

1. INTRODUCTION

1.1 Research background

The General contracting mode originated in the US in the 60s of last century. Large-scale projects are constantly increasing and management is complicated. In order to effectively control the cost and progress of projects, "Engineering, Procurement, and Construction" (E P C) is a particular form of contracting arrangement used in some industries where the E P C Contractor is made responsible for all the activities from design, procurement, construction, to commissioning and handover of the project to the End-User or Owner (International Monetary Fund, 2011). The EPC general contracting model is created, and project management and risk control are passed on to the experienced general contractor, the owner or the professional consultant engineer hired is responsible for supervision. The project cost control and control management activities are the more important research contents in the project-related management process. In the background of ensuring high quality and safe progress of the entire project, investment in project costs can be saved, and the overall revenue of the project can be realized. Maximization has become a more important core issue in project management.

With regard to the issue of project cost control, PCM encompasses several specific functions of project management including estimating, job controls, field data collection, scheduling, accounting and design. PCM main goal is to complete a project within an approved budget. Beginning with estimating, a vital tool in PCM, actual historical data is used to accurately plan all aspects of the project. As the project continues, job control uses data from the estimate with the information reported from the field to measure the cost and production in the project. From project initiation to completion, project cost management has an objective to simplify and cheapen the project experience. This technological approach has been a big challenger to the mainstream estimating software and project management industries (International Monetary Fund 2012).

The large-scale project contracting companies in China have started late and have had relatively few research results. As a result, the project cost control problems are always in the initial development period, and the cost control mechanisms that are in line with the development of Chinese enterprise projects are lacking, especially for projects. The mastery of cost control principles and the understanding of the concept of project cost control have major obstacles. In the process of contracting foreign projects, many large state-owned enterprises in China also have many weaknesses in cost control. For

example, the management of project costs is not strong, there is no control over the entire process of project costs, and no more scientific and reasonable projects can be used. Cost estimation methods, insufficient economic and technical support for project cost control, etc. Based on these problems, many large international companies are making efforts to actively adopt improvement measures to improve the efficiency of project cost control, ensure the progress of the project, and improve project performance.

Harbin Electric International Engineering Co, Ltd. carried out cost control of the Turkish SOMA project. As the progress of the project progressed, there were many situations that were not considered in the project evaluation and there was a situation of cost overruns. The project has not been completed yet. In half of the cases, the capital expenditure has already passed half, which will affect the smooth development of the project in the next step. Therefore, the dissertation extracts a study on the cost control of the Turkish SOMA thermal power project, and can effectively implement cost control and related control for the implementation of the project. This study has comprehensively analyzed the current status of cost control of Turkey's SOMA thermal power projects, and put forward the core issues of cost control basis, cost control methods, and cost control rules. For the problems that hinder the smooth development of the project, a basic plan that is relatively consistent with the cost control and related control of the development of the power engineering project is designed, and related measures are also proposed to ensure that the project can be successfully implemented to ensure that the project can be successfully completed.

1.2 Research Objectives

Since Turkey's SOMA thermal power project was launched on January 7, 2014, the progress of the project has been relatively smooth. Each time node in the original plan has also been completed according to the plan, which has played an important role in the successful completion of the entire project. However, some problems have arisen in the cost of the project. Due to the unfavorable cost monitoring, there has been a large overspending. As of now, the project has not yet been completed in half, but the cost of capital expenditure has exceeded half of the budget. If this problem is not solved in time, the progress of the project will hinder the development and implementation of the project. Therefore, the core purpose of this project research is to find problems in the cost control process of Turkey's SOMA thermal power project through cost-related theory, and to design these issues in accordance with the project management and related actual implementation and development. The cost control plan includes the improvement of the

WBS (work breakdown structure) system, the adoption of the ABC cost method (work cost analysis method), the sound rules system and the corresponding cost control safeguard measures, which provide important guidance for the smooth development of the Turkish SOMA thermal power project.

