

## Characteristics and Management Mode of University Infrastructure: A Case Study of Yangtze University

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### Abstract

Capital construction is an important part of the development of university career and it is especially important to adopt different management modes under different circumstances. On the basis of summarizing the characteristics of university infrastructure, this paper sorts out several common modes of university infrastructure management. And taking Yangtze university as an example, the advantages and disadvantages of each model are analyzed. The research shows that the choice of each infrastructure management mode should be combined with the university's own infrastructure characteristics, so as to select the favorable management mode.

### Keywords

Capital construction, characteristics, management mode.

### 1. Introduction

Capital construction is the support of university teaching and scientific research, which has played an important part. After decades of development, China's university infrastructure has formed a relatively mature management process and management system, which can basically meet the requirements of university infrastructure. In recent years, working environment and social requirements of university infrastructure have been changing constantly. Therefore, it is particularly necessary to explore an effective infrastructure management model that is in line with the characteristics of universities. This paper summarizes the characteristics of university infrastructure and discusses different management modes, so as to better serve the capital construction of universities.

### 2. The characteristics of university infrastructure

#### 2.1 Normalization

The construction of university is highly regulated, which is reflected in the whole process from project approval to completion acceptance. Engineering project establishment, design, bidding, contract management, construction management, engineering change and financial statements must strictly follow the guidelines, policies, laws and regulations on capital construction formulated by provinces, municipalities and universities.

#### 2.2 Sociality

Sociality is shown in two aspects: on the one hand, in terms of infrastructure ability, the infrastructure department of colleges and universities needs various supporting services from the society. For example, a construction project needs to be completed with the help of social forces from the aspects of feasibility study, planning, design, construction, material and equipment procurement from the society. On the other hand, all projects in universities and colleges should strictly comply with the requirements of the relevant government departments, and strictly fulfill the application, approval and completion procedures. In the process of project construction, we should accept the supervision of the government and the society, and at the same time, we should keep abreast of the changes and operational rules of the construction market.

### 2.3 Particularity

Capital construction of universities is an important guarantee to provide teaching, scientific research and living facilities, so it is different from other engineering construction. First of all, in terms of design, the purpose of modern campus infrastructure is not only for simple learning and living space, but also for various knowledge and information, ideological and cultural exchanges. Therefore, compared with other constructions in the design of university infrastructure projects, humanistic connotation should be considered. Secondly, in terms of construction, the construction of university infrastructure is mostly carried out in the campus, which will have a great impact on the surrounding normal teaching and the life of teachers and students. Most of the projects are constructed in winter and summer vacations, so the construction time is relatively tight and more periodicity.

## 3. University infrastructure management model

### 3.1 The self-management model.

It is the project management mode that the owner directly participates in the construction control process, and it is most mature in university. The infrastructure construction management department directly signs the contract with the survey and design unit, construction unit and supervision unit, and sets up a project team for each project under construction. The project team consists of the project leader and professional engineers such as civil engineering, water, heating and electricity. Since the construction department of colleges and universities is familiar with each other and easy to communicate with each other, the requirements can be timely understood and implemented into the design and construction as soon as possible, thus meeting the requirements to the maximum extent. In addition, the construction department directly participates in the construction process management, and is very clear about the construction unit and the project quality, which is conducive to the maintenance work after the project is delivered for use.

### 3.2 The condominium model

The condominium model refers to the management and service of employing project management companies to assist the infrastructure management departments of colleges and universities in the whole process or several stages of the project management. At present, this model has been gradually promoted and applied in colleges and universities, and the construction department of colleges and universities has changed from the whole-process construction management to the pure management organization, and the personnel input is much smaller than the self-management model. In this way, the personnel allocation of the infrastructure management department can be streamlined, and the professional management of the management consulting project can be brought into full play, providing professional guidance for the infrastructure management department of universities.

