



The Benefits of and Challenges to Implement 5D BIM in Construction Industry

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Abstract

The Architecture, Engineering and Construction (AEC) industry is known as one of the prominent sectors contributing to economic in Iraq. On the other hand, this sector suffers from poor quality, poor communication, and cost overruns and delay project completion. Time and cost estimation are two major critical processes in construction management, to conduct estimation must plans and specification are completed. Manually estimate is time consuming and error prone because human activities. Building information modelling (BIM) can be used to automate these processes in short time and accurate estimate, BIM is a relative new technology in architect, engineering, and construction industry (AEC), which has a major effect in construction industry practices. The 3D model is the geometry model and when attached time will be 4D and 5D when attached cost. The aim of this study is to provide clear understanding about 5D BIM in Iraqi construction industry by investigating benefits, challenges, and motivation factors that helps in applying it. The results show that the awareness rate of Iraqi engineers about BIM is actually weak with 67.5% of respondents, main advantages of BIM technology are collaboration, digital representation, visualization, effective QTO tool, and reduce change order, respectively, the main challenges that facing BIM are culture resistance, thoughts recent software and traditional approach are enough of 5D BIM tools, respectively; the main motivation factors that help in BIM adoption are adapted in universities and government support. The Iraqi construction industry is remained behind in adopting the BIM capabilities related to time (4D BIM) and cost management (5D BIM). This research helps as a stepping-stone to study further to promoting BIM application in the Iraqi construction industry.

Keywords: BIM; 5D BIM; 5D BIM Adoption; Benefit and Challenge of 5D BIM.

1. Introduction

Construction industry is one of the most important industries in the world; it suffers from poor communication, low productivity, and time and cost overruns [1]. The successful of building projects need more collaboration of different disciplinary by sharing accurate, continuous, and real- time information among project team to overcome conflicts and keep project on time and budget, poor communication and data management costs construction industry about 15.8 \$ billion per year, 3-4 % of total turnover [2]. The construction industry tends to use technology in construction project to increase the productivity and quality of the project, reduce the cost of the project, and reduce the project time [3].

Building information modeling (BIM) which is a technology based-information of each element of building that helps in planning, designing, and managing the project in collaboration and coordination environment. Building

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