

The Impact of BIM on Construction Cost Industry in the Era of Big Data and Countermeasure Analysis

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Abstract: *In the engineering cost management, BIM technology has obvious advantages in data acquisition, information analysis and processing and engineering quantity calculation. Based on this, when organizing project cost management, it is necessary to fully explore the advantages of BIM technology and improve the level of project cost management through complementary advantages.*

Keywords: BIM; Cost management; Information age.

1. PROBLEMS EXISTING IN PROJECT COST MANAGEMENT

1.1 Problems in data acquisition

In the current project cost work, there are problems such as slow information data acquisition and incomplete information acquisition, which hinder the orderly progress of the project cost. The reasons leading to the above problems are as follows: first, there are problems in the selection of the technical level and method of the project cost, and the staff can not control the changing trend of the market, which leads to a large fluctuation difference in the price calculation, affecting the accuracy of the cost; Second, enterprises do not pay enough attention to the project cost, and there are often violations and mistakes in the work, which destroy the effectiveness of the project cost.

1.2 Problems in data processing

BIM technology has a high utilization rate in today's engineering, and also has certain advantages in information processing. However, there are still some enterprises in the use of BIM technology, there are human intervention, which affects the play of the efficacy of BIM technology, and then in the process of data information analysis, it cannot meet the standard requirements, reducing the level of project cost.

2. BIG DATA OF PROJECT COST

2.1 Content

Big data of project cost is a collection of all data of project construction, including data of various project departments, external environment data and relevant data of project cost. Project cost big data has the characteristics of mass, diversity and dynamic. At this stage, the project cost big data is mainly divided into four levels, project level, enterprise level, enterprise group level and enterprise ecological level. The cost content contained in the project level mainly includes the project fraud data, the cost data formed by the project, which is the core content of the project cost big data.

2.2 Features

2.2.1 Multi-agent and multi-level data collection

The collection of traditional project cost data needs to go through the process of structure analysis, project rationalization calculation and multi-layer audit. Although it can ensure the accuracy of the project cost, it takes a relatively long time, and the work efficiency is not high, and it is easy to hinder the development of the project cost because of the influence of human and other factors in each link of operation. The cost of the big data project can realize the collection, analysis and calculation of data by improving the establishment of the database, and the influencing factors need to be considered are relatively few, which not only ensures the quality of the cost work, but also avoids data loss, and improves the overall benefit of the project cost.

2.2.2 Selectivity of data update

The cost of big data project has certain selectivity, and multi-angle simulation is realized through a variety of engineering construction, which solves all kinds of problems existing in project cost management. Timely control of the changing data in the construction of the project, the implementation of timely update of information, to provide help for the project.

3. INFLUENCE OF BIM ON PROJECT COST IN THE ERA OF BIG DATA

3.1 Challenges

With the expansion of the application of BIM technology, big data has become an indispensable and important technology in construction. However, due to the complexity of data sources, the imperfection of data model establishment, the lack of professional talents and other problems, the construction industry doubts the application of big data, which hinders the development of big data to some extent. In addition, the management concept and mode, capital investment and other aspects of the insufficient, so that the application of big data in the project cost met a great challenge, therefore, enterprises should make corresponding reforms, formulate reasonable measures, promote its full play.

3.2 Opportunities

Engineering cost enterprises with strong data ability have significantly improved both in work efficiency and cost accuracy, and also have ideal effects in the control of change design. Through the application of BIM technology, all the data of engineering construction is collected and a perfect database system is established, which provides a reliable basis for various work, such as engineering quantity calculation, quota consumption control and so on. At the same time, through the application of advanced information technology, data accumulation, in-depth mining, analysis and processing work. As a more important part of the cost, big data plays a certain guiding role in the development of the cost work, which can develop a reasonable service system according to the actual demand and improve the service level.

4. PROJECT COST MANAGEMENT OF BIG DATA AND BIM TECHNOLOGY

4.1 Application in tender offer stage

First, the basic situation of the enterprise is analyzed by using a large database, and the required human, material and financial loss standards are calculated to ensure the accuracy of the quota calculation. After the bidding is completed, the quota can be adjusted appropriately according to the actual situation of the project. Then, BIM technology is used for engineering modeling, and the actual cost required in engineering construction is calculated according to the market dynamic information, so as to provide a theoretical basis for bidding. Finally, big data and BIM modeling are used to analyze the probability of winning the bid and the final economic benefits of the enterprise, so as to promote the smooth progress of the engineering construction project.

