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# Poster Book

**IIIDBEE X 2023**  
20 JANUARY 2023  
*International Invention, Innovation & Design Exposition  
for Built Environment and Engineering 2023*

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Unleashing Potentials  
Shaping the Future

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# The Correlation Analysis Between Training and Attitudes towards Building Information Modelling (BIM) Adoption in Malaysian Construction Industry

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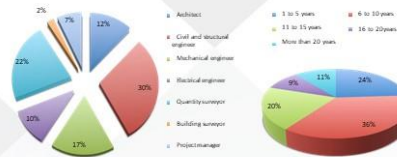


## INTRODUCTION

The adoption of Building Information Modelling (BIM) as a technological advancement in the industry has become a main concern among its stakeholders. Despite the level of BIM awareness improving, the rate of adoption is considered low. Research and expert advice has claimed that the BIM adoption rate can be increased by giving in-depth understanding in the importance and benefits of BIM implementation. Training is one of potential factors that could expedite the adoption of BIM. BIM training is a significant aspect in BIM implementation due to its role not only to expand the knowledge, but also as a means of facilitating BIM adoption. Therefore, the aim of this research is to investigate the influence of BIM training on attitudes to BIM implementation among Malaysian construction players by using extended technology acceptance model (TAM). The beliefs of ease of use, usefulness and employee resources were utilised as TAM variables for explaining the relationships between training variables and behavioural intention to use. In order to achieve this aim, an online survey was conducted among professional employees of government agencies. The findings demonstrated that extent of training was not related to TAM variables suggesting that a high amount of training would not positively affect the BIM adoption. In addition, TAM variables had significant positive relationships with behavioural intention to use. Finally, this study suggested the perspectives of ease of use, usefulness and employee resources should be taken into consideration by training organisers in organising BIM training in order to create an effective training that can facilitate BIM adoption.

## FINDINGS

The total of 204 online questionnaires were received and have been completely answered by the respondents from various government agencies. Personal information in the answered questionnaire showed that the respondents consist of various professional backgrounds in the following proportions:

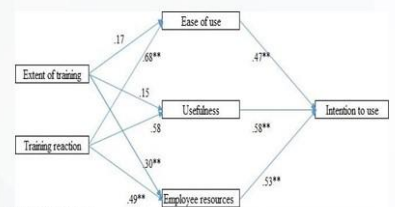
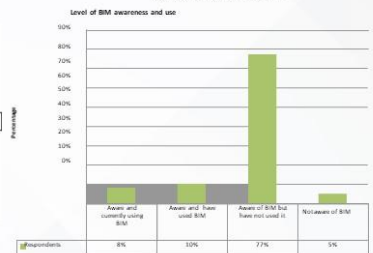


Variable	EOT	TR	EOU	U	ER	ITU
TR	0.19					
EOU	0.17	.68**				
U	0.15	.58**	.68**			
ER	.30*	.49**	.50**	.57**		
ITU	.25*	.43**	.47**	.58**	.53**	

\*\*Correlation is significant at the 0.01 level (2-tailed)  
\*Correlation is significant at the 0.05 level (2-tailed)

Relationships between training variables (EOT and TR) and ITU

### Awareness and use of BIM

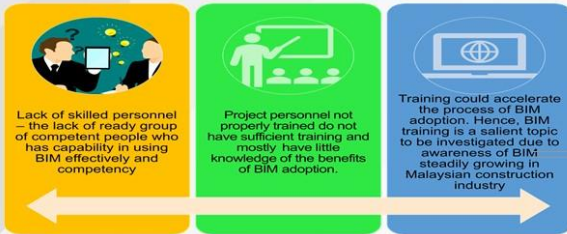


#### Tests of hypotheses

Pearson's correlation coefficient approach was employed to measure the linear relationship (correlation) between the variables in the research model. A pair of the variables in the hypotheses were tested in order to examine if there is a significant relationship between two variables in each hypothesis. In determining the level of significant correlation, the guide proposed by Evans (1995) was used to determine the significant level of value of r which consisting very weak (0.00 - 0.19), weak (0.20 - 0.39), strong (0.40 - 0.59), very strong (0.60 - 1.00).

