

Research on Engineering Quantity List Pricing and Project Cost Management of Construction Enterprises

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Abstract: In the increasingly competitive construction market, the engineering quantity list pricing model, as an important way of project cost management, is of crucial significance for construction enterprises to control costs and enhance benefits. This study deeply analyzes the characteristics of engineering quantity list pricing, and elaborates on the dilemmas faced by construction enterprises in project cost control, such as lagging concepts, imperfect mechanisms, weak risk management and control, and lack of construction-stage management. Based on this, from the dimensions of strengthening management and control concepts, improving supervision mechanisms, enhancing risk management and control capabilities, and attaching importance to construction-stage cost management, this study proposes project cost management and control strategies that are in line with the actual situation of construction enterprises, aiming to promote construction enterprises to achieve scientific management and optimization of project costs under the engineering quantity list pricing model.

Keywords: Engineering quantity; List pricing; Construction enterprises; Cost management

Online publication: May 30, 2025

1. Introduction

With the continuous advancement of the marketization process in the construction industry, the engineering quantity list pricing model has become the mainstream method of project cost management in China's construction market. This pricing model has changed the situation of government-led pricing under the traditional quota pricing model ^[1]. It is market-oriented, giving enterprises more pricing autonomy. At the same time, it also puts forward higher requirements for the project cost management of construction enterprises. Under the engineering quantity list pricing model, construction enterprises need to independently determine the bid price based on their own technical levels, management capabilities, and market price information, and conduct full-process management and control of the project cost during the construction process to ensure the economic benefits of the project ^[2]. However, at present, some construction enterprises in China still have many problems in project cost management and find it difficult to meet the requirements of the engineering quantity list pricing model, resulting in a disadvantageous position in market competition ^[3]. Therefore, in-depth research on engineering quantity list

pricing and the project cost management of construction enterprises, and exploration of effective management and control strategies are of great practical significance for enhancing the market competitiveness and economic benefits of construction enterprises.

2. Characteristics of engineering quantity list pricing

The engineering quantity list pricing has distinct characteristics. Firstly, it is mandatory. Relevant national departments have developed unified engineering quantity calculation rules and pricing specifications, which require strict compliance in bidding, tendering, and project settlement to ensure the standardization and consistency of pricing. Secondly, this model is market-oriented. The comprehensive unit price in the list is independently determined by construction enterprises according to their actual situations and market conditions, fully reflecting the market competition mechanism and being able to truly reflect the market price of construction products. Furthermore, the engineering quantity list pricing is comprehensive ^[4]. It comprehensively considers the costs of engineering entity projects and measure projects, covering all costs such as labor costs, material costs, machinery costs, management fees, and profits required to complete the list items, making the composition of project costs clearer and more comprehensive. In addition, during the performance of the contract under the engineering quantity list pricing, when the engineering quantity changes, it can be adjusted according to the contract agreement, which has strong flexibility and is conducive to the reasonable sharing of project risks.

3. Current dilemmas faced by construction enterprises in project cost control

3.1. Lagging project cost control concepts

Some construction enterprises have a wrong understanding of project cost control. They still simply equate project cost management with cost control, only paying attention to the savings of direct costs during the construction process, and ignoring the impact of the project's pre-investment decision-making, design stage, and completion settlement stage on the project cost. In the pre-project stage, there is a lack of in-depth analysis of project feasibility and precise control of investment estimation, resulting in cost overruns during the project implementation process ^[5]. At the same time, the importance attached to project cost management within the enterprise is insufficient. It has not been incorporated into the enterprise's strategic management category, and there is a lack of systematic project cost management concepts and methods, making it difficult to achieve full-process and dynamic management of project costs.

3.2. Imperfect project cost control mechanisms

Many construction enterprises have not established a perfect project cost control mechanism. In terms of organizational structure, there is a lack of specialized project cost management departments or positions, and the responsibilities of various departments are not clearly defined, resulting in a buck-passing phenomena during the project cost management process. In terms of system construction, there is a lack of perfect project cost management systems and processes. There are no clear standards and specifications for various links, from bid pricing, contract signing, to cost control during the construction process, project change management, and completion settlement, making the project cost management work lack an effective institutional guarantee. In addition, the internal supervision and assessment mechanism of the enterprise is imperfect, unable to scientifically evaluate the work performance of project cost management personnel, and it is difficult to mobilize their work enthusiasm and initiative ^[6].

