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A Review Paperon Designing of Housing Society by Using Bim

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ABSTRACT - In India there is a rapid growth in construction sector. Day by day we are forwarding steps into the world where technology is introducing the world as simple as possible. As we know India is very rapidly developing country in the world. The construction industry in India is improving and providing lot of jobs to the people. In late 1960's, there was no growth in technology as compared to today. But now we have so many advanced technologies in our hand. Whole world is taking initiative to implement technologies in their daily life. So in construction sector there are many software which are used in the whole world. "BIM" is one of that software which is widely used and accepted in the world for improving their construction quality. Quality is the main point and inevitable thing. BIM is very much useful for improving the quality of construction and it has so many advantages. But in India there is no such growth of using BIM technology as compared to the other countries in the world. But some construction companies in India are coming forward for this technology and by using this they are improving their quality. The design communication is gradually being changed from 2D based to integrated 3D digital interface. Building Information Modeling (BIM) is a model-based design concept, in which buildings will be built virtually before they get built out in the field.

Key Words: Building Information Modeling ,BIM in construction Industry ,Project management

I. INTRODUCTION

Building information Modeling (BIM) is the documentation process consisting of information about different phases of any project like design, construction planning, construction, facility management and operation

The focus is shifting from traditional 2D based to a practical reality with respect tofunctional,economic, energy,etc. all disciplines involved with a project can share asingle database. Architecture , structure,mechanic , electrical, infrastructure, and construction are tied together and challenge to coordinate them is unprecedentedly possible. Energy analysis can be done at early stage of design, and construction costs are becoming more predictable. BIM allows use of a parametric 3D model to auto generate traditional building documents such as plans, sections, elevations, details, and schedules. The change made in this Model are automatically coordinated throughout the project, which eliminate the coordination mistakes, improves overall quality of the work.

1.1Problem Identification

BIM technology is a world wide application and other countries have implemented it into their construction field. But in India there is no such growth compared to other countries. By adopting BIM as a primary source of planning in any project, many difficulties would be solved easily.Implementationof modern software and technology in the field of construction is necessary for smooth working.

For this we are presenting many features of BIM application that would help to know BIM in deep manner.It is very essential to know how it can reduce the time and cost of construction.

1.2 Objectives of the Study

Construction industry involves enormous investment and much transformation of the Livelihood of the citizens residing in the region wherein the project is to beexecuted. The Main objective of this concept is to develop an emotion to use this technology in our Construction project for better and effective structures.

Analyzing the Current Problemsto define errors those are frequent out of human errors and for well-planned Structures and improving the product.

Studying the Solutions being implementedto study the cases of BIM implementation and effect on

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construction practices by Considering cases of countries such as Australia, U.S.A. and Europe.
Proposing Solutions to suit the Problems by considering the resources being implement and the nature of the problem, Proposing feasible solutions that could be accepted by market, benefiting the society& enhancing sustainable development .

II. LITERATURE REVIEW

HAMED FERDOS, HAMIDRA ABAS, JOAO BOSCO P, DANTAS FILHO,JOANO P.GUEDES, LUIS F CANDIDO, JOSE DE P.

In this research paper we have studied that the team work on how BIM is useful in construction industry, how we can visualize the Building before it is done.Visualization makes elimination of conflicts between the Projects.They conducted a case study in a project company in Brazil. In that they analyzed a design process of a residential project with eight floors. In their research they focus on how BIM tool is used in the process and how it is beneficial to the project. It is very advantageous to use BIM technology as it saves the time and also making things visualize quickly and conclude that using BIM in process is very muchbeneficial than not using it. BIM enhances the interaction design team and therefore provides a reduction in the total time during the Project documentation. It reduces time as well as cost.

SHRIKANT BHUSKADE .

