

# University Teachers' Scientific Research Performance Appraisal Method for Quantitative Assessment

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## Abstract

To explore the establishment of the quantitative research performance evaluation system of teachers in colleges and universities, is conducive to establishing diversified evaluation system, effectively promote the construction of university scientific research level of development. This paper first analyzes the university teachers' scientific research performance evaluation problems in quantitative evaluation. Has been clear about the research results of quantitative evaluation target orientation, hierarchical classification and system principle such as the coherence and effectiveness. Put forward the correct guidance to the university teachers' scientific research performance assessment, and analyzed the teachers' scientific research evaluation item by item the main points of the quantitative indicators. Finally, proposed the university teachers' scientific research performance quantitative evaluation method optimization strategy recommendations.

## Keywords

Colleges and universities; Scientific research performance; Quantitative assessment; Evaluation method.

## 1. Introduction

Li keqiang, the prime minister in 2021, the awards ceremony, points out that to greater efforts to break the restriction of innovation to create red tape. We will deepen reform of the science and technology system and unleash researchers shoulder earnestly. We will improve the mechanism of science and technology evaluation and reward. Cultivate the soil and environment conducive to innovation.

At present, countries attached great importance to scientific research and talent evaluation and motivation. In 2013, the Ministry of Education issued on deepening the reform of higher school science and technology evaluation opinions; In 2014, the Ministry of Education promulgated the institutions of higher learning classification evaluation index system and evaluation of science and technology key point; In 2016, the Ministry of Education issued on deepening the reform of teacher evaluation system in colleges and universities by Ministry of Education guidelines; In 2018, promulgated by the State Council about optimization of scientific research management promote scientific research performance measures notice; In 2020, the Ministry of Education issued the deepening the reform of new times education evaluation overall plan. As can be seen from the above country issued a series of documents, constructing scientific performance evaluation system of scientific research. Is the rapidly increasing scientific research ability and level of effective means and methods, is the important content of the reform of the scientific research management, has the very vital significance. Overall, the current university teachers' scientific research performance mainly adopts quantitative indicators, peer review, publication, review article, measure performance by discussing and deciding awards through project scoring, representative methods of system and mechanism.

This paper mainly study of one of the important methods, quantitative assessment. This paper mainly study of one of the important methods, quantitative assessment.

### **1.1. A. University Teachers' Scientific Research Performance Evaluation Problems of Quantitative Evaluation**

At present, colleges and universities in promotion professional technology level and position appraisal, term examination to examine the work of teachers' scientific research performance generally. Scientific research performance evaluation is the teachers' position and promotion of important reference. The author combining with the experience in scientific research management in colleges and universities, summarizes the common problems in the teachers' scientific research performance evaluation quantification assessment has the following several aspects:

#### **1.1.1. Evaluation Is Oriented to Be Clear**

In quantitative evaluation of scientific research in university teachers tend to light quality, quantity or quantity quality were weighted to grasp is not reasonable, cause some teachers to pursue thesis, topic, patent number, get rich quick, no quality results, the overall scientific research level is difficult to ascend.

#### **1.1.2. The Evaluation Index to Be Reasonable**

Evaluation of scientific research is the guide teachers' personal research targets and important means the unity of the development goals of colleges and universities. Establish a scientific evaluation index system of scientific research is the embodiment of scientific research management reform in colleges and universities. In practice, a set of evaluation index tend to deviate from the actual demand. And old system, constant for many years, no dynamic adjustment, causing some unreasonable evaluation system.

#### **1.1.3. Evaluation Method to Be Scientific**

In view of the present university teachers competency evaluation is still not perfect, lead to the scientific research needs from the corresponding professional and technical personnel is not appropriate. There will be too low and too high condition setting, especially for different disciplines, quantitative evaluation method should be different. Single quantitative method and the quantitative standard is very difficult to achieve fair and just, set indicators need to be further scientific, perfect evaluation method.

### **1.2. Quantitative Research Performance Evaluation Principle**

To establish scientific and reasonable scientific quantitative evaluation index system of performance, need to follow the following principles:

#### **1.2.1. Target Oriented Principle**

Scientific evaluation of the teachers' scientific research work must be with the school's strategic development goal unifies, lead teachers to their own development direction is consistent with the school.

#### **1.2.2. Hierarchical Classification Principles**

Scientific research evaluation should be comprehensive consideration school subject distribution and post setting, the scientific research level and other factors. Hierarchical classification to establish evaluation index system, between the layers of various indicators to scientific and reasonable.

#### **1.2.3. System Principle of Coherent**

Scientific research evaluation is a complete, the closed loop system, you need to stand in the Angle of the overall development of colleges and universities. Between the layers of all kinds of

needs tight cohesion, and a reflection of complete, objective and accurate evaluation of teachers' scientific research level.

#### **1.2.4. The Principle of Effectiveness**

Set to be operable scientific quantitative indicators, to establish a convenient, intuitive data acquisition channels. To facilitate teachers and scientific research management unit must obtain, avoid complex, closed, difficult to quantitative method of statistics.

## **2. Methods**

University teachers' scientific research performance evaluation should be based on the overall development goals, fit the development direction, constantly renew the idea of scientific research evaluation. To strengthen the scientific research evaluation and application effect of quantitative indicators, outstanding quality priority. To improve classroom teaching, service economy society and the development of the industry quality weight. Guide teachers to market demand as the guide, promote scientific research achievements to teaching, to the society, to the industry.

Building innovative contributions and quality oriented, scientific research evaluation system in accordance with different evaluation objects characteristics. Make full use of information technology, build harmony in colleges and universities, research institutes and enterprises and experts at an organic whole, realizing mechanism of third-party evaluation. Form a clear direction, the reasonable classification, fair and objective and scientific evaluation criteria, incentive and constraint and multiple evaluation methods. Encourage teachers teaching "boutique", and more have clearer defect display important achievements, scientific research and innovation is the energy and build the cultural atmosphere of the pursuit of truth.

