

# ISSUES OF PAYMENT PROCUREMENT PROCESS FOR INDUSTRIALISED BUILDING SYSTEM (IBS) PROJECT

Natasha Dzulkalnine<sup>a</sup>, Mohamed Nor Azhari Azman<sup>b</sup>, Khuan Wai Bing<sup>a</sup>, Nurul Fadly Habidin<sup>a</sup>, Abdul Rahman Ayub<sup>b</sup>

<sup>a</sup>Faculty of Management and Economics, Sultan Idris Education University, 35900 Tanjong Malim, Perak, Malaysia

<sup>b</sup>Faculty of Technical and Vocational Education, Sultan Idris Education University, 35900 Tanjong Malim, Perak, Malaysia

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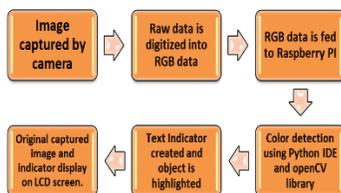
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\*Corresponding author  
natasha@cidb.gov.my

## Graphical abstract



## Abstract

This research paper intends to investigate the issues of payment procurement process for Industrialised Building System (IBS) Project. There are many differences of payment procurement process between conventional and IBS project. The IBS project requires upfront payment as compared with conventional project. Up to this moment, there is no single solution to this issue. Very often, the IBS contractor faces financial difficulty leading to the bankruptcy and delaying in the project completion. Thus, a preliminary study was undertaken with 21 samples of respondents that have a variety of background occupational. The findings from the study revealed that the issue of payment for IBS contractors comprises of five (5) main factors which are high initial cost, difficulty in securing timely and adequate financing, lack of integration at design stage, difficulty to get loans from financial institution and increment of material prices. Findings from this study may help the decision makers including the government or Construction Industry Development Board (CIDB) to formulate a new procurement process especially for the IBS contractor. The findings will be used for the financial model framework for the IBS contractor in the future.

*Keywords:* Payment, contractor, financial, procurement

## Abstrak

Kertas kajian ini bertujuan untuk menyiasat isu-isu proses perolehan bayaran untuk Projek Sistem Bangunan Berindustri (IBS). Terdapat banyak perbezaan proses perolehan pembayaran antara projek konvensional dan projek IBS. Projek IBS memerlukan bayaran pendahuluan berbanding dengan projek konvensional. Sehingga masa ini, tidak ada penyelesaian tunggal kepada isu ini. Kerap kali kontraktor IBS berhadapan dengan masalah kewangan seterusnya membawa kepada kebangkrutan dan kelewatan penyediaan projek. Oleh itu, kajian awal telah dijalankan terdiri daripada 21 sampel daripada responden yang mempunyai pelbagai latar belakang pekerjaan. Dapatan kajian menunjukkan bahawa isu pembayaran untuk kontraktor IBS terdiri daripada enam (5) faktor utama iaitu kos awalan yang tinggi, kesukaran untuk mendapatkan pembiayaan yang tepat pada masa dan mencukupi, kekurangan integrasi di peringkat reka bentuk, kesukaran untuk mendapatkan pinjaman daripada institusi kewangan dan kenaikan harga bahan. Hasil daripada kajian ini boleh membantu pembuat keputusan sama ada kerajaan atau Lembaga Pembangunan Industri Pembinaan (CIDB) untuk merangka proses perolehan baru terutamanya kepada kontraktor IBS. Hasil kajian ini akan digunakan untuk merangka model kewangan bagi kontraktor IBS pada masa akan datang.

*Kata kunci:* Pembayaran, kontraktor, kewangan, perolehan

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## 1.0 INTRODUCTION

The Malaysian economy recorded a stronger growth of 6.0% in 2014 (2013: 4.7%), driven primarily by the continued strength of domestic demand and supported by an improvement in external trade performance [1]. The construction industry makes up an important part of the Malaysian economy. Although the percentage is relatively small, it is extensively linked with many other parts of the economy.

