

# PERFORMANCE MANAGEMENT EVALUATION OF HIGHER EDUCATION

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**Abstract:** Since 2005, as the research interest in performance evaluation has gradually increased, performance management evaluation in higher education has gradually become a hot research topic. Higher education performance evaluation is an important research method that reflects the quality of university education, and plays a role in promoting and promoting the high-quality development of higher education. First, this article uses literature analysis method to summarize the connotation, origin, construction of index system and evaluation methods of higher education performance management evaluation, and clearly establishes a long-term management mechanism for higher education performance management evaluation; secondly, based on my country's national conditions and The development status of higher education, construct a standardized higher education performance management evaluation index system, and clarify the observation points of each indicator; finally, explore scientific, objective, and reasonable evaluation methods. It is expected to provide strategic direction and decision-making basis for universities to achieve high-quality development.

**Keywords:** Higher education; Performance evaluation; Evaluation indicators; Evaluation methods

## 1 THE CONNOTATION OF PERFORMANCE MANAGEMENT EVALUATION IN HIGHER EDUCATION

In order to effectively improve the quality and efficiency of education in higher education institutions, in the 1980s, Western developed countries held public universities accountable. Based on the Web of Science database, the search included two fields: performance management or performance evaluation. It was found that the performance management evaluation of higher education was relevant. Research has increased linearly since the 1970s, and higher education performance management evaluation has become a research hotspot. Since 2005, as the research interest in performance evaluation has gradually increased in my country, performance management evaluation in higher education has gradually become a hot research topic. The author searched China National Knowledge Infrastructure with the subject term "higher education performance evaluation" and found that my country only began to have relevant research results in 2003. 2005 was an inflection point. Before that, there was only one document. After 2005, the number of documents increased sharply, and performance Management evaluation has become a hot topic in the field of higher education and has been widely studied. However, looking at the existing relevant research results, there are relatively single studies on the connotation, index system construction and research methods of higher education performance, and there are not many related comprehensive reviews. This article will sort out the relevant literature on higher education performance management evaluation, and intend to summarize the connotation, origin, construction of evaluation index system and related research methods of higher education performance management evaluation, so as to provide reference for research on performance management evaluation of higher education in my country.

The performance of higher education refers to the quantity and quality of university outputs, the consumption in the process of obtaining these outputs, and the comparison with the expectations of stakeholders [1]. Many scholars evaluate the performance of higher education based on the input-output theory. Make an evaluation. The performance management evaluation of higher education needs to follow the laws of educational development. Under the overall framework of "performance thinking", the performance algorithm should be continuously simplified, the relationship between input and output of educational resources should be judged through research, and the utilization rate of university subject resources and the development of university subjects should be comprehensively investigated. Value judgment activity of strength. Among them, when determining the input and output elements, it is necessary to take into account the overall goals, management and supervision mechanisms of university discipline construction, highlight the connotation of university discipline construction, focus on construction key points and core elements, and at the same time fully consider educational input and output. "Spatial and temporal characteristics" [2].

The evaluation of higher education performance is actually the evaluation of organizational performance, that is, the use of a certain indicator system to evaluate the overall operating effect of the organization. As a public sector, the operational effects of universities are mainly reflected in the development of teaching, scientific research and social service activities. Therefore, the performance evaluation of higher education is expressed as the proportional relationship between the teaching, scientific research, and social services provided and the human, material, financial and other resources consumed [3].

## 2 THE ORIGIN OF PERFORMANCE MANAGEMENT EVALUATION IN HIGHER EDUCATION

In order to deal with social accountability, the U.S. federal government began to propose the evaluation of government employees in 1842. To this end, relevant legal amendments were passed to impose requirements and constraints.

