

# Research on cost management of enterprise engineering EPC project

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**Abstract:** *EPC project mode can comprehensively manage all stages of the project and has the advantage of integrated management. In order to improve the refinement of EPC project cost management, this paper studies the cost management of enterprise engineering EPC project. Understand the connotation of cost management of enterprise engineering EPC project and strengthen the awareness of cost management. This paper analyzes the problems existing in the cost management of enterprise engineering EPC project, and puts forward the EPC project management strategy from three aspects: design and procurement cost management, dynamic control of EPC project implementation cost and optimization of cost management mode based on lean construction, which provides a new idea for the development of enterprise engineering EPC project cost management.*

**Keywords:** *Enterprise Engineering; Design cost; Cost management; Dynamic control; Lean construction; EPC project*

## 1. Introduction

With the continuous evolution of the trend of world economic globalization, China's economy is developing rapidly, the scale of engineering projects is gradually expanding, and there are more and more large-scale engineering projects competing with the international market. Many enterprises carry out project construction and complete project construction through EPC mode [1]. However, because such large-scale enterprise projects involve many interests and large amount, in the actual development of the project, the traditional cost management method is difficult to control the project cost and has many uncontrollable factors. Therefore, for the cost management of enterprise engineering EPC project, it is necessary to optimize the project management means and absorb advanced project cost management experience, Put forward a new cost management strategy. The important means and core functions of cost management play an important role in the survival and development of engineering enterprises. Cost management is required in the whole process of engineering project design, construction and commissioning, so as to improve their competitiveness in the highly competitive market [2]. At present, the cost management of enterprise engineering EPC project has not reached the level of refinement. Therefore, this paper puts forward corresponding solutions to the problems existing in EPC project cost management, so as to provide an important reference basis for enterprise projects to realize economic and social benefits.

## 2. Connotation of cost management of enterprise engineering EPC project

EPC project is the overall contracting of the whole process of enterprise engineering, such as basic design, material procurement and project implementation. Therefore, the project can also be called general contracting project. The contractor is fully responsible for the overall process of project construction. The contractor has the right to make decisions at all stages of the project and is responsible for relevant service projects during the trial operation of the project, The phase project model effectively controls the risks of the employer and gives the contractor greater initiative. At the same time, it also undertakes more arduous tasks and responsibilities [3]. The EPC project management mode brings great convenience to the employer and reduces the management cost in all construction work. The contractor of EPC project management usually has high qualification, which can carry out all stages of the project orderly, effectively control the project progress, grasp the project quality, ensure good investment benefits, and the total cost of the project is relatively low. It is generally widely used in large-scale and complex construction projects. The cost management of EPC project is developed at

a deeper level and is more complex. There are relatively many elements of cost management. While undertaking large risks in the project, its profit is also considerable. It is a win-win model for the employer and the contractor.

### **3. Problems in cost management of enterprise engineering EPC project**

At present, there are still some problems in the actual work of EPC project cost management. First, the cost management of most engineering enterprises mainly focuses on the process of project construction, and does not pay enough attention to the cost management in the design stage. The preliminary project construction planning and design is an important factor affecting the formation of project cost and the premise of construction and procurement stage. The progress of preliminary design and procurement directly affects the construction progress. At present, the enterprise construction has the problem of serious progress lag, and the extension of construction period leads to the increase of project cost [4]. Secondly, there is a certain formalization in cost management. The responsibility implementation and relevant audit of cost management are largely formalized. The process of cost management is relatively loose, which seriously affects the quality of cost management, makes it difficult for enterprise projects to achieve basic management objectives in the whole process, and limits the scope of impact of cost management. Finally, the application degree of the advanced strategy of cost management method in all stages of cost management needs to be improved, and the implementation of many cost management work has not been implemented. Therefore, it is necessary to put forward new management methods, integrate cost management, improve the information degree of cost management, optimize the project coordination mode, and constantly learn from foreign advanced technology and experience, Strengthen the practice and application of cost management in the project.

