Research on Engineering Management with BIM

Yang Ying

Baicheng Normal University, Baicheng 137000, China

Email: 158074398@qq.com

Keywords: BIM Technology, Engineering Management, Measure

Abstract: At present, with the continuous development of social information technology in our country and the rapid development of construction engineering industry, many advanced technologies have been applied in construction engineering management. Among them, building information model BIM technology, as a basic technology, is widely used in the field of construction engineering with the help of computer. The introduction of BIM technology into construction engineering management in China can realize the great change of construction engineering information management and promote the growth of construction industry profit. This paper will analyze the construction engineering management of BIM technology, discuss the application advantages and application value theory of BIM technology, and put forward the corresponding practical measures.

1. Introduction

The construction cycle of the construction project is long, the investment of the project is relatively large, and more construction personnel are involved in the construction process of the project. During the whole construction cycle of the project, the construction of the project will be affected by many factors, including hydrologic, geology and the surrounding environment, and the exploration and design of the project, construction technology, construction operation and management system will be studied to ensure the overall construction quality of the construction project. The rapid development of electronic information technology in our country has brought great changes to the development of various industries. The particularity of the construction industry itself, the influence of information technology is relatively small, and there are great deficiencies in the application of advanced technology. BIM technology is of great significance in engineering management, and the specific work content can be displayed to all participants in the project planning stage. In the design stage, the cooperation between each major is relatively close, which can effectively improve the design efficiency.

2. An introduction to the related contents of BIM technology

BIM is an English abbreviation of the building information model, which is a digital representation of the physical and functional characteristics of the construction project, and is a platform of information sharing. In recent years, with the rapid development of the construction industry, the application of BIM technology is more and more extensive, and it is widely used in the design and construction of the construction industry. this technology mainly relies on computer aided equipment and realizes omni-directional architectural design and detection by establishing a holistic building information model.

Analysis of the characteristics of BIM technology:(1) Visualization characteristics. In the management process of the construction project, the application of BIM technology can realize the three-dimensional display of the building object and avoid the loss caused in the construction. In the traditional construction project, the plane construction drawings are mostly applied, and the three-dimensional sense of the drawings is not strong, which will lead to the omission of important functions in the construction of the construction project. With the introduction of BIM technology, through the establishment of three-dimensional, thinking and other architectural models, the

  DOI: 10.25236/iwass.2020.058

powerful effect of visualization can be achieved, and the digital expression of physical characteristics of buildings can be realized and the visualization effect can be achieved. (2) Analog characteristics. The simulation characteristics of BIM technology are mainly to simulate the building model in the design stage of the project, so that the building can achieve intuitive characteristics, and the simulation effect can be achieved in the implementation process of the project. In the design stage of the building, the performance of all aspects of the building will be simulated, and the energy-saving property of the building, evacuation of emergency personnel and thermal energy conduction can provide the corresponding basis for the actual construction scheme of the construction project. (3) Cooperative characteristics. There are many departments involved in the construction process of construction project, such as design department, construction department and supervision department, which need to realize the effective communication of information between various departments and the smooth implementation of the project. The application of BIM technology will exchange and summarize the opinions and suggestions of each department, and use computer program to simulate the construction process, which can avoid the occurrence of all kinds of construction accidents[1].

3. Application advantages of BIM technology in engineering management

The application of BIM technology runs through the whole process of project management. In the construction stage of the project, the planning and design of the project can be realized. The construction enterprises can apply BIM technology to manage, which can effectively improve the construction level of the project, ensure the construction quality of the project and obtain more economic benefits.

3.1 Through 3D modeling, there is a direct visual impact

According to the construction plan of construction project, BIM technology can display the layout of large equipment, simulate the construction scheme, and select the appropriate construction scheme through the comparison of various construction schemes. The establishment of BIM model can be used as the basis of the development model, which can improve the accuracy of the three-dimensional model and improve the probability of winning the bid.