Afterwards, governments and enterprises gradually launched performance evaluation procedures. Based on the cost performance evaluation theory proposed by Frederick Taylor and his colleagues, Fayol extended the performance management concept to other fields. At the beginning of the 20th century, the research content of corporate performance evaluation was gradually subdivided and the influence of performance evaluation was continuously expanded. In the middle of the 20th century, the United States applied the performance management evaluation system to government management, established a performance evaluation mechanism, and formed the prototype of performance evaluation. In the late 1970s, in order to reflect the role of market mechanisms in public services, reduce the degree of government intervention, restructure government management mechanisms, and resolve the three major crises of the government, Western developed countries launched the "New Public Management Movement" and introduced performance management. Evaluation theory is used to analyze and evaluate the performance of government management. At the same time, with the expansion and transformation of higher education in Western developed countries, the increasing cost of higher education has brought an increasingly heavy economic burden to the government and society, and there are endless doubts about the quality of higher education. In order to resolve the public crisis, and at the same time, understand the quality of higher education and adjust financial allocations based on the performance of higher education, the government has also initiated quality assessment and accountability of higher education. With the successful implementation of higher education performance management in Tennessee, nearly 40 states in the United States have successively carried out higher education performance evaluation at the end of the 20th century, in order to improve the efficiency of the use of educational funds, rationally allocate educational resources, and continuously improve the quality of higher education. At this point, the performance evaluation of world higher education has begun. [4]

### **3 RESEARCH ON THE CONSTRUCTION OF HIGHER EDUCATION PERFORMANCE MANAGEMENT EVALUATION INDEX SYSTEM**

The construction of the evaluation index system is the soul of performance evaluation. According to their respective research purposes, different scholars scientifically and reasonably screen out corresponding evaluation indicators based on different methods and theories through research and discussion by industry experts, and build a higher education evaluation index system.

The Jarratt Report (1985) divides higher education performance evaluation indicators into three types: internal indicators include indicators that can reflect the characteristics of the school, external indicators are indicators that can reflect the relationship between higher education and the external society, and operational indicators refer to the school's performance when carrying out educational work. The human and material resources invested reflect "productivity" indicators. On this basis, in 1986 the British University Grants Committee proposed to divide performance indicators into three dimensions: input, operation and output. In the 1990s, German state governments selected 11 indicators to evaluate the performance of public universities. When Julnes and Holzer (2006) investigated the performance evaluation of the Kentucky government in the United States, they found that performance indicators can be divided into four dimensions: efficiency, results, benefits, and productivity, with a total of 25 indicators. In 2007, the United States announced the "Action Plan for Higher Education", which regarded students' academic achievements, number of enrolled students, and final employment rate as core indicators for higher education performance management evaluation. Elsa Cardoso further refined the evaluation index system in her research and divided it into five dimensions: cost, results, activities, performance, and strategy. She also proposed that the selection of performance indicators should follow the principles of relevance, authenticity, accuracy, comparability, timeliness, 6 principles of comprehensiveness.

"Beijing Municipal Finance Bureau Higher Education Expenditure Performance Evaluation" research group (2005)[5] selected five items: the ratio of shared expenditures to personnel expenditures, library utilization rate, teacher-student ratio, proportion of full-time teachers to all faculty and staff, and graduate employment rate. Indicators construct an evaluation indicator system. Xiong Xiaoyan (2007) [6] based on domestic and foreign research results, proposed that effective indicators should be scientifically selected and the evaluation standards should be clarified based on in-depth investigation and research, combined with regional characteristics. Xie Hong (2007)[7] selected 28 indicators at three levels to construct the financial expenditure performance evaluation of higher vocational colleges in accordance with the principles of comparability, purpose, systematicness, applicability, and economy for inputs and non-economic outputs. indicator system. Liu Guoyong (2007)[8] used the logical analysis method, combined with the characteristics of higher education, and merged output indicators and result indicators based on the principles of objectivity, unity, and indirectness, and combined education quality indicators, scientific research indicators, and social service indicators. As a key object of inspection, it is pointed out that the evaluation indicators must be able to show the compatibility between professional settings and market demand. Fu Meiying and Wang De (2008)[9] selected input indicators that can reflect the school's economic sources, expenditure structure indicators that can reflect expenditures, and expenditure effect indicators, selected 8 items for evaluation, and constructed corresponding evaluation indicators. system. Liu Rong (2009)[10] selected corresponding indicators for the economy, efficiency and effectiveness of the use of education funds by colleges and universities from the perspectives of the government, consumers and creditors, and constructed a quantitative evaluation index system and a qualitative evaluation index system. Duan Yinying and Liao Chuhui (2013)[11] constructed an evaluation index system from the perspective of higher education financing, and proposed that higher education output should not only look at direct output, but also pay attention to economic growth rate,

