Proceedings of Narotama International Conference on Civil Engineering 2015
ISBN : 978-602-72437-2-9

Barriers of BIM Implementation: Experience in Thailand

Rathavoot Ruthankoon[a*]

[a] *Lecturer, Civil Engineering Department, Siam University, Bangkok, Thailand*

Abstract

Building Information Modeling (BIM) is powerful technology that improves processes throughout construction project life cycle. This paper reviews critical barriers of BIM implementation from literature and presents the barriers in Thailand based on the author's experience. The relative barriers are categorized as people, process, and investment factors. Some strategies for successful BIM implementation are discussed.

Peer-review under responsibility of organizing committee of The Narotama International Conference on Civil Engineering 2015 (NICCE-2015).

Keywords: Building Information Modeling (BIM), Construction Industry, Thailand

1. Introduction

Building information modeling (BIM) becomes very popular technology in architectural engineering and construction industry worldwide due to its fruitful benefits. BIM could be applied for whole project life cycle since preliminary design to project delivery and facilities management. Some designers, construction contractors, and property developers in Thailand have started implementation of BIM for their business but BIM is still rather new technology for Thailand. A research report in 2015 [1] found that 45.5% of people in Thai AEC industry do not know what BIM is, only 40% of them know about BIM but do not apply and the rest 14.5% report use of BIM.

2. Barriers of BIM Implementation

Many research papers presented barriers of BIM implementation. Ashraf [2] (referred from [3]) stated some barriers are standard of care of using BIM, design delegation and professional responsibility, intellectual property, insurability, and data translation. Boya, et. al. [4] summarized encountered problems of BIM application from many literatures as technology, economical, organization, and personal. Eadie et. al. [5] emphasized two most important barriers to implementing BIM overall are 'scale of culture change required/lack of flexibility' and 'lack of supply chain buy-in'. Their low ranking awarded to 'lack of management support' and 'other competing initiatives.

Based on the author's experience as a stakeholder and consultant of BIM implementation for property development, designer, and contractor organizations in Thailand, the barriers are categorized into three related groups which are people, process, and investment.

2.1. People Barrier: Learning

People who involves directly with BIM implementation is draftsman. General duty of draftsman is to receive sketch from engineer or architect and create formal drawings. One of important draftsman's skills is ability to get brief information from architect and engineer and present it correctly into formal drawings. Another important skill of draftsman is to create various drawing views, details, and combine them to section drawings. Draftsmen have to think in 3-D and present them in 2-D. With traditional CAD, draftsman can 'draw' the drawings without information attached. Information and properties setting requirements of BIM software make difficult for

* Corresponding author. Tel.: +66814424197
E-mail address: rathavoot@gmail.com

draftsman due to additional work and different inputting approach. The author found that not many draftsmen can motivate themselves to learn new things and spend their time for self-studying BIM and can change their drafting approach. Many senior draftsmen prefer to work with traditional 2-D CAD which they can work very fast. This is very important barrier.

2.2 Process Barrier: Time and Effort

Nature of construction is project-based work with time limited with delay penalty. For example, a design company must submit drawing packages or a construction contractor have to complete building construction within the duration stated in contact. It is difficult for both design and contactor companies to apply innovation like BIM in real practice because of their 'as fast as possible' work. Many companies decide to adopt BIM at the starting of project but after few months, they decide to turn back to 2-D traditional drawings because their staffs can work faster and they can submit their work on time. It is possible that BIM drawings BIM is not complete if the staffs do not have enough ability to do. People do not like to do additional work when they can deliver their products with lower effort. Project managers have to avoid these risks. Moreover, BIM implementation required more effort in early period of construction life cycle.

2.3 Investment Barrier: Return of innovation

The investment is also a barrier due to project-based costing. Financial performance of the project may be reduced if the cost of innovation is allocated to project cost. That is a reason why many project managers disagree to invest or apply innovative technology in their project without guarantee of success.

3. Conclusion and Recommendation

BIM implementation in Thailand is still at early transition stage. One way to break the people barrier is motivation. Many draftsmen like to learn new things but it should come with incentives. Company should present some incentives or career path to motivate their staffs. Negative motivation like forcing works for short time and usually leads to turnover. Training should be provided enough of staffs to use BIM effectively in real practice but on the job training is also essential. To break process the barrier, company should assign additional workforce to implement BIM along with tradition 2-D drawing as parallel work and the implementation should be applied from small part of work and expand for more. Assigning young staffs or cooperative students for BIM implementation crew is a good option for company to win investment barrier.

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