

Research on Internal Control Mechanism of University Infrastructure Project Management from the Perspective of Whole Process Engineering Consulting

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Abstract: With the deepening reform of China's construction market and the vigorous development of higher education, the management of infrastructure projects in colleges and universities is facing new opportunities and challenges. On the basis of combing the current situation of university infrastructure project management, this paper analyzes the impact of whole process engineering consulting on university infrastructure project management, and discusses the construction strategy of internal control mechanism of university infrastructure project management from the perspective of whole process engineering consulting from the aspects of organizational structure optimization, process reengineering, and system construction, aiming to provide beneficial reference for the field of university infrastructure.

Keywords: Whole Process Engineering Consulting; University Infrastructure; Project Management; Internal Control Mechanism.

1. Introduction

the construction of university infrastructure is an important material basis for the development of higher education, which is directly related to the improvement of school running conditions and the improvement of teachers' and students' working, learning and living environment. In recent years, the scale of China's higher education has been expanding, and the infrastructure investment of major universities is also showing a rising trend. Therefore, the infrastructure project management will face a more complex internal and external environment [1]. From this point of view, the traditional university infrastructure management mode has been difficult to adapt to the needs of high-quality development under the new situation, and it is urgent to innovate the project management concept and optimize the management methods and means. As an important direction of the construction market reform, the whole process engineering consulting provides a new idea for the reform of university infrastructure project management. By introducing the whole process engineering consulting mechanism, integrating the management functions at all stages of the whole life cycle of the project, optimizing the organizational structure and business processes, and improving the system and internal control, it will help universities' infrastructure management to overcome the existing obstacles, so as to improve the management efficiency and construction performance.

2. Analysis of the Current Situation of University Infrastructure Project Management

(1) The management system needs to be straightened out

At present, the management of infrastructure projects in Colleges and universities mostly follows the traditional owner responsibility system, that is, the school, as the owner, implements the unified management of engineering projects, but there are often problems of multiple management and

segmentation in the specific operation. On the one hand, infrastructure, finance, assets, logistics and other departments are all involved in project management, but they are independent and lack of overall coordination; On the other hand, although the design, construction, supervision and other participating units accept the management of the owner, their actual operation is relatively independent and the degree of cooperation is not high. This management pattern of fragmentation leads to low work efficiency, and the phenomenon of buck passing occurs from time to time, which cannot form a joint force of engineering construction.

(2) Organizational structure needs to be optimized

The capital construction management department in Colleges and universities usually has several departments with a more detailed division of labor, but there are also problems such as overstaffing and staff redundancy. Most of the infrastructure management personnel are administrative personnel with insufficient professional ability, which is difficult to be competent for the increasingly professional and complex project management work. At the same time, colleges and universities' investment in professional training of infrastructure construction team is insufficient, and the knowledge update of management personnel lags behind, making it difficult to adapt to the requirements of new technologies, new standards and new norms. In addition, the communication and coordination mechanism between the university infrastructure management department and the secondary departments is not perfect, and the communication is not smooth in the process of project construction, affecting the construction progress and quality.

(3) Management process needs to be optimized

The university infrastructure project management has not really established the management concept of the whole process and the whole life cycle, which leads to the restriction of the management process and the loss of title. In the decision-making stage of the project, there is a lack of sufficient demonstration of the feasibility and necessity of the project, and the decision-making basis is insufficient, which

is prone to decision-making errors. In the process of scheme design, the optimization of the design scheme is not in place and frequently modified, making it difficult to control the construction period. In the bidding procurement process, the relevant procedures are mere formality, the competition mechanism is not fully introduced, and the procurement cost remains high. In the construction management, the on-site control is not strict, the material management is chaotic, and the hidden dangers of project progress, quality and safety are numerous. The completion acceptance is not strictly controlled, there are many problems left, and there are many difficulties in the later operation and maintenance. The root cause of the above problems lies in the fragmentation of the management process, the disconnection of links, fuzzy boundaries, unclear responsibilities, and the lack of overall coordination.

(4) System construction needs to be strengthened

The management of infrastructure projects in Colleges and universities has not yet established a scientific and reasonable system. The management system is not systematic, which is common in the case of one discussion and the temporary formulation of management measures, and the operability is not strong; The accountability mechanism of infrastructure management is not perfect, there is a lack of effective performance appraisal methods, and the enthusiasm of managers is not high; The awareness of risk prevention and control is weak, and a comprehensive risk management system covering law, contract, quality, safety, schedule, cost and other aspects has not been established; Internal control is a mere formality, and the boundaries of rights and responsibilities at the levels of management, decision-making and implementation are fuzzy. The lag of system construction has become an important factor affecting the improvement of university infrastructure project management level.

