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Appraising effectiveness of Building Information Management (BIM) in project management

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Abstract

The Iranian construction industry has long been criticized for being inefficient. It has been claimed that 80 percent of all content within the construction process is the same for all projects and there are therefore huge opportunities for improvements. The project manager is essential for the successful delivery of construction projects. The purpose of this paper is to analysis how BIM (Building Information Modelling) can be utilized by project managers as a good tool to simulate project condition to avoid redundant works and waste of time and cost. It was concluded that project managers generally have little knowledge concerning BIM, which makes it hard for them to see its applications. The study revealed that BIM can help project managers in the task of delivering successful projects. BIM a better basis for decisions is provided in comparison with traditional projects.

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1. Introduction

Nowadays, construction projects are getting more complicated due to multiple separate enterprises working on congested sites. The most important factor of projects failure [1], are time consuming get prepared, redundant

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movements and managing the materials, etc. The most important duty of a manager in a project is to (i) increase; productivity , efficiency, infrastructure value, excellence and its ability to survive (ii) reduce; lifecycle expenses, times consumed through increasing cooperation and relation of stakeholders of a project.[2]

One thing that project managers can do is to design construction projects virtually by parametric Modelling in order to escape probable pitfalls. This kind of Modelling was greatly espoused by manufacturing companies to design, engineer and manufacture products. In the 1990, construction industry has set up the foundation of object-oriented building product Modelling. Now in the world, there is an expanding inclination in Building Information Modelling (BIM) between construction firms. Construction companies now appreciate the behooves of technology. The concept of Building Information Modelling is able to bridge the gap of labor efficiency. To note some prominent examples for which BIM has been utilized, we can refer to Walt Disney Concert Hall and Shanghai Tower and of course some other less prominent and more personal projects. Although BIM has a great rate of usage in developed countries, in a developing country like Iran, there is not a powerful inclination for using it. Thus, this paper is aimed to study BIM to demarcate its advantages and reversal effects posed to construction projects managers.

1.1. What is BIM?

Building Information Modelling (BIM) is a term that is most generally used to define a set of parametric tools and processes for the creation and maintenance of an integrated collaborative database of multi-dimensional information regarding the design, construction and operations of a building, with the purpose of improving collaboration between stakeholders, which reduces the time needed for documentation of the project and producing more predictable project outcomes. [3]

Most of the times people misconceive BIM. The most common fault is that they assume that BIM has a single model or database. While this is not even near the case that BIM is used. We have to bear in mind that BIM cannot replace human. BIM diminishes the redundant and mundane works and it facilitates data processing, but here, human individuals put data into the model. Another mistake that is commonly committed is that people assume that BIM has no errors at all, while this is not the case. Because human beings are capable of inserting some data incorrectly, the errors in BIM are probable.

It is important to detect different aspects of BIM regarding to better evaluation of projects. Table 1 conveys different aspects of BIM and in which means they have been employed.

Though the Interest among the companies in implementation of BIM has been augmenting persistently, the number of researches about the Project Management point of view is not notable.

In trying to demonstrate that BIM is an advantageous tool for Project Managers, this research was successful. This is because the advantages are not far more than the challenges but also consistent with the function of Project Manager, as defined in the different knowledge areas of the PMBOK. BIM is utilized by construction managers or general contractors to press the amount of work to prepare cost estimates. Additionally, they can make influential 3D renderings. Furthermore, schedule integrated BIM known as 4D BIM is utilized for safety analysis, animations and to prepare site logistic plans. In order to coordinate the work with subcontractors, construction managers can use BIM. Their schedule can be updated with BIM. Finally, they can turn over an as-built building information model to the owner's maintenance team.

2. Literature review

The process of a construction project is usually divided into four successive phases: initiation, design, construction and closure phase [4]. The construction manager job is officially started in a project as soon as it is awarded. The project award timeline to the construction manager and the organizational structure of the project are dependent upon the construction delivery approach. These two factors impact the involvement of the construction managers in the Building Information Modelling process.

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