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**BUILDING INFORMATION MODELING (BIM)  
IMPLEMENTATION DURING FACILITY OPERATION  
AND MAINTENANCE MANAGEMENT**

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of the requirement for the award of  
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## ABSTRACT

As the sophistication and utility of models are enhanced, Building Information Modeling (BIM) is continuing to rise in popularity among construction practitioners. Many companies have used BIM or implemented it to some degree in their activities. Nevertheless, though it is rising in popularity, its use in facility management is still delayed and the use of BIM models in the post-construction phase is a research focus that is rapidly developing. The purpose of this study is to identify the usage and barriers of BIM implementation during facility operation and maintenance management. A literature review is carried out in order to identify BIM usage and categorise important difficulties that impede the use of BIM to facility operation and maintenance management. A quantitative approach was adopted in the research. A total of 45 respondents around Malaysia were selected and participated in the survey using a random sampling method. Data gathered from the survey then be analysed using the Statistical Package for Social Science (SPSS) version 25 quantitative software. The findings revealed that there are twelve (12) BIM usages and five (5) main categories of barriers in implementing BIM during facility operation and maintenance management, which are technological, cost, personnel, management and legal issues. The conclusions of this study could help the construction sector develops recommendations for BIM–FM integration. BIM is a virtual database that stores critical design and construction data and can be utilized for effective and efficient life cycle management if building data is documented completely and precisely.

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# CHAPTER 1

## INTRODUCTION

### ~~1.1 INTRODUCTION TO CHAPTER~~

This chapter discusses the context of the research, which is about the implementation of Building Information Modeling (BIM) during facility operation and maintenance management. The research problems, research aim, research objectives, research questions and research scope were also addressed in this chapter subsequently, there are two (2) research objectives and two (2) research questions emerge from this study. Aside from that, terms such as BIM, facility operation and maintenance management have been defined. This chapter also summarizes the research methods for this study. As a result, this introduction chapter discusses the framework of this research from the beginning to the end.

### 1.2 BACKGROUND OF RESEARCH

Since late 1970s, Building Information Modeling (BIM) concept has been introduced at Georgia Institute of Technology and it has experienced a growing growth in the last decade (Diaz, 2016). This was a consequence of its efficient functionalities for construction industry. A little historical context Building Information Modeling (BIM) was coined in 2002 to represent the digital representation, building, and administration of facilities (Harris, 2010, as cited in Rokooei, 2015). Graphisoft launched the new software as a virtual building solution in 1986 and this software along with Archicad, were a notable improvement in Computer Aided Design (CAD) programmes at the time.