3. The Influence of Whole Process Engineering Consultation on the Management of University Infrastructure Projects

As an innovative management mode, the whole process engineering consulting emphasizes the implementation of the engineering consulting concept from project planning, survey and design, construction, completion to the whole life cycle of operation and maintenance, and the whole process. It implements comprehensive, professional and highly integrated management of the engineering project, and provides all-round consulting services for all project participants, to achieve multiple goals of shortening the construction period, controlling costs, ensuring quality and improving benefits [2].

(1) Market oriented transformation of management system

The introduction of the whole process engineering consulting mode in the management of infrastructure projects in Colleges and universities will inevitably promote profound changes in the management system. The core of this change will be the transfer from traditional administration to professional services. In the university infrastructure project management system, as the main body of the specialized market, large-scale engineering consulting companies play a key role. They accept the entrustment of colleges and universities, and are fully responsible for the organization and implementation of infrastructure projects. Through dynamic tracking, coordination and management, they control the

project implementation process in an all-round way, and provide professional consulting and technical support. At the same time, the functions of the infrastructure management departments in Colleges and universities will change from direct management without details to macro management. Colleges and universities will focus on formulating management objectives and standards, strengthening process supervision and performance appraisal, and handing over specific project management tasks to professional engineering consulting units. Through the benign interaction between the government, colleges and universities, and the market, a new market-oriented infrastructure management system in Colleges and universities is constructed to promote the development of infrastructure management in Colleges and universities in the direction of specialization and refinement.

(2) Flat optimization of organizational structure

The traditional bureaucratic and pyramid management mode has been difficult to adapt to the needs of university infrastructure management under the new situation [3]. With the introduction of engineering consulting concept, the infrastructure management organization of colleges and universities will usher in a flat and modular reorganization. This flat organizational structure can be divided into three levels: comprehensive management department, professional management department and project management department. The comprehensive management department shall make overall planning, allocate resources and assess performance at the macro level; The professional management department is responsible for formulating technical standards, standardizing management processes, and controlling the quality and safety of the project; The project management department is directly responsible for organizing and implementing specific engineering projects. By reasonably dividing the rights and responsibilities of departments at all levels, we can open up the management chain, realize the organic linkage between management units, and improve the efficiency of organizational operation. In addition, colleges and universities can also recruit and introduce a group of interdisciplinary talents with full process engineering consulting professional background to enrich the infrastructure management team and provide talent support for the specialization of infrastructure project management in Colleges and universities to a new level.

(3) Refined reengineering of management process

Under the guidance of the whole process engineering consulting concept, the infrastructure engineering management in Colleges and universities will usher in the refined reengineering of the process. The previous fragmented management scattered in various functional departments will give way to the integrated management of the whole process. From project decision-making, design, procurement, construction to completion acceptance, operation and maintenance, each key link will achieve seamless connection. The whole process engineering consulting unit will run through the project construction. In the early stage, the consulting unit provides professional advice for project decision-making through in-depth feasibility study and scheme comparison; In the design and construction stage, the consulting unit optimizes the design scheme, strengthens the construction organization management, and comprehensively improves the engineering construction level; After the completion of the project, the consulting unit will also participate in the project acceptance

and subsequent operation and maintenance. At the same time, colleges and universities need to establish standardized management processes covering all links, clarify the rights and responsibilities of all participants, eliminate management blind spots, realize the organic integration of management elements, and build a fine and efficient project management process system.

(4) Systematic construction of institutional system

The whole process engineering consulting concept points out a new direction for the construction of university infrastructure project management system. Colleges and universities need to reshape the system to fully cover all aspects and elements of project management. Including but not limited to responsibility management system, contract management system, schedule management system, quality management system, cost management system, safety management system, information management system, file management system, etc. These systems should form an organic unity and mutually supportive whole, and build a systematic and complete institutional framework. At the same time, colleges and universities also need to improve the internal control mechanism. Strengthen the rigid binding force of the system by improving the authorization system, supervision system and accountability mechanism to ensure that all systems are in place. In addition, the formulation of various management systems should fully conform to the operation mechanism of the whole process of engineering consulting, and provide the necessary system guarantee for the orderly intervention and in-depth participation of engineering consulting units in project management.

Conclusion: it can be seen that the application of the whole process engineering consulting in the management of university infrastructure projects may lead to systematic

changes in the management concept, organization mode and implementation path. This is very important to speed up the reform of infrastructure management system and mechanism in Colleges and universities and improve the level of construction management. Colleges and universities should embrace this change with an open and inclusive attitude, actively absorb the advanced concepts and practical experience of the whole process of engineering consulting, and explore the construction of internal control mechanism of university infrastructure project management to adapt to the new mode.

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