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Main Factors of Contractor Reluctancy to Adopt IBS Projects In Malaysia

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ABSTRACT

In recognition to the importance of Malaysian government plan for 1 million houses in 5 years, this paper aims to establish the factors contributing to contractor unwillingness to join IBS projects. However, there are unresolved issues arising from the ongoing and widespread adoption of the traditional method of construction. Among them is the resultant fragmentation of the industry itself; delays in production and delivery time; unnecessary wastages and lack of sustainability practice. As such the Malaysian Government has been continuously encouraging the industry to use, partly or if not wholly, the Industrialised Building System (IBS), which is considered to be an important part of sustainable construction initiative. The IBS, albeit in its crude form, is not new in Malaysia and was introduced in the country over 40 years ago through government-led affordable housing projects. However, the system has so far failed to gather momentum. A number of reasons identified, change in work and defective design, changes in government regulation, contractor competence, delayed payment and resolving contractual issues, financial failure-any party, labour and equipment productivity, labour availability, equipment and material availability, quality of work, safety. Based on the review on the available literature sources, this paper discusses the identified barriers with the aim of examining how far these barriers may well affect the contractor reluctance to adopt IBS projects in the Malaysian construction industry.

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INTRODUCTION

Industrialized building systems (IBS), where building components are manufactured in a controlled environment, either on site or in a manufacturing environment, positioned and assembled in construction, is considered by many as a key to the improving the construction industry (Cook, B., 2005) and have been many studies on the implementation of the IB approach and its potential. For example, although some argue that the approach of the IB is relatively more expensive than traditional construction methods (Birkbeck, 2005), numerous studies show that the cost savings of the project due to the implementation of the IB has increased significantly over time (Goodier, 2007). Recent work has also highlighted the positive role of IB in the introduction of green building (Jaillon, 2009).

IBS systems are not new in Malaysia. For example, precast concrete walls were adopted in Malaysia in the late 60s. Although IBS systems have been in existence for a long time, but there are still many unresolved issues. Some of these issues are the ability of industry players to equip them with the technical knowledge required to adopt IBS in their projects. Examples of this lack are clearly reflected in the quality of projects, and there are situations where IBS could not be continued due to the unavailability of technical experts. This paper addresses these questions and suggests appropriate approaches to overcome them.

Despite acknowledging its benefits, contractors were still not rapidly practicing IBS. The construction industry is an established industry with many deep-seated and culturally embedded practices, so the introduction of anything perceived as new or different faces barriers. Many small contractor company owners are reluctant to adopt the IBS system and prefer to continue to use the conventional method of construction. This is due to the fact that entrepreneurs are already familiar with the conventional system and for the most part technology and small-scale projects and therefore not ready to move to mechanized system based (Hamid, 2008).

Small contractors lack of financial backup and not able to set up their own manufacturing plants as it involves very intensive capital investment (Hussein, 2007).

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The contractors need to cover the amortized cost of setting up a prefabrication yard, as well as the variable costs of manufacturing components and of their on-site assembly. Some contractors in Malaysia suffered from poor productivity and financial performance to be involved in IBS (Kamar, 2009).

Cost was one probable cause of concern. It states that when there is sufficient labour supply, in-situ construction methods can be more economical. Further, in IBS projects, contractors have to pay the supplier upfront to purchase components. It is a high capital investment where 30% of the value of the project is to be paid upfront (CIDB, 2011).

In addition, contractors also faced problem in securing progress payment from clients, thus forcing them to delay payment to components suppliers. Delayed payment means a delay in the components delivery, which eventually affects the productivity of the projects.

1. Factors effecting to IBS project implementation:

A number of variables influencing the project implementation were identified following a thorough review of these articles. The term CSFs in the context of the management of projects was first used by Rockart in 1982 and is defined as those factors predicting success on projects. A careful study of previous literature suggests that CSFs can be grouped under five main categories. These include human-related factors, project-related factors, project procedures, project management actions, and external environment (Albert, 2004).

2.1 Project-Related Factors:

Walker (1995) postulated project scope as a useful predictor for construction time. The importance of project scope factor is echoed by other researchers. The attributes used to measure this factor are the type of project, the nature of the project, the number of stages of the project, the project's complexity and size of the project. (Albert, 2004)

2.2 Procurement-Related Factors:

A number of researchers identified the importance of procurement factors. Dissanayaka and Kumaraswamy, (1999) defined the scope of procurement as the framework within which construction is brought about, acquired or obtained. Therefore, two attributes are used to measure this factor; they are procurement method (selection of the organization for the design and construction of the project) and tendering method (procedures adopted for the selection of the project team and in particular the main contractor) (Albert, 2004).

2.3 Project Management Factors:

Project management action is a key for project success (Hubbard 1990). Jaselskis and Ashley in 1991 Suggested that by using the management tools, the project managers would be able to plan and execute their construction projects to maximize the project's chances of success. Then, the variables in project management include adequate communication, control mechanisms, feedback capabilities, troubleshooting, coordination effectiveness, decision making effectiveness, monitoring, project organization structure, plan and schedule followed, and related previous management experience. A number of attributes will affect this factor, including the communication system, control mechanism, feedback capabilities, planning effort, organization structure, safety and quality assurance program, control of subcontractors' works, and finally the overall managerial actions (Albert, 2004).

