

INTI INTERNATIONAL UNIVERSITY

**ADAPTATION OF BUILDING INFORMATION
MODELING AMONG QUANTITY SURVEYOR
PRACTITIONERS IN MALAYSIA.**

LOO PEI YI

FOR REFERENCE ONLY

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ABSTRACT

Building Information Modeling (BIM) has its roots in the mid-1980s but only recently has it risen in popularity. BIM typically use three-dimensional, real-time and also dynamic building modeling software. The model will simulate design, operation, logistic, estimate, and document. The process of BIM is managing and generating building data of project life cycle. BIM can show model in 3D drafting, 4D with time plans 5D with cost plans virtual modeling of buildings and 6D with life cycle management. Benefit of using BIM is better outcomes through collaboration, design innovative in the earliest stages of project, deliver projects faster, reduced waste and so on. BIM had been used in many countries including Singapore, but the issue of BIM system is still new in the Malaysia building industry. Till now there is no study done on adaptability of BIM in Malaysia, so the research intend to study about BIM. The objectives of the study are identifying adaptability of BIM to QS practitioners in Malaysia practice and determine the readiness of QS practitioners in Malaysia of using BIM. For this study, the research had carried out in-depth interview within Klang Valley area with Qs practitioner. There are 4 out of 10 participants have been conducted the interview. The conclusion had drawn the study of adaptation and readiness of QS practitioners for BIM. Furthermore, the research has identified some potential factors to educate the building industry players on the knowledge, problem of BIM implementation and assist the development of BIM for Malaysian construction industry.

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LIST OF ABBREVIATIONS

ABBREVIATIONS	FULL NAME
AEC	Architect, Engineering, and Construction
BIM	Building Information Modeling
BQ	Bills of Quantities
BQSM	Board of Quantity Surveyors Malaysia
BS	Building surveyors
CAD	Computer-Aided Drafting
CIDB	Construction Industry Development Board Malaysia
CREAM	Construction Research Institute of Malaysia
ECA	Elemental Cost Analysis
IDM	Information Delivery Manual
IEM	Institution of Engineers Malaysia
IFC	Industry Foundation Class
IFD	International Framework Dictionary
IPD	Integrated Project Delivery
JKR	Jabatan Kerja Raya
LOD	Level of Development
MEP	Mechanical, Electrical and Plumbing
PAM	Malaysian Institute of Architect
PWD	Public Work Department
QS	Quantity Surveyor
RICS	Royal Institute Chartered Surveyor
TOQ	Taking-off Quantities

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CHAPTER 1

INTRODUCTION

1.1 Background History of Building Information Modeling

Building Information Modeling (BIM) has its roots in the mid-1980s but only recently has it risen in popularity. BIM is a term that has become ubiquitous in the design and construction fields over the past 20 years. The BIM is rich and complex with players from the United States, Western Europe and the Soviet Block competing to create the perfect architectural software solution to disrupt 2-Dimensional CAD workflows.

BIM made its debut in the Architect, Engineering, and Construction (AEC) industry when 1987 in software company Graphisoft's ArchiCAD program under a different name – virtual building. Building industry strategist Phil Bernstein was the first to use the actual term “BIM” while working for Autodesk, an American multinational corporation that focuses on 3D design software. (Lauren Coker, 2011)

April 2003, Jerry Laiserin debate facilitated BIM and reported on here in the Laiserin Letter, much has transpired with regard to building information modeling. This helped popularize the term. (Ian.H,Bob.B).

1.2 What is Building Information Modeling?

Building Information Modeling (BIM) has been introduced to construction industry since 1980. BIM is a software that driving a revolution in construction industry. It is a great tool that can reduce the construction time and costs. This will lead the construction industry moving towards the modernization. BIM is for the constructions professional which are Architect, Engineering, and Construction (AEC) stakeholders. Architect who involved planning and design of construction building, engineer involves in structural, site development and geotechnical of the building and constructor are the builders who manage the construction process and the sources of building materials.

BIM is the process that carried the information of generating and functional characteristic and building data of project life cycle. All of the information will use the computer generated model. The model will simulate design, operation, logistic, estimate, and document as shown in Figure 1. Using BIM would defeat the promise of integrated project delivery.

BIM show the model in 3-Dimensional drafting, 4-dimensional with time plans and 5-dimensional with cost plans virtual modeling of buildings. The principal difference between BIM and 2D CAD is that the latter describes a building by independent 2D views (drawings) such as plans, sections and elevations. Editing one of these views requires that all other views must be checked and updated, an error-prone process that is one of the major causes of poor documentation today. In addition, the data in these 2D

drawings are graphical entities only, such as lines, arcs and circles, in contrast to the intelligent contextual semantic of BIM models, where objects are defined in terms of building elements and systems such as spaces, walls, beams, and piles. (CRC Construction Innovation, 2007).