4.2 Application of BIM technology in the design stage

Although the project capital required in the design stage is the smallest, it is the most important for the final presentation of the whole project, and the role of the project cost management is also very important. Compared with the earlier stage of the project, the design stage can issue detailed design drawings to provide the basis for more accurate cost management. It should be said that the application effect of BIM technology is the most significant in the design stage. For example, BIM technology

The application can greatly improve the quality of the design scheme, improve the accuracy of the project budget in the design stage, in order to control the project cost, so as to maximize the investment benefits. Reasonable use of BIM technology to solve the problems of "error, leakage, collision, lack" which often occur in the design process, so as to improve the reliability of the design and minimize the number of engineering changes. Combining BIM technology with traditional CAD technology, a three-dimensional model can be presented, which is more convenient for designers to check drawings.

4.3 Application in the construction phase

In the construction process, BIM technology is used to simulate the site construction situation, select a reasonable construction technology, and analyze the influencing factors, and then formulate the corresponding solution measures to ensure the rationality of cost control. At the same time, the application of big data technology can accurately analyze the changes of market price information, based on which the procurement plan of materials and machinery equipment can be developed to reduce the procurement cost of materials and machinery facilities. Moreover, the use of big data technology can effectively control the risk of project cost, timely forecast and analysis of possible risk problems, and then to prevent and control, reduce the occurrence of project cost problems.

4.4 Application in the settlement stage

The current project cost management needs to implement strict control of engineering changes, quality defects, project claims and other contents. In addition to carrying out the project acceptance work in accordance with the requirements and contract contents, it also needs to comprehensively sort out and summarize the relevant data of the cost management, and effectively divide it according to the data types, so as to provide a basis for the later performance assessment. Reasonable storage of project cost data information can analyze the cost risk, understand the scientific law of project cost management, and then provide sufficient experience and lessons for subsequent construction.

5. SUGGESTIONS ON LARGE DATA OF PROJECT COST AND IMPROVEMENT OF BIM APPLICATION EFFICIENCY

In the context of big data and BIM, in order to improve the level of project cost management, it is necessary to pay attention to the relationship among information, technology and personnel, promote the collection and sorting of internal and external information through the reasonable application of BIM software and technology, improve the efficiency of information data processing through the application of professional personnel, and optimize the level of project cost. However, at present, engineering construction enterprises have certain deficiencies in obtaining external cost data, selecting BIM software and information processing data, and reserving cost talents. In order to strengthen the application of BIM model in engineering practice, the author puts forward the following suggestions:

5.1 Strengthen cooperation between enterprises, expand data collection channels, and solve the problem of single source of original information

In addition to the basic document information, the external cost information is also particularly important. However, because the information data is trade secret, it can only be obtained through the network, which is a relatively open channel, and the integrity of the information is restricted to a certain extent. Engineering construction enterprises on the basis of improving their own cost data information, The problem that external information source is too single can be solved by strengthening cooperation and purchasing professional cost database. Through cooperation with enterprises, build an information sharing platform to improve the efficiency of external information acquisition; Strengthen cooperation with professional information enterprises to build professional information database; Combined with the actual situation of the project, the temporary purchase of the database, to ensure the quality of cost management.

5.2 Apply BIM software and information processing technology to increase the information utilization rate

Although many enterprises have begun to apply BIM software for engineering cost management, due to the wide variety of software and the lack of professional ability of operators, the efficacy of BIM technology itself cannot be better played. It is suggested that project construction enterprises give priority to domestic BIM software with good compatibility, which is convenient to master and conducive to the transmission of project cost data between different software. When big data is used to complete information processing, some skillful processing technologies can be selected in the initial stage, and then the technical level can be constantly improved to improve the processing efficiency as the work changes.

5.3 Strengthen the construction of professional teams and expand the talent pool

Project cost management under the background of big data and BIM has relatively high requirements for cost management knowledge and professional skills. However, in the current situation, project cost attaches too much importance to the technical level and ignores the importance of management knowledge, resulting in a heavy preference for talents and failing to meet the requirements of compound talent reserve. Therefore, in specific work, enterprises need to strengthen internal training and education, on the basis of improving the skill level of management personnel, expand their professional knowledge reserves, to provide assistance for the follow-up work; Moreover, the enterprise should also build a more professional cost management team, and the team personnel to implement strict audit; Subcontract the information processing work to ensure the accuracy of the project cost through outsourcing.

6. CONCLUSION

To sum up, we can learn that in the development background of the era of big data, the application of BIM technology can thoroughly optimize the cost management system of the project, and the implementation of the technology in the cost management of all links of the project can also effectively reduce the waste of resources, improve the economic benefits of enterprises, and ultimately guarantee the smooth completion of the project construction.

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