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Research on the Mechanism of Guiding Enterprises to Increase Innovation Investment in Inner Mongolia, China

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ABSTRACT. *This article took the scientific and technological innovation policies implemented in Inner Mongolia as the research object, described the current situation and implementation effects of Inner Mongolia's scientific and technological innovation policies, and finally proposed countermeasures for Inner Mongolia of China to guide enterprises to increase investment in innovation.*

KEYWORDS: *scientific and technological innovation policy, scientific and technological innovation development level, Inner Mongolia*

1. Introduction

Innovation is the driven force of a country, the development trend of the world economics. From the "Outline of the National Medium and Long-term Science and Technology Development Plan (2006-2020)" in 2006 to the "Outline of the National Innovation-Driven Development Strategy" in 2016, China has conducted top-level designs and series of deployments for innovation-driven development.

In recent years, around the two "Outlines", the Inner Mongolia Autonomous Region of China has established a series of policies to support innovation development, and constructed a policy framework for the autonomous region to promote the development of scientific and technological innovation. And under this framework, nearly 60 policies and measures to promote the development of scientific and technological innovation have been formulated. However, what are the guiding effects of these policy measures on scientific and technological innovation? What should we do in the future? These issues urgently need to be studied and explored.

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2. The current situation of Inner Mongolia's scientific and technological innovation policies

2.1 The status of Inner Mongolia's innovation level

2.1.1 Innovation subject

In 2019, there were 292 industrial enterprises above designated size in Inner Mongolia with R&D activities, accounting for 9.85% of the total number of enterprises; 93 enterprises with R&D institutions, accounting for 3.14% of the total number of enterprises. By the end of 2019, the first batch of 58 companies listed on the autonomous region's scientific and technological innovation board, the total number of autonomous region high-tech enterprises exceeded 900, a year-on-year increase of more than 20%.

2.1.2 Innovation platform construction

As of 2019, Inner Mongolia has 3 national high-tech zones, 8 agricultural science and technology parks, and 7 sustainable development experimental zones; 3 state key laboratories, 156 autonomous region key laboratories, and 2 national engineering technology research centers.

2.1.3 Output and transformation of scientific and technological achievements

In 2019, Inner Mongolia had 21,069 patent applications and 11,059 authorized patents, an increase of 28.3% and 14.9% respectively over the previous year. A total of 6,130 technical contracts of various types were signed during the year, with a contract transaction value of 18.50 billion yuan. Among them, the number of technical contracts transacted in the region was 922, an increase of 75.0%, and the technical value of transactions in the region was 1.69 billion yuan, an increase of 57.5%. A total of 687 scientific and technological achievements have been traded through the Inner Mongolia Autonomous Region's scientific and technological achievements trading platform, with a total contract value of approximately 1.99 billion yuan.

2.1.4 Investment and introduction of scientific and technological talents

In 2019, there were 21,931 R&D personnel in industrial enterprises above designated size in Inner Mongolia, accounting for 2.46% of the total number of employees. As of the end of 2019, the number of academician expert workstations jointly built by Inner Mongolia and domestic and foreign colleges and universities has reached 182, and a total of nearly 200 academicians have been introduced, including 180 academicians of the two academies. There are nearly 2,200

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academicians and experts in the station. The station construction unit and the inbound academician expert team jointly carried out a total of 474 scientific and technological cooperation projects.

2.2 The current situation of Inner Mongolia's scientific and technological innovation policies

2.2.1 Policy system

Inner Mongolia has issued the "Opinions of the People's Government of Inner Mongolia Autonomous Region on the Implementation of Innovation-Driven Development Strategies", "Innovation-Driven Development Plan of Inner Mongolia Autonomous Region (2013-2020)", "Implementation Plan for Inner Mongolia Autonomous Region to Implement the National Innovation-Driven Development Strategy Outline", "Implementation Opinions of the People's Government of the Inner Mongolia Autonomous Region on Strengthening the Implementation of the Innovation-Driven Development Strategy and Further Promoting the In-depth Development of Mass Entrepreneurship and Innovation", "Inner Mongolia Autonomous Region's Implementation Plan for Deepening the Reform of the Scientific and Technological System", and "About Accelerating the Promotion of "Science and Technology flourishes Inner Mongolia " Action to Support Scientific and Technological Innovation Policy Measures". Those important policy documents have established a policy framework for the autonomous region to promote technological innovation development.

2.2.2 Policy type

(1) Implement the national scientific and technological innovation policy

List the specific national policies implemented in Inner Mongolia with greater incentives and wider coverage, as shown in Table 1.

(2) Autonomous region-level scientific and technological innovation policy

In addition to the implementation of the mentioned national policies, from 2012 to 2018, Inner Mongolia has issued 53 policies related to scientific and technological innovation.

