

Exploration and Study of Existing Problems and Efficient Strategies of Cost Management in College and University Infrastructure Projects

Shu-lin Yi

NANYANG NORMAL UNIVERSITY, Henan Nanyang in China

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Abstract. In this paper, the current status of cost management in college and university infrastructure projects was used as a blueprint. According to the analysis of current management of construction engineering cost in colleges and universities in China, combining with the existing problems, rational suggestions and highly-efficient management strategies were provided for college and university infrastructure projects from the aspect of management science, and the writer hopes to make managers of infrastructure projects combine theory with practice and offer reference for raising the cost management level of college and university infrastructure projects.

CURRENT STATUS OF COST MANAGEMENT IN COLLEGE AND UNIVERSITY INFRASTRUCTURE PROJECTS

Presently, higher education develops rapidly in China because of the implementation of enrollment policy; in order to provide a satisfying scientific studying, learning and living environment for students, colleges and universities conduct large-scale infrastructure construction; because colleges and universities are not active in engineering management, moreover, they do not pay enough attention or implement, many problems of engineering management exist in the process of infrastructure construction; cost problem is especially serious and the atmosphere of “three-exceed” headed by budget exceeding rough estimate can be found in many colleges and universities; since project fund severely exceeds budget and project progress is delayed, education, teaching and scientific study can not be conducted normally in colleges and universities, so certain negative effects are formed 【1】 .

With the devolution of power by the Central Committee of the Party, colleges and universities’ autonomy in running school becomes bigger and bigger; they can fully and independently determine infrastructure construction; they can apply national funding, at the same time, they also can join with private capital or get loan from banks for infrastructure construction. Since the flexibility of funding operation increases, colleges and universities start their infrastructure construction; however, problems of engineering management appear constantly, especially on aspect of the cost management of engineering project. Primary task of cost management in colleges and universities infrastructure construction is how to properly handle the special funds and realize their expected function; in order to accomplish this task, colleges and universities need to continuously summarize and study cost management and to conduct it through design of engineering projects and construction from all-dimension and multi-angle.

Infrastructure Construction Department in colleges and universities is different from professional cost management companies; it has insufficient experience of cost management, limited guiding ability and old management mode; under many situations, it is led by the will of its leaders who often make decisions blindly without a clear understanding of modern cost management mode; in addition, because Infrastructure Construction Department of colleges and universities has close

relationship with certain contractors, so it considers its own profits and outsources engineering projects to some contractors which do not have enough management experience. Although our country has conducted a series of measures and reformed cost management mode of engineering, infrastructure construction in colleges and universities are not involved yet; because some of its characteristics do not fit for large-scale social engineering cost management mode; at present, it is still on reforming and exploring stage; to make sure profits of the country, society, students and other groups, colleges and universities still need to positively promote reform measures.

EXISTING COST MANAGEMENT PROBLEMS OF INFRASTRUCTURE CONSTRUCTION PROJECTS IN COLLEGES AND UNIVERSITIES

Administrative organization of infrastructure Construction in colleges and universities does not give full play of its function.

At present, cost management power of infrastructure construction in colleges and universities is too concentrated and functional departments can not form efficient power supervising mechanism; essentially, it is managed by human and rational forecast of problems can not be made. To assure success of management work of infrastructure construction in colleges and universities, managers need to have a clear knowledge of infrastructure construction market, from national laws to people management of basic level, all of these require managers to conduct management on basis of a full understanding. In order to make sure the rationality and the transparency of management, the role of managers needs to be transformed; from previous “making decision” to present public bidding; the transparent degree of construction materials, equipment and other information shall be strengthened; cost management work of infrastructure in colleges and universities shall be well conducted.

Method of cost organization shall be reformed.

In China, standards of engineering cost are organized according to budget quota **【2】**; material cost, equipment cost and other expenses in quota are too fixed and they are too inflexible to change with market price. With further freedom of construction material market, there is no limitation for purchasing construction materials; prices of materials, equipment and labor vary with the change of market; however, setting of quota takes some time and it is usually slow; as a result, the prices of production factors do not match with their purchasing prices.

Management processes of infrastructure construction in colleges and universities do not unify.

Presently, cost controlling of infrastructure construction in colleges and universities is not a complete system yet; on one hand, management mode is comparatively simplex, on the other hand, it is so scattered that budget of each stage is done by different departments; for instance, budget and completion settlement of construction drawing are conducted by construction party; since there is no complete cost management mechanism, unity of settlements can not be realized; in addition, because supervision over the whole process of project is not powerful and people of each department do not communicate in time, it is difficult for designing party, construction party and supervising party to reach an unified common sense of management; various management problems may appear, for example, designing party pays attention on budget details and it causes high cost of practical design and huge investment of engineering project; when construction party bids, it may fail because it can not rationally estimate bidding price.

There is no complete law or regulation to restrain cost management of infrastructure construction in colleges and universities.

A complete system of laws and regulations is a basic guarantee for the smooth conduction of infrastructure construction in colleges and universities. Stage-payment are mostly now for such projects. It is necessary for infrastructure construction managers to get acquainted with related laws, regulations and policies; it can assure the theoretical accordance of project cost management, profits of participants and construction parties and the legality of the projects. Complete laws and regulations of project cost are standards and accordance of cost management of infrastructure construction in colleges and universities; the implementation of laws and regulations can avoid wrong construction actions, it can also make sure the legality, normal and steady development of cost activities; at present, our country is on a key stage of economic transition, and it is essential to use relevant laws and regulations to solve frequent problems and serious expense overrun to assure the legality of production activities.