2.4 Project Participants-Related Factors:

Chua et al. in 1999 defined project participants as the key players, including project manager, client, contractor, consultants, subcontractor, supplier, and manufacturers. Walker in 1995 considered influence of client and client's representative as a significant factor on construction time performance. The client-related factors concerned with client characteristics, client type and experience, knowledge of construction project organization, project financing, client confidence in the construction team, owner's construction sophistication, well-defined scope, owner's risk aversion, client project management (Albert, 2004).

Among many factors effecting as barrier to implement IBS projects, in pilot study and the result of interviews some main items chosen to use in questionnaire.

2. Methodology:

The research was conducted by means of interview and questionnaire survey. The questionnaire design were undertaken in the phase consisted of literature review of past research focused on risks in construction and IBS housing project. 14 construction risks were compiled from previous similar studies conducted in the Malaysia and from an interview with experienced personnel involved in IBS projects it was reduced to 10 risks based on IBS project in Malaysia construction situation. Table 1 shows 10 risks types in IBS project included in the questionnaires. A total of 80 questionnaires were sent out to the IBS construction contractors. Out of 80 questionnaires, the researcher gathered 39 usable questionnaires. However, 3 responses could not be used in the

analysis because they were incomplete. Thus, only 36 responses were used. Hence, the ultimate response rates were 45%.

3. Result and Analysis:

The respondents, on the average, strongly agree that supply chain and method of procurement as primary factor contributes to the success of IBS project. It is crucial for legislators and construction actors, to establish a good relationship and collaboration among the project members from the moment the project starts up to the completion to ensure the smooth running of supply chain. Lack of expert and skilled labour (mean=4.66) and Contractor competence (mean=4.58) ranked as second and third most influential factors. The fourth ranked factors was Defective design (mean=4.43), while the fifth ranked factor was Financial failure for any party of the project (mean=4.18). Other than these top five (5) factors, the respondents also agreed that Quality of work (mean=4.02); Delayed payment in projects (mean=3.85); and that change in work (mean=3.78) are among of the most influential factors towards hindering contractors joining IBS projects. The respondents are slightly agreed that changes in government regulation (mean=3.61) and safety (mean=3.29) contributes to the concern of contractors to the IBS project. (Table1).

Table 1: Mean score and rank of IBS project related risks .

TITLE	MEAN	RANK
Supply chain and procurement method	4.72	1
Lack of expert and skilled labour	4.66	2
Contractor competence	4.58	3
Defective design	4.43	4
Financial failure	4.18	5
Quality of work	4.02	6
Delayed payment	3.85	7
Change in work	3.78	8
Changes in government regulation	3.61	9
Safety	3.27	10

Figure 1 indicates that among 10 significant factors, an established supply chain management along with a wise business model with strong consideration to local contractors behavior blend together with a good legislation strategy will highly contributes to the successful adopting the contractors to IBS projects.

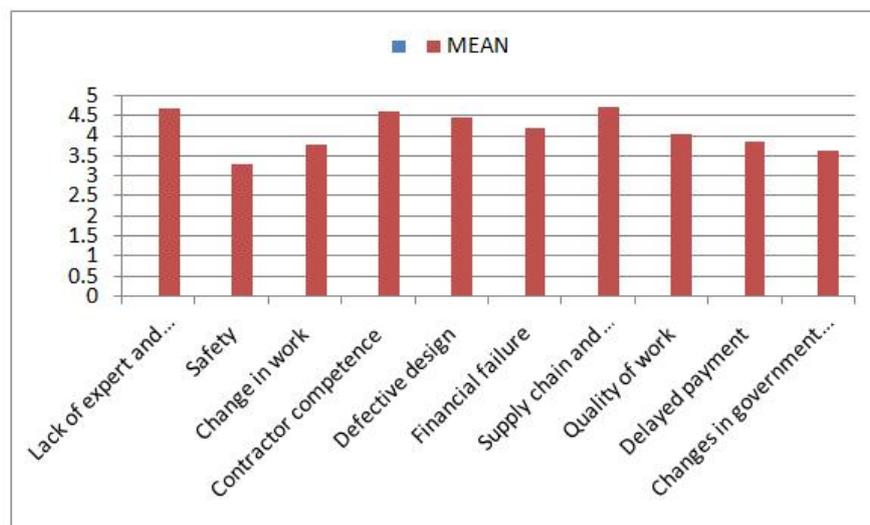


Fig. 1: Mean of each factor responded by experts.

Conclusion:

This paper evaluated the factors which hindering contractors to join IBS projects in the construction industry in Malaysia. It is indicated the level of IBS adoption is still far from the target set by the national government. Many barriers to the use of IBS were examined, its mainly revolves around skills, delivery and supply chain project knowledge, customer perceptions and perceptions of professionals and the absence of government policy, incentives and promotion. It is good to be emphasized that, even if the cost was mentioned among the factors, but it is rarely mentioned that the main reason behind the refusal to adopt IBS. Conventional building methods are preferred rather than proposing an IBS system for moving the system to build

a classical approach to IBS and even not motivated by cost factors. Another reason that adds to this belief is the fact that construction companies were exposed and trained in the traditional method of construction for decades and there is availability of cheap foreign workers in Malaysia. Shifting to IBS seems to be too complicated, unless the legislators impose a policy or strict governmental requirement on the use of IBS, or redefine the market by setting a mandatory quota for IBS projects. Therefore, a long term comprehensive policy and directive statement towards the industrialization of the building and construction sector should be pursued by the Government in order to shape a new business model for the future of the Malaysian construction industry. Further, developing new methods of procurement, providing comprehensive training packages, and introducing certification of IBS vendors are some of the other factors of encouraging contractors to join this method of construction.

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