Discussion on the Basic Problems of Scientific and Technological Talent Performance Evaluation

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Abstract: In the special period of "13th Five-Year Plan", the effectiveness of scientific and technological personnel evaluation determines the overall effect of deepening the reform of science and technology system and the depth of national innovation-driven development. The performance evaluation of scientific and technological talents needs to clarify the substance and essence of scientific and technological personnel, the direct purpose and the fundamental purpose of evaluation, establish the organic combination of quantitative and qualitative indicators, and establish an operational indicator system that can be universally applicable and can distinguish differences in a certain range .
Keywords: Scientific and technical personnel; performance evaluation; index system

1. INTRODUCTION

The "13th Five-Year Plan" period is the decisive phase in which the state further implements innovation-driven development and deepens the reform of the scientific and technological system. The key to innovation-driven development depends on leading scientific and technological personnel. China's "Outline of the 13th Five-year Plan" issued in March 2016 clearly states that the basic point of national development is innovation, and the core lies in technological innovation with the support at the development of talents. In July 2016, the State Council promulgated the "National Thirteenth Five-year Plan for National Science and Technology Innovation," which called for "accelerating the cultivation of innovative and qualified personnel teams." Talent is the first resource for economic and social development, the foundation of innovation, innovation is the first motivation to lead development, and innovation-driven is essentially talent-driven. ① Subsequently, the Ministry of Science and Technology released the "Thirteen Five-Year Plan for the Development of National Talents in Science and Technology" (hereinafter referred to as the "Science and Technology Talents Development Plan") in April 2017, emphasizing the need to improve and perfect the assessment that is guided by capability and contribution, Incentive mechanism at the same time, further pointed out that "people-oriented evaluation of scientific and technological personnel incentive mechanism to be perfect." Whether the talent potential can be stimulated or not depends on whether the evaluation of the performance of scientific and technological talents is reasonable and effective. This article intends to analyze the ambiguity and uncertainty that have long existed in the performance appraisal of scientific and technological talents in order to provide reference for establishing an effective performance evaluation system for scientific and technological personnel.

2 THE CONCEPT OF CONNOTATION - SCIENTIFIC AND TECHNOLOGICAL PERSONNEL AND TECHNOLOGY MANAGEMENT PERSONNEL

"Science and technology talent" is a concept of localization in our country. As for what is science and technology talent, the current understanding is not uniform. Some from the academic qualifications, titles specific to define, that have a college education, have a mid-level professional and technical titles of personnel is the scientific and technological personnel; while others from the practical point of view abstract summary, that the scientific and technological personnel should have some creativity, to Contribute to creative activities. ② The Talent Dictionary, published in 1989 in our country, interprets "science and technology professionals" as "those who make greater contribution to the development of science and technology and human progress with their own higher creativity and scientific exploration spirit." According to the "Plan for the Development of Scientific and Technological Talents", it is pointed out that scientific and technical personnel are "laborers who possess professional knowledge or specialized skills, possess scientific thinking and innovative abilities, engage in scientific and technological innovation activities, and contribute to the cause of science and technology and economic and social development.③"

It can be seen from the above concepts that whether engaging in scientific research or technological innovation is the key measure of whether or not it is a science and technology talent. Due to the different understanding of science and technology research activities, some think that science and technology

talents should include those engaged in science and technology management and popularization of science. However, some scholars think that scientists and technicians should make a distinction with general scientific and technical personnel. I agree with the latter point of view, because the scientific and technological activities of scientific and technological personnel in the outstanding features of the show is a certain degree of innovation and creativity, although the general need for scientific and technical staff of specific knowledge, but most of the work engaged in the transactional work. And from the previous research and practice on scientific and technological personnel, we can see that the evaluation of scientific and technological personnel is usually from the papers, projects, patents and other aspects of measuring its performance, which is clearly engaged in scientific research, technological innovation personnel work content, science and technology services There will also be some innovative work by technology managers, but their focus is not on scientific research and technological innovation. With the development of the society, people also raise the requirements for the quality of "qualified personnel", and the definition of "skilled personnel" should be more rigorous.