1.2.1 Research Significance

Project cost control is a relatively complex system management. This paper has certain theoretical value and practical guidance significance for the study of the cost control of Turkish SOMA thermal power projects. On the one hand, based on the status quo of cost control of the project, this paper has designed the basic safeguards for the cost control programs and management related to the improvement of the WBS system, the adoption of the ABC cost method, and the improvement of basic rules and systems for cost control and related controls. The relevant management and control theories of various project costs can be summed up. It also lays down a certain theoretical basis for the research of junior scholars in this area, which reflects the theoretical significance of this article. On the other hand, the research of this article is based on Based on the development of the SOMA thermal power project in Turkey and the problems existing in the cost control of the project, a relevant level improvement plan for actual cost management and control that meets the progress of the project is designed, and basic measures for related safeguards are also provided. Turkey's SOMA thermal power project managers accurately grasp the cost of project inputs and have very important guiding significance for promoting the smooth development of the project.

1.3 Research status at home and abroad

Regarding the content of cost control and management aspects and management methods, whether domestic or foreign, scholars in this field have conducted in-depth research on this issue from different perspectives.

1.3.1 Research on the Connotation of Cost Control

Cost control, also known as cost management or cost containment, is a broad set of cost accounting methods and management techniques with the common goal of improving business cost-efficiency by reducing costs, or at least restricting their rate of growth. Businesses use cost control methods to monitor, evaluate, and ultimately enhance the efficiency of specific areas, such as departments, divisions, or product lines, within their operations.

In the literature, large projects with a wide scope and complex deliveries are also called integrated projects (Hobday, Davies, & Prencipe, 2005), complex projects (Barlow, 2000), Complex Product Systems (Hobday, 1998), turnkey projects and simply large projects (Miller & Lessard, 2001). These projects involve integrating a wide scope of products and services into a total solution to meet the customer's complex and unique needs. To understand how complex projects differ from more standardized projects, suggest that they should be classified according to the project's breadth of the scope and technological uncertainty. Recent studies based on comprehensive systematic literature reviews (Bosch-Rekvelde, Jongkind, Mooi, Bakker, & Verbraeck, 2011; Geraldi et al., 2011) have extended our understanding of complex project. The characteristics of complex projects are related to size of a project, interconnectedness of various elements of a project, uncertainty and project uniqueness. A cost control theory system for the goal, and defines this important concept of "target cost" in the theory, and also strongly argues that the organization needs to pass its "target cost" for product design and product production processes. "And carry out cost control and control activities. The management method of this type of cost-related control is mainly based on the combination of scientific and rational prediction of the project operating costs that have been completed or realized beforehand to a certain extent and the control of the cost in the event, which is of great significance.

Paul (2006) and Magne (2013) believe that the traditional cost control method means that the cost control starts from the relatively passive after-accounting state to the production process and starts the cost control, so that the costs on the cost accounting process are integrated afterwards, which in turn makes the cost Control and control are more scientific and reasonable. That cost control mainly refers to the objectives of cost management that companies establish in advance according to a certain period of time, and that the cost-controlled subjects are within the scope of their duties, so that before the cost of production occurs or during the process of cost control, each Classes can influence a variety of factors of cost and a series of measures taken to prevent and adjust the relevant conditions, so as to ensure the cost control and control objectives to achieve a smooth management behavior. Hsiao (2006) pointed out that the relatively traditional management standards for enterprise project costs cannot meet the needs of the rapidly changing internal and external environments in the current corporate operation management. The standard of this cost operation and management mechanism is too stringent or too loose to encourage employees. The management aspects are all unfavorable. Marie and Rao (2010) in the four main aspects of the practice based on the company's routine management (design or engineering research mechanism, empirical

observation and determination mechanism for project commissioning, work research technology determination mechanism, and historical standard average determination mechanism) After analyzing and discussing the cost control mechanism, we pointed out that in order to promote the objective and feasible cost, the formulation of related management and control standards not only measures the management and control performance of the previous enterprise project cost, but also fully consider the future related expected costs. In terms of management and control of performance, a relevant set of cost management and control mechanisms for engineering projects that is more complete and in line with the actual operational needs of the company are formed on the basis of relevant.

