



EVALUATING THE UNDERSTANDING OF INDUSTRY TOWARDS BUILDING INFORMATION MODELLING TECHNOLOGY IN MALAYSIA

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Abstract: Building Information Modelling (BIM) has gained the attention in the construction industry especially within the Malaysian construction context. This paper generally aims to investigating the understanding of industry towards building information modelling technology in Malaysia. Study was carried out through a random questionnaire survey among the registered professional architects and graduate architects. Overall from this research, it was indicated that the level of BIM technology adoption in Malaysia is still low with percentage of 70 although it has been applicable in Asia. Therefore, it is suggested that government should take initiative to promote BIM in order to make more professional in the industry aware of this technology.

Keywords: Building Information Modelling, Understanding, Industry, Malaysia

INTRODUCTION

BIM is a data-rich, object oriented, intelligent digital representation of software, and are much more than just three dimensional representations of two dimensional drawings. Users are able to add cost, systematic schedule, sustainability issue and other useful data to the model. The BIM manager can analyse, review and suggest changes at the research, informational databases, plans, and scope of the project (Anantatmula, 2008). It uses coordination, consistency, computable information that will results in a reliable and digital representation of the building project. This tool is able to synthesize the results from assessments, identifying and structuring problems and conflicts among the evaluated results, and finally produce a set of suggestions and options to assist the decision making process (Fu et al., 2006). Globally, BIM is most commonly used on complicated projects such as high-rise buildings, bridges, arts centres, stadiums, educational buildings, office projects and medical facilities. Mostly, it is applied for planning, design, construction and management of buildings. However, its capabilities can and is being extended to challenging and complex civil engineering projects (Sah and Cory, 2009). Previous literatures indicate that research done by Farhana (2011) is aimed to determine the level of awareness on BIM among the engineers in Malaysia. Thus, the research is carried out by distributing to the Engineers in Johor, Selangor and Kuala Lumpur. The result shows that the level of awareness on BIM among the engineers in Malaysia is still at initial stage. Hence, the effort to promote BIM need to be increased so that the BIM benefit can be applied by professionals in the construction industry. In addition,

another research finding by Tan (2011) reveals the objective to determine the level of awareness towards the technology of BIM among Quantity Surveyors (QS) in Malaysia. The results showed that the level of awareness towards the technology of BIM among QS in Malaysia is relatively still at early stage even in pre-contract or post-contract stages (Tan, 2011). Therefore, this study is to evaluate the understanding of industry towards Building Information Modelling technology in Malaysia.

RESEARCH METHODOLOGY

The study was carried out within states in Malaysia and the technique used for the data collection in this research was questionnaire. The process involved is the questionnaires will be distributed to the respondents through email and by hand. The survey was administered randomly among architect respondents. The total number of registered professional architects is 1836 and graduate architects are 1654, which both make up the total of 3490 members according to Board of Architects Malaysia (BAM) in 2012. Tables (1 and 2) breakdown the location of registered professional architects and graduated architects. The data was gathered through reliable source from the Board of Architects Malaysia's website (LAM).

Most of the research will use a table which is provided by Krejcie and Morgan (1970). However, there are difficulties in getting architects who have the knowledge in BIM technology. For this survey, the method used is by convenient simple random sampling which the questionnaire is distributed to all respective registered architects in states of Malaysia (see Tables 1 and 2).

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Table 1. Number of Registered Professional Architects in Malaysia

State	No.
Sarawak	136
Sabah	95
Johor	73
Pahang	17
Negeri Sembilan	10
Melaka	29
Perak	28
Kuala Lumpur	613
Kelantan	16
Terengganu	13
Pulau Pinang	137
Kedah	40
Perlis	3
Selangor	622
Putrajaya	3
Labuan	1
Total	1836

Source: Board of Architects Malaysia (2012)

Table 2. Number of Registered Graduate Architects in Malaysia

State	No.
Sarawak	97
Sabah	63
Johor	84
Pahang	27
Negeri Sembilan	25
Melaka	20
Perak	70
Kuala Lumpur	406
Kelantan	20
Terengganu	34
Pulau Pinang	96
Kedah	43
Perlis	4
Selangor	634
Putrajaya	28
Labuan	3
Total	1654

Source: Board of Architects Malaysia (2012)

Eight five questionnaires were sent out and from these only 30 questionnaires were returned and analysed using SPSS software (v.17.0). This software will compute the data into result by means of percentage, mean and standard deviation (Mo, 2011).