3 THE PURPOSE OF EVALUATION - THE DIRECT PURPOSE AND THE FUNDAMENTAL PURPOSE

The direct purpose of the performance appraisal of scientific and technological talents is to stimulate the enthusiasm and ability of scientific and technological talents to work and solve the motivation of scientific and technological personnel themselves. The ultimate goal is to have more innovative achievements in serving the society and serving the country's strategic goals. In the current colleges and universities, research institutes, performance evaluation has been the focus of papers, research projects, books and other aspects of the lack of sufficient attention to the transformation of scientific and technological achievements, resulting in the title for the evaluation and issued papers, in order to obtain funding for scientific research and application projects , The theoretical results from reality, the results can not be used, resulting in a large number of academic waste and the loss of research funding. The "motivation" thus stimulated runs counter to the fundamental purpose of "serving the community and serving the country's strategic objectives" to a certain extent.

As an important indicator of the performance appraisal of scientific and technical personnel, the transformation of scientific and technological achievements has not received due attention on the one hand. On the other hand, due to the difficulty in obtaining data indicators, especially in universities and research institutes, the conversion of scientific and technological achievements is based on the number of patents Instead of whether it is industrialized or not, whether economic benefits are obtained or not and how much economic benefits are often obtained can not be clearly stipulated, so that its guiding role in performance evaluation can not be fully utilized. Compared with universities and research institutes, the purpose of obtaining economic benefits is stronger and the market is more closely integrated. After all, there is a demand for a market and a market for profit. We often say that enterprises are the most dynamic elements in the market. It is worth learning and studying by universities and research institutes in stimulating scientific and technical personnel to carry out scientific and technological innovations and transforming achievements. Only when the direct purpose of resolving the motivation of sci-tech personnel themselves and the basic purpose of serving the national strategic goal will be combined in the appraisal, will the talent-led innovation drive the development of the real play.

4 THE ESTABLISHMENT OF INDICATORS - QUANTITATIVE AND QUALITATIVE

At present, the index of performance evaluation of science and technology talents has two kinds of quantitative index and qualitative index. Quantitative emphasis on quantitative calculation, digitization of the results, the standard objective, clear and easy to compare, but the lack of flexibility; Qualitative needs to understand the object of evaluation based on its behavior, the results of subjective assessment of a certain subjectivity, but can make up for quantitative Evaluation of "only divided into the" lack of rich evaluation content. ④

China has made great breakthroughs in the quantitative research and practice of talent performance evaluation. In order to solve the problem of "quantity" and "quality" of performance, the result is transformed from "quantity" evaluation to "quantitative evaluation" Different levels of publications, projects, awards, patents and other approved departments to obtain standardized indicators of different values. To a certain extent, this solved the issue of the balance between quantity and quality and caused some controversy at the same time. The main focus of the controversy is whether the index value can truly reflect the value of the result and equivalent conversion between different index values. First of all, the more basic and professional the quality of research results reflected in the index value, the less sensitive and difficult to use as the quality of the evaluation criteria; secondly in the performance evaluation of different individuals often different indicators Value converted into a total score to compare, then how to judge the equivalence between different index values: a SCI papers quantified with what level of project quantified value equal, the same level of projects and award-winning results have How many points of difference, "write" out of the non-utility patent and produced a certain

social and economic benefits of the outcome of the value can be distinguished? If you do not know the intrinsic relationship between these indicators, simply adding several values to compare will be unfair. Quantitative problem is the lack of flexibility, then you need a flexible index intervention, the elastic index is a qualitative indicator, reflected in the performance evaluation is the evaluation of experts, often with the help of a professional committee. Experts can make professional decisions on the performance results after the vote, to some extent make up for the lack of simple quantitative, but in the actual operation of the process there will still be some problems. On the one hand, when a research institute, a university or an enterprise conducts an internal evaluation, the unit will, in order to strike a balance, draw out 1-2 experts from each department to enter the evaluation committee. Most of these experts are only experts in their field and are not familiar with it Other professional direction, the result will be the "only quantitative" phenomenon; the other hand, the lack of effective management and oversight mechanisms, it is easy to appear in the qualitative evaluation by relationship, by impression, on the qualifications.