### 3.3 The agent construction model

The agent construction model is a kind of project construction management mode in which the owner entrusts the construction project to the professional project management company with independent legal person qualification in the form of contract. As professional project management companies have stronger professional technical strength and more project management experience, this model can make project management more standardized and efficient, and save a lot of manpower and energy in universities. The problem of the agent construction mode is that the entrusted project management company's understanding of this particularity will be different from that of the university's own management staff, and there may be some problems such as the completed project failing to meet the requirements of the university. However, from the perspective of development trend, the agent construction model may be the development direction of the socialization of university infrastructure management, which should be paid attention to and studied.

### 3.4 The general contract mode

The management mode is that the general contractor of the project accepts the client's entrustment, organizes the project design, procurement and construction as a whole to carry out the construction,

and hands over to the client after completion, namely the turnkey project. The advantage of this management mode is that the owner only needs to sign and implement the contract with the general contractor, and only coordinate with the general contractor. The management of the project implementation process is organized and managed by the general contractor itself, and the owner only needs macro control. The infrastructure management department of the university shall, as party a, be responsible for handling the preliminary procedures of the project, and the general contractor of the project shall participate in all or part of the implementation steps such as project survey, design, procurement, construction, completion and acceptance of trial operation, and finally hand over to party a. This model can be applied to the construction of new universities. As the newly-built universities do not have the construction management power and technical management level at the time of establishment, they lack the construction management experience, and they are fully responsible for the construction by entrusting the general contractor of the project. In the end, the universities complete the transfer of the project as the receiver. In this process, university infrastructure department is also training and training their own infrastructure management personnel, for the future infrastructure work to do a good talent pool.

### **3.5 Build-operate-transfer mode**

This model refers to a financing and project management method of large-scale infrastructure construction relying on private capital, which has also been applied to some engineering projects in universities in recent years. The specific meaning of the model is to select the private sector through bidding and grant the private sector the right to operate the infrastructure within a certain period through the franchise agreement. The biggest advantage of this model is that it can solve the problem of project investment shortage, and it can introduce social idle funds into universities and encourage private investment in higher education. For universities, its significance is to effectively alleviate the problem of infrastructure shortage in large-scale development of universities, and reduce the pressure of financial allocation and loan risk will help the reform and innovation of infrastructure construction, operation, maintenance and management system. For investors, the market for the use of university infrastructure is stable and the investment risk is much less than that of other industries.

## **4. The selection of Management mode**

The choice of each management mode is closely related to the technical strength and management ability of the university infrastructure department, the source and composition of funds, and the scale of the project. Each university should choose the suitable infrastructure management mode according to its situation. Any management mode has its advantages and disadvantages. In different development periods, it should make corresponding adjustments according to the development of the situation and the needs of its own career development.

At present, most colleges and universities have their own infrastructure. Self-management mode is still the most common management mode in colleges and universities, but co-management mode and agent construction mode have their own advantages. With the reform of logistics socialization in universities, these modes have been promoted gradually, and some universities have carried out effective exploration. Take Yangtze University for example, The infrastructure department of the university mainly adopts the management system of "integrating planning and construction, focusing on self-management and co-management". The campus planning function and capital construction function are uniformly set in the infrastructure planning department. To some extent, it is conducive to the construction of the whole process of campus planning and management, and ensures the overall orderly implementation of campus planning.

## **5. Conclusion**

At present, most colleges and universities still take the self-management mode as the main mode, and the effect is remarkable. Considering the particularity of internal and external policies and management environment of colleges and universities, self-management mode must exist for a long

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time and be in the main position, but new management models also need to be added. In particular, the model of agent construction can make universities get rid of the work in non-professional fields and improve construction efficiency through specialized project management, which is worth further promotion and exploration in universities.

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### **References**

- [1] F.J. Long: Study on Management Structures and Applications for University Construction, China Civil Engineering Journal, vol. 36(2003)No. 3, p.11-15.
- [2] W.S. Guo, R.W. Niu: Analysis and Discussion on the Management Mode of University Infrastructure, Engineering Economy, vol.27(2017)No.8, p.53-56.
- [3] X.Y. Shen: Probe into the Management Model of the Campus Capital Construction in College, Journal of Jiaying University, vol.19(2007)No.4, p.68-71.