3.3. Lack of risk management and control awareness

During the project cost management process, construction enterprises have insufficient awareness of risks and a weak risk management and control awareness. In the bidding stage, to win the bid, enterprises often blindly lower their bids without fully considering the risks brought by market price fluctuations, project changes, force majeure, and other factors, resulting in cost-out-of-control situations during the project implementation process. During the construction process, in the face of risks such as rising material prices and construction delays, there are no effective countermeasures, and it is impossible to adjust and control the project cost in a timely manner^[7]. At the same time, enterprises do not manage contract risks well. During the contract signing process, they do not carefully review the contract terms, and do not clearly stipulate some possible risk points, resulting in disputes during the contract performance process and increasing the difficulty of project cost management.

3.4. Lack of construction-stage management and control

The construction stage is a crucial stage for the formation of project costs, but construction enterprises have many problems in the management and control of this stage. In terms of construction organization design, there is no scientific and reasonable planning based on the actual situation of the project, resulting in resource waste, construction delays, and other situations during the construction process, increasing project costs^[8]. In terms of material management, there are problems such as unreasonable procurement plans, lax inspections, and poor warehousing management, causing material waste and cost increases. In terms of project change management, the approval process for changes is not strict, and the design and construction plans are changed at will, increasing engineering quantity and project costs. Additionally, construction enterprises often lack dynamic monitoring of project costs during the construction process, making it difficult to identify and address issues in project cost management in a timely manner.

4. Project cost management and control strategies for construction enterprises under the engineering quantity list pricing model

4.1. Strengthening project cost management and control concepts

Construction enterprises should establish a comprehensive project cost management and control concept and integrate project cost management throughout the entire project process. In the pre-project stage, it is necessary to strengthen the management of the investment decision-making stage. Through in-depth market research and feasibility analysis, reasonably determine the project investment estimate to lay a foundation for the smooth implementation of the project. In the design stage, actively participate in the optimization of the design plan. Through methods such as value engineering, reduce project costs on the premise of ensuring project quality and functions.

At the same time, project cost management should be incorporated into the enterprise's strategic management system to improve the awareness of all employees in the enterprise about project cost management and form a good atmosphere of full-staff participation and full-process management. By carrying out training and publicity activities, enhance the project cost management awareness and professional capabilities of employees, so that each employee can consciously participate in project cost management in their work and contribute to reducing costs and increasing benefits for the enterprise.

4.2. Strengthening the internal supervision mechanism of enterprises

Construction enterprises should establish and improve the organizational structure of project cost management, set up specialized project cost management departments, and clearly define the responsibilities and authorities of

various departments and positions to ensure the smooth progress of project cost management work ^[9]. Improve the project cost management system and process, and develop detailed operation specifications for each link, from bid pricing, contract signing to construction process management, project change control, and completion settlement, so that the project cost management work has rules to follow. Strengthen the internal supervision and assessment mechanism of the enterprise, establish a scientific and reasonable performance assessment index system, regularly assess and evaluate the work performance of project cost management personnel, and link the assessment results with salaries to fully mobilize their work enthusiasm and initiative. At the same time, strengthen the internal audit of project cost management work, timely discover and correct problems in the project cost management process, and ensure the standardized and efficient operation of project cost management work ^[10].

4.3. Improving the risk management and control level of construction enterprises

Construction enterprises should enhance their risk management and control awareness and establish a perfect risk early-warning mechanism. In the bidding stage, conduct a comprehensive risk assessment of the project, fully consider the risks brought by market price fluctuations, project changes, force majeure, and other factors, and reasonably determine the bid price to avoid winning the bid at a blindly low price. During the construction process, pay close attention to market dynamics, timely master the changes in material prices, labor costs, and other situations, and take effective risk response measures, such as signing fixed-price contracts and hedging materials, to reduce the impact of market risks on project costs ^[11]. Strengthen contract risk management by thoroughly reviewing contract terms before signing. Clearly define the rights and obligations of both parties and specify potential risk points to prevent contract disputes. Additionally, establish a risk emergency plan to ensure that, in the event of a risk occurrence, prompt measures can be implemented to respond effectively and minimize losses.