In terms of capital investment, the autonomous region’s local government has allocated a total of 1.16 billion yuan in various science and technology special funds. Among them, six special projects have been established, including the Natural Science Fund, Scientific and Technological Innovation Guidance and Reward Fund, Applied Technology Research and Development Special Project, Major Science and Technology Project, Special Science and Technology Achievement Transformation Project, and Science and Technology Award Fund, the financial technology investment system that basically covers the entire scientific research process is

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shown in Table 2.

Table 1 The main national scientific and technological innovation policies implemented by Inner Mongolia

Serial number	Implemen-tation time	Policy name	Implementation object	Progress status in 2019
1	1996	Enterprise research and development expenses plus deduction	Enterprises that meet the requirements and engage in research and development activities and have a sound financial accounting system that implement audit collection	864 enterprises, plus 5.169 billion yuan of deduction
2	2008	Income tax reduction and exemption for high-tech enterprises	Recognized high -tech enterprise	267 high -end enterprise s enjoyed preferential tax policies, reducing and exempting income tax of 3.479 billion yuan
3	2016	Technology business incubator (mass innovation space) enjoy tax incentives	Eligible incubator	the incubator tax benefit was 11.514 million yuan, and the crowd -creation space tax benefit was 3.525 million yuan
4	2013	Intellectual Property Advantage Enterprise, Demonstration Enterprise	Eligible companies	57 national level directly transferred to autonomous region level + 20 autonomous regio n level
5	2013	The performance evaluation of state-owned enterprises' scientific and technological innovation	State-owned enterprise	Set scientific and technological innovation indicators for the year and tenure; when calculating economic efficiency indicators, R&D expenses are treated as profits and added back; for companies that have achieved major scientific and technological innovations, additional points will be given in the mid-year assessment; for companies that implement major scientific and

Data source: Ministry of Science and Technology, Inner Mongolia Science and Technology Department, Inner Mongolia State Taxation Bureau

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Table 2 Major regional scientific and technological innovation policies in Inner Mongolia

Serial number	Implementation time	Policy	Object
1	2007	Inner Mongolia Scientific and Technological Innovation Guidance Award Fund	Eligible enterprises and institutions
2	2007	Autonomous Region Science and Technology Awards	Scientific and technological achievements and scientific and technological workers with major contributions
3	1986	Natural science funding	Universities, research institutes and enterprises
4	2004	Application technology research and development special project (result transformation guidance project + technology post-transaction subsidy)	Enterprises and institutions with independent legal personality, colleges and universities, scientific research institutes, social organizations, private non-enterprise units, and Jingmeng High-tech business incubators established outside the district
5	2018	Special fund for transformation of scientific and technological achievements	Enterprises and institutions with independent legal personality
6	2012	Major science and technology special funds	Enterprises and institutions with independent legal personality, colleges and universities, scientific research institutes, social organizations, private non-enterprise units, and incubators established outside the district

Data source: Inner Mongolia Department of Science and Technology, Inner Mongolia Department of Finance

In terms of talent introduction, the "Inner Mongolia Autonomous Region's Implementation Measures for the Introduction and Flow of Talents" has been issued

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to clarify the implementation standards of various policies and attract seven types of innovative talents with generous remuneration and high salaries. Various leagues, cities, universities, and research institutes have also introduced distinctive talent incentive measures.

In terms of achievement transformation, in 2018, the autonomous region established a special fund of 500 million yuan for the transformation of scientific and technological achievements, which will be used for the transformation of scientific and technological achievements, subsidies after technology transactions, venture capital compensation, and intellectual property pledge financing compensation. Implemented 187 scientific and technological achievements transformation guidance projects, and provided post-subsidies to 138 technological achievements trading activities.

In terms of science and technology services, the Inner Mongolia Autonomous Region Scientific and Technological Innovation Board, Inner Mongolia Scientific and Technological Innovation Coordination Fund, Inner Mongolia Intellectual Property Pledge Financing Risk Compensation Fund, and Patent Pledge Financing Registration Green Channel have been established to ease financing constraints for enterprises.

3. Problems in the guidance of Inner Mongolia's scientific and technological innovation policies for enterprises' scientific and technological innovation

3.1 The status of the innovation subject of industrial enterprises above designated size has regressed

From the perspective of innovation input, the reduction in basic innovation input of industrial enterprises above designated size is reflected in the substantial reduction in R&D expenditure and R&D personnel input. In terms of average indicators, the proportion of enterprise R&D personnel input has declined. In 2019, the proportion of industrial enterprises above designated size in Inner Mongolia with R&D institutions was only 3.1%, and the proportion of enterprises engaged in R&D activities was only 9.85%. From the perspective of innovation capability, Inner Mongolia has the lowest innovation efficiency in the science and technology research and development stage compared to the other 10 western provinces. From the distribution point of view, industrial enterprises above designated size in the 12 league cities in Inner Mongolia are also unbalanced in their innovation development. The central cities has higher R&D investment, while the eastern and western cities have less R&D investment.

