The Research of Data Mining in Grid Life Cycle Cost Control

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In the background of the gradual improvement of the information technology and the socialist market economic system in, the entire life cycle cost management has replaced the entire process project cost management, therefore, high power investment projects such as grid construction, should strengthen project cost management, to adapt to the new era development requirements. The paper , from the perspective of data mining, analyzed and assessed the grid entire life cycle cost, and put forward reasonable proposals for cost control.

Keywords: Life Cycle; Data Mining; Grid Project Cost; Cost Control.

1. Introduction

In recent years, our country advocated strongly the market-oriented reforms on the grid, on this basis, building the power grid construction cost data mining model and achieving cost control, which can further strengthen the power grid construction management. However, project cost control is not an once thing, the management activities throughout the whole process of the project from planning to acceptance. Life Cycle Cost Control is an the method of implementing the total cost minimization of the project life cycle including of the various stages, to achieve scientific decision-making, and ensure quality, safety and meet the functional, then achieving the targets of reducing Project Life cycle cost.

2. The Importance of Project Cost Control

2.1. Project cost control problems existed

The present stage cost control in china, over budget and so widespread, these phenomena largely affected the construction enterprise management rationalization, specific questions are as follows.
Project cost members did not meet the standard of professional skills. For grid companies, the cost sector is necessary, it is a necessary prerequisite for getting on smoothly tender and improving profitability. However, at present, the problem that economic and technical separated on the construction field is widespread. Technical staff believe the project cost is the responsibility of financial officers, ignoring the project cost, so the construction cost would be difficult to determine reasonably and controlled effectively.

(2) Tendering and bidding is not standardized. Bidding irregularities mainly show the manual operation, deliberately suppressed project cost, which in the cost administration was unable to correctly judge the cost of the project, and pose a serious threat to the engineering quality and safety, increase the difficulty of the work of relevant departments.

(3) Enterprise quota is not standardized. There is a big difference between different building projects and different construction companies. Grid as a special industry, in the construction process, the selected equipment, technology, capital and raw materials have special requirements, these requirements often require large amounts of data as a basis for analysis, but in practice, companies often ignore this, resulting in quota happening deviation, affecting the liquidity of enterprise capital.

(4) Subjective waste phenomenon is more serious. We usually unable to determine the fixed standard to limit the late work in the design phase of construction projects, which in the waste phenomenon occurs sometimes. Designers change design, impacting the authenticity of project cost.

2.2. Significance of project cost control

Construction project cost control is closely related to the interests of business. After selecting the project, investors begin to carry on a series of investment management activities. All expenses paid in investment activities constitute a project cost, so the success of project cost control is directly related to the profitability of the enterprise. Strengthen cost management enables effectively control cost, reduce investment and operating costs, enhance the company's operating capability and competitiveness. The level of cost control will greatly reduce investment and increase revenue, so, construction cost and cost control must be placed in an important strategic position.

Building construction is a job that involves many fields, especially in the power grid and other major projects, because of its large amount of investment, its project cost management is more important. In the course of the project implementation, reasonable cost control measures and strict cost management
are guarantee of quality and efficiency of project [1]. However, the traditional management model lags, many management does not implement radical reforms, which have a certain influence to construction project cost and cost control [2]. If construction enterprises want to obtain economic benefits in construction, achieve their own development, they need to take effective measures to solve the existing problems and good construction project cost and cost control efforts.

3. The Content Of Grid Project Cost Control

The entire life cycle time grid construction projects is very long, and the contents in the various phases of the project are not the same, the whole life cycle of the power grid construction project also includes a plurality of stages.

(1) The cost control of Investment decision-making stage

Exist between the various aspects of a close relationship, and thus the cost of the project cost control must proceed from the initial construction project, namely investment decision-making stage, permeate all aspects [3]. Cost control need to estimate the funds that needed for the project according to the actual situation. When making estimates, there are certain to reserve fund to guard against the risk, with the aim to achieve a minimum cost of total project, a more rational use of human, material and financial resources, finally achieving the maximum investment returns.

