Analysis of the Project Information Management Mode Based on BIM Technology

Chunyao Deng

School of Engineering and Technology, Hulunbuir University, Hulunbuir, Inner Mongolia Autonomous Region, 021008, China

dcy19900726@163.com

Keywords: Engineering Project, BIM Technology, Management Strategy, Information Management Mode

Abstract: Informatization is the main trend of information management of engineering projects and the key to improve the level of technical management. Therefore, BIM Technology is embedded in the project information management business to promote the informatization of project information management. First of all, based on a large number of documents, the advantages of BIM Technology for project information management are analyzed. Based on the construction of BIM Technology project information management mode, the smooth realization of this management mode is realized, in order to respond to the suggestions of management strategy.

1. Introduction

In recent years, with the rapid development of the construction industry, the trend of project non standardization is more and more obvious. In addition, as the number of people involved in the project increases, coordination among various stakeholders becomes complex[1]. As it is an engineering project, the coordination effect among participants will affect the project progress and construction quality. On this basis, the construction of project information management model based on BIM Technology platform, and strengthen the information exchange of all parties, and adjust the construction work, promote the rapid flow of information, adjust the work between departments and professional positions to improve the suggestions. Achieve project management objectives.

2. Advantages of BIM Technology in Project Information Management

BIM Technology is a digital information virtual modeling technology which contains all information of project information and data model of organizational behavior between project information[2]. Under BIM Technology, the combination of information data model and behavior model transfers the information layer data from the model layer to the management layer, so as to generate dynamic data association. Its application in project information management mainly includes the following advantages.

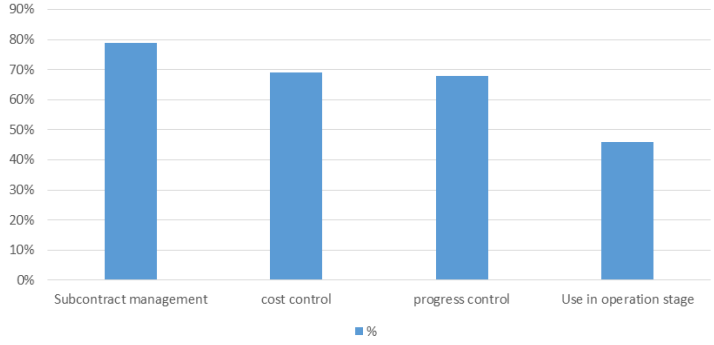

Figure 1 Questionnaire statistics

  DOI: 10.25236/edbm.2020.143

2.1. Meet the Basic Needs of Project Management

BIM Technology has the characteristics of visualization. Engineering structure model and professional model can understand information, explain and implement technology intuitively and quickly, and meet the needs of all parties.

2.2. Enhance the Quality of Information Creation

Information creation is the foundation of project information management, which needs high precision and integrity information[3]. BIM Technology is used for information innovation, which can innovate multi-dimensional information including text, pictures, tables, etc., and is convenient to use. The information created not only has the characteristics of integration, but also covers the information of various professional columns, and the information of each stage ensures the integration and accuracy of information.

2.3. Strengthen Information Sharing

The traditional method of information transmission is usually "point-to-point", which has strong directionality and is easy to become "the disadvantage of information"[4]. After BIM Technology is adopted, the way of information transmission becomes "point-to-point". With higher transmission efficiency and higher sharing, it not only solves the problem of information loss, but also maximizes the value of information.

3. Construction of Project Information Management Mode Based on BIM Technology

3.1. System Structure and Function Module

The project information management mode based on BIM Technology adopts B / S architecture to set Web goals. BIM Technology is used to develop and design online management platform based on computer network[5]. All parties can access the online management platform through the server and browser. After setting up and identifying permissions, information and data are checked and transmitted. Moreover, it greatly facilitates the use of information. In B / S mode, the management and modules of the actual engineering data are separated to prevent human tampering and improve the reliability of information query and editing. In the process of information transmission, it is easy for the data circulation department of engineering information transmission to transmit data through BIM model, users to feedback real-time information instructions and determine the automation and informatization of information management.

3.2. Data Sorting and Analysis

In order to share the information exchange platform, please use BIM Technology. Participants, departments and experts enter the platform through license to exchange information on specific issues. The platform combines information processing and analysis[6]. Permission division is based on the type of information flow permission and the document viewing process of participants. Through the authority management, we can form the working mode of mutual restriction and management, and ensure the efficiency and timeliness of information exchange between meetings. For example, after receiving the information, confirm the data to a special person. After supervision, review and approval, data information is integrated and submitted to relevant personnel, and finally released to the public through BIM platform. Party and personnel information within the authority can be read. The data comparison and analysis ability of BIM Technology cannot be used in other technical tools. The information platform established by BIM Technology can speed up information transmission and sharing, and improve project management level.

3.3. Data Storage and Optimization

After the overall structure of the project is established, the data flow can be basically determined, and the data needs to be analyzed to achieve data storage and optimization. In the whole process of engineering design and construction, a large number of data are generated. In the process of project

construction, these data are in a dynamic change process[7]. In the face of such a huge data, if it is input into the database for safekeeping every day, it will inevitably increase the workload of the staff and improve the work intensity. Therefore, the data storage and optimization function of BIM platform must be fully utilized, and the data storage must be carried out according to the established workflow. Through "batch upload or import" template to complete the data import template at one time, the strength of data storage is reduced, and the efficiency of information management is improved.

