Research on the Main Shortcomings and Constraints of Building Regional Science and Technology Innovation Center

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Abstract. Under the background of globalization and knowledge economy, scientific and technological innovation has become the core driving force to promote economic and social development. Accelerating the construction of regional science and technology innovation center is an important measure to promote several innovative resources and promote the development of science and technology innovation. However, in the process of construction, there are also many problems and challenges. This paper aims to deeply analyze the problems and challenges faced by the construction of regional science and technology innovation centers, with a view to providing reference for the development of regional and even national science and technology innovation.

Keywords: Construction of Science and Technology Innovation Centers, Shortcoming, Constraint.

1 Introduction

Report of the 20th CPC National Congress, emphasized "promoting the construction of international and regional scientific and technological innovation centers as a whole" when deploying the task of perfecting the scientific and technological innovation system. Promote the construction of regional science and technology innovation centers around key tasks, promote the convergence and coordination of innovation elements, build a regional innovation system with science, technology, industry, talents, policies and finance as the fulcrum, systematically promote the convergence of resource elements and upgrade the functional structure, form a dynamic synergy mechanism, produce major original achievements, and drive and lead high-quality development. There are some key shortcomings in the construction of regional science and technology innovation center, which are mainly diagnosed and analyzed from four aspects: high-end innovation resources, transformation of scientific and technological achievements, innovation ecosystem and regional synergy and open innovation [1].

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2 The Main Shortcomings of the Construction of Regional Science and Technology Innovation Center

2.1 High-End Innovative Resources such as Talents and Scientific Research Facilities

The first is the shortage and loss risk of top talents. Although there may be a certain number of talents, high-end talents such as scientists and leading innovative entrepreneurs with top influence on a global scale are still relatively scarce. This may be because there is still a gap in the comprehensive conditions such as research funds, academic environment and living facilities compared with the top international science and technology centers. For example, in some frontier scientific and technological fields, such as quantum computing and brain science, there is a lack of local talents who can lead the international academic frontier. Brain drain is more prominent. Excellent talents trained in the region may flow to other more attractive areas at home and abroad due to better development opportunities, higher salary and better scientific research conditions. Some universities and scientific research institutions have become "talent training bases" for developed regions or international science and technology giants, and it is difficult to retain high-end talents to serve local scientific and technological innovation for a long time [2].

Second, the lack of high-end scientific research facilities and sharing obstacles. For some super-large and high-precision national key scientific research facilities, such as the Large Hadron Collider and Extreme Ultraviolet Lithography, the regional science and technology innovation center may not be fully equipped due to various factors such as capital, technology and policy. This makes it difficult to carry out some cutting-edge basic research and key technology research that need the support of high-end facilities, and cannot compete with top international science and technology regions with complete high-end scientific research facilities. Although the sharing mechanism of scientific research facilities has been established in some areas, there are still many obstacles in actual operation. For example, it is difficult to balance the benefit distribution between different units, the process of booking and using the shared platform is complicated, and the division of equipment maintenance responsibilities is unclear, which leads to the inefficient utilization of scientific research facilities and can not give full play to its supporting role in scientific and technological innovation.

2.2 In the Transformation of Scientific and Technological Achievements

Firstly, the depth of collaboration in Industry-University-Research is not enough. There are still barriers to cooperation among universities, scientific research institutions and enterprises. The scientific research achievements of universities and scientific research institutions are often out of touch with the actual market demand. Researchers pay more attention to the acceptance of academic achievements and scientific research projects, and pay less attention to the market application and industriali-

zation of achievements. For example, many scientific research achievements are innovative in theory, but when they are actually transformed into products or services, it is difficult to realize large-scale industrialization due to the lack of consideration of commercial factors such as cost, market scale and user experience. In the process of cooperation with universities and scientific research institutions, enterprises also face the problems of single cooperation mode and high cooperation risk. Cooperation usually focuses on simple modes such as technology transfer and entrusted development, and there is not enough exploration on deep integration methods such as co-construction of R&D platform and long-term strategic cooperation. At the same time, due to the uncertainty of scientific research results and the change of market competition environment, enterprises take greater risks in the process of cooperation, which affects Industry-University-Research's enthusiasm for collaborative innovation.

