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A Review of Building Information Modelling for Construction Management

Pratiksha B. Vanjari[1], Sushma S. Kulkarni[2]
[1]*Civil Engineering Construction Management Department, Rajarambapu Institute of Technology, Rajaramnagar, INDIA*

Abstract: Building Information Modeling (BIM) is a method that takes place from its primary data collection to the completion of every construction operation. BIM is both a digital and a simulated representation of results. BIM is used for real modeling in construction management. The primary benefit of the application of BIM is that the visual integration of all structures and systems such as Mechanical, Electrical and Plumbing (MEP) and the mutual acceptance of potential conflicts between the building systems. This research focuses on the application of BIM to construction management. BIM is more beneficial in the most crucial period of the life cycle of the project. BIM includes a bunch of software for modeling, analysis, rendering, organizing, scheduling, estimating, etc
Keywords: Application, Building Information Modeling (BIM), Construction Management (CM).

I. INTRODUCTION

Construction management includes the effective use of the funds available, the monitoring of the scope of operation, efficient project planning, the avoidance of project delays, the development of project design and the quality of construction. Track a massive task in a short period of time with an appropriate schedule of activities. BIM has been undertaking large-scale initiatives with a high profile. In addition to such large-scale projects, BIM is often used for component parts of smaller-scale projects.
The use of BIM technology in the world is being introduced to ensure that the result of Architecture, Engineering and Construction (AEC) is achieved. Preparation and representation of information with all investment factors. BIM is a three dimensional virtual representation of tools with all knowledge packages, including design, coordination, estimate, scheduling and planning. The computerization of data with access to information and interaction with all stakeholders is part of the project. BIM improves close co-operation and efficient communication. Multidimensional BIM is giving "nD" modeling.

II. METHODOLGY

This research assessed whether construction management knowledge is up to date with respect to innovations in BIM. A systematic literature review was undertaken to explain how BIM influences the basic functions of building management.

A. BIM

BIM shall include 3D, 4D and 5D modeling as necessary, which shall provide for cooperation and coordination between the parties involved in the construction activities. The 3D, 4D and 5D (Fig.1) dimensional models performed well in construction management as well as the most productive way to build the project in the planning, design, construction and overall maintenance of activities to minimize workload, save resources and reduce waste.
The purpose of the paper is to provide information on the application of BIM in construction management.

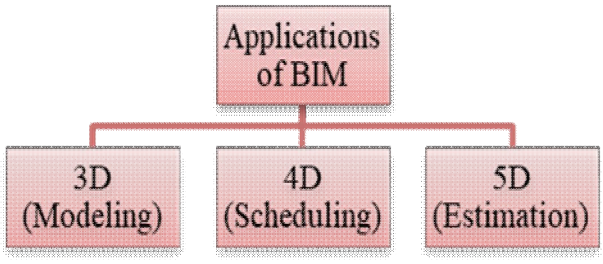

Fig. 1 Applications of BIM

The use of BIM is digital with communication, coordination and collaboration. Using 2D drawings to create 3D, 4D and 5D models.

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B. 3D Model

For several years, 3D modeling has been an important method in the Architecture, Engineering and Construction (AEC) industry. The method has been particularly useful in the design and tendering process of the project, in order to achieve benefits for clients and consumers in the show of their proposed designs. BIM is to implement and improve this simulation technology so that it can be just as successful from tender via handover during the life cycle of the project.

Several BIM software's are used for the 3D model, such as Tekla Structure and Revit. Revit is commonly used because of its custom family and user specified parameters. Revit software used to construct a concrete building system to enhance the visualization of 3D modeling. All data used for building design , planning, service and maintenance details integrated in the model and shared with stakeholders. It allows the user to imagine the design at any level of any event, with the hope that it will be consistent in any view. The ability to shift and rotate the object freely in both directions allows audiences the ability to obtain a better understanding of how the project should look.

C. 4D Scheduling

Effective implementation of a 3D model is accompanied by the use of a 4D BIM with comprehensive design and visual construction simulation.

4D applies scheduling data to the construction site prior to the activation of the associated planning. This allows teams to evaluate activities sequentially using the project, allowing participants to derive and envision the success of the activities over the duration of the project. The use of 4D BIM technology may result in improved control over conflict detection or the complexity of changes occurring during the construction project. It would contribute to a decrease in the waste of money and running on time.

Project scheduling is done with the use of Primavera or MSP software to get a better result. Scheduling is done on the activity of the project and depends on the cost of the project being overturned.

The scheduling of the project mainly relied on the quantity taken off by the planning of 3D model simulation works. The 4D model scheduling should allow for a certain planned degree of interactivity, graphic representation, comprehensive project planning. Nevisworks software is used to help visualize the implementation of scheduling activity.

D. 5D Cost Estimation

5D BIM is used for budget monitoring and cost analysis of associated activates. This enables the automated generation of quantities to continue faster, provides more reliable data and the estimator explores new ways of providing efficient design output and cost-integrated BIM with 5D CAD simulation models to facilitate the creation of more efficient, cost-effective and sustainable construction.

Cost estimation is also based on the use of Primavera or MSP Project grate development tools. The overall project was created through runoff, which generated the number of facilities. This is completely dependent on project scheduling and promoting Primavera or MSP software and understanding.

