Research on Human Resource Performance Management of New Public Sector Scientific Research Institutions in Chinese Mainland——Taking Guangdong Innovative Design Institute as an Example

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Abstract: Scientific innovation R&D institutions have been playing an important role in the scientific and technological innovation system of Chinese Mainland for many years, and also an important support for Chinese Mainland to stand as a high-end manufacturing highland. With the global economic integration in recent years, high-end manufacturing has gradually become an important technological innovation point in the Guangdong Hong Kong Macao Greater Bay Area. In recent years, Chinese academia has studied more about the brain drain of government led institutions. However, for the special group of new scientific research institutions in the public sector, there are few research cases about the brain drain. There is no systematic description of the causes of brain drain in scientific research institutions, and the countermeasures that can be found to solve the brain drain problem in scientific research institutions are not specific enough. The author tries to take the loss of scientific and educational personnel of Guangdong Innovation Design Institute as a case, and provide optimization strategies.

Keywords: New Scientific Research Institutions; Performance Management

1. Research background

The scientific and technological innovation strength of new public sector research institutions is a key indicator to determine the success or failure of national competition.Its core lies in the competition and utilization of talents, so it is very important to handle the relationship between talents and innovative research in the process of innovation. New scientific and technological research and development institutions are the basic force for the development of China's high-tech research and development and the transformation of technological achievements. Therefore, it is of great practical significance to grasp the current situation of the reform of performance related pay in the new "public sector" scientific research institutions and to formulate relevant indicators of performance distribution in scientific research institutions.

2. Concept definition

New scientific and technological research and development institutions are a new form of research and development organization in Chinese Mainland in recent years. They are a collection of innovative units derived from the innovation ecosystem. Their main functions include carrying out basic frontier research and original research, promoting the development of industrial common technologies, promoting the transformation of scientific and technological achievements, incubating scientific and technological enterprises, and cultivating and gathering high-end talents.This kind of scientific and technological research and development institutions will soon become an important means and carrier for Chinese Mainland to obtain high, precise and cutting-edge technology and technology marketization by adopting scientific management mode and market-oriented operation mechanism to

combine innovation and entrepreneurship with incubation. At present, Chinese Mainland is a new force to promote the transformation of scientific and technological achievements. Different from the naming method of traditional science and technology R&D bases, such as key laboratories and engineering technology research centers, new R&D institutions are a general term for the characteristics of research organizations.

According to the Guiding Opinions on Promoting the Development of New R&D Institutions issued by the Ministry of Science and Technology, new R&D institutions are independent legal entities focusing on the demand for scientific and technological innovation, mainly engaged in scientific research, technological innovation and R&D services, diversified investment entities, modernized management systems, market-oriented operation mechanisms, and flexible employment mechanisms. Generally speaking, it has the following characteristics:

First, the functional orientation reflects the government's guidance.The new R&D institutions reflect the will and functions of the government. The government guides the new R&D institutions to strengthen their integration with the leading industries in the region by integrating the local scientific and technological resources, transforming scientific research achievements into local enterprises, enhancing the technological strength of enterprises, and providing innovation drive for local economic development.Second, the management mode reduces the restriction of officials. It is generally adopted that the president of the institute (institute) under the leadership of the council is responsible, and the council composed of members of all types serves as the decision-making body. The institution is set with variable levels and staffing, and is not limited by post setting and total wages. The operating funds are diversified investment mechanisms such as financial funds, social capital and industrial funds.The third is to establish an incentive mechanism. The institution operates according to the enterprise management mode, adopts the contract system, dynamic assessment, last place elimination and other management systems, attracts high-end innovative talents at home and abroad with the market salary level, and fully mobilizes the enthusiasm of research and development and transformation of scientific researchers. Papers, patents, etc. are no longer the only indicators of performance evaluation, and its ultimate goal is to incubate innovative enterprises, promote emerging industries, and create social wealth.