Table 1 shows the real GDP by kind of economic activity for year 2014 to 2015. The construction sector contributes 3.9% of GDP for year 2014 and 0.4% of growth. Although the construction sector has the lowest contribution to the GDP, but the construction sector relates to all sectors in Malaysia.

The construction sector is expected to continue to record high growth. After several years of robust growth, the activity in the residential sub-sector is expected to increase at a more moderate pace due to lower housing approvals and property launches. Nonetheless, growth in the non-residential sub-sector is projected to be sustained, amid higher construction activity for industrial and commercial buildings. New and existing multi-year civil engineering projects, particularly in the transport and utility segments, will continue to provide additional support to the sector [2].

The issues of late and non-payment are paramount to the construction industry as compared to other industries. This is due to the following facts:

- Unlike many other industries, the duration of construction projects are relatively long;
- The size of each construction project is relatively large and each progress; payment sum involved are often relatively large;
- Payment terms are usually on credit rather than payment on delivery;

- Services are rendered before progress payment is made;
- Products become fixtures disabling removal

Due to unpleasant working condition and the availability of cheap foreign worker, majority of construction companies preferred to hire them. Therefore, in 2008, to reduce the dependency on foreign worker, the government has initiated the implementation of Industrialised Building System (IBS) to the construction industry. Every government project shall achieve at least 70% of IBS component.

According to [2], as compared to conventional construction method, the advantages of using IBS are as follows:

- Fewer site workers employed due to simplified construction methods
- Quality controlled end product through controlled prefabrication process and simplified installations
- Reduction of construction materials at site through the usage of prefabricated components
- Reduction of construction waste at site with the usage of standardised component and less onsite materials
- Safer construction site due to reduction of site workers, material and construction waste
- Faster completion of construction due to usage of standardised prefabricated components and simplified installation process
- Lowered total construction cost

Since 2008, Industrialised Building System (IBS) or known as prefabrication has been seriously implemented in government projects, where 70% of IBS components must be utilized in government projects worth RM10 million above (Treasury, 2008). Therefore, there will be changes in the contract and the tendency of late payment by involving the IBS manufacturers may be imposed in the project.

**Table 1** Real GDP by Kind of Economic Activity (2005 = 100)

Sector	2014 <sup>p</sup>	2014 <sup>p</sup>	2015 <sup>f</sup>	2014 <sup>p</sup>	2015 <sup>f</sup>
	% of GDP	Annual change (%)		Contribution to growth (%)	
Services	55.3	6.3	5.6	3.5	3.1
Manufacturing	24.6	6.2	4.9	1.5	1.2
Mining and quarrying	7.9	3.1	3.0	0.3	0.2
Agriculture	6.9	2.6	0.3	0.2	0.0
<b>Construction</b>	<b>3.9</b>	<b>11.6</b>	<b>10.3</b>	<b>0.4</b>	<b>0.4</b>
<b>Real GDP</b>	<b>100.0</b>	<b>6.0</b>	<b>4.5~5.5</b>	<b>6.0</b>	<b>4.5~5.5</b>

<sup>p</sup> Preliminary

<sup>f</sup> Forecast

Source: Department of Statistics Malaysia (DOSM) & Bank Negara Malaysia (BNM)

## 2.0 LITERATURE REVIEW

There are a lot of differences between IBS and conventional method in construction. The difference can be measured by productivity, value chain, construction time, reduction on dependency on foreign labour, cost of construction and construction wastages as shown in Table 2.

