A Scenario of Implementation Building Information Modelling (BIM) Technology in the Interior Design Industry

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Abstract:

While Building Information Modelling are established in construction industry especially in architectural, engineering and construction (AEC), interior design is still struggles and freshly in this technology. BIM is a new paradigm in a construction industry to enhance the construction progress and documentation more efficient and fast. The main research is to emphasize the scenario of implementation building information modelling for interior design industry in Malaysia context. The research explores how crucial the adoption BIM for interior design firms in industry. This study is embark on collecting data through a pilot survey which is several interior design firms registered with Board of Malaysia Architect (LAM) was chosen. The research outcomes are to find out the problems why interior design industry in Malaysia is unimplements BIM technology in interior design industry. This study also will be figure up the solution on adoption of BIM in interior design industry.

Keywords: Interior Design, BIM, Design Process, Readiness, Awareness

1. Introduction

Today, plentiful construction industry players move on implement Building Information Modelling (BIM) in their profession and it is be obliged to have this technology. With this technology, is can an enhanced the work flows and delivered contained by the built environment especially for interior design industry. BIM technology is just a tool to ensure it existent but it was assisted by using particular software to plan, design, construct and compilation documents. By using this technology, it is give benefit for interior design firms as an opportunity to reconsider and make more efficient the process in design phases among others industry.

Emphasize about BIM, it is more highlight on the design aspects such as outside of the building, construction phases, building structure and the benefits of BIM it's bringing to that features of architectural design. But for the design in the inside of the building such as finishes and materials, furniture's schedule, the fixtures, and the area requirements is discuss how BIM being apply in interior spaces. BIM technology can be portrays as the geometry, geographic information, spatial relationship, quantities and properties of building character, cost estimates, material inventories and project schedule (Bazjanac, 2006). Otherwise, in construction industry some characterizes also must look such as construction documents, design and drawing documents, procurement details, submittal processes and other elements related with drawing and documents (Khemlani *et al.,* 2006).

Nowadays, BIM has implemented many countries such as a United Kingdom (UK), Amerika Syarikat (US), Australia, Hong Kong, Denmark, Norway, Finland and Singapore (NIBS, 2007; Furneaux and Kivit, 2008). Compared with Malaysia, BIM is freshly to implement and government started to introduce BIM in construction industry by Public Works Department and Construction Industry Development Board (CIDB) (JKR, 2013; Ahmad Latifi *et al,* 2014). This idea is to be giving the possible for reduce the cost, time and avoid the design problems while in construction phases.

2. Research Aim And Methodology

According to above matters, it is crucial that still do not have any research about adoption BIM in interior design industry in Malaysia. This research aim is to find out the scenario of BIM usage, and identify knowledge and barriers of BIM for interior design industry in Malaysia. The initial data is hesitation barriers adopting BIM in interior design industry. This study focuses on ID firms registered with Lembaga Arkitek Malaysia (LAM) which is sixteen (16) interior design firms was chosen randomly as a preliminary survey to get appropriate data and result. The selection of interior design firms are focusing in Klang Valley only because a majority interior design firm was established in Klang Valley compared others place in Malaysia.
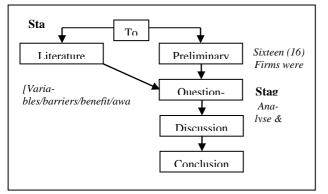
Figure 1: Research method flow

3. Finding and Analysis

A total of sixteen (16) questionnaires were distributed to interior design firms for preliminary survey in surrounding of Klang Valley. This research will emphasize the scenario of implementation building information modelling in interior design industry. The study will clarify the awareness, readiness, problems and barriers of BIM appropriate usage in the interior design firms.

According to Table 1, is shows the responses of year of firm established for interior design. Only six (6) respondents representing 38% of the total firms established between the year 2006 and 2010 while five (5) respondents representing 31% of the total firms established between 2011 and 2015. However, three (3) respondents representing 19% of firms established between 2001 and 2005. However, between the year 1990 and 1995 and 1996 and 2000 each represented one (1) respondent (6%) only.

