



## Payment issues in Malaysia Industrialised Building System (IBS): Literature visit

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### ABSTRACT

The development of Industrialized Building System (IBS) project involves close relationship between various players such as clients, contractors and manufactures. A good payment mechanism will lead an effective integration and collaboration among player automatically will efficiently achieve the project goal. Although efforts has been undertaken to enhance the IBS practice in Malaysia, the adoption of IBS is still not achieve the government target. This is due to some issues regarding of current payment mechanism. Unlike the conventional approach, the adoption of IBS required a strong cash flow among the project stakeholders especially the contractors in order to ensure project on progress. Current practice, unfortunately, some of the IBS projects are still use the traditional payment method (which is based on in-situ progress claim). This practice is one of the main barriers that affect to the IBS implementation in Malaysia. Therefore, the purpose of this paper through literature review is to explore the issue of payment mechanism in order to enhance the adoption of Malaysian IBS projects in future.

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## INTRODUCTION

The construction industry can be considered as one of the major industry in Malaysia. This industry output is often seen as a driver for economic growth practically in development country such as Malaysia [1]. Moreover, construction industry has a strong linkage with the development of other industries directly or indirectly in this county. Due to the significance of construction industry, in 1960's the Malaysian government has introduced a more systematic and effective method known as the Industrialized Building System (IBS) as replacement of conventional method. IBS has been defined in a number of definition in construction literature, for example [2] defined IBS as prefabrication process and construction industrialized concept. IBS also has been addressed as an integrate manufacturing and construction process with systematic organization and well management [3]. In simply state, IBS definitions and concept can be differentiating from experience of users, perception and understanding. The adoption of IBS has led to several advantages such as reduced project duration, cost, less labour, efficient manufacturing process, wastages and increase the quality of project [4], [5].

However, although IBS has been introduced in Malaysia since 1960's, yet its application are still at low levels [6]. Despite acknowledging IBS benefits, the construction industry in Malaysia is still far from mature. One of the crucial barriers in IBS adoption is project deliveries which still domination by traditional method. Till date, the traditional method has been addressed and criticizes due to its fragmented approach that always led to construction problem such as increase project cost, overrun time, less communication and collaboration and wastages [9]. Moreover, the domination of traditional method practically, procurement and payment mechanism in organizing and delivery IBS project in Malaysia would negatively affect the IBS project outcomes [10]. Figure 1, revealed that a payment mechanism is one of the priority barriers of IBS in Malaysia. From this figure, it identify that payment mechanism among the manufacture, clients and contractors is high priority in BIM adoption within the industry.

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Industry	High	Poor understanding on IBS by professional and designer Lack of incentives contractor Lack of standard design (contractor) Lack of skill labor (contractor) Lack of training (contractor) Small volume demand (manufacture) Lack of standard design (manufacture) Lack of skill labor (manufacture) Lack of training (manufacture) High capital expenditure (supplier) Resistance from Client (general)
	Low	Security of payment (contractor) Cost to change to IBS is higher (contractor) Security of payment (manufacture) Security of payment (supplier) Resistance from conventional contractor (general) To meet the design and manufacture requirement (general)
		Low <span style="margin-left: 100px;">High</span>

**Fig. 1:** Barriers in BIM adoption in industry adopted form [11]

*Overview of Payment issues in implementation of IBS in Malaysia:*

Payment can be defined as a transaction sum of money for the purpose of good sold or service rendered. In construction, payment is referring to monetary consideration for the contractor's performance or work done [12]. The Malaysian construction has been plagued with payment issue in long time period and has negatively affect construction players particularly contractor. Judi and Rashid (2010) stressed the importance flow payment in construction project in order to achieve the objective of the project. Any delay in cash flow will have major influence (such as project delay) toward progress of the construction project. They also highlighted the payment issues not only affect the construction project itself, but also lead the company into liquidation and influenced the profitability. In general, a payment issue is hierarchical problem which affect all the construction players and overall construction process. For example one of the chronologies in payment issues, if the clients have difficulties to make payment to the main contractor and may lead to contractor unable to pay their sub-contractor in turn, the sub-contractor failed to make payments to supplier and negatively affect project progress. Based on literature, this situation can be regarded as causes to few affect such as decrease profitability [14], project delay [15], and jeopardized contractors reputation [13].