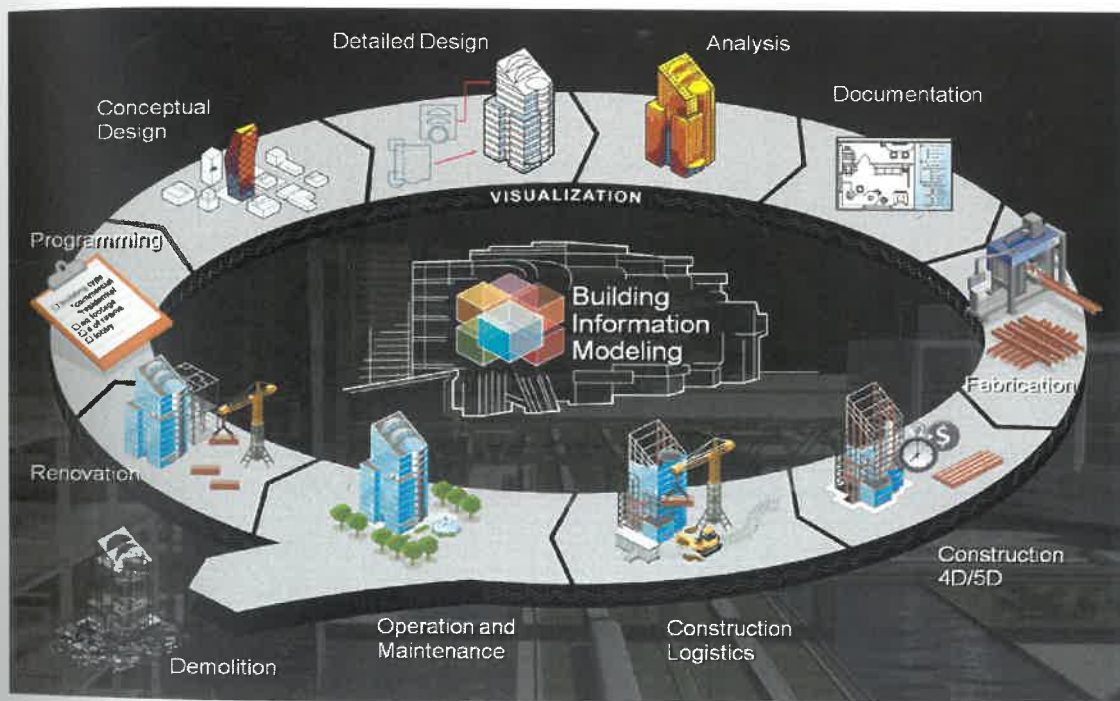


Figure 1: Building Information Modeling

(Courtesy of Autodesk)

There are many possibilities for applications of BIM in the AEC industries, but a hallmark of BIM is that it should allow contractors to receive design documents which incorporate accurate quantities and specified materials in electronic format (Lee, A., Marshall-Pointing, A.J., Aouad, G., Wu, S., Koh, W.W.I., Fu, C., Cooper, R., Betts, M., Kagioglu, M. and Fisher, M. 2003). The cost estimate is the crucial part of any

construction. This research will look into cost estimate by Quantity Surveyor and adaptation of BIM among quantity surveyor (QS) practitioners in Malaysia.

The key benefit of BIM is its accurate geometrical representation of the parts of a building in an integrated data environment (CRC Construction Innovation, 2007). BIM is important because it take the design to the next level because BIM can show in 3D. It also reduces work and rework, once key in the data it will automatic come with the estimating, financial, design and building plan. The BIM also can control the enviromental data which is more predictable and controlled life-cycle costing.

BIM had been introduced many years ago and the tool brings many of benefits, but the industry has been slow adopted in the new technology. Martyn Day (2011) stated that: " It is estimated that as few as 10 percent of firms in the UK construction industry use BIM software on their projects. This compares to approximately 60 percent in the USA."(Bernstein and Pittman, 2005) stated that the barriers to BIM adoption are:

1. The need for well-defined transactional construction process models
2. The requirements that digital design data be computable, and
3. The need for well-developed practical strategies for the purposeful exchange and integration of meaningful information among the BIM

Besides that, not only barriers to BIM adoption there are also conflict of using BIM for QS, Qs practice when doing take-off QS will follow standard of measurement, but BIM is design to measure by modal-based estimating.