4.4. Focusing on cost management and control during the construction stage

4.4.1. Compiling quotas for competitive construction enterprises

Construction enterprise quotas are important bases for enterprises to make bid prices and control costs. Enterprises should compile construction enterprise quotas that are in line with their actual situations by combining their own technical levels, management capabilities, and construction experience. During the compilation process, fully consider factors such as the enterprise's construction technology, mechanical equipment configuration, and personnel quality to ensure the scientificity and rationality of the quotas ^[12]. By continuously collecting and analyzing project data, dynamically adjust and optimize the enterprise quotas so that they can accurately reflect the actual cost level of the enterprise and improve the competitiveness of the enterprise in bid pricing. At the same time, construction enterprise quotas can also provide a reference for the enterprise's cost control during the construction process, helping the enterprise to timely discover cost deviations and take measures to adjust.

4.4.2. Project cost management and control in bid pricing

In the bid-pricing stage, construction enterprises should deeply study the bidding documents and engineering quantity lists, and accurately understand the requirements and intentions of the tenderer. Carefully analyze the project characteristics and engineering content in the engineering quantity list, and reasonably determine the calculation standards for various costs in combination with the actual situation of the enterprise. When determining the comprehensive unit price, fully consider factors such as market price fluctuations, enterprise management levels, and profit targets to ensure that the bid price is not only competitive but also ensures the economic benefits of the enterprise. At the same time, pay attention to the application of bidding strategies. According to the characteristics of the project and the situation of competitors, select appropriate bidding methods, such as the unbalanced bidding method and the multi-scheme bidding method, to increase the winning rate ^[13]. In

addition, during the bid-pricing process, strengthen the review of bidding documents to ensure the accuracy and completeness of the bid price and avoid economic losses caused by bidding errors.

4.4.3. Strengthening construction management to reduce costs

During the construction process, construction enterprises should strengthen the management of construction organization design. According to the characteristics and actual situation of the project, develop scientific and reasonable construction plans and progress schedules, optimize resource allocation, improve construction efficiency, and reduce construction costs^[14]. Strengthen material management, establish a perfect system for material procurement, inspection, warehousing, and requisition, reasonably determine the quantity and time of material procurement, and reduce material procurement costs. At the same time, strengthen the monitoring of the material use process, strictly control material consumption, and avoid material waste. In terms of mechanical equipment management, reasonably configure mechanical equipment, improve the utilization rate and integrity rate of mechanical equipment, and reduce the use cost of mechanical equipment. In addition, strengthen the management of construction personnel, improve the skill level and work efficiency of construction personnel, and through a reasonable salary incentive mechanism, mobilize the work enthusiasm of construction personnel and reduce labor costs.

4.4.4. Change and visa management

Strictly standardize the management process of project changes and visas, and establish an approval system for project changes and visas. Before a project change occurs, fully demonstrate the necessity and feasibility of the change, evaluate the impact of the change on the project cost, and implement it only after approval by relevant departments and personnel. During the implementation of the project change, strengthen the measurement and review of the changed engineering quantity to ensure the accuracy of the changed engineering quantity. For project visas, handle them in a timely manner. The visa content should be true, accurate, and complete, and be signed and confirmed by relevant personnel. At the same time, establish a project change and visa ledger to record the change and visa situations in detail, which is convenient for verification and review during project settlement and avoids the increase of project costs caused by poor management of changes and visas^[15].

4.4.5. Construction technology informatization management and control

Actively introduce advanced information technology and build an information platform for project cost management. Use the information platform to achieve real-time collection, storage, analysis, and sharing of project cost-related data, and improve the efficiency and accuracy of project cost management. By establishing information tools such as engineering quantity calculation software and cost analysis software, achieve rapid calculation and dynamic analysis of project costs, and timely discover problems in project cost management. At the same time, use the information platform to strengthen the monitoring of the construction process, achieve real-time tracking and management of construction progress, quality, costs, and other information, and provide strong support for project cost management. In addition, through the information platform, strengthen communication and collaboration with construction units, supervision units, and other relevant parties, timely solve problems in the project cost management process, and improve the synergy and effectiveness of project cost management.

5. Conclusion

Under the engineering quantity list pricing model, the project cost management of construction enterprises is a complex systematic project. Facing the many dilemmas in current project cost control, construction enterprises

need to start from multiple aspects, such as strengthening management and control concepts, improving supervision mechanisms, enhancing risk management and control capabilities, and attaching importance to construction-stage cost management, and take effective management and control strategies. By continuously improving the project cost management system and enhancing the project cost management level of enterprises, it is possible to effectively control costs and maximize economic benefits in the fierce market competition, and promote the sustainable development of enterprises. In the future, with the continuous development of the construction industry and changes in the market environment, construction enterprises still need to continuously explore and innovate project cost management methods to better adapt to the requirements of industry development.

Disclosure statement

The author declares no conflict of interest.

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