RESULT ANALYSIS

Level of BIM adoption in local construction industry

Figure (1) shows the level of BIM adoption in Malaysia is still very low with (70%) of majority respondents agreed on the low level (0- 20%). This indicates that the adoption is relatively low although it has been applicable in some Asian countries.

Sector that has been Adopting BIM in the tasks

The respondents indicated that the private sector in Malaysia has the highest BIM adoption in their works, which is 60%, while the public sector has shown 36.7% (See Figure 2).

Current Project that used BIM Technology

Concerning the current projects using BIM technology, it was found from the analysis that architecture and landscape work has the highest percentage (53.3%) of BIM used, especially in the design part.

While, the civil engineering and housing and building project both shows result of same percentage, which is 20% each.

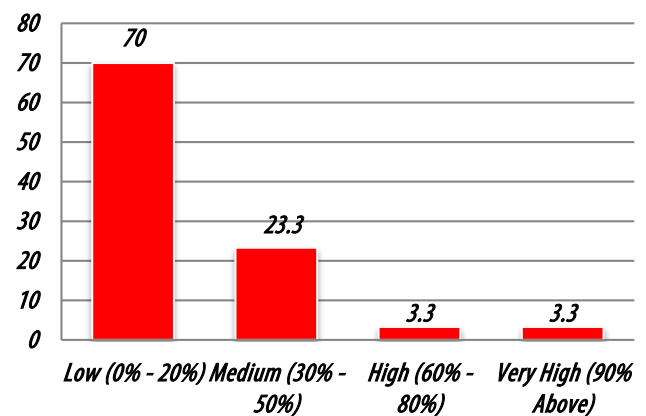


Figure 1. Level of BIM Adoption in Malaysia

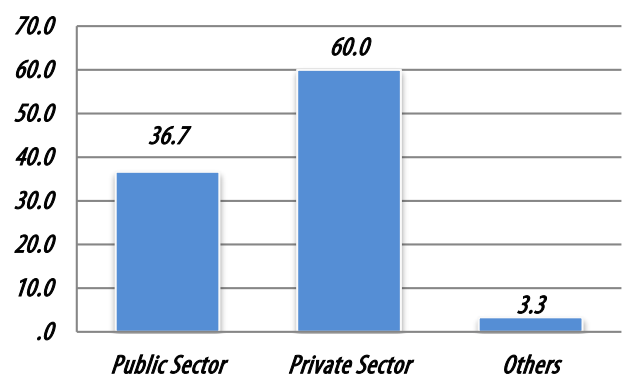


Figure 2. Sector that been Adopting BIM

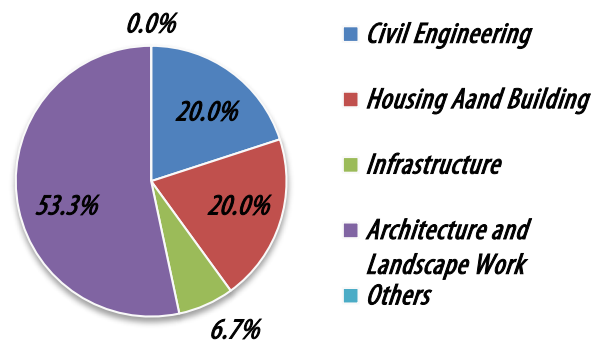


Figure 3. Project Currently Used BIM Software

Comparison of BIM technology to other Software

The respondents were asked to rate the benefit of BIM technology comparing to other softwares such as Billsoft, AutoCad, Revit, Autopipe, Primavera and many others when implement projects in local construction industry. However, based on the obtained results, it can be observed that most of them rated that BIM is actually good in implementing project (43.3%) comparing to the other softwares (Figure 4).