3.2 Fast calculation of engineering quantity

The application of BIM technology, through the establishment of BIM database and the correlation of project data, can quickly calculate the engineering quantity, improve the construction budget accuracy of the project, and the establishment of BIM database can provide the data information needed in the project management and improve the construction management efficiency of the project. The establishment of BIM model can extract materials from it, predict the cost and cost of the project, and provide the corresponding basis for the cost management of the project[2].

3.3 Precision project construction plan

In the process of project construction management, project engineering enterprises need to carry out fine management. It is a complex work to obtain useful information from a large number of engineering data and information. The application of BIM technology can quickly obtain basic data, formulate accurate construction plan, reduce the waste of resources and logistics to a certain extent, and provide corresponding technical support.

4. The problems of BIM technology in construction engineering management

4.1 The application of information technology is not enough

In the construction management of construction engineering, information construction is the key to promote the management and transformation of enterprises, and is also the key thing for enterprises to carry out management. However, in the actual construction management of

construction project, the decision-making level and management of the enterprise do not have enough understanding of information technology, and the management consciousness is not strong, which leads to the management of construction project is not in place, and affects the construction progress and construction quality of the project[3].

4.2 Aiming at the shortage of investment in construction engineering management informatization

In the management process of the construction project informatization, the relevant software system of the information management needs to be developed, the investment of the hardware and the software development is emphasized, a large amount of capital is required to be invested in the initial construction, and the procurement and the upgrade of the hardware and the software system are realized to establish a complete information management system. However, in order to obtain more benefits, some construction enterprises do not pay attention to the investment in information management, and are lower than other enterprises in terms of output value and asset profit rate, and can not carry out the construction and maintenance of information technology.

4.3 Lack of relevant policies of the government and the construction industry

In view of the application of information technology in the construction industry, the policies of the relevant governments and the construction industry do not support, and the investment in funds is relatively small. The hardware upgrades and software development costs related to information technology are self-financing by enterprises, which will seriously affect the enthusiasm of information construction. Some relevant construction industry departments have not taken any action on software development standards. As a result, the information software applied by enterprises can not be effectively applied.

5. Application of BIM technology in construction stage

BIM is the building information model, the core of its application is the interaction and transmission of information, which is widely used in foreign countries and has a great application effect. The successful cases in the application of BIM technology are also more and more, the rapid development of the information technology in our country, the application of BIM technology is becoming more and more extensive, and it is paid more and more attention in building construction management[4].

5.1 Application of BIM technology in design stage

With the continuous development of urbanization in China, the construction engineering industry is developing in the direction of modernization and scientization, and the functional demand of architecture is also increasing. In the design stage of building engineering, it is necessary to take into account the functional characteristics of the building. The application of BIM technology can intuitively see whether the building function is reasonable and whether the overall layout is scientific. The design of modern building engineering is relatively complicated. It is necessary to take into account many factors and meet the needs of people. In the process of design, it is not only necessary to apply to the traditional management method, but also to keep pace with the times, and it is necessary to integrate the modern technology into it. The application of BIM technology can provide a new development path for the construction project, and the application of the plan drawing in the traditional design can not reflect the collision between the components, which causes great inconvenience to the construction. For example, the application of BIM technology can establish three-dimensional building model, through simulation and demonstration to detect, optimize the project design, can correct the errors in architectural design in time, and understand some key problems in building engineering. The application of BIM technology in architectural engineering design can realize the integration and analysis of data information and detect the differences and conflicts between the designs. The application of BIM technology in project engineering management can display the differentiated information in an intuitive way, can view the

three-dimensional effect of drawings and pay attention to the optimization design.