3.2 The scale of investment in science and technology is small and the structure is poor

Inner Mongolia has invested 14.78 billion yuan in R&D, with an intensity of less than 1%, which is lower than the national average of 2.23%. In addition, compared

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with developed provinces, Inner Mongolia's investment in science and technology is relatively small and investment direction and structure is not suitable. According to recently research results, Inner Mongolia has low efficiency in the scientific and technological research and development stage, but has high efficiency in the transformation of technological achievements. However, Inner Mongolia's financial support for science and technology has no obvious emphasis on the transformation of technological achievements.

3.3 Serious shortage of innovative talents

There is a huge gap between the number and level of innovative talents in Inner Mongolia and the developed regions. Jiangsu Province's regional innovation capability has been ranked first in the country for eight consecutive years. The contribution rate of scientific and technological progress has reached 61%. The province has 794,000 R&D personnel and 97 academicians of the two academies. In comparison, the number of R&D personnel in Inner Mongolia is only 42,000, and there are currently no academicians. The sharp comparison of figures reflects the shortage of high-level innovative talents in Inner Mongolia, and the serious shortage of high-level scientific research teams and leading talents.

3.4 Insufficient transformation of scientific and technological achievements

From the perspective of innovation input, Inner Mongolia's new industry R&D institutions, technological transformation funding, and R&D personnel input have been greatly reduced. As a result, in terms of innovation output, although patents and papers have increased significantly, the sales revenue of new products has decreased, indicating the ability to transform technological achievements in the new industry is weak. In terms of the innovation policy environment, similar to the industrial enterprises above designated size, the portion of industrial R&D funds from government departments has dropped significantly, while the R&D expenditure plus tax deduction and tax deduction and exemption for high-tech enterprises have increased. It shows that Inner Mongolia has implemented many national policies, but the financial support for the transformation of scientific and technological achievements at the same level is still relatively weak.

4. Policy recommendations for Inner Mongolia to guide enterprises to increase investment in innovation

4.1 Enhancing the status and role of enterprises in innovation

4.1.1 Actively support the development and growth of leading companies

Accelerate the cultivation of a group of leading companies with core

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technologies, independent intellectual property rights, and competitiveness. Give full play to the innovation-driven role of large-scale enterprises in Inner Mongolia, and promote the innovative development of industries and upstream and downstream industries in the industrial chain through technological spillovers of large enterprises, and generate innovative enterprise clusters, thereby enhancing the overall innovation strength of the region.

For regional superior industries, such as coal chemical industry, steel, heavy equipment, central enterprises in the rare earth industry, and local state-owned enterprises, continue to ensure and increase the ratio of R&D investment through performance evaluation policies for enterprises and responsible persons, and cultivate domestically, even world-renowned enterprise group to enhance the regional innovation level.

4.1.2 Cultivating innovative entities for SMEs

For start-up technology-based small and medium-sized enterprises, use "innovation coupons" inclusive of payment for industry-university-research cooperative innovation projects or purchase inspection and testing, technical certification, qualification certification and other services. On the basis of the National Science and Technology SMEs Bank, the "Inner Mongolia Science and Technology SMEs Cultivation Bank" will be established. For enterprises entering the database, on the basis of enjoying R&D expenses plus deductions, rewards will be given according to a certain percentage of the enterprise’s R&D expenses in the previous year as recognized by the local tax authorities. To formulate the "Inner Mongolia Independent Innovation Product Catalog", the government can make the first purchase or order for the trial products with great market potential and need key support and products that are put on the market for the first time.

4.2 Optimize investment scale and structure

4.2.1 Further increase financial investment in science and technology

It is necessary to effectively ensure the promotion of scientific and technological innovation expenditure as a key expenditure, narrow the gap with the financial science and technology investment in developed regions, increase the proportion of R&D expenditure in GDP, and strive to enter the third level of regional innovation. More financial funds should be invested in advantageous industries and strategic emerging industries such as the new generation of information technology, high-end equipment industries and biological industries for key technology research areas and the cultivation and introduction of scientific and technological talents. Through the formulation of universal preferential policies, the use of financial, tax reduction and exemption, loan guarantees, financial interest discounts and other means to encourage enterprises and social capital to flow into the field of scientific and technological innovation.

