

Key Points of Budget Control of Construction Cost Based on Information Technology and Its Grasp Analysis

Peipei Liang

Guangdong Business and Technology University, Zhaoqing Guangdong, 526040, China

Keywords: Construction Engineering; Cost Budget; Information Technology; Control

Abstract: The construction project cost budget is the monetary expression of the value of the construction project, and is the sum of the expenses consumed in the construction activities of the construction project reflected in monetary form. In the current construction process, in order to make the construction more smoothly, it is quite necessary to ensure high-quality project budget preparation. Construction project budget is an indispensable part of the construction enterprise in the process of project cost control, and plays a very important role in further strengthening the control of project cost for the construction enterprise. Using modern information technology to calculate and manage engineering cost scientifically is a direction of current effective management of Engineering cost. Cost management organizations at all levels should attach great importance to engineering cost informatization. Reasonable control of construction costs is not to blindly reduce construction costs, but to reduce expenditures that do not need to be spent. We should make full use of informationization means and speed up the construction of informationization platform for standard and project cost management.

1. Introduction

The wide application of information technology has deeply affected every field of contemporary society. People's mode of thinking, living habits, management methods and working methods have undergone changes [1]. The construction industry is the basic industry for social and economic development. After the reform and opening up, with the development of China's economy, the construction industry has developed rapidly. However, after experiencing rapid development, with the economy entering the new normal and the construction industry entering the adjustment period, project cost control has become a very important issue [2]. As an important basis for phased investment control, construction project cost budget plays a connecting role in basic construction and plays a pivotal role in project cost management [3]. As an important basis for the phased investment control, the construction project cost budget plays a leading role in the basic construction and plays a pivotal role in project cost management [4]. Utilizing the development of modern information technology, and combining with the actual situation of enterprises, and gradually establishing an engineering cost management information system that is accurate, convenient, fast and in line with international practice and market economy, has reached an urgent point and has become the eagerly awaited by many people in the industry [5].

The construction project cost budget is the monetary performance of the construction project value, which is the sum of the expenses spent on the construction work in the form of money [6]. The construction project cost budget refers to the currency expression form of the investment resources of the construction project in the construction project, and it is the use of currency to measure the economic situation of a project [7]. As a large-scale project, construction engineering needs to prepare all the engineering quotations in advance, and rationally allocate the funds according to the expected materials needed, and scientifically make corresponding manpower arrangements [8]. In the process of building construction, the engineering quality is important, but it is also necessary to master the correct way to control the construction quality, and the budget of the engineering project is its primary premise [9]. Using modern information technology to scientifically calculate and manage the project cost is an effort to effectively manage the project cost at present. Project cost management agencies at all levels should attach great importance to the

informatization of project cost and make full use of informatization means. Reasonable control of the construction cost is not to reduce the construction cost blindly, but to cut down the unnecessary expenses so that the project can proceed smoothly within the budget.

2. Necessity of Information Technology in Engineering Cost Management

The formation of project cost needs a powerful and convenient tool. Comparing with the quota compilation, the formation of engineering cost requires more computers and is more widely used. Because there are many materials used in the project, and the price changes of various materials have different effects on the project cost, the price differences of the main materials of the whole project are summed up according to their content multiplied by the price differences. Construction project budget is one of the preconditions for the smooth progress of construction projects. Scientific and reasonable construction project budget can maximize the maximum value of investment in construction funds, and it is also the basis and guarantee for the cost control of construction enterprises. Overbudgeting of construction projects has always been a prominent problem in engineering construction, which will lead to the loss of control of project cost and the great reduction of project investment benefit. Due to the lack of science and rationality, the cost budget has lost its due guiding role in actual projects. Program budget personnel need to have a response to all kinds of situations that may occur, make reasonable arrangements, and deal with some problems in a short time without affecting the construction process of the project.

In the construction process of construction projects, there are often emergency accidents of various types. Therefore, management personnel are required to timely control the progress of the project and handle the cost budget in real time [10]. In order to ensure the use efficiency of construction materials and reduce the project cost, project management personnel must strengthen the management and strict control of the materials and their use on the construction site. Using the existing technology to establish a multi-mode collaborative work environment and a collaborative work support platform with integrated multimedia modes. The cooperative design and operation process is shown in Fig. 1.

