

Promotion Path of Innovation Capability in Regional Central City under the Background of Digital Economy

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Abstract: Innovation is the driving force for the development of regional central city. The digital economy has brought new opportunities and challenges to the promotion of innovation capability in regional central city. Firstly, the significance of digital economy for the innovation development in regional central city is introduced. Secondly, the constraints on improving innovation capability on innovation subject, innovation resource and innovative environment are sorted out. Thirdly, based on the background of digital economy, from three levels of country, region and enterprise, the promotion path of innovation capability is proposed, which provides new ideas for promoting innovation development in regional central city.

1. Introduction

The construction and development of regional central city is the basic requirement of national regional development strategy. Under the condition of knowledge economy, innovation, as the fundamental driving force of economic development, has gradually become the key factor to maintain the national core competitiveness [1]. In October 2019, "Implementation Plan of National Digital Economy Innovation Development Pilot Zone" was released at the Sixth World Internet Conference. Guangdong, Fujian, Zhejiang, Sichuan, Chongqing, and Xiongan New Area have been identified as the first batch of national digital economy innovation development test zones. During the meeting, "China Internet Development Report 2019" showed that China's digital economy had a scale of 31.3 trillion, accounting for more than one-third of GDP, and contributing more than two-thirds of GDP growth. The digital economy has become a key economic object cultivated by cities and constitute the basic condition of urban innovation development.

At present, there are many problems in regional central city, such as lack of innovation capability, low level of urban management, and insufficient environmental protection. In particular, lack of innovation capability has become the biggest obstacle to the development in regional central city. The innovation development in regional central city should seize the trend of digital economy, identify the opportunities and challenges brought by digital economy, consolidate the basic conditions for innovation development, and then promote innovation capability.

2. The Significance of Digital Economy for Innovation Development in Regional Central City

2.1 The Behavioural Pattern of Innovation Subject is changed

Under the background of digital economy, the capability of innovation subject in regional central city to leverage innovation resource has been greatly improved. The innovation subject starts to carry out innovation activities with the help of various innovation platforms. More and more innovation subjects are integrated under the effect of "bilateral network"[2]. On the one hand, small and medium-sized, decentralized innovation activities in regional central city are integrated. Enterprises have created more freedom and living space in the era of big data, and provide more convenient communication and exchange of information for smaller enterprises with diverse functions in regional central city, which makes the innovation activities of such innovation subject play an increasingly important role and stimulate the enthusiasm of enterprises to carry out innovation activities. On the other hand, innovation in different fields and industries are integrated.

With the development of the new-generation information technologies such as Internet, cloud computing and artificial intelligence, the boundaries of various fields and links are becoming more and more blurred, which changes the chain structure of traditional industries and makes each innovation subject gradually develop into an innovation network.

2.2 Innovation Resource is Continuously Energized

Innovation activities in regional central city cannot be carried out without the support of innovation resource such as talents, funds and technology. Under the background of digital economy, the characteristics of innovation resource have changed significantly, which facilitates the connection and flow of innovation resource and puts forward new requirements for the innovation development. In terms of talents, more digital talents with strong ability are needed. Regional central city, such as Nanjing, Hangzhou and Chengdu, has launched the "people grab" battle by lowering barriers to entry and increasing preferential policy. In the financial field, many financial products have been produced with the help of digital economic technology, which provides new channels for enterprises to fund innovation activities. In terms of technology, artificial intelligence such as driverless car is popularizing under the rapid and steady development of digital economy.

2.3 Innovation Environment is updated

The innovation environment emphasizes the carrying capacity of innovation subject and innovation resource. Innovation environment in regional central city mainly includes soft environment and hard environment. Soft environment refers to innovation culture, quality of workers, laws and regulations related to innovation activities, etc. In the era of digital economy, the innovation development in regional central city especially needs the support of intangible elements, and more emphasis is placed on the use of soft environment functions. Hard environment refers to the level of hardware facilities that affect the innovation development, such as Internet infrastructure and road traffic infrastructure. The level of Internet infrastructure affects the informatization and intelligentization of innovation development in regional central city. With the penetration of new-generation information technologies such as big data, cloud computing, and artificial intelligence, innovative fields such as Internet finance, smart manufacturing, smart cities, and e-commerce are rising continuously [3], which provides efficient, convenient and low-cost services for innovation activities.

3. Constraints on Promotion of Innovation Capability in Regional Central City

3.1 Constraints on Innovation Subject

Innovation subject is the starting point of all innovation activities in regional central city. Core innovation subject mainly includes enterprises, universities, scientific research institutions, governments, and intermediary service agency.