education Gini coefficient, crime rate, population Indirect output indicators such as birth rate. Zhang Yuewu and Ma Feng (2015) [12] focused on mid-term evaluation, selected corresponding typical indicators, and used the analytic hierarchy process to construct an indicator system. Yang Xiaobo, Li Yonghua et al. (2015) [13] based on compliance and effectiveness, constructed a performance evaluation index system for financial funds in colleges and universities in Hebei Province, using the fund arrival rate, the misappropriation or expropriation rate of certain funds, and the expenditure budget completion rate. Evaluate compliance while incorporating development potential into effectiveness indicators. Shen Hongtao (2015)[14] took the four major functions of colleges and universities as the starting point to construct a three-level evaluation index system. Yan Yan (2017)[15] started from the perspective of school strategic management and constructed a performance evaluation index framework for colleges and universities under strategic management with school-running capabilities, school-running influence, key measures, and organizational changes as the main evaluation modules. Gao Zheng and Tang Wanhong (2019)[16] constructed a performance evaluation index system for financial capital investment in colleges and universities based on input and output, and selected 32 indicators from five aspects: talent training, scientific research, teachers, disciplines, and social services to reflect Productivity.

#### **4 RESEARCH ON PERFORMANCE MANAGEMENT EVALUATION METHODS IN HIGHER EDUCATION**

At present, scholars use different methods to evaluate the performance of higher education according to their own research focus. By reviewing the literature, the more commonly used evaluation methods will be explained one by one. Efficacy coefficient method, also known as efficacy function method, is a kind of comprehensive evaluation method and is often used in performance evaluation. The "Beijing Municipal Finance Bureau Higher Education Expenditure Performance Evaluation" research group (2005) [17] selected 5 indicators of 9 universities in Beijing as evaluation indicators. Based on the principle of multi-objective planning and based on 3 years of data on each indicator, 9 were determined. The highest value within 3 years of colleges and universities is the satisfactory value of the indicator, and the lowest value is the disallowed value, which are the upper limit and lower limit respectively. The actual value is reflected by the average value of the indicator in 3 years. The satisfactory value of each indicator is Degree weighted average, and finally a comprehensive evaluation.

The Analytic Hierarchy Process (AHP). Jin Rongxue et al. (2017) [18] aimed at the problem of performance evaluation of higher vocational education. According to its goals and nature, the higher vocational education performance evaluation index system was aggregated and stratified according to the degree of membership and correlation between factors, and then the two A judgment matrix is constructed after pairwise comparison of indicators of the same layer in each indicator layer. Finally, the weight value and consistency ratio of each indicator are calculated through the eigenvector method, and the performance of higher vocational education in Hubei Province is analyzed and evaluated based on the calculation results.

Data Envelopment Analysis, or DEA for short. Wang Zhong et al. (20 21) [19] used the DEA model to analyze the scientific and technological statistical information data of 40 universities directly under the Ministry of Education from 2010 to 2017, and constructed an input-output index system. Each school was regarded as a decision-making unit. 40 colleges and universities directly under the Ministry of Education form the evaluated group. The input-output efficiency is analyzed, and the dominant factors are derived based on the analysis results to provide a theoretical basis for decision-making.