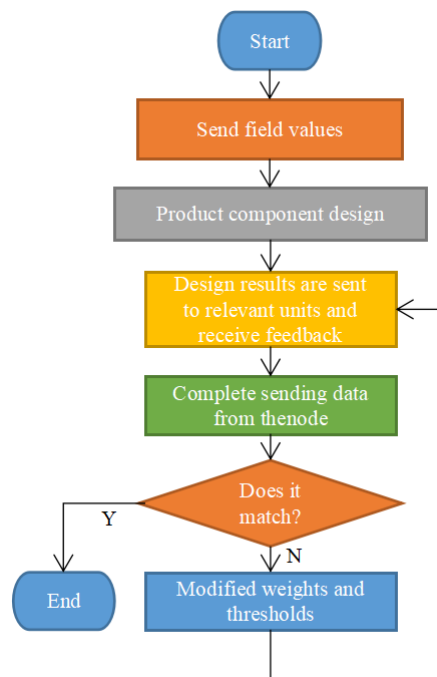


Fig. 1 Construction engineering cooperation design operation process

In the project cost control system of construction enterprises, only if the construction project budget is well done can the project cost control be guaranteed, and the most reasonable arrangement and dispatch of funds in all links of the project be guaranteed. Due to the lack of scientificity and rationality, the cost budget has lost its due guiding role in practical projects. The construction period

of construction project is long and the scope involved is very wide. Although the budget estimate made at the beginning of the project predicts the fluctuation of material price, market risk and so on, there is room for the budget. The implementation of each construction project requires a budget plan in advance, and the person in charge usually makes a preliminary budget based on the project data and then makes a project cost map. As a project cost personnel, we need to master the correct method of project cost and effectively control it. Only through detailed investigation and research can we solve a series of problems related to project cost.

3. The Role of Project Budget in Project Cost Control

3.1 Ensure the Scientific Rationality of Project Cost Control

With the rapid development of information technology and its popularization and development in construction industry, the application of information technology in engineering cost management in our country is mainly manifested in that people have got rid of manual labor in setting quota, compiling bid base, bidding quotation and cost control. In the Internet era, the living space and behavior space of enterprises and the cost management of enterprises can not be developed without the network. We should do a good job in the network construction of cost information and realize the networking of internal and external information of enterprises. The progress of information technology not only improves the original work efficiency and the accuracy of budget and final accounts, but also makes timely and accurate use of material price information, which has been extended to the whole process of project cost management. The compilation of project cost budget is very important. It is the basis of effective control of project cost to compile scientific and reasonable project cost budget. After the current project cost is evaluated and calculated, engineering documents are formed on the basis of the project budget. After the prepared engineering documents are approved by relevant departments, such documents become common reference documents for all parties involved in the project. Although the budget estimate made at the beginning of the project predicted material price fluctuations, market risks and other situations, it left room for the budget.

Data and information on project cost collected and mastered by relevant units on the network can be transmitted to professional users of project cost work through the Internet. Meanwhile, price documents in the project can also be transmitted to relevant units on the Internet. The first development in the information design of building layout is geometric modeling, which deals with basic problems such as geometry and shape representation of objects, research on graphic data structure, etc. The path density, node number and center potential are analyzed. As shown in Table 1.

Table 1 Analysis of the information structure design of building layout

Network	Path density	Number of nodes	Central potential
Encounter information	1209	2052	0.724
Mutual information	2026	2011	0.557
Weighted summation	617	2425	0.661

The professional quality of the staff working in the project budget often affects their thinking and methods when investigating market data. The professional knowledge of the project cost management staff can effectively ensure the correctness and prediction of the basic data. The instruction of a construction manager directly affects the progress of the whole project, so the construction unit also needs to carry out strict inspection and training on the managers to urge the professional knowledge of the managers to keep pace with the times. In the process of actual project preparation, relevant engineering personnel directly carry out project budget preparation without detailed investigation in advance, which will cause great loopholes and even serious errors for the project. First, the budgeting personnel should grasp the specific situation of the project site and make the budget based on the comprehensive consideration of the construction organization characteristics of the project.

3.2 Effective Control of Construction Cost

Staff will arrange the procurement of some materials, replacement of equipment and reasonable setting of labor remuneration according to the budget in the report. This can effectively control the actual cost of Engineering cost, and then control the cost of construction output. As an accounting work, it has the characteristics of complexity, so it needs to be considered more carefully and thoroughly. It not only pays attention to economy, but also needs to be combined with technology. Information network should be a kind of information network in a broad sense, including not only the local area network within the cost management department, but also the industry website. The project cost control document based on project budget is a more scientific and intuitive standard document, which can provide the main basis for project financing and bidding. As the final decision of project approval, enterprise managers need to analyze the rationality of the project budget to ensure that the project cost control can be stabilized at a certain level.

Many construction units regard the project cost budget control as an isolated and static process, and only focus on controlling the budget cost in the bidding stage and the completion settlement stage. Due to the structural form of the building itself, the use of different building materials will also lead to differences in building energy efficiency between multi-storey and high-rise buildings. The urban civil construction model based on the information design task can be used to solve the design problems and quality problems that may occur in the project in advance through collision detection and other forms. Topology reliability optimization simulation comparison is shown in Fig. 2.