1.3.2 Related Research on Cost Control Methods

In the 1950s, the prototype of cost control was a cost control method and management theory used by the US military in the research and development of weapons systems. G T. Staubus proposes and advocates that in the process of cost control, the ABC should be adopted, and that the ABC can supervise and record the implementation of all production activities in real time. The activity cost is used for more practical measurement analysis. The evaluation of performance and the evaluation of the practical efficiency of resources are used to complete the cost assessment and cost control of the activity. The source of resource consumption and the object of resource consumption are assessed and calculated in terms of cost analysis. ABC cost method is a cost accounting and management method that reflects the cost of an activity, the cost of operation, performance evaluation, and resource utilization through a dynamic tracking and measurement method. British scholar Simmon (1999) first published the idea of cost control of “strategic cost control management” and conducted a preliminary discussion on the feasibility of the theory in practice. The American scholar Michael Porter (1997) is mainly responsible for a relatively comprehensive theoretical analysis of the cost strategy, pointing out the necessity of establishing cost advantages in cost control. Shank, a management accounting expert from the United States, has conducted in-depth research on the basis of Simmon and Porter's theory and pointed out that the management of strategic cost control is an important foundation for the implementation and implementation of the company's development strategy. From a strategic point of view, the company the comprehensive improvement mechanism of the project's cost control measures is also a means for the entire company to form a more important competitive advantage.

Coopor (2000), a British scholar, is the chief systemic explanation of cost control

management. He believes that in order to cooperate with detailed data on various types of costs, using the method of operating costs, the responsibility for cost control of project activities can be implemented to everyone, thus reducing the cost of the enterprise, and to a certain extent, enhance the competitiveness of the enterprise. The internal reform of Toyota Motor Corporation of Japan is an important source of corporate cost planning. The basic connotation of cost planning refers to the previous cost control, which is a guiding or preventive method of cost control.

There are also some domestic relevant scholars who advocate the management methods of cost positions. This method is mainly composed of two aspects: the location accounting of costs and the control of costs. The location accounting of costs is an important basis for cost location management, and cost control is an important goal of cost location management. A dynamic cost control optimization model. The model mainly uses the principle of particle swarm as an important basis to implement the control of its dynamic costs. It analyzes the cost of the construction period in the construction project and analyzes the deviations of multiple factors, and optimizes it. The model carries out its dynamic cost control. Fen Yuan (2016) put forward a process performance evaluation model. This model mainly uses process management as an important basis to construct a system of performance evaluation indicators for the process. Through this model, a comprehensive comparison of multiple construction organization programs can be carried out, and finally the model can be selected, an optimal cost control scheme. Liu Ping proposed an optimization model for multi-objective cost control. This model mainly uses genetic algorithms as an important basis to optimize the content of the entire project in terms of construction period, quality, and safety before the implementation of the project. Calculations, in order to examine the results of the entire project cost control.

1.4 Theoretical Framework

The research on the cost control of the Turkish SOMA thermal power project in this project mainly includes the following four aspects:

(1) After the background of the research on the project cost control, the core issues to be studied in this project are extracted, and the relevant costs are controlled. On the basis of consolidating the content and literature on cost control methods, we have comprehensively grasped the application overview of related cost management and control theories at home and abroad in the corresponding enterprises and project management. This is the basic overview and development status of Turkey's SOMA thermal power project in this topic. The in-depth analysis and design of the project's cost

control program proposed a more substantial theoretical basis.

(2) Turkey SOMA thermal power project cost control overview and problems. Based on the basic overview of the project, the related content of the project's cost control field was analyzed, and the main problems of the Turkish SOMA thermal power project in its current project operation and management were found, and the most serious of these core issues was analyzed in depth. The two main reasons lay the foundation for the design of the project cost control plan.

(3) Turkey's SOMA thermal power project cost control program design. The cost control plan of the project is mainly composed of three parts: improving the WBS system, adopting the ABC cost method and a sound cost control system, and they coordinate and cooperate with each other.

(4) Turkey SOMA thermal power project cost control protection strategy. From the aspects of optimizing related information systems, handling the relationship between cost and progress, and the relationship between cost and quality, the corresponding management strategies and measures are extracted to ensure that the related programs of cost control of management projects can be implemented more smoothly and achieve and achieve The project plans out the expected results.