3. Introduction to Guangdong Institute of Innovative Design

Guangdong Institute of Innovative Design was officially established in 2013. It is a public sector institution directly under Shunde District. It is funded by the governments of Shunde District and Beijiao Town. It focuses on precision instrument research and development, information technology, mechanical automation, industrial design, etc. At the same time, it carries out joint postgraduate training business relying on scientific research projects, and is building a collaborative innovation platform integrating "government, industry, university and research" in Foshan.In 2017, the Institute was officially awarded the honorary title of "National Open Base for Joint Cultivation of Engineering Degree Postgraduates" by the Engineering Education Instruction Committee, which is the first and only open base for joint cultivation of engineering degree postgraduates in China, playing a good exemplary role in comprehensively improving the level of joint cultivation of professional degree postgraduates in Guangdong and the whole country.Based on the needs of Shunde's industrial development, the Institute has introduced a large number of professional talents at the postgraduate level for Shunde with the characteristics of project introduction, platform oriented pilot training of the Institute, and integrated development of industry, teaching and research. At the same time, it has also created an innovative model of joint training of professional researchers and industrial circles in the country. As of November 2022, the joint training of postgraduates has made the following achievements: the Institute has signed cooperation agreements with 84 domestic and foreign universities and colleges to jointly build joint training bases; 4500 postgraduates were trained, 410 enterprises and institutions participated in the joint training, more than 1300 joint training projects were solicited, and more than 4500 postgraduates were required.Up to now, the Institute has carried out 20 important scientific research projects, most of which are independent research and development, and has incubated and produced a variety of scientific and technological products, including two high-tech products. At the same time, 6 types of instruments and equipment have entered the engineering and productization stage. 153 patents, 8 software copyrights and 20 scientific papers have been applied, including 97 invention patents, 42 utility model patents and 14 appearance patents. 7 invention patents, 17 utility model patents and 7 appearance patents have been authorized, 6 software copyrights have been authorized, and 48 invention patents have entered the practical examination stage.

4. Human resource management problems

Guangdong Institute of Innovative Design and Research is a scientific research entity that provides technical services. At present, it is in a rapid stage of strategic development and is in urgent need of optimizing the allocation of human resources and management reform. The results achieved in the past eight years have created a new idea for the national graduate joint training model, and also made some achievements, but it does not mean that the current operating mechanism is no problem. The problem of the loss of R&D personnel alone is enough to become the two core businesses that restrict project R&D and student training.It is known from the public data that in 2021, there will be 25 projects set up by the Institute, of which 20 are long-term R&D projects, which have been invested for 3 years. There will be 5 new R&D projects set up in this year. By 2022, there will be 20 R&D projects and 0 new R&D projects. Compared with 2021, the new R&D projects are basically stagnant. Due to the reduction of the project, the number of students trained based on the project in this year will be reduced to 131 in 2022 compared with 353 in 2021. The research institute project is facing a dilemma of lack of research and development personnel, such as the number of people in the electronic circuit department will be reduced from 5 (including 1 doctor and 2 masters) to 2, the number of people in the mechanical department will be reduced from 4 (including 2 masters) to 2, and the number of people in the biomedical department will be reduced from 6 to 3.

The continuous reduction of science and education personnel has led to a shortage of teachers. The pressure of teachers to guide students to complete project research has continued to increase. It is impossible to recruit technicians who meet the requirements of project research and development within a short period of time. Many employees have expressed their resignation ideas in private or public for many times. Through the interview method, the author conducted network communication with the science, education and administrative personnel who have left the project departments (interviewers: Doctor A of the Ministry of Materials and Chemical Industry, Doctor E of the Biomedical Department, Assistant Researcher F of the Biomedical Department, Doctor K, Doctor W of the Academic Affairs Office, and Master H of the Financial Department), and concluded that the reasons are: 1. The salary structure is unreasonable, leading to the loss of a large number of R&D personnel to the market; 2. The selection and employment mechanism is unreasonable, and can not be promoted; 3. Lack of assessment mechanism for leaders and promotion channels for ordinary employees; 4. Employees lack necessary promotion opportunities;

At the same time, through the analysis of existing literature, the author summarizes the following common problems existing in current scientific research institutions:

The total amount shall be controlled, and the units shall be managed within the approved total amount limit. At the same time, some "public sector" new scientific research institutions have introduced talents for the purpose of introduction, and the matching degree between talent introduction and the actual needs of the unit is not accurate enough. There is a lack of special support at the national level, and the talent cannot be fully guaranteed in the total amount adjustment.