Second, technology and finance's support system is not perfect. The role of venture capital in scientific and technological innovation is limited. Compared with the mature technology and finance market, the regional science and technology innovation center has fewer venture capital institutions, smaller capital scale and more conservative investment preference. For technology enterprises in seed stage and initial stage, it is difficult to get enough venture capital support because of their high risk and low assets, which leads to many potential innovation projects being aborted due to lack of funds. There is a bottleneck in science and technology credit service. When banks and other financial institutions provide loans to technology enterprises, it is difficult to evaluate intangible assets such as intellectual property rights of technology enterprises and the credit risk is high, which often requires high collateral or guarantee conditions, which makes it difficult for technology enterprises, especially small and medium-sized micro-technology enterprises, to obtain full bank loans. In addition, technology and finance lacks product innovation and diversified financial service products aimed at different development stages of technology enterprises.

2.3 Innovative Ecological Construction

First, the atmosphere of innovation culture is not strong. Some regions have not really formed a cultural atmosphere that encourages innovation and tolerates failure. The society's cognition of innovation is still relatively traditional, and the tolerance for failure in the process of innovation is low, which makes the innovation subject have concerns when exploring new technologies and new models, fearing that it will suffer social public opinion pressure and economic losses due to failure. For example, some entrepreneurs may face doubts from family and society after their initial failure, which will affect their enthusiasm for starting a new business. The form and content of innovative cultural activities are relatively simple. Although some innovation and entrepreneurship competitions, scientific and technological lectures and other activities may be held, the participation and influence of the activities are limited, lacking continuity and systematicness, and it is impossible to deeply stimulate the innovation consciousness and enthusiasm of the whole people [3].

The second is the fragmentation of the innovation service system. The function of science and technology intermediary service institutions is not perfect. The service

quality of intermediary service institutions such as technology transfer, intellectual property services and legal consultation is uneven, and some institutions lack professional ability, so they cannot provide high-quality and all-round services for innovative enterprises and researchers. For example, in the process of technology transfer, some intermediaries lack in-depth understanding of the technology market and professional technology evaluation ability, which leads to low efficiency of technology trading. Innovative service resources are scattered and lack of integration. Government departments, universities, scientific research institutions, enterprises and other subjects have certain innovative service resources, but these resources have not formed an effective collaborative integration mechanism, and there are repeated construction and waste of resources. For example, different units may have built their own scientific and technological information platforms, but the information between the platforms is not shared, and it is impossible to provide one-stop comprehensive services for the innovation subject.

3 Analysis of the Restrictive Factors of Building Regional Science and Technology Innovation Center

3.1 In the Governance System of Scientific and Technological Innovation

First, the coordination of institutional mechanisms is poor. The division of responsibilities between different levels of government departments in the region in the management of scientific and technological innovation is not clear enough, and there are cross-management and blank areas. For example, in the examination and approval of science and technology projects, there may be a situation that many departments have the authority to examine and approve, but the standards and processes are inconsistent, which leads to the need for enterprises and scientific research institutions to declare in multiple positions, which increases administrative costs and reduces the efficiency of examination and approval. It is difficult to coordinate scientific and technological governance between regions. For cross-regional scientific and technological innovation projects or industrial collaborative innovation, it is difficult to establish an effective coordination mechanism because of the differences in policies, regulations and administrative systems in different regions. For example, in the construction of cross-regional scientific and technological innovation centers such as the Yangtze River Delta and Beijing-Tianjin-Hebei, when it comes to cross-regional affairs such as tax sharing and intellectual property ownership, it is often difficult to coordinate the interests of all parties.

Second, the policy accuracy and stability are insufficient. Science and technology policy lacks precision and can't meet the needs of different types and different stages of development. For example, some existing policies may give strong support to large enterprises, but for small and medium-sized micro-innovative enterprises, especially start-ups in seed stage, there is a lack of targeted support policies, such as financing guarantee and site subsidies. The stability of policy is not enough. Science and tech-

nology policy is greatly influenced by the change of government and economic situation, and the frequent adjustment of policy makes it difficult for innovation subjects to form stable expectations. For example, the change of preferential tax policies may affect the long-term deployment of R&D investment plans and innovation strategies of enterprises [4].

3.2 On The Integration of Innovation Chain and Industrial Chain

Firstly, the front-end basic research in innovation chain is weak. The investment in basic research is relatively insufficient. Compared with applied research and experimental development, regional science and technology innovation centers may pay less attention to basic research and capital investment. This leads to the lack of underlying theoretical support in some key core technology areas, and it is difficult to achieve source innovation. For example, in basic scientific research such as semiconductor materials, the investment is limited, which limits the independent innovation ability of high-end links in the industrial chain such as chip technology. Basic research and applied research are not well connected. The basic research achievements of universities and scientific research institutions are often difficult to be quickly and effectively transformed into applied technology, and the cooperation mechanism in Industry-University-Research is not perfect, which makes the basic research achievements out of touch with the actual needs of the industry. For example, some basic research results are of high value in theory, but they cannot play a role in the industrial chain due to the lack of suitable transformation channels and application scenarios.

