

## Research on the Whole Process Cost Management of Engineering Projects under the Information Technology

Liwei Fang

Wenzhou Polytechnic, Wenzhou 325035, China

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*Abstract: In today's rapid development, the development and growth of various fields are inseparable from information management, and the construction industry is no exception. The degree of information popularization and the level of information management play an inestimable role in various fields. In the field of project cost, information management plays a different role in data, intelligence and diversification. In the current era of big data, it leads the project cost to a new level in a more scientific and efficient direction. By understanding the current situation, development and future trend of informatization of project cost management, this paper analyzes the role and significance of informatization management in project cost, studies the whole process cost management informatization management of local enterprises in Wenzhou, and discusses how to give full play to the advantages of informatization management in project cost management to better serve the project cost.*

*Keywords: Informatization, cost management, whole process.*

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### 1. INTRODUCTION

A comprehensive study of the project cost management mode of Wenzhou enterprises, especially for the projects of the whole process cost management, undoubtedly has obvious academic value, economic value and social value.

The topic has the following practical significance:

- (1) It is helpful to guide small and medium-sized Wenzhou enterprises to understand the importance of informatization of cost management in the whole process, promote the deep integration of information technology and enterprise management, realize technology upgrading, and further strengthen the construction of information infrastructure.
- (2) The research tries to solve the technical problems encountered by small and medium-sized enterprises in the whole process of information management, optimize the information management of engineering projects, improve the application level, achieve industry information sharing and service, and establish enterprise integrity information management..

### 2. BACKGROUND

Since the beginning of the 21st century, informatization, mainly characterized by digitization, electronization and networking, has caused profound changes around the world and reshaped the new

pattern of world economic development. The development level of informatization has become an important symbol for determining the development level of a country's productivity, measuring a country's comprehensive national strength and international competitiveness. In this context, the wave of development of informatization is rapidly changing the face of my country's construction industry. The information communication method of the construction industry has changed from a chain type to a plane type, the bidding method has gradually moved from paper bidding to electronic bidding, and computer-aided technology is widely used in construction project management. Since 2003, my country has successively released (2003-2008 National Construction Industry Informatization Development Planning Outline", "2011-2015 Construction Industry Informatization Development Outline" and "2016-2020 Construction Industry Informatization Development Outline" The "Development Outline" has become a "blueprint" for planning at the government level. As a public policy, the three outlines are a means of macro-control of the national economy, and their interpretation is an indispensable part of the study of construction industry informatization.

After so many years of hard work, although my country's construction industry informatization has made certain achievements, the overall situation is that the degree of my country's construction informatization is still at a low level. In recent years, my country's building informatization market has developed rapidly. In 2018, the scale of my country's building informatization market reached 24.5 billion yuan, an increase of 19% from 20.7 billion yuan in 2017. However, the penetration rate of building informatization is still at a low level in the industry. In 2018, China's building informatization accounted for only 0.1% of the total output value, while the investment in developed countries such as the United States could reach 1%. It can be seen that my country's construction industry informatization investment is far lower than that of developed countries. In contrast, based on the existing huge volume measurement of my country's construction industry, the improvement of the informatization rate will bring about a huge incremental market, and there is huge room for improvement in the future.

The main problems in the development process of building informatization in my country are the low level of informatization, the opaque industry information, the huge construction industry system, the low entry threshold for the construction market, the non-standard market management, the industry policies that increase the cost of enterprises, and the untrustworthy operation of enterprises. The entire industry urgently needs a profound developmental change.

Among them, the project cost management informatization, as an important part of the informatization in the construction field, is the development goal of many modern engineering project management consulting companies. It will play an important role in project cost management, become an important support for project cost management activities, and lead the development direction of future project cost management activities in the whole process.

### **3. METHOD**

Project cost management is the use of scientific and technical principles and methods, under the principle of unified goals and each responsible, in order to ensure the economic benefits of construction projects and the economic rights and interests of all relevant parties, the management of construction project cost and construction and installation project prices are carried out. The whole

process and all-round compliance with policies and objective laws of all business behaviors and organizational activities. The "whole process cost" control refers to: in order to ensure the investment benefit of the construction project, the project construction starts from the feasibility study through preliminary design, expansion preliminary design, construction drawing design, contracting, construction, commissioning, completion, commissioning, final accounts, The whole process of post-assessment, etc., and all business behaviors and organizational activities carried out around the project cost. The basic principles of cost control in the whole process of project management are divided into three aspects: the principle of stage, the principle of target responsibility and the principle of dynamic. If an enterprise wants to further improve its own data and participate in more whole-process cost management projects, it must realize informatization.

