Research on the Internal Talent Training Path and Performance Evaluation Mechanism of New R&D Institutions in Zhejiang Province

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Abstract: New research and development (R&D) institutions are an important part of the national innovation system, playing an important role in promoting the transformation of scientific and technological achievements. In recent years, new R&D institutions have gradually become the driving force of innovation-driven development in China. Taking new R&D institutions in Zhejiang Province as the research object, this paper studies the internal talent training path and performance evaluation mechanism of new R&D institutions in Zhejiang Province by using the literature research method, comparison method, case verification method, and other methods. The investigation results show that there are problems such as lack of material and spiritual support and neglect of the absorption of local talents in the internal talent training, and there are problems such as unclear standards, insufficient data, and opaque processes in the performance evaluation mechanism, which greatly affect the establishment and improvement of the performance evaluation mechanism. Given the above problems, this paper puts forward a forward-looking, oriented, flexible, and compatible talent training path and performance evaluation mechanism, hoping to optimize the effective internal talent training path of new R&D institutions, improve the evaluation performance, and promote healthy development of new R&D institutions in Zhejiang Province.

Keywords: Innovation; New R&D institutions; Zhejiang Province; Talent cultivation; Performance evaluation mechanism

1. Introduction

Nowadays, countries attach great importance to the issue of technological development, and breaking through technological problems can promote tremendous progress in technological development. To adapt to the current technological innovation environment and improve the research and development efficiency of R&D institutions, traditional R&D institutions have transformed into new R&D institutions that focus on technology transformation, actively incubate, and serve enterprises. As of the end of 2021, there were a total of 2,412 new research and development institutions in China, with relatively concentrated field distribution [1]. Over 70% of them were concentrated in the eastern region, with Guangdong, Jiangsu, Shandong, Zhejiang, and other provinces ranking among the top. Diversified institutional types and close integration of industry, academia, and research. However,

it still faces a series of problems such as insufficient top-notch scientific research capabilities and the urgent need to improve the function of attracting high-end talents [2]. There are multiple types and strong correlations of innovation entities in foreign countries, and innovation units show an integrated trend in the innovation chain. The government guides society to invest in research and development institutions with funds and technology and has multiple advantages such as the concentration of high-quality talents. Foreign new research and development institutions started early and have more mature operating mechanisms [3,4]. Compared to foreign research and development institutions, there are still many areas for improvement in China. But for technological innovation, the most important aspect is still talent cultivation [5]. Adapting to the technological innovation environment, cultivating high-quality talents, and improving the efficiency of research and development institutions play an important role in promoting the improvement of performance evaluation mechanisms for new research and development institutions [6-10]. Based on this, this article will provide suggestions on how new R&D institutions in Zhejiang Province can cultivate talents, absorb and retain high-quality talents, and related performance evaluation mechanisms.

2. Analysis of talent cultivation issues within new research and development institutions in Zhejiang Province

2.1. Lack of material support and uneven conditions of soft and hard resources

Lack of material support is a common problem in new research and development institutions in Zhejiang Province. Due to limited funds, institutions are often limited in their investment in talent cultivation, equipment updates, project research and development, and other areas. This leads to the inability of relevant research and development institutions to introduce advanced research and development equipment promptly, and to a certain extent, a lack of sufficient training opportunities, thereby affecting the cultivation of talents and the research and development capabilities of institutions. In terms of software and hardware resources, aging and insufficient laboratory equipment will also affect the research and development progress, thereby reducing the quality of research and development results. If software resources such as databases and software tools are not updated on time, it can also affect the work efficiency of R&D personnel.

2.2. Lack of spiritual support and imbalanced overall research and development vitality

Lack of spiritual support is also one of the factors affecting the construction of new research and development institutions in Zhejiang Province. In some new research and development institutions in Zhejiang Province, there is a problem of inadequate incentive mechanisms, which can make employees feel that their efforts are not recognized and rewarded enough, thereby affecting their work attitude and career development, and reducing their work enthusiasm and innovation motivation. Of course, while individuals rise, attention should be paid to the coordination between individual development and overall strategy, and an effective team cooperation mechanism should be established, because if the overall R&D ability is not synchronously improved, there is a risk of imbalanced overall R&D vitality.

2.3. Neglecting the absorption of local talents

The new research and development institutions in Zhejiang Province lack the strength to absorb local talents. Some research and development institutions in the province overly focus on foreign talents and their overseas backgrounds, which to some extent leads to regional biases and neglects the absorption of local talents, resulting in the loss of a large number of local talents who combine talent and experience. In terms of salary and culture, some institutions do not provide salary levels that meet the expectations of local talents, resulting in insufficient attractiveness; Even if expectations are met, cultural differences may make it difficult for local

talents to integrate into the organization.