Enterprises are the main undertakers of innovation activities. Enterprises are divided into production, processing, distribution, and sales enterprises. They play an integral role in innovation activities, and realize the flow of knowledge, technology and talents to enterprises by introducing advanced technology of scientific research institutions, innovative thinking and high-end talents of universities. However, the technological innovation level of enterprises in regional central city is not high. Taking Xuzhou as an example, Xuzhou is an old industrial zone and resource-based city with a low proportion of high-tech industry, and the proportion of science and technology investment in GDP is only 2.1%. The overall innovation level of enterprises is not high, which limits the promotion of innovation capability in regional central city.

Universities and scientific research institutions are similar, both are important forces engaged in research, but there are certain differences in the specific functions. Universities are the headstream of innovative thinking and the source of talent cultivation. Scientific research institutes are important practitioners of transforming innovative thinking into innovative achievements. Both provide enterprises with "raw materials" for innovation activities, deliver high-end talents and solve

technical problems. Therefore, the number and scale of universities and scientific research institutions play a decisive role in the innovation level. However, the number of universities and scientific research institutions in regional central city is small, which seriously restricts the generation and diffusion of innovative knowledge.

The government and intermediary service agency are the leader and service provider of innovation development in regional central city. The government is an effective guarantee for the operation of innovation activities, playing the role of market intervention and macro guidance, but the functions of local governments need to be further strengthened. From the practical situation, there are still problems such as Passive corruption, backward of service function transformation, inefficient allocation of resources. Intermediary service agency mainly provides services such as evaluation, audit, and consulting for innovation activities, breaks through communication barriers between different circles in the development of innovation activities, promotes the flow of innovation elements, and accelerates the transmission of innovation information.

3.2 Constraints on Innovation Resource

Innovation resource are necessary for innovation subject to carry out innovation activities, such as talents, funds and technology. Talents are the core driver of innovation. Under the background of digital economy, there is often a flow of talents to large cities such as Beijing, Shanghai, Guangzhou and Shenzhen, which leads to the shortage of digital talents in most regional central cities. The improvement of innovation capability requires advanced technology as support. Innovation subject such as enterprises and intermediary service agencies, must have a higher level of technology, and backward technologies will be eliminated by the market under the background of digital economy. Funds are the "lifeline" that run through innovation activities. The shortage of funds will lead to the end of innovation activities. At present, the proportion of R&D expenditure in GDP is low in regional central city, and the funds for innovation are insufficient. Insufficient innovation funds will reduce the innovation vitality and creativity of innovation subject, and cause both the government and enterprises to face loss of benefits. As a result, the development of innovation activities will fall into a vicious circle, which will seriously restrict the improvement of innovation capability in regional central city.

3.3 Constraints on Innovation Environment

Innovation environment is the foundation of innovation activities in regional central city. Policy environment means that the government formulates laws and regulations and introduces relevant measures for the purpose of improving innovation capability. However, there is still a big gap on innovation policy in regional central city, which leads to the lack of innovation concentration. Cultural environment is mainly reflected in the value orientation of innovation subject, the degree of acceptance, tolerance or support for new ideas and behaviors. Many enterprises believe that the cost of innovation activities is high. Based on conservative estimates, they chose to stand still and refuse to accept new ideas. Under the background of digital economy, the boundaries between different fields have become increasingly blurred, leading to intensified market competition and even predatory innovation [4]. Fierce market competition often triggers price wars, resulting in an imbalance between supply and demand, which disrupts innovation activities.

4. The Promotion Path of Innovation Capability in Regional Central City under Background of Digital Economy

Entering the new economic era, the improvement of innovation capability in regional central city has important strategic significance and value of the times. In view of the factors that restrict the improvement of innovation capability, active countermeasures have been proposed from the three levels of national, regional and enterprise to promote the innovation development in regional central city.

4.1 National level: Government Should Give Full Play to Service Function and Increase Policy Support

Firstly, government can use big data, cloud computing and artificial intelligence to obtain data such as resource distribution, supply and demand situation, transaction behavior, and carry out fine and intelligent management for innovation development in regional central city, which can improve the service capacity of innovation system.

Secondly, the government should give full play to its leading force in innovation development in regional central city, focus on improving scientific and technological innovation capabilities, and formulate relevant policies and regulations that encourage and support innovation development. For example, since "mass entrepreneurship and innovation" was proposed, innovation activities across the country have quickly reached unprecedented levels in the short term [5]. The government can continue to provide policies such as tax incentives, market fairness, and ownership protection. The ownership protection policy serves the activities of technology research and development, brand design, unique invention, etc., which can prevent innovation from being imitated and copied, resulting in a large number of results, and guarantee the smooth development of innovation activities.