**Table 2** Comparison between Conventional and IBS Construction

Component	Approach	
	Conventional Construction	IBS Construction
Cost	Conventional construction requires higher cost in terms of: <ul style="list-style-type: none"> <li>• Material costs</li> <li>• Labour costs</li> <li>• Equipment costs</li> <li>• Overhead costs</li> </ul>	IBS will reduce construction wastage and increases the cost savings as follows: <ul style="list-style-type: none"> <li>• Material costs</li> <li>• Labour costs</li> <li>• Equipment costs</li> <li>• Overhead costs</li> </ul>
Speed	<ul style="list-style-type: none"> <li>• Longer construction period</li> <li>• Delay completion of the project due to the on-site construction</li> <li>• Components are disaggregated and difficult to assemble and erected</li> </ul>	<ul style="list-style-type: none"> <li>• Shorter construction period</li> <li>• IBS construction permits a faster completion of the project because of its rapid and all-weather construction</li> <li>• The components are easy assembled and erected</li> </ul>
Wastage	Wastage of steel, followed by brick, cement, and concrete, and timber are close to 10% of the total material used in the construction project.	Wastage of timber, followed by cement, brick, soil, and concrete is less than 5% of the total material used
Quality	<ul style="list-style-type: none"> <li>• Low quality and poor finishes due to workmanship</li> <li>• Require higher maintenance expenses because of low quality</li> </ul>	<ul style="list-style-type: none"> <li>• Provide higher quality and better finishes due to production occurs under a sheltered environment and produced in the factory</li> <li>• Better quality reduces the maintenance expenses because prefabricated components require less repair and preventive maintenance</li> </ul>

Apart from the advantages of using IBS, the construction industry faced the challenges in

implementing IBS. Previous challenges of using IBS are listed as shown in Table 3.

**Table 3** List of Studies on the Challenges of using IBS

Challenges of using IBS	Source
IBS requires an initial immense investment cost	Warszawski, [17]; Kamar et al., [12]; Rahman and Omar, [15]; Thanoon et al., [16]; CIDB, [10]; CIDB, [11]; CIDB, [11]; Badir et al., [6]
Prefabrication elements are considered inflexible	Warszawski, [17]; Arditi et al., [5]
Negative impact on social perception	Chung and Kadir, [9]
The industry is uncompetitive due to lack of open collaboration	Warszawski, [17];
Requires highly skilled workers	Blismas and Wakefield, [7]; Blismas and Wakefield, [8]; Kamar et al., [12]; Badir et al., [6]
IBS is unattractive choice	Thanoon et al., 2003
Lack of information in IBS implementation	Blismas and Wakefield, [8]; Blismas and Wakefield, [7]; Warszawski, [17]; Kamar et al., [2012]; Chung and Kadir, [9]; Rahman and Omar, [15]
Transportation related limitations	Arditi et al., [5]
Lack of contractor expertise and competence manufacturer	Arditi et al., [5]
Investment in IBS construction projects are more risky	Warszawski, [17]; Rahman and Omar, [15]

## 3.0 SURVEY OBJECTIVE, METHODS AND SAMPLING

The objective of this survey is to identify the issues of payment for the IBS contractors. The respondents were asked to identify the possible solution on this matter based on their past experiences and their general perceptions. In this survey, twenty one (21) questionnaires were distributed to the respondents in a workshop. An interview approach is also conducted to further explain the payment issues of IBS contractors.

Figure 1 shows the respondent's role in organisation. Most (66.7%) of the respondents are lecturers, 9.5% are contractor and other position include architects, policy makers and manufacturers. Figure 2 illustrates that most of the respondents have experience of 1-5 years in IBS construction. This data indicates that the answer given by the respondents is reliable and trustworthy.

Most of IBS project funding is from government projects and the rest is from private projects. The data shown in Table 2 evidenced that government supported the use of IBS in their projects as outlined in the policy of Malaysian construction industry. In the

Construction Industry Transformation Programme (CITP), the government has provided the fund to expand the usage of IBS in Malaysian construction industry.