Compare to conventional method, payment issues has more significantly affected productivity and development progress of Industrialized Building System project. As mentioned above, the IBS system is based on prefabrication process which is contractor need to purchase construction component from manufactures and this concept required them to have a strong cash flow. Unfortunately, the current practice in IBS project is an awarded contractor will be paid by client an initial payment between 10% and 25% of contract value (Nawi *et al* 2007). Meanwhile, in IBS project, basically manufacture is required 75% of the capital in order to manufacture the IBS component before delivering these components to the construction sites [10]. Unfortunately, small contractor do not have strong financial funding to follow this concept. To deal with this situation, some of the contractor required a bond from a financial institution as a guarantee [9]. On the other hand, some contractor only paid 75% the manufacture if only the materials are on site [10]. Both of the situations are unfair for the both party which contractor and manufacture. This payment mechanism will negatively affect contractor cash flow and supply chain [16]. In addition, the foundation of Malaysia Industrialized Building System (IBS) process was based on traditional method. Traditional method has been address as fragmentation process to project delivery which a main barriers that contribute to the payment problem, supply chain and also project outcomes such as rework, project delay, overrun cost, lack of communication and wastages [5], [11], [17]. Fragmented approach refers to all the construction processes are based on a sequential manner through the project life cycle. Nawi *et al* (2014) also explained this "beyond-the-wall syndrome" which is this concept not only affect the design stages, but also cause problems in supply chain such as the delay in the project, delay in supply and so on. Thus from the construction literature, its clearly mentioned by several researcher that there is a need an integration of IBS element which design, manufacturing and construction [10], [11].

Shukor *et al* (2011) discussed the relationship between current practice of payment mechanism with project delivery and supply chain in IBS project development in Malaysia. Based on their semi interview among manufactured who involve in IBS project in Malaysia revealed that there is a need for new payment mechanism for IBS project delivery. These due to the current concept that 75% payment from contractor is only made once the material are on-site, this is unfair to manufacture. In addition, some of respondents in their study who are

contractor claim that their need a direct payment system from the client in order to utilized IBS. From construction literature, most of the researches are more focus on The overview of IBS in Malaysia [6], The experiences of Malaysia and other countries in IBS [8], Supply chain integration in IBS [10], and Strategic outlook for IBS manufacture in Malaysia [11]. The literature is still lack studies on the payment mechanism of IBS project development. Therefore, comprehensive studies need to be undertaken to establish or identify a solution payment issues in IBS project.

#### *Discussion and Conclusions:*

As mentioned above, IBS is one of the new construction methods as introduced by government in order to enhance the value quality, and productivity performance of Malaysia construction industry. Based on IBS concept, it can be consider as a solution to construction problem and led to increasing project productivity, indoor quality, durability and reducing cost and time. However, there is an interoperability issues between IBS concept and current payment practice of the development of IBS project in Malaysia. This current practice is worsened by the domination of traditional method in IBS project due to the fragmentation concept. As mentioned above, the current practice is not parallel with the core concept of IBS, which cause unfair situation for the manufacture, contractor and clients. The issues between all these parties led to the construction problem such delay in payment, delay in project component and lastly affect the project progress.

Form literature in IBS, a comprehensive study has been done in term of review of IBS, supply chain strategies in IBS adoption and strategic outlook for IBS manufacture in Malaysia. Yet, there is limited study that focuses on payment mechanism of IBS adoption in Malaysia. Thus, this paper discussed the issues of payment mechanism and its current situation in development of IBS project in Malaysia. Literature revealed that the current payment of IBS development project in Malaysia will need to embrace change for successfully adoption of IBS. In addition, this paper will contribute to development of an appropriate payment mechanism in order to fully utilized Industrialised Building System (IBS) in Malaysia.

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