

Abstract

An Investigation About Potential Benefits and Challenges of Using (BIM) In Iraqi Construction Projects

By

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Building Information Modeling (BIM) is an integrated and comprehensive system for all processes related to the construction project, which includes a set of effective policies, procedures, and computer applications that increase the performance of the project during its life cycle.

The aim of this study is to investigate the application of building information modeling in terms of potential benefits and challenges in Iraqi construction projects, as well as the factors driving this application.

The quantitative approach was adopted by conducting a questionnaire directed to professionals in the field of construction projects in the public and private sectors supported by personal interviews with respondents either individually or in groups. A set of 300 questionnaire forms were distributed to the private companies, governmental institutions and engineering departments of the various ministries.

The analysis and statistical tests appropriate to the nature of the collected data were identified and executed by using two software (IBM SPSS v.24) and (SmartPLS v.3.2.6) where the analysis included but not limited to the relative importance index, the sign test, exploratory factor analysis, the confirmatory factor analysis, and other tests.

The results showed that the level of knowledge in building information modeling is very low. The first potential benefits of BIM which have the highest ranking was the saving of project cost. The second highest rank was providing high quality and fast data documentation system, the third highest rank was minimizing change orders, the fourth was detecting of design errors, conflicts, and minimizing rework, and the fifth was facilitating cooperation. In addition to the inclusion of all the benefits within the three key factors, the first factor was the knowledge support for management in term of (costs, data,

processes), the second factor was the effective design performance, and the third was the effective construction performance.

On the other hand, the first potential BIM challenges which have the highest ranking was the weak government efforts to implement BIM. The second was the shortage of experts in BIM field. The third was the weak knowledge for BIM benefits. The fourth was the strong resistance to change, and the fifth was the low education in the universities and unavailability of government training centers. All challenges were included in four key factors, the first factor was the weakness environment challenge (knowledge, legal, educational, and cooperative) and poor government effort to change this environment. The second is the financial challenge in covering the costs of BIM implement. The third is the organizational challenge in BIM adoption manage (beginning of adoption and subsequent stages) and demonstrating its effective role, and the fourth is the firm's culture challenge and weakness in interest and weak skill base.

Finally, about the motivation factors of the BIM, the first highest ranking for BIM motivation factors was promoting local awareness of BIM benefits. The second was the skills development for inexperience's engineers, and the third was establishing an educational base for BIM.