(2) The cost Management of the design phase

The design phase is a key of construction project cost control, and playing a connecting role. The proportion of design costs of total costs is only 2%-3%, although this percentage is small, but its impact on the project cost up to 75-85%, and even larger proportion, this shows that the merits of the project design will directly affect the total cost, processes, quality and safety, etc., directly determine the inputs of human, material and financial resources. Design stage construction cost control mainly includes two aspects: the design of the tender and the setting of quota [4].

(3) The cost control of the bidding phase

Bidding is essentially competing under market economy conditions, each one of the various stages of project costs amount can be clearly presented in this stage. The work of bidding phase will directly affect the construction project progress and the project cost, and facilitate for enterprises to select construction enterprises which are short duration, low cost, quality and security.

(4) The cost control of the construction phase

Construction phase of the project is the stage that the capital investment is largest, and is an extension and practice of the previous stage. Strengthen the
construction cost control, it is to strengthen the management of compliance behavior. At this stage, we are suppose to pay attention to strengthening contract management, improving the supervision mechanism, enhancing the economic and technical means, scientifically selecting the equipment, materials, etc.

(5) The cost control of the final acceptance stage
The main work of this stage is to truthfully review be completed engineering review, according to national or local relevant regulations, contracts, budgets and fixed costs, completion data, carefully examine the project payment. Making settlement audited truly reflects the actual cost, to achieve a virtuous circle.

Figure 1. Big Data and Power Engineering Supervision fusion schematic.
4. Completes Reasonable Proposals of the Grid Construction Project
   Engineering Cost and Cost Control

4.1. Improve the relevant personnel cost control awareness and
     professional skills

Only when all the staff of enterprises, including staff of construction and project
management who have awareness of cost control, companies will be able to do a
good job cost control cost, reduce the cost of construction of the project cost and
improve economic efficiency of enterprises. First of all, enterprises should
strengthen the training of all staff and improve the staff's awareness of cost
control and professional skills [5]. Secondly, the enterprise management
personnel need to develop a sound responsibility management system, the cost
target specific to each one-way project even specific to each staff. Finally, the
establishment of reward and punishment system.

4.2. The use of information technology to strengthen the construction
     cost management

With the continuous development of the Internet, big data and other science and
technology, cost accounting methods are constantly updated, cost management
and control that based on data mining is one of the effective ways. A variety of
project management cost data more dispersed, using the information technology
is enabling the staff in a short time to collect and intelligent processing of
complex data, to improve work efficiency and quality of cost control and
management has a positive significance, to ensure the capital cost minimum
under the premise of guarantee engineering quality, safety and progress.

4.3. Improve the project cost management model

Establishing a sound investment control system, the pursuit of effective control
of investment projects, in accordance with the provisions on the supervision and
implementation details, and improving relevant systems, implement the
responsibility to establish a sound investment control system from the project
management mechanism. At the same time preparing monthly engineering,
reviewing progress payment and avoiding runaway investment. Reviewing
progress payment, the amount of the project that be determined by the
supervising party, according to the contract agreed valuation basis, the material
unit price and the cost of a fixed price to pay the corresponding project progress.
4.4. **Perfect contract management work**

The formulation and signing of the contract must be strictly in accordance with the requirements of the relevant rules and regulations. Generally contract must include the project period, the price and the manner of payment, etc., so when signing a contract need to scrutiny of these projects, and restrain the unbalanced quotation, reasonable control of price and contract price, detail description of the materials, equipment, quality, technology, labor costs and other requirements in the contract. At the same time, it is necessary to have a certain predictability of the contract claims and fully consider the possibility of rising to the claim controversial point, so as to avoid the occurrence of claims.

5. **Summary**

Power sector construction projects typically have a feature that is large investment and long period of time, etc., thus the space of saving the cost in the process of construction cost control is large; on the other hand, it requires a lot of data for the support, and should be run through the whole life cycle. Adjusting the bias, controlling limits, so making resources to play its biggest utility, while, there are still many questions about their cost control, it is necessary to strengthen the awareness of staff, introduce new technologies, improve the relevant regulations and management mode, to reasonably control costs and maximize efficiency.

**References**