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THE RELIABILITY OF BUILDING INFORMATION MODELLING (BIM) IN ACHIEVING THE ACCURACY OF COST ESTIMATE AMONGST QUANTITY SURVEYORS

Dissertation submitted in partial fulfillment
of the requirement for the award of
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ABSTRACT

Preparing cost estimates is one of the main roles of a quantity surveyor. It involves data collection, analysis, comparison and other factors to ensure the accuracy of the estimation and achieve client satisfaction. The traditional method used in cost estimates in has a high possibility of miscalculation or double measure which affects the estimate accuracy. Past studies have examined that the integration of Building Information Modelling (BIM) with cost estimation will have a significant impact on the quantity surveying practice as BIM gains popularity due to its various advantages. The aim of this research is to establish the reliability of BIM in achieving the accuracy of cost estimates amongst quantity surveyors with the intention of uncovering new findings. The research objectives were to determine the contributing factors to cost estimate, the BIM reliability factors and the limitations that hinder the reliability of BIM in achieving the accuracy of cost estimate. Primary data are collected using the quantitative method via questionnaire survey amongst quantity surveyors at firms situated in Johor state. The findings reveal top five most significant factors to be considered in preparing cost estimates were market condition, availability of information, project gross floor area, location of the project as well as design and construction. The most highlighted BIM reliability factor in improving cost estimation was BIM can prevent design clashes for measurement purposes. Finally, this research found that BIM requires a long time to adapt to the technology was ranked first in the limitations that hinder the reliability of BIM in preparing cost estimate. As a result, the research can pave the way for more targeted academic, industry, and policy responses for the enhancement of the digitalisation of the construction industry.

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CHAPTER 1

INTRODUCTION

1.1 Background of research

One of the main roles of a quantity surveyor is preparing a cost estimate that is within the budget of the client. It involves from the beginning of the construction until the post-contract stage. A preliminary cost estimate and a project brief are needed by the client and the consultants before the development process to ensure the estimate does not exceed the cost target once the estimation and the design have been agreed upon. Preparing the cost estimate includes the process of data collection, analysis, and comparing all the available data related to the construction project. It is to increase the accuracy of the estimation and achieve client satisfaction. A realistic estimate is required to reflect the probable cost of the proposed project (Ahmad, 2011).

This cost estimate can be derived from various ways and sources including the effective use of technology and cost data. Enshassi et al. (2013) stated that the availability of high-quality historical cost data and the level of expertise competence are important for accurate construction cost estimation. There is a variety of cost data required at different stages. Information obtained from the publications, technical journals and quantity surveyor's past experiences on a similar project is some of the cost data required during the development of the cost estimate. To obtain more detailed information, data such as project specifications, drawings, and pricing adjustments are necessary as well. The more detailed and up-to-date the cost data, the more accurate the outcome will be.

The integration of BIM with cost estimating has helped the quantity surveyor in controlling the cost effectively. With the assistance of BIM, it has reduced the large need for traditional methods and increased the efficiency of work (CIDB, 2019).