STRATEGY OF COST MANAGEMENT OF INFRASTRUCTURE CONSTRUCTION IN COLLEGES AND UNIVERSITIES

Strengthen the Construction of Management Institution

Colleges and universities are a part of national institutions. Under current situation, because related national laws and regulations are incomplete, so that colleges and universities still have a long way ahead of them to uphold the profits of investigators and to assure their own profits. Strengthening the construction of cost management institution of infrastructure construction requires the coordination of different departments; rights and responsibilities of departments shall be summarized, managed and integrated; core responsibilities of each department shall be cleared; with proper conditions, departments can be divided; power crossing shall be reduced and highly efficient management shall be realized. Moreover, the construction management of bidding work shall be strengthened; authoritative bidding management institution shall be established and the range of bidding shall be enlarged; professional bidding mode of project management shall be implemented; information distribution and evaluation of eligibility shall comply with laws and regulations.

Promote the Marketization Scale of Cost Management of Infrastructure Construction in Colleges and Universities

On basis of combining characteristics of infrastructure construction in colleges and universities, advanced cost management mode shall be imported properly from society; reform shall be conducted step by step and reform goals shall be achieved stage by stage. Presently, project cost management has been included in market-oriented operation; if infrastructure construction projects in colleges and universities still develop with the original pricing mode, they will finally be eliminated by market; current budget system needs to be reformed and market-oriented management mechanism shall be imported flexibly; market information shall be mastered, and at the same time, the legality of projects shall be paid enough attention.

Further Improve Cost Management Laws and Talent Training Mode

There are many laws and regulations about project cost; "Economic Law", "Tax Law", "Administrative Law" 【3】 and many other laws relate to project cost closely; these laws are principles to restrain project cost activities, meanwhile, they can also assure profits of involved parties; especially under the environment of great economic development, cost management links directly with capital and profits, so the legality of project cost activities is required more strictly. In

addition, because project cost management work started late in China, compared with international project cost management, ours has weaker competitive power; the competition on project cost market is a competition of core talents; our country shall fasten training talents who own international view and are brave enough to innovate; in this way, talents can be saved for the development of cost view.

LIVING EXAMPLE OF CAPITAL CONSTRUCTION ENGINEERING COST MANAGEMENT IN COLLEGES AND UNIVERSITIES

Engineering general situation

Taking the new campus' construction engineering of X college as an example, and the new campus' construction engineering is specifically developed for improving the college's services to scientific research and study conditions of students and teaching and administrative staff.

For further guaranteeing the living conditions of teaching and administrative staff, two apartment buildings have been built in Zhonghua road of south campus, and the buildings' durable years is 70. A completed project was handed over in April 2014, and it had been qualified accepted for putting into use. In the early stage of starting the construction, the colleges' leader had drawn up the use guideline of "practical, economic and durable".

It proceeded the whole process's engineering dynamic monitoring for engineering cost, engineering risk and others of the whole construction process of the new campus project. It can show the design stage's engineering cost control through the whole process's engineering dynamic monitoring, and it also can avoid the construction period's delay due to the mistakes of design drawing, guarantee the term of construction work, effectively guarantee design budgetary estimate price, and avoid the engineering construction stage's effect on engineering cost after the bid and tender.

Measures and effect analysis of new campus constructing engineering cost management

Considering to proceed the engineering cost management in the design stage will achieve the most visible effect, therefore, the college's project leading group and designing institute respectively completed preliminary design and construction drawing design. The college's leading group is responsible for design supervision, and they comprehensively select the optimum design scheme from the aspects of manufacturing technique, technology, economy, and avoid the quality problems brought by low engineering cost through considering the aspect of quality. Carrying out quota design, and Strangling the budget's out of control in the cradle.

This project employed the form of open tendering and post qualification, and it requires general construction contractor to at least possess level one qualification, above five years similar engineering experiences. Clearly listing bidding principles and requirements in the bidding documents, making the bidding price's formulating more reasonable, and it should provide sample of "the specific material designated by party A" before entering the field.

After bidding documents of the project were determined, carrying out the process according to the following procedures as figure 1:

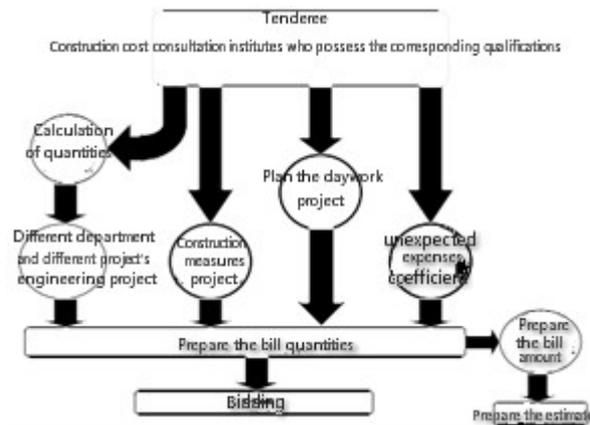


Figure 1 The project procedures

The contract management link is very strict, and it adopts fixed unit price contract. The protocol of clause is fairly detailed, and it proceeds track management during the execution process of contract. Accurately recording the project's specific status, live effects, acceptance situation, scheme alteration and others into contract documents, and it carries out contract management personnel's working with legal certificate system, and strengthens documents' archive management. Implementing the responsibility of engineering cost control to the individual during the construction phase, arranging the related responsible officer be long-term stationed at construction site, conducting dynamic follow-up auditing. The main follow-up control links of engineering cost management in the construction process are: material utilization amount, material price, engineering alteration, site signing recognition certificate.

The above measures and methods possess a remarkable effect in the engineering cost link of Zaozhuang college new campus construction project, and it achieves a good effect, and it is expected to having saved about 28% cost for college, and also save plenty of valuable resources for society.

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