Therefore, in the construction of evaluation indicators, each agency should fully explore the accuracy and validity of the relevant quantitative indicators, and analyze the inherent relations among different quantitative indicators. In the process of qualitative evaluation, experts in the field adopt the method of evaluation, Experts in related fields set up an expert committee to avoid the layman from evaluating the insider's behavior. In the organic combination of quantitative indicators and qualitative indicators, the final results can be obtained by weighted average of quantitative indicators and qualitative indicators. Of course, the evaluation and supervision departments should effectively assume the supervisory role in this process.

5 THE EVALUATION SYSTEM - UNIVERSAL AND INDIVIDUAL DIFFERENCES

Managers hope not only a set of evaluation systems that can be universally applicable for accurate and efficient evaluation, but also hope that this evaluation system can reflect some differences and screen qualified personnel for development. However, practice often meets the needs of the masses, it can not distinguish between individual differences, embodies the "absolute fairness," and can not inspire "a few potentialities." Reflected in the current study is the establishment of evaluation indicators either for a group, or for a unit. Regardless of the nature of basic research, applied research, experimentation and development research, ignoring the long-term nature of basic research, the effectiveness of applied research, and the creativity of experimental development research lead to the one-sidedness of the established evaluation index system. Such evaluation shows the fairness, but denied the difference.

Effective evaluation is to establish a scientific evaluation system, the establishment of scientific evaluation system based on a large number of valid empirical data, using a unified standard to measure people in different disciplines, different fields and different growth stages is actually unfair, Can easily lead to the inundation of special talents, and our country can not get rid of the master with such an overemphasis on standardization and non-discrimination. Therefore, in the evaluation of scientific and technological personnel, not only classification, but also at different levels to establish a level applicable to a certain level of performance evaluation index, so that the same type of evaluation with the same level of evidence based on evidence; mature performance evaluation system Should also have some flexibility, to meet the needs of motivating special talent evaluation.

In the further implementation of the innovation-driven development strategy and the all-round deepening of the reform of science and technology system, a reasonable and effective evaluation of the performance of science and technology personnel is related to the stimulation of the vitality of science and technology personnel and the improvement of China's international competitive advantage. Only by clarifying the ambiguities and uncertainties that hinder the effectiveness of talent evaluation can we effectively reflect the motivational and guiding functions of talent evaluation and thus play an important role in leading innovation-driven development of science and technology talents.

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REFERENCES

[1] Tian Xiaobing, Innovation Leads Talents to Lead - Interview with Feng Chujian [EB / OL], Deputy Director, Policy, Regulation and Supervision Department of Ministry of Science and Technology on "Planning for the Development of National Talents in Science and Technology for the Thirteenth Five-year Plan Period" http://most.gov.cn/kjbgz/201706/t20170627_133778.htm

[2] Feng Tieying. Evaluation of science and technology personnel status and evaluation methods of choice and innovation [J]. Scientific Research Management, 2007 the third period.

[3] "Thirteen-Five" National Science and Technology Talent Development Plan [EB/OL]. Http://www.edu.cn/rd/gai_kuang/xin_wen_gong_gao/201704/t20170419_1508161.shtml

[4] LI Yan-qin, LI Xiao-ping. Characteristics and

Construction of Performance Evaluation System for High-level Scientific Research Personnel [J]. Science and Technology in Chinese Universities, 2017, No. 2