

The Practice of Project Teaching Method in Engineering Cost Teaching--the Application of Bim Technology

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ABSTRACT. *In the process of project construction, strict and meticulous project cost work must be carried out, which is conducive to the smooth development of the project and also helps to supervise the enterprise to carry out effective cost control work. Overcoming all kinds of uncertain factors when carrying out engineering cost teaching work, also faces great risks in the management process. The BIM technology engineering project has solved this difficulty well. Through its high integration of data and information, it guarantees the management personnel to calculate the expected risk and reduces the uncertainty of management.*

KEYWORDS: *Bim technology, Engineering cost, Large project teaching method*

1. The Current State of Engineering Cost Teaching in My Country

1.1 The Current Situation of the Cost Teaching of the Whole Life Cycle of Bim Technology Engineering Projects

In my country's traditional state of engineering cost teaching, the process is cumbersome and the work is repetitive, which not only causes a serious waste of social resources, but also greatly increases the expected risk and raises the level of management by a gradient. After BIM technology is developed, it has the advantages of integrating data and information, which reduces the burden on the teaching staff of engineering cost and also saves costs for enterprises. BIM technology is mainly to use its advanced three-dimensional measurement to establish a model, to simulate the construction site, construction time, and construction process to allow managers to find problems more directly. It can also be applied to other fields.

1.2 The Development Issues of Bim Technology Engineering Project Life Cycle Cost Teaching

At present, two-dimensional technology has gradually been unable to apply in the field of engineering management. Researching BIM technology and full life cycle cost teaching is our most urgent task at this stage, but we have encountered many problems in the research process. On the one hand, because the development of BIM technology in my country started late and there is a serious shortage of technical talents, it is necessary to introduce foreign talents to conduct rapid research and development of BIM technology. However, this method will not cure the root cause and will cost a lot of financial resources. In the future construction may also be subject to many restrictions abroad. On the other hand, our country is still in the development stage of BIM technology, experts are experiencing faults, related laws and regulations do not provide for this aspect, and even its industry standards and regulations have left a blank. Just starting from the lack of industry standards, there may be contradictions in the research and development of this technology by different companies in my country, which will seriously affect the development of BIM technology.

2. Bim Technology and Full Life Cycle Cost Teaching Application

2.1 The Stage Division of Cost Teaching in the Whole Life Cycle

The so-called life-cycle cost management activities are actually to carry out efficient cost control activities in various reasonable ways under the condition that the project funds are determined. This control activity mainly includes the four basic processes of drafting stage, design stage, construction stage, and completion stage, and these four basic links also have their own special attention points in cost. The specific content is as follows: (1) Drafting stage. The task at this stage lies in the decision-making of project investment, which is the key link for the project to determine the direction of investment issues. Therefore, in this link, the construction party and the investor must carefully negotiate, study carefully and make reasonable decisions. In this link, the construction party must come up with a feasible and effective plan to impress the investor and provide the investor with an evaluation plan. Space, and investment estimation is also a key influencing factor for investors to make decisions. The design of the plan should be based on a series of indicators and elements such as the specific conditions of the project, national standards and special needs to design a practical and feasible estimated plan. (2) Design stage. In the process of project construction, the design task is in the preparatory work of the project, and this is the lifeline and core element of the entire project. The rationality of the design plays an important and decisive role in all parts of the entire process. The construction scale, construction period, cost quotation, quality assurance, construction difficulty, and human factors of the project are all involved. It is precisely because the design work is so important that the design strategy selection in the design stage will have an important decisive effect on the construction of the

