

Some opinions on cost management of Chinese government-invested projects

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Abstract:

Purpose of this paper

With the acceleration of China's industrialisation and urbanisation, how to reasonably identify and effectively control the cost of Chinese government-invested project becomes an important subject.

Design

This paper uses the system analysis method, firstly to analyse the problems existed in Chinese government-invested projects, and then puts forward the appropriate management measures from both macroscopic and microscopic views.

Findings

The macro management measures include perfecting the rules and regulations relating to the government-invested projects, establishing scientific decision mechanism of the projects, promoting the entrusted construction projects, perfecting the quota standard of the construction pricing, and implementing the entire process control of the project cost. The micro management measures include paying attention to the control of the project cost in the decision-making stage, playing the leading role in the design period, standardising the bidding and contract management, imposing strict management of the engineering changes and visas during the construction period, and strengthening the project review (audit) work in the completion settlement.

Value of paper

The measures above could provide references for innovations regarding the cost control methods of the government-invested projects.

Conclusions

Project cost control of government-invested projects is a systematic work, that requires close attention from leaders as well as collaboration of relevant departments to manage the whole process.

Keywords: Chinese Government-Invested Project, Project Cost, Entire Process Control, Management Measure

1. Introduction

In recent years, with the increase in urbanisation and industrialisation in China, the investment scale on the infrastructure and social development business of the government has expanded continually. However, due to the insufficient legal system, lack of mechanisms and an immature market, many problems that cannot be ignored still exist in the management of the construction of Chinese government-invested project, especially in the reasonable identification and effective control of the project cost. How to implement the effective control of the cost of Chinese government-invested project has become the primary task and a major issue of governments and project cost management institutions at all levels.

2. Problems in project cost management in Chinese government-invested projects**2.1 Unscientific decision mechanism and inadequate feasibility study**

The Statistics Bureau of Huahua, (2007) gives an example of a medium-sized city of a province with a population of less than 600,000, and an income per capita of less than RMB 5,000 Yuan, but the municipal government invested some hundreds of millions in this city to build a stadium which can accommodate 30,000 people and a gymnasium which can accommodate 10,000 people.

2.2 Incompliance with the capital construction procedures

Some projects were carried out without conducting the necessary preliminary feasibility studies, and in the preparation of preliminary design documents of some projects, the project budget was taken into account. Some use the preliminary design drawings as the working drawings to for tendering, and some projects are constructed with its reconnaissance, design, awarding and construction being conducted synchronously.

2.3 Lack of the further design of the construction drawings

Due to the lack of competition and restriction mechanisms in the design industry, the designers draw drawings without considering the rationality and economical efficiency of the structure and plan, making the quota design meaningless and leading to many items being omitted.

2.4 Lack of standardisation management of bidding and contract management

Some parties awarding the contract dismember the project arbitrarily to avoid tendering, without clarifying and refining the articles concerning the determination, change, adjustment and settlement of project cost in the contract. Some even sign a “twin-contract”.

2.5 Lack of some effective restriction measures for engineering changes and visas

The arbitrary change and non-performing the formalities of changing is a common phenomenon. The contract price of a project is RMB 25.6 million Yuan, but due to the design change and visas¹, the cost increased by RMB 9.24 million Yuan.

2.6 Lack of the strictly examination of the project closing audit

It leads to an overestimation and risky calculation, Party A and Party B's collusion with the intermediary organ for fraud and other non-standard conduct. These problems not only influence the project's quality and safety, but also may cause cost overruns of government-invested projects, resulting in the non-fundamental turnaround of “budget estimate exceeding estimate”, “budget exceeding budget estimate” and “settlement exceeding budget”.