## **3. Teachers' Scientific Research Evaluation Point Analysis of the Quantitative Indicators**

### **3.1. Scientific Research Evaluation Points**

The value of outstanding innovation, the new theory, new concepts, new ideas, research and development of new technology, new equipment as the core evaluation scale; And data authority reliable research methods properly; Hold to the difficulty of the research question, fully affirmed the academic value and practical value to solve the problem of difficult point. Different categories of scientific research project, to formulate scientific and reasonable evaluation index system, pay attention to the value of innovation.

### **3.2. Class achievement Assessment Report**

Thorough solid academic research, the data are accurate and reliable; Prove whether strict fully, whether to use the necessary data analysis, simulation, and fight for discussion and other scientific methods; The question of whether or not to have distinct orientation, grasp the frontier, touch must demand; The weight, length, data collection and author ease; Whether has stronger applicability interoperability. To solve the major theoretical or practical problems have driven or important reference value.

### **3.3. Monograph Evaluation Points**

Whether the knowledge structure system is complete, make a point on the basis of whether or not sufficient, logic is tight. Data is the data accurate and reliable, whether to put forward a new concept, academic ideas and scientific interpretation theory. Fill the blank of the disciplines important, whether to have the originality of the research train of thought.

### **3.4. Thesis Evaluation Points**

If there is a sharp point, whether strict logic, argument is sufficient, the data is reliable; Whether to put forward the original ideas, opinions, and new understanding; Whether the new method is proposed, thinking and thinking paradigm; To the difficulty of the thesis writing. Published journal quality. Reproduced and reference rate.

### **3.5. Regulations Assessment**

Frame structure, style whether science, item set is reasonable, accurate content is a comprehensive specification. Provisions explanation and is in accordance with the law say French words; Whether has applicable value and enforceability; Whether with the current laws and regulations system, form a complete set of policy documents.

### **3.6. Software Evaluation Points**

Whether there is innovation on technology improvement, whether to have the stronger applicability and operability; Data collection and processing, system development and the maintenance, the experiments demonstrate the difficulty; If the software copyright.

### **3.7. Translation Evaluation Points**

Whether to express the ideas of the original content and point of view, language is accurate, to the difficulty of the translation of space and translation, if there is important reference value.

### **3.8. Reference Books Achievement Evaluation Points**

Plays an important reference role in related field, whether the important information in the system integration of literature classics, meaning is clear and accurate, whether the structure design of science, content is a comprehensive system, layout is reasonable, whether it's a good retrieval for future reference; Workload and ease.

### **3.9. Audio and Video Class Achievement Evaluation Points**

Images are detailed historical data, the script layout is scientific and reasonable, whether the audio and video clips, images, and artistic means, professional level, a higher academic value and practical significance for important knowledge propaganda and popularization play a role in promoting.

### **3.10. Academic Communication Class Scientific Research Evaluation Points**

Speak whether belong to the relationship between hot and difficult problem in the development of national security or academic frontier hot issues; Whether special reports results have value, has important significance to the discipline construction; Whether to cultivate the scientific research and talent masters, produce bigger effect.

### **3.11. Research Class Scientific Research Evaluation Points**

Whether to collect relevant data and information, to master the first-hand data and real cases, whether study captures the important question, Targeted countermeasures are put forward, and will be adopted by leading bodies, archives, specification is complete, system.

### **3.12. The Innovation of Scientific Research Team Evaluation Points**

Around innovation team's construction and development, the representative achievement, service teaching and social and economic situation, the evaluation mechanism of cultural construction, etc.

### **3.13. Innovation Platform Evaluation Points**

Around the innovation platform for the construction of the teaching quality, service and contribution and service and economic society, the talent team construction, the evaluation mechanism of cultural construction, etc.

## **4. Results**

### **4.1. Design for Professional Technical Cadre Evaluation System of Academic Research**

Encourage the original innovation and focus on the needs of personnel training, follow the rules of talent growth, stimulate the creativity of the talent innovation; Teachers' scientific research performance evaluation should reflect the number of scientific research, and should reflect the scientific research quality; Both evaluation to complete the job task is given priority to, and should be both independent research achievements; Should not only guide people more quickly out high quality scientific research achievements, but also to guide the foothold official duty post to do a good job of current scientific research; To encourage scientific research personnel dedicated to scientific research, and to encourage scientific research organs, security personnel service.

### **4.2. The Classification of the Scientific and Reasonable Evaluation**

According to different types and levels of teachers, according to the different disciplines such as philosophy and social science, natural science, different research types, such as basic research, applied research, respectively, to establish scientific and reasonable, with emphasis on evaluation standard. In evaluation for teachers in the basic research for studying, long-term accumulation, focusing on accelerating major original achievements. For evaluation of the application of the researchers to focus on demand, with independent knowledge of safety and major technological breakthrough. Of the soft science research personnel evaluation decision by service demand, the formation of strategic research report, the think tank construction as the key support think tank.

### **4.3. Establish A Representative Achievement Evaluation Mechanism**

Adhere to the principle of quantity, quality is given priority to, give attention to two or morethings encourage concentration of scientific research, accumulated for a long period of time, contain dangerous behavior. To output a high impact factor of academic papers authors and approved project, director of the national subject, to give full affirmation in the scientific research evaluation, Innovative and clearer defect display academic achievements as the important basis of evaluation of teachers scientific research work.

### **4.4. Reasonable Set of Scientific Research Evaluation Cycle**

Optimize the annual scientific research evaluation, weaken the annual appraisal, takes the term examination, encourage term focus produce great results.

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