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4.2.2 Optimize the structure of financial technology investment

It is necessary to improve the internal structure of scientific and technological investment in accordance with the actual financial resources, and invest the limited R&D funds in the fields of advantageous technical achievement transformation and technology acquisition and transformation, and provide technical and talent support for the basic research and experimental research of new technologies in the later period. To rationally allocate the proportion of scientific and technological investment of universities, R&D institutions and enterprises, it is necessary to give play to the role of R&D institutions and universities in basic research, common technology research and applied research, and promote the in-depth integration of industry, university and research with a reasonable interest mechanism, and promote collaborative innovation.

To optimize the structure of financial investment in science and technology between regions, Inner Mongolia has a vast territory, and the government's science and technology funds and science and technology talents are mainly concentrated in Hubao'e cities, while the shortage of science and technology resources in other regions has increased the gap in regional innovation development. Therefore, it is necessary to appropriately tilt scientific and technological resources to the eastern and western alliance cities of Inner Mongolia, optimize the structure of financial investment between regions, and achieve balanced development.

4.3 Speed up the construction of talent ladders

In terms of talent planning, guided by "high-quality, high-tech and lack of reality", we will optimize and integrate various types of talent plans and special funds at all levels, and implement the echelon construction of "top talents-leading talents-young talents-reserve talents".

In terms of talent introduction, focus on the construction of the ecological environment for talents, and formulate the "Implementation Opinions on the Construction of the Ecological Environment for Scientific and Technological Talents in Inner Mongolia Autonomous Region", focusing on creating a business environment capable of starting a business, a security environment without worries, a fair environment that reflects competition, an evaluation environment that focuses on quality and contribution, a support environment for quality services, and a management environment that streamlines administration and delegates power.

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4.4 Improve the transformation mechanism of scientific and technological achievements

4.4.1 Strengthen the construction of platforms and carriers for the transformation of scientific and technological achievements

Taking the opportunity of developing strategic emerging industries, cultivate and build various types of science and technology industrial parks and industrial innovation bases, and guide the establishment of a new type of R&D institution with enterprises as the main body and integrating production, education and research. Strengthen the cooperation in the transformation of achievements with domestic universities and institutes, guide the implementation of advanced scientific and technological achievements outside the zone in Inner Mongolia, and serve the economic and social development of Inner Mongolia. Continue to build national technology business incubators and crowd-creation spaces, and build a step-by-step result incubation and cultivation system.

4.4.2 Build a service system for the transformation of scientific and technological achievements that integrate online and offline

Improve the Inner Mongolia science and technology achievement trading platform, cultivate national-level technology transfer service institutions, and form an online and offline technology market and achievement resource allocation system to provide support and convenience for the scientific and technological innovation service system to connect supply and demand, information interaction, and cooperation expansion.

5. Conclusion

This paper sorts out the Inner Mongolia science and technology innovation policies, and then identifies the problems about enterprise innovation and the innovation policies in Inner Mongolia. Aiming at the actual situation of enterprise innovation and the existing problems of policies in Inner Mongolia, this paper puts forward the relevant countermeasures. The conclusions of this study provide a reference for Inner Mongolia to make a series of science and technology innovation policies and to improve the incentive effect of policies.

References

[1] Su Jingqin, Li Xiaoang, Xu Xinao. 2012. A comparative analysis of the composition of national and local scientific and technological innovation policies based on content analysis[J]. Science of Science and Management of Science and Technology, vol.33,no.6,pp.15-21.
[2] Li Jianjun(2019). Research on the implementation of scientific and technological

ISSN 2616-5902 Vol. 2, Issue 8: 104-114, DOI: 10.25236/AJBM.2020.020814

innovation policies in Inner Mongolia[D]. Inner Mongolia Normal University.
[3] An Yaohua, Wulan(2016). Proposals on Fiscal and Taxation Policies to Promote Technological Innovation in Inner Mongolia[J]. China Finance, no.10,pp. 57-58.
[4] Mansfield(1977).Social and Private Rates of Return from Industrial Innovations. Quarterly Journal of Economics, Basic research and Productivity Increase in Manufacturing. American Economic Review, no.77,pp.221-240.
[5] Guo Qingwang(1995). Optimal income taxation [J]. Research on Financial Issues, no.08,pp.27-32.
[6] Hu Haipeng, Yuan Yong, Kang Jie(2020). Research on the experience of establishing government procurement policies to promote technological innovation in the United States and Europe in line with international rules[J]. Decision Consulting, no.05, pp.38-42
[7] Liu Yun, Yan Zhe, Cheng Yijie, Ye Xuanting(2017). The policy mechanism and empirical research of government procurement to promote scientific and technological innovation: Taking Beijing as an example. China Soft Science, no.08,pp. 9-20 .
[8] Dou Shiting, Liu Jia, Pang Shoulin(2019). Research on the Synergy of Technological Innovation of Science and Technology Policy Combination——Supply Side-Demand Side Perspective [J]. Science and Technology Progress and Countermeasures, vol.36, no.22, pp.118-126.