Fund source of performance pay. In terms of material support, many new "public sector" scientific research institutions lack special support at the national level due to the fact that their talent funds are mainly self raised. The protection for individual talents is weak, and some talents still need to travel for their livelihood, which makes it difficult to devote themselves to scientific research. At the same time, the funding channels are relatively single, the ability to attract diversified social capital is insufficient, it is difficult to achieve long-term stable support for talents, and even the performance pay cannot be paid in time. The three-level input mechanism of the institute, institute and team is not perfect, and there is a problem that all post subsidies are solved by the team or research group.

Performance distribution of different types of personnel. At present, the "new type of public research institutions" performance salary system of the Ministry of Public Affairs has established the work layout for the overall development of the four teams of scientific research, management, support and transformation. However, compared with the relatively perfect special support policy for scientific research talents, the training measures and related policies for supporting and transforming talents are relatively lacking, which has a certain impact on the construction and development of these two teams. The three teams of scientific research, support and transformation are planning together The same deployment situation has not yet been formed. At the same time, the performance guarantee for non staff personnel and dispatched workers is not perfect, and there is a phenomenon that they can not get performance by doing practical things.

5. Cause analysis

First, the salary structure is rigid and lacks flexibility.The fixed salary in December of each year, plus one month's salary as the year-end reward, and there is no material reward. According to the income and salary survey, the annual salary of the master including five insurances and one fund is about 100000, and the annual salary of the doctor is 140000. [Internal data of the Institute] The main income of scientific research institutions depends on the financial allocation of Shunde District Government and research funds used for scientific research projects. The financial allocation of the district government is generally verified by reference to the establishment, that is, the allocation of funds according to the head. Other welfare and subsidies also depend on the financial expenditure of the district government. In fact, although Foshan Municipal Government has provided tendentious support for some key projects of the unit, such as setting up various provincial and municipal science and technology awards and natural science funds, the threshold for these awards is very high, and young researchers cannot obtain them in the short term. The income of our staff is still at a low level compared with that of enterprises with the same business, and the rigid salary structure cannot effectively improve the competitive consciousness of science and education personnel, which has largely lost their enthusiasm for work. The progress of scientific research and projects is slow, and the output is actually low.

Secondly, the unit is permeated with a strong official class ideology.It overemphasizes the old idea that the lower level should obey the higher level and the younger generation should obey the elders. This kind of environment is more suitable for doing repetitive and single work, but it seriously damages the attitude of scientific research and the spirit of innovation. When the unit encounters some key decisions, it often only follows the instructions of the president, who is not a researcher. The most fatal problem is that no one can dissuade it even if he knows that the president's instructions are unreasonable, no one can dissuade him even if his subordinates have better solutions. He must obey the instructions of his superiors and implement them in place. This environment will undoubtedly kill many useful R&D plans.

Third, senior leaders lack respect and humanistic care for talents. It is simple and rude to treat talents without paying attention to them or giving full play to their advantages. As a result, talents are buried in vain and their abilities are useless. Some people were enthusiastic when they first came here. It didn't take long to find that there was no positive feedback after hard work. On the contrary, some people who only did superficial kung fu were appreciated, which caused a psychological gap in the long run, leading to the expulsion of good coins from bad ones. Finally, they had to leave. In scientific research institutions, the waste of human resources has reached an alarming level. In this case, talented people might as well go out for a break, rather than waste their lives, to realize their own life value.