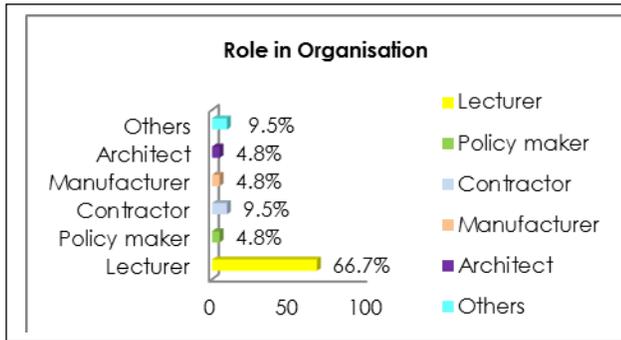


Figure 1 Role in Organisation of Respondent



Figure 2 Respondent's Experience in IBS Construction

Table 4 IBS Project Funding

Government	Private
14	7

#### 4.0 RESULTS AND DISCUSSION

The survey shows that there are five (5) main issues of payment for the IBS contractor:

**i. High initial cost**

The cost incurred for the implementation of IBS is to set up the factory. The IBS contractor needs more than 30% of the up-front payment. The payment is based on work progress for the conventional and it does not apply when it comes to IBS project. Besides that, there is an issue of high prices in terms of production cost which comprises of buying new equipment, machineries, technology and training for the manpower.

**ii. Difficulty in securing timely and adequate financing**

The difficulty of financial funding for the IBS contractor is because of the progress work payment. The payment for the IBS contractor cannot be treated as same the conventional project because the initial cost is not the same. It is essential for the IBS contractor to receive the initial payment from the client to sustain their business.

**iii. Lack of integration at design stage**

In terms of the integration at design stage, respondents mentioned that sometimes it is related to the payment issue to the IBS contractor. It is needed that each party is be responsible and has good cooperation in this stage to ensure that the payment is made based on the right design.

**iv. Difficulty to get loans from the financial institution**

Contrary to literature review, some of the respondents mentioned that financial institution is not a main problem for the IBS contractor. As long as the documents are completed, the financial institution will provide the loans to the IBS contractor. As for now, a few banks are willing to provide loans for the construction industry such as EXIM Bank, SME Bank and others.

**v. Increment of material prices**

Most of the respondents explain that the increment of the material prices will affect the production cost. The high cost of material will increase the initial cost of production. One of the respondent revealed that the material prices increase every three (3) months which it is difficult for them to sustain the equilibrium of the profit.

The interview session in this study involved four (4) construction players who have wide knowledge in IBS construction and have experiences in handling the IBS project. From the interview, the respondents mentioned that there is no special contract document for IBS project. It is suggested that there is a need for a new IBS form of contract especially for IBS project. Two of the respondents in the interview session are manufacturer. One of the respondent explained that the payment issue for the manufacturer is because of the high cost of material. It is essential to be included in the contract and the certification letter for the work progress. The manufacturer needs a deposit for the progress payment. According to the manufacturer, government projects have the worst payment issue.

There is a delay in payment because of the procedure. One of the respondents has experience working in United Kingdom (UK) mentioned that there is also an issue of payment that includes contractor not performing well. There is no issue of financial institution because some banks will provide the loans as long as the contractors have all the documents required. The respondent suggested that a new contract for IBS should be implemented.

## 5.0 CONCLUSION

The finding shows that majority of the respondents come from academic background and have experience in the IBS industry. The research revealed that the main cause of payment issue in Malaysian construction industry was high initial cost to implement the IBS project. Besides that, the difficulty in securing timely and adequate financing also contributed to the payment issue of IBS contractor. In the design stage, it is needed that the cooperation of each party is going well to avoid the payment issue. The other issues are from financial institution and increment of material prices. From the findings, it is suggested that the new contract of document especially for the IBS project should be done. The existing procurement method is not suitable with the IBS project because of the different procedure. Besides that, the position of installer and manufacturer should be revisited to make sure that the payment procedures will be streamlined. By highlighting the suggestion, it is hoped that the payment issue of IBS contractor will be solved to ensure that IBS construction in the Malaysia can be expanded widely.

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