E. Use Of Application

Proper planning and scheduling of construction activity for overcome and reduce delays in project. Proper planning of activities is needed to trace the project throughout its execution.

III. DISCUSSIONS AND RESULTS

In order to further improve BIM, it is important to apply its resources in as many projects as possible. As with all emerging innovations, they need to be used in order for users to be relaxed with their handling and to gain more experience and knowledge of their practice. The integration of Primavera and Revit has been done to create a 5D application that offers a better visualization of the progress of the project.

This relation between the daily activities and the individual drawings in Revit contributes to distinctive construction sequences.

IV. CONCLUSION

The development of the construction sector lies in the use of technology, and BIM is able to define the whole future efficiently. The introduction of BIM into design and construction work has introduced new roles and responsibilities to the CM. After all, the current CM Information Structure is focused on conventional methods, given the fact that BIM is becoming more popular.

BIM is successful at any step of the lifecycle of the project as it encompasses many CM functions in the most important phases. Traditional CM roles and obligations are therefore insufficient in the management of the CM-related functions of BIM-based projects.

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The main purpose of this study relates to the ability of BIM being used across a variety of construction management applications. However, the literature review shows that there are variations between conventional and BIM implementation. These results therefore indicate that the existing construction management body of information should be revised to reflect the changes induced by BIM in the existing construction management tasks and responsibilities.

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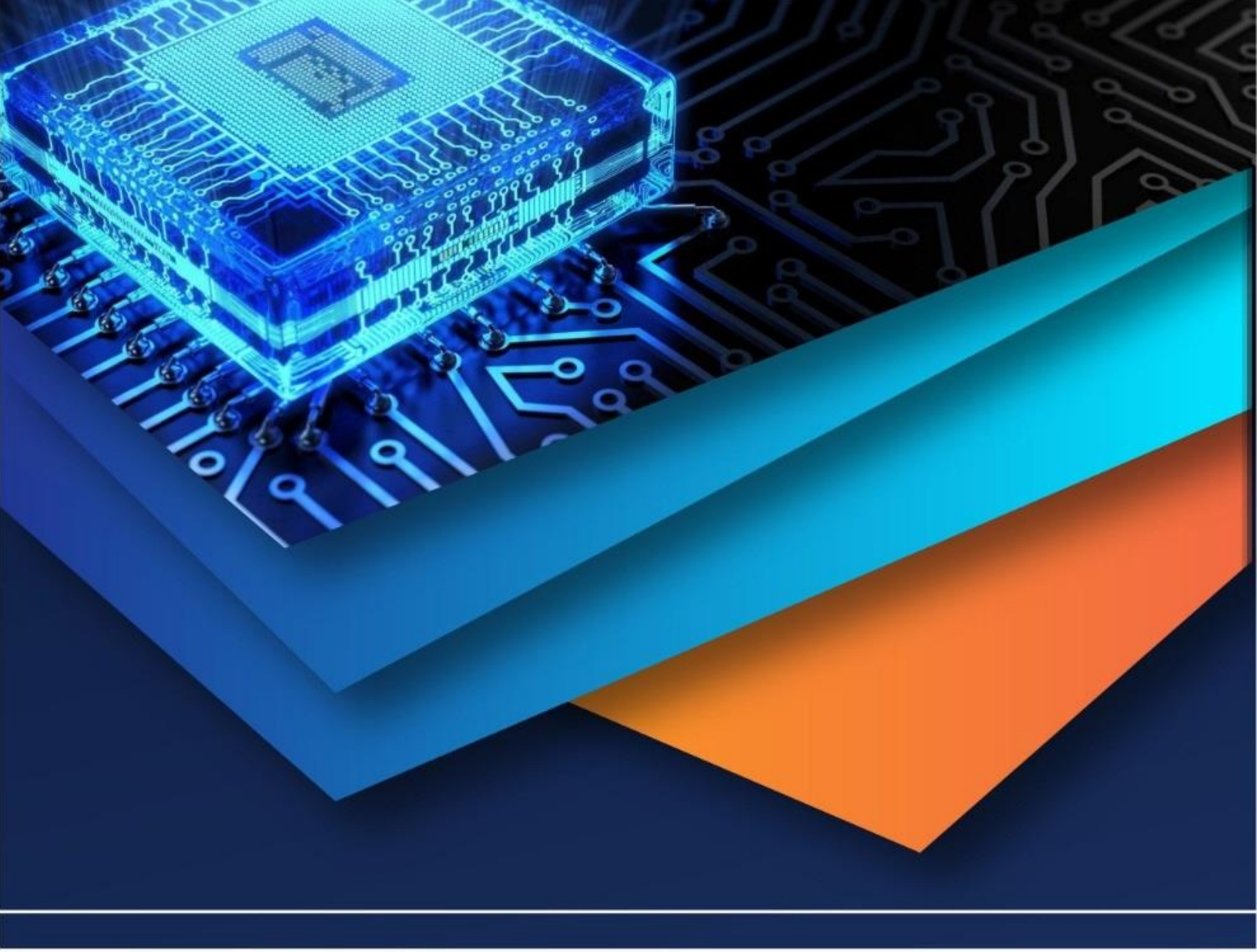

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