From the survey, the results indicated that the level of BIM awareness is very high where 95% of the respondents are aware of BIM. On the contrary, the usage of BIM is very low where only 8% of the samples are currently using BIM and 10% of the samples have used BIM. From the literature review, it is found that BIM awareness among architects is about 80% and found that quantity surveyors in Malaysia also have high level of BIM awareness ranging between 65% to 81% in different construction stages. Thus, these findings offer clear evidence that BIM is already a well-known technology in Malaysian construction industry. In use of BIM, the findings showed that the level of BIM use is very low (18%) as found in the previous study, which means Malaysian construction players are still struggling to fully adapt to BIM implementation.

## PROBLEM STATEMENT



## AIM & OBJECTIVES



The relationship between training variables (EOT and TR) and ITU are via the TAM variables, this is reflected on significant relationships between ITU and TR (moderate) and EOT (weak).

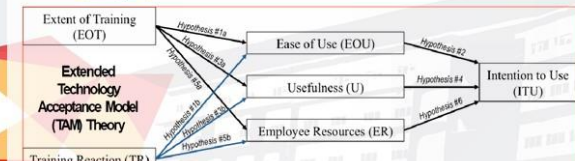
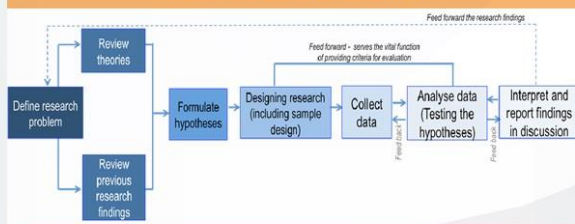
### a) Relationship between Extent of Training (EOT) and Intention to Use (ITU)

For EOT a strong ITU might prompt someone to seek out and attend BIM training. Equally, relationships seen may be due to the measured variables both being related to an unmeasured third variable, for example, an employee who has been assigned to a BIM project might score highly on both EOT and ITU without the training having had any actual effect on intention.

### b) Relationship between Training Reaction (TR) and Intention to Use (ITU)

For TR, the moderate relationship with ITU might indicate that the enjoyment, satisfaction and expectation of training have fulfilled the needs of participant in participating BIM training. These results might be explained by the fact that the training contents and experienced trainers are important elements in creating conducive training environment that may turn to be main psychological factors to influence participants to use BIM.

## METHODOLOGY



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## CONCLUSION

In conclusion, extended TAM variables demonstrate positive influence to behavioural ITU, the BIM training organisers should be sensitive to the current needs of the potential participants and not just provide the training to fulfil their training schedule. Although there was a weak significant positive correlation between EOT and ITU, as compared to the relationship between EOT and TAM variables, the number of days training may not be able to contribute a strong positive impact on the participants because the knowledge and skills they have learned in training were still unable to help them understand and explore the uses and benefits of BIM. Therefore, it could be concluded that possibly there is a lack of training quality in terms of content and trainer.

## NOVELTY

This research intends to promote the effort in enhancing BIM Training methodology among construction players towards acceptable attitudes on BIM adoption. Eventually, it could lead to the establishment of effective organization of BIM Training

## COMMERCIALISATION

This research is in the process of applying an Intellectual Property (IP) for the title and scope following the extended research on promoting effort in enhancing BIM training among construction key stakeholders towards acceptable attitudes on BIM adoption.

## RECOGNITIONS, CONFERENCE & PUBLICATION

- 2<sup>nd</sup> Runner Up in Pestagan Unjuku Bahan Sektor Aven 2019 held on 30 Sept 2019 in Ocala, Malaka
- Paper presented in ICRMBEE 2019, Bangkok Thailand and Paper published in Bahrudin, H. E. A., Othman, A. F., Adnan, H., & Ismail, W. N. W. (2019, February) BIM training: The Impact on BIM adoption among quantity surveyors in government agencies. In *IOP Conference Series: Earth and Environmental Science* (Vol. 233, No. 2, p. 022036). IOP Publishing
- Paper published - Bahrudin, H. E. A., Othman, A. F., Adnan, H., & Ismail, N. A. A. (2021) Evaluating the influence of training on attitudes to building information modelling (BIM) adoption in Malaysian construction industry by using extended technology acceptance model (TAM). In *Collaboration and Integration in Construction, Engineering, Management and Technology* (pp. 577-582). Springer, Cham.