

Managing the interior design projects using BIM Technology in Egypt: State of the art

Prof. Amal Abd-El khalee

Professor at the Faculty of Applied Arts - Department of Interior Design & Helwan University.

amalawad2212@yahoo.com

Researcher. Solaiman Hassan

Researcher at the Department of Interior Design and Furniture - Faculty of Applied Arts - Helwan University

eng.soliman77@gmail.com

Dr. Doaa Al-Aydi

Lecturer, Department of Interior Design and Furniture - Faculty of Applied Arts - Helwan University

doaaelaidi31@hotmail.com

Abstract:

Building Information Modeling (BIM) technology is characterized by providing many accurate information during the project life cycle.

This research came to extrapolate the current situation of the use of BIM technology in the field of interior design project management

In Egypt, through the use of the Statistical Survey Methodology, which relies on

To collect, record and analyze the data obtained through the participation of 50 interior design companies in Egypt in a questionnaire to answer the following questions:

What are the types of projects in which technology is used? What are the main reasons why companies use technology? What are the most important software used and the criteria that are relied upon when choosing software when applying BIM technology? What are the most important features and benefits of BIM technology? What are the obstacles that companies face when using technology? What is the importance of BIM during the project life cycle? Which is better, managing interior design projects the traditional way or the BIM technology?

By analyzing these answers quantitatively and qualitatively, a set of results was obtained that reflect the current situation of BIM technology in Egypt.

In this area.

Keywords:

BIM - Project management triangle - Project life cycle –Project Management –Likert Scale.

Introduction

Building Information Modeling (BIM) technology is one of the latest developments in the science of construction engineering and everything related to it

From different disciplines, including the interior design specialization, which is an integrated system that includes everything related to the project and puts it in one template. This template is a central database that feeds the stakeholders of the project. Stakeholders - a concept that includes all members of the project team in addition to any party or person affected by the

project Whether from inside the facility or outside it, negatively or positively” (Al-Mahmed 2017, pp. 99-100) in addition to all project documents, whether they are drawings, specifications, bills of quantities or the project implementation timetable.

The research will extrapolate the current situation in Egypt for the use of building information modeling technology to manage and follow up the various implementation stages of interior design projects, which in turn provides a set of mechanisms that take into account many organizational aspects and quantitative methods, including planning and follow-up project implementation in order to achieve the desired goals of the project .

Research problem and hypothesis:

This research raises the problem of the scarcity of using modern technology such as Building Information Modeling (BIM) technology in the field of interior design project management, and it asks about the extent of the interest of interior design companies in Egypt using this modern technology in their projects? And the research assumes that the interior design companies in Egypt do not fully rely on the use of BIM technology when managing their projects, and this may be due to their lack of sufficient knowledge of the importance and size of the benefits that may accrue to them when using this technology.

Importance, Objective and Limitations of the Research:

The importance of the research is due to its study of this topic, which is rarely addressed in scientific research for the specialization of interior design. It also aims to extrapolate the current situation to determine the extent to which BIM technology is used in the management of interior design projects in the Arab Republic of Egypt. The limits of the research are the time limit between 2020-2021 And my only place is the Arab Republic of Egypt.

Importance, Objective and Limitations of the Research:

The importance of the research is due to its study of this topic, which is rarely addressed in scientific research for the specialization of interior design. It also aims to extrapolate the current situation to determine the extent to which BIM technology is used in the management of interior design projects in the Arab Republic of Egypt. The limits of the research are the time limit between 2020-2021 And my only place is the Arab Republic of Egypt.

Research Methodology :

The research follows the Statistical Survey Methodology, which means the field that specializes and studies all aspects related to survey designs, based on the selection of one of the survey methods in order to use it in collecting and analyzing data to obtain the information needed for research. (Al-Azzawi 2008, pp. 98-100).

The method (Questionnaire) has been chosen, defined as “a tool for collecting data based on a set of written questions to obtain data that are useful in answering a problem” (Al-Azzawi 2008, p. Or opinions, and it is used in questionnaire or opinion poll forms so that a set of questions is directed so that the answers express the opinions and the scale depends on responses indicating the degree of approval or objection. (Al-Mashhadani 2017, p. 104)

The data will be analyzed quantitatively (quantitative data analysis is intended to process data digitally through the application of statistical methods and goes through three stages: organization, description and analysis of information). (Al-Mashhadani 2017, p. 123)

By obtaining the arithmetic mean and the standard deviation to study the extent of the existence of a relationship between the questions of the questionnaire, through the application of the “T”-

test (which is known as one of the most important and most widely used statistical tests in research and studies to reveal the statistical significance between the mean of two or more samples, The derivation of this test is credited to the Irish scientist WS Gosset). (Bin Muhammad 2003, p. 21)

As for qualitative data analysis (qualitative analysis means to focus in addressing real experiences and current events, on what the researcher perceives and understands and can classify and glimpse the relationships that can be observed by mental observation). (Al-Mashhadani 2017, p. 123). The random sample included 50 companies working in the field of interior design within the Arab Republic of Egypt, representing the sample population.

Discuss the results:

This research raised a question about the extent of interest of interior design companies in Egypt by using BIM technology and through the application of the statistical deductive research method, in which the questionnaire was relied on as a tool for data collection and the stages it went through starting from the stage of data collection through the two stages of registration and analysis through The data is represented graphically for the ease of the analysis process, ending with the stage of reaching a set of results that we have to discuss.