Finally, the government should increase direct investment in scientific and technological innovation and increase investment in education. The direct investment from the government is the most important and direct source of funds for innovation activities. The government should improve the stable growth mechanism of fiscal innovation investment, gradually increase the proportion of expenditure on science and technology innovation in the general public budget, strengthen support for basic research, education innovation research and cutting-edge technology research, and ensure that enterprises, universities, and research institutes have sufficient and stable funding sources for innovation.

4.2 Regional Level: Improve Mechanism on Talent Introduction and Strengthen Construction on Innovation Environment

Various fields and links of urban development are infiltrated and covered by digital economy, and talents are increasingly becoming the core driving force for innovation development and urban transformation. The scale and quality of talents are the key factors affecting the improvement of innovation ability [6]. Not only the perfect mechanism of talent introduction should be established, but also innovation environment conducive to talent development should be strengthened.

In order to attract high-level talents, the threshold of entering to regional central city should be lowered, the guiding role of funds should be given full play, scientific and technological leaders suitable for innovation development and R&D talents of key industries should be actively introduced, and the distinctive talent chain closely connected with the high-tech industrial chain should be formed. The mechanism of talent evaluation must be improved to ensure that talents participate in the distribution of benefits with innovative elements such as knowledge, skills, management, etc., and reward the value of talents with market value. The material and spiritual incentives for talents must be strengthened. In order to avoid the loss of talents, the talent guarantee mechanism must be constantly improved in order to retain local talents.

As for strengthening the construction of innovation environment, On the one hand, we should create soft environment for innovative culture. Culture can improve the reputation of regional central city, provide strong support for urban construction, and drive the tourism and economic development. The innovation willingness and value orientation of innovation subject can be influenced by cultural environment. A good cultural atmosphere in a region can continuously promote a good cycle of innovation activities and improve the evolution of innovation level to a more efficient and coordinated direction. On the other hand, the construction of hard environment should be paid attention. The informatization and intelligentization of development in regional central city are affected by the level of Internet infrastructure. The construction of Internet infrastructure should be strengthened to provide more convenient supporting services for the

generation of innovation achievements.

4.3 Enterprise Level: Attach Importance to Scientific and Technological Innovation and Give Play to Linking and Driving Effect

The enterprise is the core innovation subject in regional central city, and the innovation ability of the enterprise represents the innovation level of the city to a certain extent. Firstly, enterprises should attach importance to scientific and technological innovation, increase investment in scientific and technological innovation, constantly introduce talents in the field of digital economy, and pay attention to the cultivation of digital talents, and then gradually form an excellent team of digital economy within enterprises. At the same time, enterprises should set up their own R&D institutions and increase R&D expenditures. The more enterprises engaged in R&D activities, the higher the innovation output will be.

Secondly, the engine enterprises in regional central city should give full play to their driving role, make use of the characteristics of digital economy, promote the construction of "big data" platform and Internet industry, give play to their ecological agglomeration role, and attract upstream and downstream enterprises to participate in innovation activities. Engine companies can encourage companies in similar ecological positions to form strategic alliances with the help of digital technologies. The innovation network formed with the engine enterprise as the core can give full play to the advantages of each enterprise and improve the overall innovation ability.

Thirdly, enterprises can cooperate with universities and research institutes to form an innovation network of industry-university-research alliance. Universities and research institutes are complementary to enterprises, and they can provide enterprises with a variety of resources such as innovative thinking and innovative technologies. The government report of the two sessions in 2018 emphasizes the integration and innovation of universities, research institutes and enterprises. Enterprises should build an open industry-university-research platform with a networked thinking and devote themselves to building a digital technology research platform. The "Trinity" innovation network can make better use of the advantages of each innovation subject. In this way, it can not only break through the core technical bottleneck of innovation, but also achieve the talent sharing, making the overall level of innovation far higher than a single enterprise.

5. Conclusion

Under background of digital economy, the innovation development in regional central city is facing new opportunities. The behavioral pattern of innovation subject is changed. Innovation resource is continuously energized. Innovation environment is updated. But at the same time, innovation subject, innovation resource and innovation environment are facing new challenges. In order to effectively solve the constraints on the improvement of innovation capabilities and promote high-quality urban development in regional central city, the nation, region and enterprise must work together.

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