According to the Statistics Bureau of Jiangsu Province, (2011) in 2010 the fixed asset investment in China was RMB 31.1 trillion Yuan, increasing by 23.6%; the fixed asset investment in Jiangsu is RMB 263 trillion Yuan, increasing by 21.5%, in which the China's and state-owned investment holding is about RMB 579 billion Yuan. This is a very impressive figure. By innovating the mechanism and taking effective measures to reduce 1% project cost, RMB 5.8 billion Yuan can be saved

¹ Visa: The documentary certification signed by the representative of the owner and the contractor which refers to some important events involved in the construction period.

for the tax payers. During the “12th Five-Year Plan” period, the industrialisation and urbanisation will further accelerate, and the fixed asset investment of government will continue to grow more rapidly. Therefore, in the transformation period, enhancing the cost management of Chinese government-invested project is imperative, and the relevant departments should give high priority to the cost control of government-invested project and take effective measures to enhance the supervision and management.

3. The macro-management of Chinese government-invested projects

Good management of Chinese government-invested projects should start from the macroscopic and microscopic aspects, implementing effective supervision according to the principle of addressing the symptoms and root causes and centering on the early decision-making and design, pricing, payment, settlement, audit of the main players in the market and other key links. There are some measures to taken.

3.1 Perfecting of laws and regulations of the Chinese government-invested projects

It is important to perfect laws and regulations of the Chinese government-invested projects and change the practice of treating the management of social projects and state-owned projects equally, highlighting the characteristic that the government has achieved a lot on the public service management, and studying to prepare the laws and regulations for the management of Chinese government-invested project. Considering that the distant water won't quench immediate thirst, before the relevant laws and regulations coming out, all relevant departments may prepare corresponding measures and regulations to standardise the outstanding problems existing in the government project.

3.2 Establishing scientific decision mechanism of the Chinese government-invested projects

Governments at all levels should establish government project planning reserve agencies to plan, argue and conduct economic and technical analysis to the construction projects above the local limit (RMB 5 million for small cities, RMB 10 million for medium-sized cities and RMB 20 million for big cities) uniformly. For instance, the construction committee of Nanjing established a municipal project reserve centre in 2004, receiving good effects since its operation. Meanwhile, the special committee of the National People's Congress gave a review decision to practically improve the scientific of the government's project decision-making.

3.3 Promoting the entrusted construction projects

Zhou Hongbo *et al* (2007) found that actively cultivating the project management company and adopting the project deputed construction way is the inevitable requirement for building the professional and social project construction management. But in light of the incomplete legal system and immature market mechanism, the current government project can not totally follow the centralised deputed construction way by social intermediary companies. It was observed (Tianjin University, 2000) that in the transformation period, a city or a region should set up one or more civil service bureaus responsible for the housing construction, municipal infrastructure and communication and transportation and water conservancy construction under the government's management. The projects above the limit can be constructed by the government's civil service bureau collectively, and the projects below the limit can be constructed by the social deputed company through tendering. The government centralised deputed construction has professional management ability; has no interest relationship with the project beneficiaries; and is convenient for the formation of supervision mechanism.

3.4 Perfect the quota standard of the construction pricing

Chen Jianguo (2001) found that a scientific and reasonable quota standard is the basis for effectively implementing the cost control. Therefore, the cost management institutions should timely prepare and modify the investment estimation indicators, project budget targets and the preparation methods of estimate and budget, as well as the fixed consumption of labour, materials and machinery of various projects according to the energy conservation and requirements of "four new" technologies, continually completing the evaluation basis. Meanwhile, the cost management institutions should also set up the supervision and control system of cost of government-invested project as soon as possible, and timely collect, summary and issue the indicators and index of various project and the typical construction cost cases, providing basic information for the determination and control of the cost of government project.

3.5 Implement the entire process control of the project cost

The construction cost forms part of the whole process of the project construction, and is mainly determined in the early stages of the construction. It was observed (The Training Materials Editing Group of the

Qualification Examination of the National Cost Engineer, 2009) that according to data, the investment and decision-making processes influence 75%-95% of the cost of overall project, and the influence rate of design stage is 35%-75%, the construction stage is 5%-35% and the completion stage is 0%-5%. For this reason, firstly the concept should be discarded that government project values is the completion of projects on schedule with the quality guaranteed but not the cost control of the construction, and therefore the government leaders, departments and the society, must be made aware of the cost and value of projects. Secondly, management of the whole process of construction cost should be implemented, and the cost management in the early project initiation and design stages be addressed and enhanced. Meanwhile, the audit department should implement the process of tracking audit to the major construction projects, and issue periodically issue audit reports. Thirdly, it should identify the responsibilities and put the various supporting measures of construction cost management into practice. The development and reform, financial, construction, audit, supervision and other departments at all levels should strengthen the supervision and management to the state-owned investment construction cost control within their respective scope of official duties, set up effective coordination mechanism, communicate the circumstances periodically, conduct joint hearing system for major projects, ensuring the implementation and effective operation of supervision.

