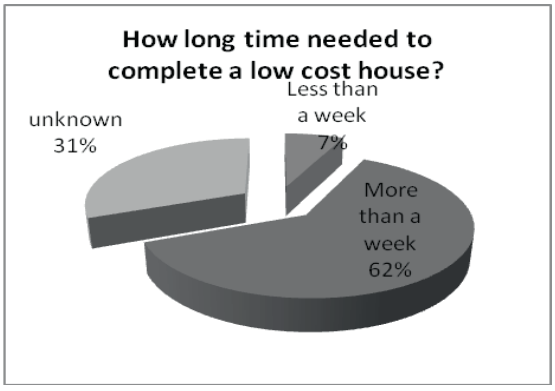

Fig. 5. Part 2- How long does it take to complete a low cost house?

For Question 4, (Figure 4, Part 2), 'how long does it take to complete a low cost house', 62% from total respondents agreed that the time taken to complete a low-cost house is more than one week. For a more conventional method, low cost houses would need more than a week to fully be built. 31% did not know anything about house construction's time consumption, denoting the possibility that they may not know about the achievement of the Industrialized Building System (IBS) and they have no idea about the Industrialized Building System (IBS). Only 7% agreed that a house can be fully completed within a week.

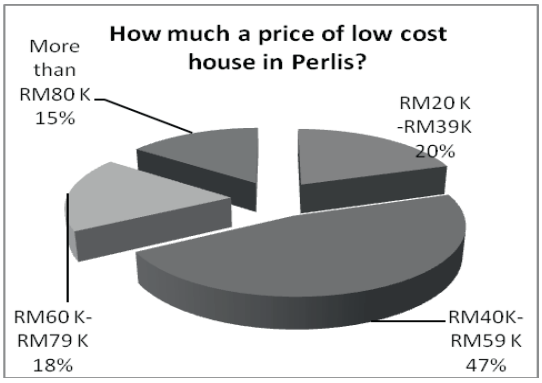

Fig. 6. Part 2- What is the current price of a low cost house in Perlis?

Question 5, asks "What is the current price of a low-cost house in Perlis?'. From Figure 5 part 2, it shows that the majority quoted the price of a low cost house in the range of RM40,000 to RM59,000. This is the current standard price in Perlis. 20% quoted a price somewhere between RM20,000 to RM39,000, a range that represent the least price range. Thirdly the range quoted was RM60,000 to RM79,000, this is quite a high range of price as this has a lot to do with the location of the housing. For example, the houses in Jejawi would be enetitled to this range because of its location which is near to Kangar and Arau. Lastly there is a range of RM80,000 and above. This price range covers areas with dense population such as Arau, Kangar and Kuala Perlis.

4. Conclusion and Recommendation

Conclusively, it is revealed that the awareness level of the Industrialized Building System (IBS) in Perlis is still low. To explain this, most development projects in Perlis have been using the conventional method. Although some government projects have been reported to have used the Industrialized Building System (IBS) method, it is found that the usage does not achieve 50%. This does not comply with the standard determined by the government, which is 70% and above.

We have also found that the Industrialized Building System (IBS) is actually extremely adequate to be implemented in the state, but it remains a fact that it is difficult to obtain raw materials and skilled work force. Apart from that, the factories are very far from Perlis, and they come in small number. Many developers even think that the IBS is not worth to be applied to housing types constructed in Perlis.

The following are some suggestions which can function as a guide, and simultaneously making the IBS implementation more known to the public (as clients) in general and the developers, contractors and consultants in particular.

1. The supplier Company should build a factory in the northern part of Malaysia to facilitate the developers to get easy raw material supply and at the same time, save the delivery and transport costs.
2. Clients, consultants and contractors need to build a strong foundation and communication between themselves in conducting new construction projects , especially those which apply the Industrialized Building System (IBS) .
3. The CIDB and related parties need to raise the awareness of developers and contractors or consultants systematically.
4. Local contractor is encouraged to adopt the latest technology construction works. What is regarded as an important initiative is exposing the contractors to not be afraid to try and use the new technology.

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