Principal Component Analysis, referred to as PCA, is a mathematical method for dimensionality reduction. Tong Meihong et al. (2014) [20] constructed a performance evaluation index system for college teachers, standardized the original data, and tested the selected indicators. , after meeting the requirements of the principal component analysis method, the number of principal components is extracted, and the performance evaluation results of each teacher are obtained through comprehensive evaluation, which helps teachers clarify their personal strengths and weaknesses and continuously improve their comprehensive abilities.

Balanced Scorecards, referred to as BSC. Hu Zhidan (2008)[21] designed a performance evaluation framework for universities from the aspects of customer (stakeholder) assessment, assessment of internal operating processes, assessment of innovation and learning capabilities, and assessment of financial and economic indicators, and evaluated through the balanced scorecard. Corresponding performance, analyze gaps and propose improvement strategies, and continuously improve the performance of colleges and universities from a strategic perspective.

At present, many scholars no longer use a single method to evaluate the performance management of higher education, but use a variety of combination models to conduct a comprehensive evaluation. Jin Rongxue et al. (2017) [22] used the AHP-entropy weight method to comprehensively evaluate the performance of higher vocational education in Hubei.

#### **5 CONSLUSION**

Higher education performance evaluation is an imported product. Due to different political, economic, cultural, and social operating models in different countries, of course, financial appropriation systems and models also have different forms. The performance evaluation system established in each country has different focuses, so the selected indicators are also different, making it difficult to form a unified evaluation and assessment indicator system and indicator selection criteria. By combing through the relevant literature on higher education performance management evaluation, we found that domestic research on higher education performance management evaluation remains at the

micro level. Due to limitations in data acquisition, many scholars only select a certain aspect of higher education to carry out performance evaluation. For example, Conduct evaluation research on performance management of scientific research funds in universities. Some scholars draw lessons from foreign research results and apply relevant evaluation index systems. However, due to limitations of national conditions and social reality, many indicators are difficult to statistically quantify, which makes the index system only stay in the theoretical stage, and it is impossible to carry out empirical research and verify the effectiveness of the index system. Scientific and rationality cannot provide a decision-making basis for the development of colleges and universities. At the same time, although many scholars have verified the rationality of the indicator system and evaluation methods through empirical research, the indicator system is relatively targeted and limited. It is suitable for a single empirical case, but cannot be universally applicable to other universities. In addition, currently, scholars mostly conduct higher education performance evaluation from the input-output research perspective, ignoring process indicators. In short, the higher education performance evaluation research system is not perfect enough, the implementation is not strong enough, and the practical significance of performance evaluation has not yet been truly demonstrated.

Based on the above issues, the following research can be carried out on the performance management evaluation of higher education.

First, combine the national policies and socio-economic and cultural environment to clarify the research purpose and significance of higher education performance management evaluation, establish a long-term management mechanism for higher education performance management evaluation, and issue unified guiding documents based on common requirements. Effectively promote the scientific development of higher education performance management evaluation from the top design level to continuously improve the internal quality of higher education in order to gain greater development space.

Second, while learning from foreign higher education performance management evaluation index systems and research methods, we must also continue to explore and build a standardized higher education performance management evaluation index system with Chinese characteristics. Invite experts from various subject areas to determine the evaluation indicators, use scientific and reasonable methods, screen and reduce the indicators with low overlap to construct an evaluation indicator system, and then clearly explain the observation content of each indicator. Based on various indicators as statistical basis, a higher education performance management evaluation statistical database is established, and data collection is completed using information technology. By analyzing relevant data, we can understand the educational performance results of various universities in China and help universities achieve high-quality development of higher education.

Third, the selection of higher education performance management evaluation methods also has a crucial impact on the results of higher education performance evaluation. This requires researchers to explain the reasons for different results based on different research results and combined with external factors and internal factors. Study the applicable scope of different methods, and finally write a case-based guidance document to form a model evaluation process.

## COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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