Second, the application of the back-end market of the industrial chain is blocked. The market access standards for new technologies and products are strict and complicated. In some emerging technology fields, such as biomedicine, new energy vehicles, etc., due to safety, quality and many other factors, the market entry threshold is high, and the period from research and development to listing of new products is long, which inhibits the industrialization process of innovation achievements to some extent. For example, after a new drug is successfully developed, it needs to go through strict clinical trials and approval procedures before it can enter the market. The downstream enterprises in the industrial chain have limited acceptance of new technologies. Traditional industrial enterprises may face problems such as technology compatibility, cost increase and insufficient skills of employees when upgrading with new technologies, which leads to low enthusiasm for adopting new technologies. For example, when some traditional manufacturing enterprises introduce industrial internet technology, they need to carry out large-scale transformation of the original equipment and train their employees. These factors have increased the difficulty for enterprises to adopt new technologies [5].

3.3 Talent Guidance and Supply

First, there are many obstacles to the introduction of high-end talents. The attraction of talent introduction policy is limited. Although some talent introduction policies have been introduced in various places, compared with developed areas at home and

abroad, there is still a gap in salary, research start-up funds and living facilities. For example, for high-end overseas talents, some regional science and technology innovation centers may not be able to provide the same level of scientific research environment and living security as foreign countries, making it more difficult to introduce talents. The talent evaluation mechanism is not flexible enough. The existing talent evaluation standards often pay too much attention to traditional indicators such as academic qualifications and professional titles, and pay insufficient attention to innovation ability and practical experience. This makes it difficult for some talents with practical innovation ability but low academic qualifications to obtain corresponding recognition and introduction opportunities.

Second, the talent training system is out of touch with the actual needs. The connection between education system and industrial demand is not close enough. The specialty setting and course content of colleges and vocational education institutions may lag behind the actual needs of industrial development, resulting in the trained talents not directly meeting the post requirements of enterprises. For example, with the rapid development of the emerging artificial intelligence industry, the scale and quality of personnel training in related majors may not keep up with the employment needs of enterprises. The system of continuing education and career development of talents is not perfect. There is a lack of systematic planning for the continuing education of on-the-job personnel, and the training of employees in enterprises is not standardized and professional enough, which limits the knowledge updating and skill upgrading of talents and makes it difficult to meet the needs of the rapid development of scientific and technological innovation.

3.4 Financial Support

Firstly, the risk sharing mechanism in technology and finance is not perfect. The venture capital market is not mature enough. The number of venture capital institutions in regional science and technology innovation centers is relatively small, the scale of funds is limited, and the investment behavior is more cautious. For high-risk scientific and technological innovation projects, especially those in the early stage, the support of venture capital is insufficient. For example, it is difficult for start-ups in some frontier science and technology fields to obtain enough venture capital due to the high uncertainty of technology and market. Lack of perfect risk compensation mechanism. In technology and finance, there is no effective risk compensation system, and there is no reasonable mechanism for risk sharing among the government, financial institutions and enterprises. Once scientific and technological projects fail, financial institutions often bear the losses alone, which makes financial institutions worry a lot when providing services in technology and finance.

Second, the innovation of financial service products is insufficient. There is a single type of financial products for technology enterprises. Traditional financial products, such as bank loans and bond issuance, have limitations in serving science and technology enterprises. Technology enterprises are characterized by a relatively high proportion of intangible assets and a lack of sufficient collateral, and the existing financial products are difficult to meet their financing needs. For example, when

banks provide loans to technology enterprises, they mainly use fixed assets as collateral, which is a big constraint for technology enterprises with intellectual property as their main assets. Financial services are not flexible enough. When financial institutions provide financing services for technology enterprises, they cannot provide personalized services according to the different development stages and capital demand characteristics of technology enterprises. For example, for growing technology enterprises, a lot of money is needed for market expansion and technology upgrading, but financial institutions may not be able to provide flexible financing solutions.

4 Conclusion

To implement the innovation-driven development strategy and strengthen the construction of strategic science and technology strength, the construction of science and technology innovation center is the focus of current attention. which has great and far-reaching influence on developing new quality productivity, enhancing the national science and technology innovation strength, strengthening the dominant position of international science and technology competition and cooperation, and helping the sustainable development of society.

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