Readiness of Acceptance and Adoption of BIM in tasks

Based on the Figure (5) below, it indicates that most respondents are not ready yet to accept and adopt BIM in their professional tasks. This can be seen with 56.7% which is the highest percentages. However, there are still 26.7% of respondents who are ready to accept and adopt this technology in their work.

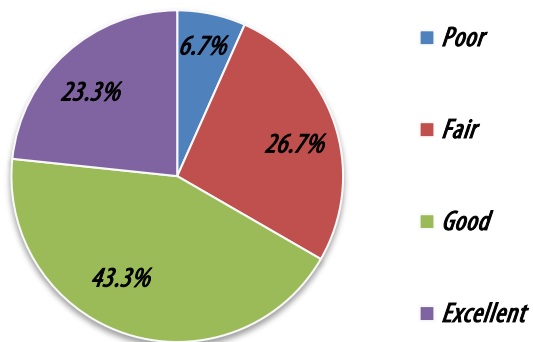


Figure 4. Benefit of BIM compare to other Software

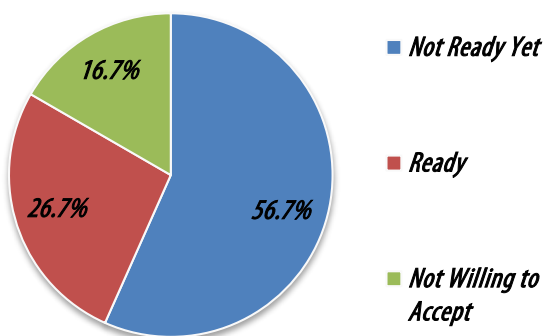


Figure 5. Readiness of Acceptance and Adoption

Way to solve BIM Problem

There is several ways suggested that can overcome the challenges in BIM. However, Based on the results presented in Table (3), it can be seen that most respondents agree that setting a training plan by the company is the most effective and efficient way, which rank the highest percentage 34.3 and frequency of 12, followed by the second ranking which is both giving subsidy by the government and personnel management by the government which both shows the same 25.7%.

Table 3. Solution of Problem

Way to solve BIM Problem	Frequency	Percentage (%)
Developed an action plan like technology analysis	8	22.9
Form a professional committee to further explore the benefits	8	22.9
Set training plan	12	34.3
Giving subsidy by the government	9	25.7
Personnel management by the company	9	25.7

DISCUSSION OF THE FINDINGS

Based on the obtained results, it was indicates that the level of BIM technology adoption in Malaysia is still low with percentage of 70 although it has been applicable in Asia. Teo (2012) in her studies revealed the study include identifying the level of usage of technology within the construction industry, identifying the barriers for the implementation of BIM, the potential driving factors in accelerating

the BIM adoption and the consequences if BIM has being adopted in the local construction industry. However, the respondents discussed that the private sector in Malaysia had the highest BIM adoption in their task compare to public sector. Moreover, this research show that architecture and landscape work has the highest percentage of BIM used, especially with designing part, followed by civil engineering and housing and building project. From the result collected, it shows that respondent rate that BIM technology had actually the advantages and good in implementing project, compare to other softwares such as Billsoft, AutoCad, Revit, Autopipe, Primavera and many others. However, they had not ready yet to accept and adopt BIM in their professional tasks which shown 56.7%.

Therefore, there were several ways suggested that can overcome challenges in BIM. Based on the study, most respondents agreed that setting training plan for BIM was the most effective and efficient way. According to Arayici (2008), this software tool whom the firm chooses to train can increased productivity in future projects, enhanced greater collaborative and cooperative skills among other employees and participating consultants.

CONCLUSION AND RECOMMENDATIONS

Based on the obtained results, it can be concluded that BIM has indeed changed the mind-set industry thinks about how technology, can be applied to the design, construction, completion, maintenance and management of building projects. In the view of many parties, it facilitates the involvement of all designers start from the project earliest stages. Therefore, it is recommended that government should take initiative to promote BIM in order to make more professional in the industry aware of this technology.

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