3. Analysis of internal talent cultivation paths for new research and development institutions in Zhejiang Province

3.1. Strengthen the collaborative operation of software and hardware resources

Soft resources play an undeniable role in enhancing employee innovation and creativity, while hard resources play an important supporting role in providing the necessary equipment and environment for talent cultivation. Therefore, strengthening the collaborative operation of soft and hard resources can help establish a sound talent training system for new research and development institutions. Institutions should actively integrate internal and external resources, including funds, technology, talent, information, and other soft and hard resources. Through rational resource allocation, they should ensure the efficient utilization of resources and achieve effective collaborative operation of soft and hard resources. To avoid resource waste, institutions can also establish mechanisms such as sharing platforms to promote the sharing of soft and hard resources, thereby better leveraging the synergistic effect of soft and hard resources.

3.2. Establish and improve talent cultivation and incentive mechanisms

The talent cultivation incentive mechanism is an effective measure to promote the high-quality development of new research and development institutions in Zhejiang Province. A sound incentive mechanism should be established in the early stage of institution establishment. On the one hand, by comparing and analyzing the large market environment, establishing a clear distribution of benefits, coordinating material and spiritual incentives, and enhancing the sense of achievement of the "capable," "excellent," and "wise." At the same time, institutions should actively promote communication and cooperation among talents, encourage talents to strive for collective honor and achieve personal happiness and collective honor on the basis of enhancing team cohesion. On the other hand, institutions should also explore strict elimination systems to stimulate talent vitality and ensure the continuous strength of the talent team.

3.3. Targeted cultivation of local talents

Zhejiang Province is located in the Yangtze River Delta region, with advantages such as convenient transportation, smooth information flow, talent gathering, and a complete manufacturing system and strong industrial foundation, which have laid a solid research and development foundation for new research and development institutions. Therefore, new research and development institutions in Zhejiang Province can rely on their own advantages to develop specific local talent training plans, such as training goals, content, forms, etc., to form customized training courses that are suitable for the actual situation of local talents and regularly conduct training, academic exchanges, and project practices. To achieve the "introduction" of local talents, institutions can establish reward mechanisms, appropriately increase salary levels, and enhance the job satisfaction of local talents.

4. Analysis of performance evaluation mechanism for new R&D institutions in Zhejiang Province

4.1. Unclear performance evaluation criteria

In the performance evaluation process of new research and development institutions in Zhejiang Province, due to the lack of clear evaluation criteria, the evaluation criteria are too abstract, lack specificity and operability,

and are prone to unfair phenomena. For example, some standards only use words such as "excellent" and "good" to describe, without providing clear quantitative indicators or specific standards, which makes it difficult for evaluators to accurately grasp the evaluation scale, leading to subjectivity and arbitrariness. New research and development institutions are different from traditional research institutions, and their performance evaluation needs to pay more attention to aspects such as innovation ability, achievement transformation ability, and industry-driving ability. However, the existing evaluation criteria may still mainly rely on traditional indicators such as paper publication and patent application, which fail to fully reflect the characteristics and value of new research and development institutions. The evaluation criteria have not formed a complete system. Performance evaluation involves multiple aspects, including talent team building, scientific research, innovation capabilities, achievement transformation capabilities, social influence, etc. However, existing evaluation standards may only focus on certain aspects and fail to form a comprehensive and systematic evaluation system, resulting in less objective and accurate evaluation results. With the development of technology and the continuous emergence of new research and development institutions, the standards for performance evaluation should also be adjusted and improved accordingly. However, existing evaluation standards may not be updated promptly and cannot adapt to new development needs and trends.

4.2. Insufficient performance evaluation data

In the performance evaluation process of new research and development institutions in Zhejiang Province, they often only rely on government departments or internal databases of evaluation institutions and fail to fully utilize external data resources, such as industry associations, academic journals, etc. This results in limited data volume, making it difficult to fully reflect the actual situation of new research and development institutions. When collecting data, it is possible to only focus on certain specific indicators, such as the quantity of scientific research achievements, funding investment, etc., while ignoring other important indicators, such as innovation ability, achievement transformation ability, industry driving ability, etc. This leads to incomplete data and cannot provide a comprehensive basis for performance evaluation. Due to insufficient data sources and unreasonable collection methods, errors, omissions, or duplications in the data can greatly affect the accuracy and reliability of the data, thereby affecting the objectivity and impartiality of the final evaluation.

4.3. The performance evaluation process is not transparent

In the performance evaluation process of new research and development institutions in Zhejiang Province, due to the lack of an open and transparent mechanism, the evaluation process, time arrangement, evaluation experts, and other information were not clearly disclosed. The evaluation results were often only communicated internally or only disclosed within a limited scope, and were not timely and comprehensively disclosed to the society. In addition, the evaluation experts involved in the selection and evaluation process may have subjectivity and arbitrariness, failing to ensure the requirements of expert qualifications, experience, and impartiality. These will make it difficult for the public to understand the specific situation of the evaluation results, making it difficult to supervise and evaluate the evaluation process and results. As a result, the evaluation process and results are difficult to be monitored and recognized by the public, reducing the credibility and credibility of the evaluation.