6. Improvement Strategy of Personnel Management in Scientific Research Institutions

6.1 Optimizing the personnel management system of modern units under the national rules and regulations

The main leaders of the Institute hold many positions, not only in charge of scientific research, finance, but also in charge of personnel. Because the managers of the Institute lack modern human resource management awareness, there are contradictions in a series of processes such as recruitment, selection, employment, and salary payment. Professional human resource talents should participate in the human resource management position, rather than managing the personnel work of the whole unit like those who have no contact with human resource management.

Set up a flexible salary payment system to encourage flexible performance. In principle, the personnel management system of modern scientific research institutions is based on the employment system, integrating modern human resource management concepts and practical experience, and combining the characteristics of scientific research institutions, to establish a personnel management system suitable for the unit.There should never be a phenomenon in an innovative unit with project research and development, where the talented people work hard but get nothing. Strengthen the improvement of the corresponding management system. If there is no corresponding management system, it will lead to the phenomenon of mixed use of various personnel management systems. To some

extent, it will lead to the lack of fairness in personnel management, and it is easy to increase many contradictions between researchers and managers. At present, the state puts forward the following requirements for performance distribution of scientific research institutions. The reform of the performance distribution system of scientific research institutions should adhere to the principle of efficiency first and giving consideration to fairness, combine the labor remuneration of scientific research institutions with their responsibilities and work performance, and establish a balanced comparison and dynamic growth mechanism.The large loss of talents in the Institute has a lot to do with the employees' personal efforts not being timely and fully recognized, and has a lot to do with the employees' recognition of the performance appraisal results. Therefore, in order to enable talents to fully feel the affirmation of their own abilities and achievements in the Institute, reflect the fairness and equity of the management of the Institute, and reduce the brain drain rate, the first task is to optimize the performance management system of the Institute and strengthen the implementation of the annual salary=basic annual salary+post annual salary+incentive annual salary+post consumption for teachers who undertake major scientific research tasks in terms of labor distribution; Specifically, the basic annual salary is determined by their tenure and level of service, and the salary series stipulated by the state is adopted.

Dredging the channel of post development. The research institute should unblock talent training channels, provide full career development space for the talents of the whole institute, give full play to the characteristics of each talent, and further dredge employee development channels:A clear vertical promotion channel is designed internally. After meeting the basic promotion requirements, the employees can be promoted to a higher level through assessment and defense, or they can be promoted to a higher level through exceptional assessment even though they do not meet the basic promotion conditions due to undertaking more challenging tasks in the position. At the same time, it can also give play to the strengths and expertise of various talents, facilitate the training of compound talents, and further design the left and right conversion channels. Cross category conversion can be realized between different posts to realize person post matching or multi post training.Encourage multiple development paths: In order to further tap the potential of talents and break the shackles of specialty, for example, engineers who have certain management potential in technology research and development can apply for functional management on the premise of meeting the job requirements, and have technology research and development background in the research institute, further engaging in functional management will be more conducive to the development of scientific research management, Grass roots R&D experience is more conducive to scientific decision-making in management.

The training needs of the staff of the Institute should be clarified, and the work skills training should be strengthened.Establish a complete training plan mechanism for demand collection, plan release and course selection on demand. At the beginning of each year, the annual training demand statistics will be released. Each department will propose the training demand, and the Human Resources Department will summarize and formulate the training plan. Improve the team's overall learning ability by holding lectures, conducting "brainstorming", organizing thematic discussions, and conducting learning seminars. At the same time, the "internal trainer" mechanism of the Institute was established, and the technical backbone of the Institute was invited to the platform to introduce experience and explain the application of new technologies. At the same time, the combination of training content and work practice was emphasized, highlighting the importance of theory guiding practice, and finally the training results were reflected in the cost creation value. At the same time, a set of training assessment and evaluation mechanism shall be developed. Rewards and punishments shall be taken into account in the assessment. Employees shall be encouraged to actively participate in learning, and punishment measures shall be taken for employees who are perfunctory and coping learning to achieve the purpose and effect of training. The research institute should make full use of the "industry university research" cooperation platform to create opportunities for researchers to receive continuing education and learning.

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