

## **ABSTRACT**

### **REVITALIZATION of COMPLETED STRUCTURES USING BUILDING INFORMATION MODELING**

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Information technology and its application have resulted an enormous development in the construction industry during the last decade. The main reason behind this evolution was the dependence the Building Information Modeling (BIM) as an advanced input for the construction approach. BIM is now globally considered to be the tool of transforming the construction process to new era. Even though the BIM concept has started since 1980's to establish what we call today BIM, it made huge impact on building and construction industry. Not only in the design and Implementation phases, is it also considered as a good tool for the whole project lifecycle.

The aim of the present study is to clarify how BIM can be used in after project construction within uncertainty and risky environment such as document losses and unrecorded change orders. Case studies did not utilize BIM in the early phase of design and implementation works. This work aims to explain what extent of BIM can be conducted in analyzing what was constructed before and how to re-spirit the project and its documents.

To achieve the objectives of the study, a comprehensive literature review was done regarding the subject area. There were some difficulties since there were many different opinions for BIM approaches. Even so literature describing the subject was enriched with field studies of the targeted projects. Interviews with project team, project site photography, collecting the available schemes and documents were the approaches used in this work to re-build the projects models.

The results obtained from this work show that the knowledge and expectations of BIM within existing building have admirable achievements for construction industry .The accuracy of the quantities between BIM and actual was (93.5%) for case study I and (96.9) for case study II . Furthermore, BIM approach used in this work made more progress in the implementation of BIM as a rehabilitation and renovation tool in civil projects. The conclusions of this study reflect high correlation (99.77%) for case study I and (95.8%) for case study II between the quantities take off and cost estimation with what actually constructed, more than the traditional approach. The aim of the study enable that working with a model in which all project team feel comfortable and harmonic, will ensure enough resources to make the model updated and ought to lead to a minimum conflict within the model or what traditionally called “project documents”.