Project cost is an important link in a construction project and is closely related to the final profitability of the entire construction project. The whole process cost has covered all aspects of the construction process, and it is more comprehensive, systematic and more accurate in response, which is conducive to the reasonable control of construction costs. The research ideas are as follows:

- (1) Extensively read relevant domestic and foreign works and literature, sort out the research status, and lay a theoretical foundation for this research project;
- (2) For the small and medium-sized construction enterprises in Wenzhou, collect the required information and enterprise difficulties by visiting enterprises, surveying questionnaires, and the Internet. Conduct statistics, analysis, sorting and summarization of data, find out the crux of the problem, and help SMEs understand the importance and necessity of informatization;
- (3) Establish a simplified version of the whole process cost management system, determine the direction of software production, and implement multi-party comparisons with other software to obtain the best user experience;
- (4) Contact with the enterprise to simulate filling, and further improve the system process, so as to be streamlined, effective and easy to use.

## **4. RESULTS AND ANALYSIS**

### **4.1 Clarify the main body positioning and division of labor**

First of all, it is necessary to clarify the problems currently faced by the engineering cost industry. It is recommended that under the control of government departments, industry associations should take the lead in formulating and improving the information system, clarifying standards, establishing a high-standard information platform system, breaking barriers, and building information platforms. Resource Sharing.

### **4.2 Improve the information technology standard construction system**

The basic premise of the construction of engineering cost informatization is the technical standard system. Only by establishing a unified technical standard system, can there be perfect cooperation between various industries and departments, as well as large-scale system development and application. First of all, it is necessary to formulate the main engineering cost information data standards, technical specifications, etc. according to the project category; then formulate information collection, processing standards, communication and sharing standards, such as the unified interface standard of cost software application cost, unified data format conversion and database. The

foundation of information construction; the third is to do a good job in information classification, and classify and manage prices, indexes, quotas and other information. The fourth is to integrate the resource base, implement dynamic extraction of the cost data of new projects, and improve the level of the data system.

#### **4.3 Big data information management in the whole life cycle**

In the field of contemporary construction engineering, project cost management needs to be considered from the whole life cycle. Project cost control should not be limited to a certain stage or a certain unit, but should focus on the overall situation, including comprehensive consideration of planning, design, implementation, operation and maintenance, etc. Therefore, a large amount of data support is needed. With the development of big data and the advancement of information technology, engineering cost information must have matching service functions in order to adapt to the development of the cost field. Combine big data to create a variety of information platforms for common development. The engineering cost information platform is the existence of digitization and network integration of various cost information, and is an important link in the development of industry informatization.

#### **4.4 Information management should fully reflect intelligence**

Cost control should be more active control, but under the traditional mode, due to factors such as complex data and limited manpower, many cases are summed up and assessed afterwards, and active control cannot be started. By establishing an information platform combined with BIM technology, various engineering projects can be actively controlled in terms of design and implementation at the beginning stage, and important indicators and key data can be displayed more intelligently and wisely under the information platform. Work becomes simple and efficient.

#### **4.5 Improve training efforts and improve the information technology level of cost management personnel**

The construction of engineering cost informatization involves knowledge fields such as policies and regulations, economic management, information technology, and engineering construction. It puts forward a new level of training requirements for talents. Not only professional knowledge, but also data statistics, file management, etc., need to establish a mechanism, cultivate a large number of compound talents suitable for the current development of cost informatization, and establish a strong professional team to meet the needs of the construction of project cost informatization.

### **5. CONCLUSION**

In recent time, the low energy retrofit in existing houses would offer a great amount of energy saving and carbon emission in the UK. According to the different house situation, applicable and acceptable measures should be carefully applied in the balance among the sustainable concept, client requirement and local regulation, since the best building performance would usually accompany highest refurbishment expense.

The primary energy consumption in the case study house was reduced considerably by 86% after retrofit. Various measures, especially for reducing heat loss, were introduced. Insulation locations in walls and types of glazing were emphasized. As for insulation, the energy issues were same owing to the same U-value according to PHPP. However, the internal insulation would have interstitial

condensation sometime during the year, which seriously affected the insulation effectiveness. With the vapor barrier applied, the costs for both cases were very close. However, because of the risk of broken barrier, external insulation seemed to be more suitable in this particular house which was located out of conservation area. When turn to glazing type, the cost benefit for double glazing overweighed triple one substantially while other advantages on triple glazing over double one, such as annual energy saving, seemed fairly tiny.

Thereafter, for this house, external insulation in walls and double glazing application would be sufficient in retrofit plan. However, depending on different circumstances, measures might be different according to the special requirements. It was reasonable to have more triple glazing for retrofit due to the updating production technologies and decreasing price. But triple glazing still had its potential usage in buildings in some special cases or in future retrofit houses when the price decreased.

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