entire project. The construction party must insist on seeking truth from facts, carefully inspecting, making overall considerations, and trying to come up with the best plan as much as possible to meet the investors' expectations of the project construction to the greatest extent. Moreover, an excellent plan is not achieved overnight. The designer must continuously optimize the design plan on the basis of continuous research, solve problems and prevent potential hidden dangers, and carry out efficient construction plan design on this basis. Keep the construction cost firmly within a reasonable range. (3) Construction stage. If design is the soul of pre-project preparation, then the construction process is the carrier of the soul. Design is an ideal construction state, and the actual meaning of construction is to achieve the idealization of the design as much as possible. The construction project must fulfill the requirements of the plan, national professional standard restrictions and actual construction management work to turn the design plan into reality. Due to the influence and restriction of many practical factors, actual construction often faces huge challenges, and even practical problems that can shake the foundation of design. On-site construction activities may also be restricted by many uncertain factors, including some irreversible emergencies, such as heavy rains, snowstorms and many other natural phenomena. At this time, construction activities have to come to a standstill, and even worse. Will have a huge negative impact on the construction of the project. The cost budget designed at that time will be difficult to grasp. The stage with the largest cost consumption in the entire project is this stage, and its uncertainty will have a greater impact on the entire construction project. Therefore, it is very necessary to design an emergency backup plan so as to minimize the impact on project construction when problems occur. (4) Completion stage. This is the final stage of the entire project. This stage involves the acceptance, inspection, settlement, and aftermath work after the completion of the project, and involves multiple economic benefits. The completion settlement is also the most intuitive embodiment of the final cost of the entire project.

2.2 Application of Bim Technology in All Stages of Life Cycle Cost Teaching

The application of BIM technology has brought a different meaning to the cost control work. At different stages, the application of BIM technology also has its characteristics and focuses. (1) Decision-making stage. The decision-making stage of the project construction is the basic project of the entire project, which is of great significance to the cost control of the entire project. Correct and reasonable decision-making plays a decisive role in the construction prospects and construction cost control of the entire project, and the benefits and cost-benefit ratio of the project after completion. Decision-making is the most important link before the actual construction, so the decision-making task is worthy of a lot of energy from the construction party and the investor. Based on the long-term development of construction management work, people have gradually explored a certain amount of experience, so the concept of applying BIM to the cost teaching work of the entire life cycle of engineering construction has been jointly proposed by many professionals.

(2) Design stage. In this stage, it has the same principle as the decision-making stage. The BIM technology construction model helps to obtain the corresponding data, so as to more intuitively observe the construction expectations of the entire project, and also help the designer to make a more reasonable design. In addition, the actual construction conditions are numerous, and some problems even need to change the basis of the design. However, the gap between the design idea and the reality will lead to uncertain prospects for modifying the design, which will cause the indefinite interruption of the project, and the control of the construction cost will be A huge influence factor. (3) Construction stage. This stage is the operation stage of the project. The application of BIM technology in this process is mainly reflected in the calculation of engineering quantities, such as the demand for building materials and the measurement of building data. This model is different from traditional calculation methods in its obvious advantages such as high-speed, high-efficiency, three-dimensional and intuitive, which also facilitates efficient control of construction cost management. (4) Maintenance phase. Since general buildings have a longer life span, it takes a long time for maintenance and aftercare during the entire process. The cost of this part is very high, and the management difficulty is also the greatest.

3. Bim-Based Full Life Cycle Cost Management Countermeasures

In the life cycle cost management and control work based on BIM technology, how to conduct efficient management is the decisive factor to maximize the effectiveness of BIM technology. BIM technology can use the digital platform to realize university docking, and the application of BIM technology can also help to realize the improvement of cost management efficiency. With the introduction of the life-cycle management model, the life-cycle cost analysis model is also used.

4. Conclusion

At present, my country's construction industry continues to develop, and BIM technology also provides a strong driving force for the development of my country's construction industry. BIM technology is mainly used in the process of construction engineering information management. The cost control work of the whole life cycle has been widely popularized. The advantage of BIM technology is that it can effectively manage the construction plan and its construction process in the whole process of the construction project. Therefore, BIM technology breaks through technical barriers and promotes the rise of the construction industry in the current excellent environment.

Acknowledgments

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