In this research paper we have studied that BIM is the traditional scheduling and cost estimating method with a more reliable and automated technology. From his case study there are three areas of potential development in the future: i) higher levels of detail (LOD) in BIM model will be available as BIM technology develops, ii) linking time and cost parameters. Concurrently to BIM components in the building model to deliver a scheduled financial analysis, and iii) allocation of resources on 4D BIM model to analyzeand plan the resource usage based on the most updated design, and even simulate the resource allocation.
he explained every aspect of BIM in construction industry. He mentioned that how all the work from modeling to cost estimation to completion of building to demolition of building is well planned in BIM based software Revit. He gave the information about Autodesk Revit software. In his paper he showed designed detailed structure of G+2 residential building. In that he explains every small detail from foundation to column to side elevations. From rendering he showed the 3D actual look of building. He also showed scheduling in detail. In his research paper that BIM based 4D scheduling helps understanding of the construction components and schedule progress that in turn results better construction planning. BIM reduces time and cost of project and gives better quality construction projects.

EMAD ELBELTAGI, OSSAMA HOSNY, MAHMOUD DAWOOD,AHMED ELHAKEEM.

Inthis research paper they have explain that BIM is helpful for cost estimation in building construction.In BIM (Revit) very detailed work can be done by using MS Excel.From visualization one can find or track the budgeted cost and actual cost very effectively. They presented some equations for calculating variance in the cost and quantity from their research. They presented some graphs and tree diagrams for better understanding of equations. They present three key indicators for monitoring the performance. There are three key indicators that are used in performance measurement: (1) budgeted cost of work scheduled (BCWS), (2) budgeted cost of work performed (BCWP), (3) and actual cost of work performed (ACWP). they conclude that cost estimate and control are important tools to track and monitor construction projects. They introduced a mathematical methodology for evaluating construction performance with respect to cost and a BIM based visualization system has been introduced to facilitate tracking and monitoring construction progress to cost has been developed.

SAGAR MALSANE, ABHISHEK SHRIVAS .

Critical Factors Impacting BIM Uptake in the Indian Built Environment Sector" this paper is based on how Indian building sector is adopting BIM in their profession. The team took a survey by providing questionnaire to 85 professionals out of which 65 completed the questionnaire.For this survey the team used RII method i.e. relative importance index. They showed also the research taken in U.S. that how much percentage of building sectors is using BIM technology. They showed the properties of BIM that how helpful it will be. They design a questionnaire that distributed to 85 professionals. They gave a list of various BIM barriers along with their sources. By RII method they calculated all the data one by one.The team conclude that the BIM awareness Is most attractive function and represented a RII percentage data in the form of table. To assess BIM awareness, the overall mean and RII values were calculated 3.26 and 65.26% respectively. They conclude that in the Indian context, country-specific Indian national BIM standards need to be developed, and a structured roadmap should be made available to make the transition without hindrance and to be successful.

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SIJIE ZHANG, JOCHEN TEIZER, JIN-KOOK LI, CHARLES M. EASTMAN, MANU VENUGOPAL .

Building Information Modeling (BIM) and Safety: Automatic Safety Checking of Construction Models and Schedules". On this topic Sijie Zhang and his team perform a research that how to control the accident on site or fall related hazards by using BIM.They took a survey in U.S. that shows in past 2 decades more than 26,000 construction workers have died at work. That equates to approximately five construction worker deaths every working day. From tree diagram and visualization they explain a safety measures at site. Because of BIM it is possible to make a safety model before starting the construction work.They outlined a framework for a rule-based checking system for safety planning and simulation by integrating BIM and safety. They showed that potential safety hazards can be automatically identified and corresponding prevention methods can be applied in an automated approach.

AHMAD JRADE, FARZAD JALAEI .