Table 1: Year of Firms Established

Year	Frequency	Percentage
1990-1995	1	6%
1996-2000	1	6%
2001-2005	3	19%
2006-2010	6	38%
2011-2015	5	31%
Total	16	100%

Based on Figure 2, is shows the respondents of level of knowledge instead of experience of BIM. The result shows four (4) respondents representing 25% of the total respondents know about BIM while twelve (12) respondents representing 75% of the total respondents do not know or have never heard of BIM. The level of knowledge about BIM is very poor in interior design industries compare others construction players such as architect, engineers and construction (AEC).
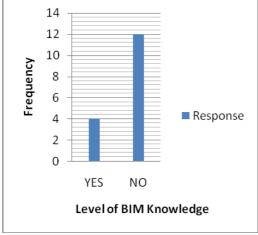

Figure 2: Level of BIM knowledge

Acording to Table 2, is shows the revealed only seven (7) respondents representing 44% having poor about BIM awareness

while five (5) respondents representing 31%. However, only four (4) respondents representing 25% have very poor about BIM readiness but ten (10) respondents representing 62% they are ready to implement BIM in interior design industry. From the data, the level of awareness and readiness is very crucial for interior design industry which is they are not realised the importance of BIM in the construction industry especially for interior design industry. This result described how critical BIM adoption in the interior design industry in Malaysia.

Table 2: Level of awareness and readiness BIM for interior design.

Level	(VP) 1	(P) 2	(F) 3	(G) 4	(VG) 5	Total
Awareness Level	4	7	5	0	0	16
Readiness Level	4	0	10	2	0	16

Note: VP=Very Poor, P=Poor, F=Fair, G=Good, VG=Very Good

Based on Table 3, is shows the ranking of barriers to the application of BIM in interior design industry in Malaysia. Technology is higher with eighteen (18) respondents rating following seventeen (17) respondents in IT and knowledge characterizes as a barriers for BIM usage. Others barriers with sixteen (16) respondents each are awareness, readiness, time and financial. The lower rating with fifteen (15) respondents is information, design and team oriented take place the character.

Technology, knowledge and IT (software; hardware) take place the higher ranking in barriers use in interior design firms. Most of the interior design firms facing this problems because the cost are highly and less of human resource skills. In term of design and team with fifteen (15) respondents it is describe the using of BIM are not importance because some of the contractors not using BIM and it is not required to using BIM software.

4. Discussion

This research come out with some a contribution which is to understanding the implementation BIM for interior design in Malaysia context, the paper has established for this study identify a poor level of knowledge and technology adoption in Building Information Modeling (BIM) for interior design industries in Malaysia. From the analysis, the lower level of awareness is shown that interior designers in Malaysia still not comprehend the beneficial and significance of BIM in interior design industry to enhance the performance and efficiency in the planning and construction phases. Interior design is still far behind with other construction players in Malaysia. A few of recommended to improvise the productivity and efficiency for interior design industry, this study firmly to seek the recommend as follow:

i.   Industry players need to increased awareness of the benefits of the implementation of BIM as an approach towards the productivity and efficiency through the professional bodies.

ii. Capable to increase a knowledge and technology to ensured interior designers have capability to dominate a good skill and technical innovation.

iii. Interior designers in Malaysia able to enhance the scope of works and design process by using BIM technology as a part of skill and knowledge.

iv.   Initiatives to develop of curricula in academic need to revise on Higher Institution level for enhance the better integration on BIM adoption to ensure graduates fulfil the needed and requirement from industries level with the BIM knowledgeable and skilfully background in their profession.

Table 3: Ranking of the Barriers to the application or use of BIM in Interior Design

Rates	Barriers									
	Financial	Time	Knowledge	Technology	Information	Readiness	Awareness	IT [Software, hardware]	Design [Specific challenges]	Team [Oriented Challenges]
1	2	1	2	0	3	1	1	1	0	5
2	0	2	0	3	0	0	2	0	5	4
3	4	2	2	5	1	2	0	0	0	0
4	0	0	7	1	1	2	1	2	2	0
5	1	8	2	0	1	2	1	1	0	0
6	0	1	1	4	4	1	1	2	1	1
7	8	0	2	1	1	0	1	1	1	1
8	0	1	0	1	1	7	1	2	2	1
9	0	1	0	1	2	1	7	1	2	1
10	1	0	0	2	1	0	1	7	2	2
Total	16	16	17	18	15	16	16	17	15	15

5. Conclusion

BIM usage is continues to produce and develop around the world and many high profile in construction industry to seek interior designers using BIM for better performance and knowledge. The interior design industry in Malaysia can improve BIM knowledge if they aware and ready to implement BIM in their profession. For make is more realistic, all parties including government institution, agencies, organisation, construction players, stakeholders and higher institution must play a

part and improve to work together to achieve the objectives. Comprehensive andcooperative

each party in construction industry are most welcoming to ensure all parties have their proficient to use Building Information Modeling (BIM) technology.

Acknowledgement

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