4. The Micro-Surveillance of Chinese government-invested projects

4.1 Pay attention to the control of the project cost of the government-invested projects in the decision-making stage

Investment decision-making is the source of construction cost. The cost of this stage only accounts for 0.5%-3% of the total investment amount, but the various technologies and economic decision-makings of the project play a decisive impact to the construction cost and the economic benefit after the construction completion, therefore it is a key link of construction project cost management. Key points of cost management in the decision-making stage are: a) seriously and scientifically preparing the feasibility research report, and conducting technical and economic evaluation and scheme comparison to the project to be constructed. b) conducting market survey, mastering relatively detailed and complete data materials and preparing the project investment estimate of high quality, making it play a real role of controlling the total investment in the project construction. c) improving the construction standards of government project, introducing the expert panel discussion mechanism, the post-evaluation accountability mechanism of feasibility research report and investment estimate and the system of accountability for approval faults of project.

4.2 Play the leading role of design in the control of the project cost

A project's cost is reasonable or not, wasteful or economical generally has been determined in the design stage. Design cost, generally, accounts for only 1% of the life cycle cost of construction project, but influences 75% of the construction cost. So it is a key link in the construction project cost management. The cost control in design stage is based on three aspects.

4.2.1 Actively promote the bidding of design

Clear regulations should be made that the larger government projects must implement the design or program tendering. When tendering, the bidders should fully and comprehensively analyse and compare the scale, function, equipment selection, investment control, etc. of the construction project as required, submit a detailed bidding program along the economic and technical indicators of single projects or every segment of work of unit projects, and apply the value engineering theory to conduct technical and economic comparisons and selection to the design program in the evaluation of bid.

4.2.2 Strictly implement of the quota design and design optimization

It is required that in the construction design, the designer controls the preliminary design and construction documents design according to the approved investment estimation and preliminary design estimates. The designer should divide the investment amount and quantity designed and authorised in the previous stage into different specialties, and should further divide them into the different unit projects and partitioned projects. The designer should also prepare the accurate budget timely after the preliminary design and construction drawing design, and re-optimize the designs breaking the audited quota. Also, the preliminary design and construction drawing design documents of government's project must include the project budget and the construction drawing budget; total investment of budget estimate should be restricted in 10% of the investment estimation of feasibility study; the construction drawing budget should not exceed the preliminary design budget.

4.2.3 Introduce some incentive mechanism and accountability mechanism in design

Yuan Weifan (2010) found that the incentives and disincentives for the design quality of government project should be clearly stated and included in the contract. For elaborate designs, designs adopting new technologies and materials to optimise the program and to save the cost, and designs of which the variation quantity is controlled within the quota, the rewards should be stated; for designs of which the variation quantity exceeds the quota or designs causing more variation quantity (additional variation cost exceeding 3% of unit contract price) or resulting in losses due to the variation, punishment should be administered.

4.3 Standardise the government's project bidding and contract management

Due to the relatively short implementation time of bidding and contract awarding, some unsatisfactory aspects still exist. However, it turned out to be an effective market competition method to select the contractors and reduce the construction cost. Currently, it is important to focus on the methods for standardisation. Firstly, government projects must implement the mandatory tendering, preventing actions in avoidance of tendering, such as dismembering the construct's contract awarding. The government should specify that the projects that can be carried out within the qualification range of a general contractor enterprise cannot be awarded separately, The equipment and materials supplied by Party A should be purchased through the tendering or the price competition. Secondly, it is better to distinguish between the supervision methods of state-owned projects and social projects, and implement strict procedures and supervision to the tendering of government projects. Thirdly, with government project tendering, the government should entrust an intermediary with an applicable qualification to prepare the construction budget (base number) and set the price ceiling (the price ceiling should not exceed the budget) according to the national regulations. Fourthly, it is important to study and explore scientific and reasonable bid evaluation methods targeting projects of different types to embody the reasonable and full competition principle of tendering.