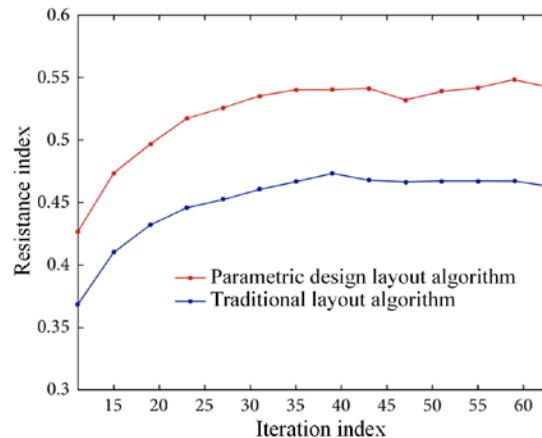


Fig. 2 Comparison of construction layout optimization simulation

The budget of a project is knowledgeable, and many aspects of knowledge are often involved in the calculation and estimation of the project by the staff. There are different engineering calculation rules in different time periods, so we should have a comprehensive understanding of the current engineering calculation planning, calculate the results of the amount of work, and then get the consumption and the required costs. With the deep application of network and whole process information technology in engineering cost industry, information technology will not stay in a certain link or a certain type of enterprise or unit. The application of Internet technology in the field of engineering cost gave birth to the engineering cost information network. The technology has the characteristics of wide distribution range, strong technical consistency, simple and convenient use, rich expression forms and the like, and greatly promotes the information circulation technology. In the construction phase of the construction project, the cost budget control personnel should earnestly implement the contents of the contract cost budget as an important part of the control. After the budget of the construction project is reviewed by relevant departments, the construction of the construction project can be supervised through the flow of funds, which is convenient to promote more scientific construction cost.

4. Conclusion

At present, the competition of construction engineering market is fierce. In order to improve their own economic benefits and gain more market share, construction engineering enterprises must focus on cost control. This requires the relevant personnel engaged in the budget control of construction cost to attach great importance to the budget control of construction cost and understand its important position and impact. Effective control of the construction cost budget is conducive to controlling the construction cost and improving the investment efficiency of the project. This paper summarizes the function of project budget, points out the problems existing in the cost control of construction project based on project budget, and gives the corresponding measures. In order to improve the economic benefits of enterprises and the long-term development of the construction industry, it is necessary to deeply study the law of the impact of China's market economy on the prices of construction materials and equipment, to implement the accuracy and rationality of the cost budget of various departments, and to effectively improve the cost budget overruns in construction projects. With the further in-depth research and application of information technology in the cost industry, it is bound to revolutionize the budget price of construction projects, thus pushing the cost of construction projects in our country to further conform to international standards and ushering in a new period of great development in the cost budget of construction projects.

References

- [1] Yang J B, Chen C C. Causes of Budget Changes in Building Construction Projects: An Empirical Study in Taiwan[J]. The Engineering Economist, 2015, 60(1):1-21.
- [2] Larsen J K, Ussing L F, Brunoe T D, et al. The Project Management Process of Planning and Budgeting in Public Construction Projects[J]. International Journal of Information Technology Project Management, 2015, 6(4):20-33.
- [3] An S M, Woo S, Cho C S, et al. Development of budget-constrained rescheduling method in mega construction project[J]. KSCE Journal of Civil Engineering, 2016, 21(1):1-9.
- [4] Lin Y K, Huang C F, Yeng C L, et al. Project Reliability Interval for a Stochastic Project Network Subject to Time and Budget Constraints[J]. IEEE Transactions on Reliability, 2017:1-11.
- [5] Pellicer E, Carvajal G I, Rubio M C, et al. A method to estimate occupational health and safety costs in construction projects[J]. KSCE Journal of Civil Engineering, 2014, 18(7):1955-1965.
- [6] Maphosa S G. The impact of cultural differences on construction project performance[J]. Japanese Journal of Limnology, 2015, 67(1):29-36.
- [7] Adafin J, Rotimi J O B, Wilkinson S. Risk impact assessments in project budget development: architects' perspectives[J]. Architectural Engineering and Design Management, 2016:1-16.
- [8] Ock J H, Park H K. A study on the algorithm of cash flow forecasting model in the planning stage of a construction project[J]. KSCE Journal of Civil Engineering, 2016, 20(6):2170-2176.
- [9] Senouci A B, Mubarak S A. Multiobjective optimization model for scheduling of construction projects under extreme weather[J]. Journal of Civil Engineering and Management, 2016, 22(3):373-381.
- [10] An S M, Woo S, Cho C S, et al. Development of budget-constrained rescheduling method in mega construction project[J]. KSCE Journal of Civil Engineering, 2017, 21(1):85-93.