Research on Fine Management of Engineering Cost Based on BIM Technology

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Abstract. Through the refined cost management of the project, the cost can be reasonably reduced to improve the effectiveness of the construction. BIM Technology plays an important role in the current project cost. By using this technology, the project cost can be managed scientifically and precisely, which can make the project smoothly implemented.

Keywords: BIM Technology, Management of Engineering Cost, Research

1. Concept

BIM is the abbreviation of building information modeling, which is often translated as "building information model". BIM is actually a digital representation of the physical and functional characteristics of a construction project. It is a resource platform that can share the information of the target project, which can provide reliable basis for all decisions in the whole life cycle of the project from concept to demolition. In different stages of the project, different participants can insert, extract, update and share information data in the BIM system to Reflect their own business responsibilities, support their own decisions, so as to achieve collaborative work. Meticulous management of project cost is an advanced and scientific management mode at present[1]. The basic principle of this management is that in the construction of the project, the project cost management must be subdivided into specific management levels, so that the cost of the project can be reasonably managed and the cost can be effectively controlled. In every construction stage of the project cost, it is necessary to optimize the allocation of relevant resources according to the organizational form, technology, economic development and other factors presented by the enterprise. In this way, the project cost can be reasonably controlled, and the problems encountered in the current project cost management can be changed.

1.1. Management content

The construction cost of the project has certain complexity, and the construction work can be divided into eight related construction steps. Then according to the technical characteristics of each
construction stage, it is divided into five developing technical stages, each stage has different cost management direction and content[2]. The first stage is to reasonably estimate the investment cost in the early stage of project construction; the second stage is to reasonably budget the design content; the third stage is to scientifically budget the construction drawings in the early stage of project construction; the fourth stage is to reasonably manage the contract awarded in the stage of project contracting; the fifth stage is to later stage of project implementation. It is necessary to make a scientific settlement of the project cost and make a scientific final account after the completion and acceptance of the project.

2. BIM design introduction

For engineering cost personnel, BIM model building is an important basic work of BIM application. The quality and efficiency of BIM model directly affect the effect of subsequent application. There are three ways to build the model:

1) directly install the construction drawings to rebuild the BIM model, which is also the most basic and common way.

2) if the electronic file in AutoCAD format of two-dimensional construction drawing can be obtained, the DWG two-dimensional drawing can be converted into BIM model by using the function of drawing recognition and transformation provided by the software

3) reuse and import BIM model provided by design software to generate BIM calculation model. This is the most reasonable way to view the whole BIM process, which can avoid a lot of manual work and possible errors caused by re-modeling

2.1. Problems and suggestions of data transmission standards not unified

At present, there are still obstacles in the data transmission and sharing of information software with different functions. Generally, the design department makes a set of model, the cost department imitates a set of model, and even needs to establish a data model for construction management, which affects the level of vertical integration and integration of the construction industry, and also leads to repeated work and cost increase[3]. One of the key reasons is that there is no unified data transmission
3. Analysis on the application value of BIM based engineering cost fine management

Fine management of the project cost can ensure that the project construction has reasonable and sufficient funds, and the cost of each stage of the construction can be controlled within a reasonable range. In the field of engineering construction, the bill of quantities is mainly used for pricing, which is formed according to the actual situation of the project, and is conducive to the dynamic and fine management of the construction cost by all parties. With the continuous expansion of the project scale, the data involved in the cost management of relevant units increases rapidly, which makes the cost management more difficult. The application of BIM Technology can effectively solve this problem. This technology can realize the application of computer and network in cost management, not only can improve the management efficiency, but also provide conditions for further refinement of management.

3.1. True and complete information transmission

Information transmission is affected by many aspects, such as long construction period, different working subjects in different stages and different software used by different subjects, which makes data communication problems. BIM model makes up for this disadvantage and reduces the loss caused by lost information. The unified model brings together all kinds of information in the project, makes the information transmission more complete and faster, and the Department information of the construction unit is closely connected. Building units can also directly put forward requirements through the 3D space view effect of BIM model and limiting preset functions, so as to ensure that complete and accurate information is transmitted and the project cost is reduced.

3.2. Enhance cost control strength in engineering design

In addition, BIM can improve the cost control strength in engineering design. In order to effectively control the cost of each construction stage in the early stage of design, BIM Technology can be used to analyze the information of the proposed scheme through automatic technology, and provide the calculated cost data to the engineering designer. In this way, scientific measurement can be carried out for the project, and reasonable changes can be made to the design through the application of this technology. By using BIM Technology, engineering cost and spatial data can be scientifically correlated, so that the cost of several data can be provided to engineering designers, so that the change results can be observed intuitively, and the design scheme can be changed rapidly.

3.3. Resource planning function of BIM image

standard, which reduces the level of data sharing. Using API to establish the seamless connection of BIM related software is short of national unified BIM standard. Therefore, to provide a transmission standard for the construction industry that does not depend on any system and is suitable for describing the product data throughout the life cycle of the construction project has become a key issue of the construction industry informatization. BIM software developed before in our country, this problem is more prominent. With the development of international IFC Standard, it has been accepted by many countries.
By using the database provided by BIM model, the project manager can arrange the resource plan such as capital plan and schedule plan reasonably. Specifically, we can use BIM software to quickly build the three-dimensional model of the project, use BIM database to give the time information of each component in the model, and through the automatic calculation function, we can calculate the entity engineering quantity, then we can subdivide the workload of the data model according to any time period, any part of the project, and also subdivide the time required for a certain part of the project; and Combining the price information of labor, material and machinery in BIM database, we can analyze the cost of any part and any time period, so as to quickly make the resource plan of project schedule and capital plan, reasonably allocate resources, timely and accurately control the project cost, and efficiently carry out cost analysis and progress analysis. Therefore, from the overall point of view of the project, improve the management level of the project[5].

4. Conclusion

With the rapid development of project management, its influence is increasing day by day. Project management has been proved to be an efficient way of management. However, the application of project management in China is not very extensive, and there is a certain gap with foreign countries in both theory and practice. This raises a serious problem for the management education and project management practitioners in China. We must strive to improve the level of project management to meet the opportunities and challenges brought by economic globalization and China’s accession to the WTO.

References

[1] He guanpei. BIM overview [M]. Beijing: China Construction Industry Press, 2011. [3] Zhai Chao. Key role of BIM Technology in construction stage [J]. Xinluban, 2007, 7.
[2] Yang Baoming. New thinking of project cost management [n]. Architecture times, 2010-12-20.
[3] Deng Jia. On the refined management of project cost of BIM technology[J]. Engineering Technology: Full Text Edition: 00082-00082.
[4] Ma Zhenrong. Research on BIM Technology in the Fine Management of the Whole Process of Engineering Cost[J]. Science and Technology Innovation, 2018.
[5] Zhang Chuanfu. Analysis of the refined management method of project cost from the perspective of BIM technology[J]. Building Materials and Decoration, 2019, 000(017):193-194.
[6] Bai Qiaoyun, Sun Shun. Discussion on the refined management of project cost based on BIM technology[J]. China Science and Technology Investment, 2018(16).