### **4. Problems in cost management of enterprise engineering EPC project**

#### ***4.1. Design and procurement cost management***

In the cost management of enterprise EPC project, the cost of design work accounts for a relatively small proportion, but it has an important impact on the overall project cost. The preliminary design of the project is the premise and basis of the later work. Therefore, the quality and progress of design play an important role in the whole enterprise project. Effectively controlling the design progress, grasping the design quality and formulating control schemes and standards can lay a good foundation for the construction and construction of the project. Therefore, the design organization should carefully study the bidding documents, actively communicate and communicate with the employer, and further understand the employer's demands, so as to optimize and improve the design work in time, and carry out modular construction by using three-dimensional design software. Track and measure the design progress in time. If there is a certain lag in the design progress, analyze the reasons in time to ensure sufficient time for follow-up work and save the project cost. Procurement is the core link of EPC project and accounts for the largest proportion in the project cost. Therefore, it is necessary to effectively control the cost on the basis of ensuring the procurement quality, so as to improve the economic benefits of the project, refine the procurement work interface, plan the equipment transportation route, ensure the equipment safety, and reduce economic losses.

#### ***4.2. Dynamic control of EPC project implementation cost***

In the implementation process of the project, cost management has entered the practice stage, its uncontrollable influencing factors have increased, and the difficulty of cost management has also been improved to a certain extent. Therefore, cost management and control in the implementation stage directly affect the overall cost management effect of the project. In the implementation of the project, many enterprises participate, and there are mutual constraints and inseparable relations among enterprises. In order to control the project cost within a reasonable range, it is necessary to dynamically track and control the project cost in the implementation process, and timely check the project progress. When there is a certain deviation between the budget cost and the actual cost, it is analyzed to determine the deviation range. Use the earning method to measure and analyze the completed cost, and then take targeted measures to ensure that the actual expenditure is within the reasonable range of the preliminary plan. The cost and schedule deviation are calculated by earning method, so as to predict the cost required in the construction process of subsequent projects, and further implement the

implementation of the project according to the project budget. In order to ensure the tracking and implementation of cost management, it is necessary to establish a perfect system of dynamic cost and progress supervision, so as to ensure the management and control of expected project cost in EPC project.

#### **4.3. Optimizing cost management mode based on Lean Construction**

Lean construction management takes reducing the cost waste in the production process as the starting point, based on the service life of the project, aims at creating the maximum value for the employer, constructs a cost management value chain based on Lean Construction on the basis of value flow theory, continuously improves and refines the work process, so that all parties involved in interests can play a role together, with all participating enterprises as the main body, Establish a close relationship between enterprises, form a lean construction cost management system, and realize the orderly operation of system management. Firstly, through the management of cost information, deepen the EPC project organization's understanding of cost information, establish an information platform, realize the cost information sharing of participating enterprises, and use the lean construction mode to enable the Contractor's enterprises to accurately and quickly obtain various information of EPC project and assist in the development of cost management. The second is to manage the costs incurred during the project, and timely adjust the amount deviation in the capital expenses, so as to lay a solid foundation for cost accounting in the later stage. Control the production progress through the circular plan, improve the reliability of the work process, avoid serious waste in each stage of the project, coordinate the whole process of project cost management, supply the required amount of materials and funds on time, stick to the waiting time of the construction personnel, and formulate the follow-up plan according to the personnel feedback in the construction process to obtain the maximum value.

#### **5. Conclusion**

The development of EPC project mode has brought opportunities and challenges to the development of project cost management. Therefore, enterprises need to strengthen the awareness of cost management, constantly explore and innovate and keep pace with the times. This paper puts forward cost management strategies from three aspects: design and procurement cost management, dynamic control of EPC project implementation cost and optimization of cost management mode based on lean construction, and has achieved some research results. At the same time, due to the limitations of time and conditions, there are still some deficiencies in this paper, which need to be further discussed in the future. For example, the research on information construction should be more in-depth to make cost management more scientific and standardized.

#### **References**

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