5. Ways to improve the performance evaluation mechanism of new R&D institutions in Zhejiang Province

5.1. Develop clear performance evaluation standards

Create flexible and efficient management concepts, and optimize performance evaluation standards. Clarify the

nature and positioning of new research and development institutions in Zhejiang Province, and formulate clear performance evaluation standards. Based on the characteristics of new research and development institutions, select indicators that can objectively reflect their performance, such as innovation ability, achievement transformation ability, industry driving ability, etc. Develop specific quantitative standards for each indicator, such as the number of patent applications, the conversion rate of scientific and technological achievements, and the contribution to the industry. Assign reasonable weights to each indicator based on their importance in performance evaluation. Opinions can be collected and the weights of each indicator can be determined through expert consultation, questionnaire surveys, and other methods. Then, based on quantitative evaluation indicators and weights, establish clear evaluation levels, such as excellent, good, average, poor, etc. Set specific standards for each level so that evaluators can accurately assess the performance level of the evaluated institution. Finally, regular expert discussions and revisions can be organized to ensure that the evaluation criteria reflect the current development trends and requirements of new research and development institutions.

5.2. Improving data collection and processing capabilities

In the process of data collection, the scope and content of data collection should be clearly defined, scientific data collection methods and processes should be developed, and multi-channel data sources should be established, including government departments, industry associations, academic journals, etc., to ensure the comprehensiveness and accuracy of the data. Afterward, the collected data is cleaned, deduplicated, and verified to ensure its accuracy and reliability. At the same time, establish a data quality assessment system, conduct regular quality inspections and evaluations of data, and promptly detect and correct data errors. To ensure the rigor of data, it is necessary to use technologies such as big data analysis and artificial intelligence to deeply mine and process the data. By using methods such as data visualization and data mining, we explore the patterns and trends behind the data, providing a more scientific and accurate basis for performance evaluation.

5.3. Establish open and transparent performance evaluation standards

Based on the characteristics and development trends of the new research and development institutions identified above, clear performance evaluation standards will be formulated, including indicators of innovation ability, achievement transformation ability, and industry-driving ability. Ensure that the standards are clear, specific, and easy to understand and operate. To enhance credibility, various channels can be used to promote performance evaluation standards, enhance the awareness and understanding of evaluated institutions and relevant stakeholders, conduct training activities, and help evaluators and evaluated institutions better understand and apply performance evaluation standards. In the face of constantly changing new research and development institutions, regular expert discussions and revisions can be organized to encourage evaluated institutions and relevant stakeholders to provide opinions and suggestions, promote continuous improvement of standards, and ensure that standards can reflect the current development trends and requirements of new research and development institutions. For the problems and deficiencies in the standards, it is necessary to establish a supervision and evaluation mechanism to supervise, evaluate the implementation of performance evaluation standards, and make timely adjustments and improvements, thus improving the transparency and credibility of standards.

6. Conclusion

The establishment of new research and development institutions is conducive to promoting scientific and technological innovation in Zhejiang Province, and to a certain extent, driving the healthy development of the economy and society in Zhejiang Province. This article analyzes the internal talent cultivation path and

performance evaluation mechanism of new R&D institutions, explores the problems in these two aspects, and provides development suggestions, including but not limited to strengthening the collaborative operation of soft and hard resources, establishing and improving talent cultivation incentive mechanisms, cultivating local talents in a targeted manner, formulating clear performance evaluation standards, improving data collection and processing capabilities, and establishing open and transparent performance evaluation standards. It is hoped that this can contribute to the high-quality development of new research and development institutions in Zhejiang Province.

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References

[1]   Xing F, Ming W, 2023, Construction of New R&D Institutions in Ningbo: Effectiveness, Problems, and Countermeasures. Zhejiang Economics, 2023(10): 42–43.

[2]   Hu Y, Lv L, Ji Y, et al., 2023, Research and Policy Recommendations on the Development of New Research and Development Institutions. China High Tech, 2023(19): 152–154.

[3]   Ding M, Chen B, 2015, Innovative Measures and Inspirations of Federal Financial Support for New R&D Institutions in the United States. Scientific Management Research, 33(2): 109–112.

[4]   Yang L, Shi L, 2023, Talent Evaluation of New Research and Development Institutions: Problems, Experiences, and Inspirations. Science and Technology China, 2023(5): 40–43.

[5]   Peng X, Li X, Chen M, et al., 2023, The Construction Status, Problems, and Countermeasures of New R&D Institutions in Ningbo City. Ningbo Economy (Financial Perspective), 2023(9): 41–43.

[6]   Zhou J, Chen W, Yu L, et al., 2021, Analysis of Different Types and Development of New R&D Institutions. China Science and Technology Forum, 2021(7): 29–36.

[7]   Chen X, Chen J, Luo L, et al., 2023, Comparative Study of Performance Evaluation Index Systems for New R&D Institutions in Typical Provinces and Cities. Science and Technology Management Research, 43(17): 59–70.

[8]   Wu J, 2023, Performance Evaluation Promotes the Healthy Development of New Research and Development Institutions. China Accounting Report, 2023-06-09(009).

[9]   Li X, Peng X, Zhou X, 2023, Analysis of the Operation Mechanism and Development Route of New R&D Institutions in Ningbo City. Industrial Innovation Research, 2023(22): 38–40.

[10] Guo W, 2022, Research on the Innovation Performance Improvement Path of New R&D Institutions Based on Interactive Orientation, thesis, Suzhou University of Science and Technology.