"Integrating building information modelling with sustainability to design building projects at the conceptual stage", this research is based upon how BIM is useful to design a sustainable building i.e. environment friendly design. They describe three related components.(1) environmental (2) economic (3) social well-being. These components can be achieved at conceptual stage by using sustainable design. They showed that using BIM in designing process makes client visualize the building before starting the construction. They describes following reasons that designers will not be able to quantify the environmental impacts of these materials to support the decisions needed to design sustainable buildings: (1) A lack of information about the sustainable materials that are stored in the database, (2) A lack of interoperability between the design and analysis tools that enable full life cycle assessments (LCAs) of buildings.In BIM software like Revit, one can design a sustainable model of building. They mention Hardin (2009) established three main areas of sustainable design with a direct relationship to BIM. These areas are material selection and use, site selection and management, and systems analysis. In their research they also mention Kriegel and Nies (2008) indicated that BIM can aid in the aspects of sustainable design which are building orientation which can reduce the cost of the project, building massing to analyze building form and optimize the building envelope, day lighting analysis, water harvesting reducing water needs in a building, energy modelling reducing energy needs and analyzing how renewable energy options can contribute to low energy costs, sustainable materials reducing material needs and using recycled materials and site and logistics management to reduce waste and carbon footprints.They also showed scope of this into our construction industry. In Revit software we can place or design environment friendly components that not only a sustainable but also affordable design. Cost will also reduce by using environment friendly components. From some graphs, tree diagrams and snapshots they showed how we can use BIM for designing the sustainable building.Their research paper presents a methodology to implementing sustainable design for building projects at conceptual stage by integrating BIM, LCA and relational databases with conceptual model. They conclude that in BIM there are some limitations for the model because it does not cover all the existing green elements.

MARK SHELBOURNE .

This review emphasis on the increased in the use of Building Information Modelling (BIM) over the past decades by the global Construction industry. The increased use has been contributed to by many Stakeholders across the building lifecycle. This paper concentrated on those Institutions in Australia & UK. This paper describes research conducted as part of an Office of Learning & Teaching funded project from the Australian Federal Government. The project was called code BIM. The paper begins with a literature review of current theories of BIM teaching across global HE institutions. This is followed by a summary of good practice. This paper describes efforts to determine what these skills are & how they can be taught at the higher education level through the development of an educational framework.

KUMAR MUKHERJEE .

Scope of building information modeling (BIM) in India." This paper emphasizes on the acceptance of BIM in the Indian construction industry. The design communication is gradually being changed from 2D based to the integrated 3D digital interface. Building Information Modeling (BIM) is a model-based design concept, in which buildings will be built virtually before they get built out in the field, where data models organized for complete integration of all relevant factors in the building lifecycle which also manages the information exchange between the AEC (Architects, Engineers, and Contractors) professionals, to strengthen the interaction between the design team. BIM is a shared knowledge about the information for decisions making during its lifecycle. There's still much to be learned about the opportunities and implications of this tool. This paper deals with the status check of BIM application in India, to do that a

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survey has been designed to check the acceptance of BIM till date, while this application is widely accepted throughout the industry in many countries .

III. RESULT & DISCUSSION

There are several 3D software in construction industry, Such as 3Dmax, Sketch up, and the others. Many of these 3D visualization display are only for rendering in the earlier stage. The communication gap existed in construction Parties, because the traditional drawing contained limited Information lead to difficulty to execute in construction Stage. There are a lot of design work finished based on the Traditional CAD platform and using three views (such as Layout, section and elevation) to present their stereoscopic results. This fragmentation information is easy to make participants lack of the understanding ability in the complex projects. BIM platform is not only providing the visualized three dimensional graph previous for participants but also Including series of construction information. It promotes interactive communication and feedback for the design results. The point is the building project plan, design, construction and operation are carried out in a visual state. The BIM is implemented in the Architecture, Engineering and Construction (AEC) inevitably, because the construction project demand sustainable, efficiency and cost Improvements throughout project life cycle thought the building construction project was involved with many professional parties, the BIM technology established the platform to communicate with each other. The participants are easy to understand designer proposed solutions through taking advantage of BIM and reduce the misunderstanding expression for each other.

IV. CONCLUSION

BIM is an innovative way to virtually design and manage projects. Predictably if building performance and operation is greatly improved.With the concepts of Smart City in the construction industry, the BIM technology has became a hot research topic also. The BIM tools need exploit more application for construction industry in the future. The Building Information Model produced quantity take offs can be generated to provide cost Estimations on a construction project. BIM based 4D Scheduling helps understanding of the construction Components and schedule progress that in turn results better construction planning. In other words, BIM ptime and cost savings and yields better quality construction products. Overall, Building Information Modeling is a great concept

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