5.2 Application of BIM technology in project implementation stage

The operation and application of BIM technology runs through the whole stage of project management. BIM technology can present the whole construction project intuitively by establishing three-dimensional model, and can display the distribution of large equipment through three-dimensional model according to the project construction plan, which will play a very important role in engineering construction. The construction of BIM model can be used as the basis of the development model and can improve the actual results of the three-dimensional model, and can improve the overall construction efficiency. For example, by establishing BIM database, the construction and perfection of database can be ensured, and the actual engineering quantity can be calculated in the shortest time. The application of BIM database can provide corresponding data information support for the management of construction project, ensure the continuous improvement of management activities, and the establishment of BIM data model can manage the cost of construction project, which is beneficial to the smooth development of various activities of construction units[5].

6. Application of BIM technology in construction management

6.1 Application of BIM technology in construction management

In the process of quality management of construction engineering, the application of BIM technology can strengthen the control of building materials. Through the application of BIM technology and Internet technology, the corresponding information storage module is established by using BIM technology, and the related information of building materials and mechanical equipment is stored, which can effectively analyze and process the information data. According to the established information module, the construction personnel can prepare the relevant materials and equipment, ensure that the building materials and equipment can meet the construction standards and requirements, apply BIM technology to the construction technical quality management, through the simulation of the construction process, formulate the corresponding specifications and standards, the full application of BIM technology can play a positive role in the construction quality[6].

6.2 Application in building safety management

In the safety management of construction projects, the application of advanced BIM technology can greatly improve the work and ensure the safety of the project construction. Therefore, when BIM technology is applied to the safety management of the project, the hidden dangers and safety accidents can be analyzed, the characteristics and requirements of the project can be compared, and the safety management of the project can be improved. The application of BIM technology can analyze the hidden danger and accident of safety, compare the requirements of the project, check whether the relevant safety measures are in place, pay attention to the continuous optimization of safety measures, ensure that every department has a safety work foundation, and can also reduce all kinds of contradictions existing in the construction.

6.3 Application of BIM technology in management schedule

In the management of the construction project schedule, it is necessary to carry on the construction according to the certain construction plan. In the traditional construction engineering construction, the architectural design is the graphic design mode. With the continuous development of the construction industry in our country, the graphic design can no longer meet all kinds of needs of the construction industry. It is necessary to use BIM technology to establish the three-dimensional model, which can improve the efficiency of the construction project and achieve effective control of the progress of the project. The application of BIM technology can through the establishment of the corresponding information data sharing platform, through the sharing of data information and the accumulation of resources, so that the obtained information data can be fully reflected in the model, ensure the integrity of all data, can realize the visual management of cost

information, the establishment of three-dimensional model, can be reflected through simulation, real-time interactive stereoscopic graphics, the organic combination of information digital and three-dimensional graphics, which can reflect the different space parts and construction time of the construction project, correspond to the construction management work of different stages, and ensure the overall construction quality and construction process of the construction project.

7. Conclusion

To sum up, the application of BIM technology in construction engineering has great advantages. At present, the application of BIM technology in the construction industry of our country is still in the primary stage, and the relevant policies of our country are also coming out one after another, which has a broad space for development and has become the goal and direction of the development of construction industry to guide the application of BIM technology in construction project management. The application of BIM technology in construction project management is constantly studied and analyzed, which has a better development prospect in the future.

References

[1] FU Gang. Application of BIM Technology in Traffic Civil Engineering Management [J]. Theoretical Research in Urban Construction, 2018(15):34.

[2] MENG Xinluan. Application Analysis of BIM Technology in Construction Engineering Management [J]. Sichuan Cement, 2018(03):217.

[3] HU Wenwen. Transformation and Upgrade of Field Engineering Management System Based on BIM Technology [J]. Jiangxi Building Materials, 2018(02):216-217.

[4] JING Xiaojun. Application of BIM Technology in Construction Engineering Management [J]. Theoretical Research in Urban Construction, 2017(33):40.

[5] LIU Wei. Research on the Application of BIM Technology in Construction Engineering Management [J]. Economic Outlook the Bohai Sea, 2017(11):192.

[6] YU Ye. Application Analysis of BIM in Construction Engineering Management [J]. Technology and Economic Guide, 2017(28):163.