Meanwhile, the management of construction contract should be enhanced. The determination, adjustment, specific settlement methods of the project cost, the risk scope and the handling methods for exceeding the risk scope should be clearly stated in the contract. Before the official signing of the contract or awarding contract of the government project, such a contract should be submitted to the cost price, tendering and other relevant departments through Internet for review. After signing such a contract, it should be reported to the construction competent department for recording. The contracts or agreements that have not been recorded cannot be used as the basis for the project settlement.

4.4 Impose strict management of the engineering changes and visas in construction period

In the construction, visa change management is the difficult and important point in the cost control during the implementation process of the project, especially in a government project. In order to strengthen the visa change management, firstly on the basis of strengthening the design management, should strictly control the joint trial with drawings and delivery systems, and perform a strict drawing approval system, striving to expose the problems in drawings as soon as possible. Secondly discussions with experts, program selection and strengthen the review and approval procedures should take place. Changes of which costs exceed 5% and above of the construction cost should be submitted to the relevant department of the project for approval; Changes of which costs exceed 10% and above of the construction cost should also be submitted to the approval department of the project to post-register the relevant formalities. Thirdly the project should implement a hierarchical control and limit the quota of visa. The visa should be in accordance with the principle of “issuing before construction”, and should also be strictly reviewed and approved according to the procedures and system. The effective visa must be signed by the authorised representatives of the construction party, the supervisor and Party A. Visa cost exceeding 1% of the contract price or RMB 50,000 Yuan per time should be signed by the project’s legal representative. Lastly the project should complete the formalities and clarify the price. Before the implementation of change or visa, Party A and Party B should reach consensus on cost adjustment and state the reason, area, time, change or the contents of visa as well as the cost of change or visa in the change order or visa sheet, avoiding confirming of costs at afterwards or in the settlement stage as far as possible. Besides, a system should be established that before signing the contract of a government project, the management methods of changing visa in the construction should be prepared according to the characteristics of the project and the management requirements of the project, and such management methods should be reported to the relevant department to be recorded, and the main contents of such management methods should be written in the contract.

4.5 Strengthen the project review (audit) work in the completion settlement

Settlement audit is the last gate of construction cost control. Yin Yilin *et al* (2000) found that viewing from the situations in these years, generally the

audit subtract rate of completion audit of construction enterprises is 5%-20%, indicating the importance of the settlement review (audit). To strengthen the review (audit) work of the completion settlement of Chinese government-invested projects, it is important to focus on carefully following the following steps. Firstly select the cost consulting enterprises with high qualifications and good reputations. It is advocated that such enterprises be selected through tendering. The audit responsibility and quality standards, as well as the reward and punishment articles concerning the fault compensation and audit quality should be clarified in the consulting contract. Secondly it should be clearly specified that the projects with further design changes and visas or which is complicated and involve large technology must implement the re-check system. This means that the project settlement must go through two reviews conducted by different agencies. Thirdly a government-invested projects review result record system must be implemented. In other words, after reviewed by the consulting enterprise, such review report should be submitted to the cost management institution through Internet for recording, and the cost management institution should review the recorded results carefully. Lastly the construction, audit, financial and judicial expertise management departments should communicate with each other frequently, increase cooperation, standardise the cost consulting market, increase the force for checking the consulting quality of government project, seriously punish the consulting enterprises and individuals of poor quality, practicing fraud and causing major losses, record their misconducts and make such misconducts public, improving the consulting quality of government project through standardisation of the consulting market.

5. Conclusion

Project cost control of government-invested projects is a systematic project, requiring the close attention from leaders and the collaboration of relevant departments for the whole process and comprehensive management. Only when scientific decision-making, reasonable design, meticulous construction and strict review are achieved, can the effective management and control to the cost of government project be implemented, and thereby guarantee the best economic and social benefits for the tax payers.

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