Starting with the fact that BIM technology is suitable for the nature of major projects (service - tourism - commercial) due to the time and cost needed by the modeling stage, which is the first stage on which BIM technology depends, based on the most common software when applying BIM technology It is the Rift program, followed by the ArchiCAD program, and then the Netsork program.

The disparity in the ratios between the extent of knowledge of interior design companies in Egypt with BIM technology is due to the fact that the companies participating in the questionnaire's knowledge came through their participation in projects outside Egypt that require implementation using BIM technology.

The research refers (according to the practical aspect) the implementation stage is issued to the most important stages of the project life cycle in which BIM technology plays an important role, according to the analysis of the questionnaire data and the interpretation of this is due to the fact that the implementation stage is one of the most important stages of the project that takes the greatest amount of time and cost, in addition to that it is Through it, the application of project quality standards, in spite of that, the design stage (in theory) may be the most important, as the use of BIM technology during the design stage helps to obtain a design with the least amount of conflicts as possible. This technology also helps to accurately determine the cost and time of the project, Thus, the highest possible benefit is obtained from the use of Building Information Modeling (BIM) technology.

The result of the part on the obstacles that the companies participating in the questionnaire faced when using BIM technology was that it was not suitable for interior design projects by 54%, and this confirms the hypothesis of the research that companies working in the field of interior design in Egypt are not familiar with the capabilities and benefits of technology that suit the nature of interior design projects to the same degree of suitability Construction and building projects.

In addition to the above, the results showed that the feature of coordination and cooperation is the most important feature of BIM technology, which interior design companies in Egypt are

keen to acquire BIM technology for. It also came as a result that the detection of conflicts and the development and evaluation of alternatives is the most important reason for using BIM technology. BIM confirms the previous result, due to what the two characteristics give to the elements of the project management triangle (time - cost - quality), both of which help to reduce the time and cost of the project resulting from resolving conflicts that may occur during the implementation process, in addition to the reflection of the rapid resolution of conflicts on the quality of the final relations Among the interior design elements of the project.

Recommendations:

- 1) Through the results of the research, it is recommended to make several recommendations as follows:
- 2) That the concerned authorities in the Egyptian construction sector issue a mandatory charter for all companies that apply to implement major national projects in accordance with Building Information Modeling (BIM) technology in support of the state to keep pace with this vital and important sector for global development.
- 3) That the interior design companies in Egypt seek to pay attention to the application of building modeling (BIM) technology when managing their projects for what will benefit them, given the multiplicity of benefits that will accrue to companies when applying the technology, the most important of which is the ease of resolving conflicts that may occur during the design and implementation of the project, which in turn will be reflected positively on Elements of the triangle of interior design project management in terms of saving project time and cost, in addition to raising the level of quality.
- 4) That the graduates of the Department of Interior Design and Furniture are interested in developing themselves and expanding their awareness and skills by obtaining training courses for BIM technology in order to keep pace with the development in the labor market.
- 5) Inclusion of a course on Building Information Modeling (BIM) technology within the study program for students of the Department of Interior Design and Furniture, in order to develop the skills of graduates and graduate interior designers at a scientific level commensurate with the requirements of the labor market.

References:

- 1) aleazawaa , rahih yunis kuru (2008). muqadimat faa manhaj albahth aleulmaa , altabeat al'uwlaa , almamlakat al'urduniyat alhashimiat , eamaan , dar dijlat lilnashri.
- 2) almahmid , nasir 'iibrahim (2017). 'iidarat almasharie al'iihtirafiat , altabeat althaaniat , almamlakat allearabiat alsaeeudiat , alriyad , maktabat almalik fahd alwataniati.
- 3) almashhadanaa , saed salman (2017). manahij albahth al'iielamaa , altabeat al'uwlaa , al'amarat allearabiat almutahidat , aleayn , dar alkitaab aljamaeaa.
- 4) bin muhamad , husayn bin hasan (2003). 'iiftiradat 'iistikhdam li'iiikhtibarat (t) , risalat majistir , jamieat 'umm alquraa , kuliyyat altarbiat , almamlakat allearabiat alsaeeudiat , makat almukaramati.
- 5) eabd alrashid , 'iibrahim (2006). 'iidarat mashruelat altashyid , altabeat althaaniat , jumhuriat misr allearabiat , alqahirat , dar alnashr liljamieati.

- 1- Arino J., Murga G., Campo R., Eletxigerra I.& Ampuero P. (2012), Building information models for astronomy projects, Proceedings of SPIE The International Society for Optical Engineering.
- 2- Chavada R., Dawood N.& Kassem M. (2012), Construction workspace management: The development and application of a novel planning approach and tool, Electronic, Journal of Information Technology in Construction.
- 3- Harris.D. & David, A. (2007), National Building Information Modeling Standard, USA National Institute of Building Sciences.
- 4- Kerzner, H. (2017). Project Management system Approach to planning Scheduling and Controlling, 12th Edition, USA, John Willey & Sons P&T.
- 5- Messner, J., Anumba, C., Dubler, C., Goodman, S., Kasprzak, C., Kreider, R., Leicht, R., Saluja, C. & Zikic, N. (2019). BIM Project Execution Planning Guide, Version 2.2, USA, The Pennsylvania State University.
- 6- Sacks, R., Eastman, C., Lee, G. and Teicholz, P. (2018). BIM Handbook: A Guide to Building Information Modeling for Owners, Mangers, Designers, Engineers and Contractor, Third Edition, USA, John Wiley & Sons.