4. Project Information Management Strategy Based on BIM Technology

4.1. Training Professional BIM Technical Talents

BIM Technology is a new and high technology developed and widely used in recent years. It has a high degree of technology and professionalism, with a comprehensive quality and staff capacity requirements. Therefore, in order to meet the basic requirements of BIM Technology Application, it is necessary to strengthen the training of BIM technicians[8]. From the perspective of talent training, the enterprise unit, in talent training, training, environmental assessment, marketing, other task adjustment plan, establish a systematic human resource development model, the smooth and systematic development of novice talents provides passing, and trains more specialized talents.

4.2. Vigorously Study BIM Technology Application

During the application process, the project owner, BIM as the organizer and performer of information management mode, BIM Technology fully understands that it must form an important opportunity with the differentiation advantages of other enterprises as BIM Technology Application Research, and the increase of BIM Technology research efforts makes it applicable[9]. In the process, the owner, standardization, rationalization, data and information of the project are integrated, the information management is standardized, and the requirements of all staff who improve the effectiveness level of management, the enterprise level, the project level, the front information flow network of guard link and link are established. Among them, the construction of information background needs special attention.

4.3. Modular Management of Project Information

The project information management mode based on BIM Technology is mainly used to store large database of project related data and information. With the deepening of BIM Technology Application, the integration degree of project information is higher and higher. The function of information integration module needs to be further subdivided, expanded and strengthened. Therefore, the staff can build different data modules according to the information management needs of different departments and different professions, so as to wash the data integration module. All departments and experts are assisted by corresponding data modules to improve work efficiency.

4.4. Dividing the Boundary of Shared Information

The biggest characteristic of project management mode based on BIM Technology is information cooperation, timely, reliable and open information sharing. However, in a specific work, information sharing can not have no boundary, and information and boundary must be clearly defined. For example, it is sensitive to business secrets, enterprise intellectual property rights and other relevant information. Information sharing boundaries must be set up to ensure the security of important information. Based on this consideration, BIM platform database information must be divided into two types. Each specialty and project corresponds to different information modules. Each information module is given different access authorization. To access the input information module for information. This setting makes the boundary of information sharing more clear and improves the information security to a certain extent.

4.5. Clear Ownership of Information Property

BIM Technology of engineering project information management is applicable. The

development trend and dynamics of information work, the owner of the project, the project management unit, the unit design, construction and operation unit, and the joint work among the units, strengthen the work brought by all parties. However, in the process of data sharing and using, intellectual property rights may be abused, misused and improperly used. In order to avoid this situation, the ownership of all kinds of data and information, the ownership of information, and the application system must be built in order to make sure that BIM Technology project information management mode is suitable for strict information. Establish BIM standard contract demonstration text, detail information security, information management, ownership of information model, and responsibility confirmation of BIM data model and project implementation process. At the same time, we should establish a system of supervision and punishment, supervise and accept letters and visits, resolve disputes in a timely manner, impose legal and economic sanctions on violators, curb data application, misuse and fraud, and protect intellectual property rights.

Project information based on BIM Technology is a large-scale information database. Through the application and development of BIM Technology, the function of project information integration model should be subdivided, extended and expanded. The professional systems of office system, resource management system, process control system, and project management system construct all the software tools involved by the parties. The division of labor is different. They are all kinds of levels and the information needs of all kinds of use levels and conditions of the project department, in order to meet the action together.

5. Conclusion

In summary, the BIM Technology of project information management can not meet the needs of all parties in information management, can not meet the data transmission, sharing, information management and improve management efficiency, strengthen the common work of all parties, and ensure the work effect has great advantages. Therefore, based on BIM Technology, the functions of building project information management mode, data query and data analysis, data storage, and optimization of BIM platform are constructed to effectively process information with high reliability and complete and high reliability. At the same time, the boundary of information sharing should be clearly defined, the ownership of information assets should be clearly defined, the disputes of data and information use should be reduced, and the goal of project information management should be achieved.

References

[1] KOU, Weiwei., CHEN, Changliu. Research on the Application of BIM Technology in the Whole Life Cycle of Construction Projects. Construction Quality, 2018.

[2] LIU, Jun-e., GAO, Si., GUO, Zhang-lin. Application of BIM Technology in Fabricated Building. Value Engineering, 2017.

[3] Mering, M, M., Aminudin, E., Chai, C, S. Adoption of Building Information Modelling in project planning risk management, 2017.

[4] Anthony, Okakpu., Ali, Ghaffarian, Hoseini., John, Tookey. Exploring the environmental influence on BIM adoption for refurbishment project using structural equation modelling. Architectural Engineering and Design Management, no. 1, pp. 1-17, 2019.

[5] Elijah, Oluwatosin, Oyewole., Joshua, Oluwasuji, Dada. Training gaps in the adoption of building information modelling by Nigerian construction professionals. Built Environment Project and Asset Management, no. 1, 2019.

[6] Dongping, CAO., Heng, LI., Guangbin, WANG. Impacts of building information modeling(BIM) implementation on design and construction performance: a resource dependence theory perspective. Frontiers of Engineering Management, vol. 4, no. 1, pp. 20-34, 2017.

[7] Zhong, W., Zhang, K., Yang, G. Research on Business Process Reengineering of Project Management Based on BIM Visual Threshold, 2017.

[8] MA, Shaoxiong., LI, Changning., XU, Hong. Research and Application of Construction Management Platform for Long-Span Bridge on BIM-Based Technology. Journal of Graphics, 2017.

[9] Plume, J., Marchant, D., Mitchell, J. Proposal for an Open Data Model Schema for Precinct-scale Information Management, no. 180, pp. 822-831, 2017.