

### Strategic Thinking on Digital Economy to Promote the High-Quality Development of China's Independent Innovation Demonstration zones

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#### Abstract

Based on the perspective of digital economy, this paper studies the high-quality development of national independent innovation demonstration zones, which provides new ideas for exploring and promoting the high-quality development of national independent innovation demonstration zones. The digital economy has an important driving effect on improving innovation efficiency, promoting industrial transformation and upgrading, and giving birth to new business formats, and has become a new driving force for the highquality development of national independent innovation demonstration zones. On the basis of analyzing the driving effect of the digital economy and the characteristics of high-quality development of the national independent innovation demonstration zone, the role mechanism model of the high-quality development of the national independent innovation demonstration zone based on the digital economy is constructed, and the high-quality development process of the digital economy promoting the industrial transformation and upgrading, the optimization of the allocation of innovation factors, and the improvement of the innovation supply system of the national independent innovation demonstration zone are explored. In order to achieve the strategic goal of high-quality development of the national independent innovation demonstration zone, it puts forward countermeasures and suggestions that should improve the construction of digital infrastructure, strengthen the optimization of digital system, train and introduce digital talents, promote the integration of digital economy and real economy, and accelerate the process of digital industrialization.

**Key words:** Digital national economy; Innovation demonstration zone; Independent digitalhigh-quality development; Digital industrialization

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### **1. FORMULATION OF QUESTIONS**

China's economy has entered a stage of high-quality development, and promoting high-quality development is the fundamental requirement for maintaining sustained and healthy economic development, which has become the forward direction and main theme of China's economic development (Hu, Xie, & Ren, 2019). Since the establishment of the first national independent innovation demonstration zone in China in 2009, the national independent innovation demonstration zone has played a strong demonstration role in innovation-driven development and promoting high-quality economic and social development, and has become an important carrier and strategic choice to promote high-quality economic development (Wang, et al, 2018). However, there are still many problems in the national independent innovation demonstration zone, such as lack of industrial integration, poor circulation of resources and factors, and poor allocation of human resources (Ma & Zhang, 2019), and new entry points are urgently needed to promote the solution of current problems to further release the vitality of high-quality development. China has entered the era of digital economy and is a digital economy power in the true sense (Du, 2018). At present, China has entered a new era and is in the turning stage of economic development, in order to maintain high-quality economic development,

it is necessary to adapt to the general trend of economic change (Lu, 2019), and the digital economy has become a major strategic opportunity to drive the high-quality development of the national independent innovation demonstration zone. Based on the perspective of digital economy, the study of the high-quality development of national independent innovation demonstration zones provides new ideas for exploring and promoting the highquality development of national independent innovation demonstration zones.

Promoting the digital economy from bigger to stronger and driving the digital transformation of emerging industries in the National Independent Innovation Demonstration Zone is an inevitable choice to promote the high-quality development of its economy (Cao, 2018). At present, the academic community has explored the promotion of high-quality development of digital economy from different angles (Zhang & Li, 2019), and the national independent innovation demonstration zone is the driving engine for the high-quality development of regional economy, but the current research on the high-quality development of digital economy promotion demonstration area is still relatively lacking. How to let the national independent innovation demonstration zone use the "east wind" of the digital economy to promote the solution of problems in the process of highquality development is a practical issue that needs to be discussed urgently. In order to solve this problem, this paper combines the driving effect of digital economy with the strategic thinking of high-quality development, and discusses the role mechanism of digital economy in promoting the high-quality development of national independent innovation demonstration zones. The penetration of various elements of the digital economy into the innovation subjects of the demonstration zone is conducive to accelerating the national independent innovation demonstration zone, improving the efficiency of scientific and technological innovation, smoothing the flow of factors, and continuously developing and expanding new momentum for high-quality development.

# 2. DRIVING EFFECTS OF THE DIGITAL ECONOMY

After the agricultural economy and industrial economy, the digital economy has become a new form of socioeconomic development (Liu,2019). In 1995, Don Tapscot proposed the concept of digital economy, and the connotation and extension of digital economy have been evolving with its development. At present, the clearest is the definition made at the 2016 G20 Hangzhou Summit: a series of economic activities with the use of digital knowledge and information as key production factors, modern information networks as important carriers, and the effective use of information and communication technology (ICT) as an important driving force for efficiency improvement and economic structure optimization. The digital economy is an important force driving rapid economic development, and its driving effects are mainly manifested in the following aspects.

#### 2.1 Digital Technology is Conducive to Improving the Efficiency of Scientific and Technological Innovation

Digital economy is marked and driven by digital technology, the supply of digital technology such as artificial intelligence continues to create digital economic benefits, the ever-changing digital information technology is an inexhaustible driving force to drive high-quality economic development, playing a huge role in economic development. In the process of the digital economy penetrating into all social reproduction links such as production, distribution, exchange and consumption, we will continuously accelerate the circulation and integration of scientific and technological innovation elements and breakthroughs in core technologies, continuously improve the efficiency of scientific and technological innovation, and accelerate the transformation and application of scientific and technological achievements. Data-driven innovation has become a key form of innovation and is gradually expanding into many areas of the economy and society.

# 2.2 The Digital Economy Can Give Birth to New Formats and Models

The digital economy has led to the rise of countless emerging enterprises that use data as a key factor of production, creating large-scale economic benefits. At the same time, the digital economy promotes the rapid transformation of scientific and technological innovation achievements, drives management innovation with digital technology innovation, provides impetus for economic development, and continuously gives birth to new formats, new models and new industries: such as Internet finance, telemedicine, shared cars, and intelligent risk control, intelligent medical diagnosis, intelligent driving, etc. spawned by the development of artificial intelligence. In this process, the digital economy continues to innovate the use of natural resources, constantly innovate economic development methods, and achieve sustainable economic development more effectively.

#### 2.3 The Digital Economy Can Promote Industrial Transformation and Upgrading

While accelerating its own development and realizing digital industrialization, the digital economy is gradually going beyond the scope of the information industry, gradually penetrating into other industries and crossintegrating with various industries, data has become a key production factor, and digital information technology is comprehensively transforming traditional industries. More and more traditional industries have begun to use digital technology through information transformation, provide digital products and services, realize industrial digital transformation, and drive industrial transformation and upgrading. In this process, total factor productivity, production and operation efficiency, and management organization efficiency continue to improve, production processes are continuously optimized, effective supply capacity is significantly improved, and the industrial value chain is driven to the middle and high end of the industrial value chain.

### 3. CHARACTERISTICS OF HIGH-QUALITY DEVELOPMENT OF NATIONAL INDEPENDENT INNOVATION DEMONSTRATION ZONES

In the new era, the national independent innovation demonstration zone has entered a stage of high-quality development, and the specific characteristics are reflected in the following aspects.

#### 3.1 The Configuration of Elements in the Demonstration Area Is More Efficient

The National Independent Innovation Demonstration Zone has cultivated a large number of innovation-leading enterprises, and on the basis of building an innovation subject that effectively drives high-quality economic development, it has accelerated the deep integration of production, education, research and application, and integrated and allocated innovation elements more efficiently. Since the establishment of the Pearl River Delta Demonstration Zone, while the two core cities of Guangzhou and Shenzhen have gathered a large number of innovative elements such as capital and talents, each element has also accelerated its diffusion to the surrounding areas (Lin, Liu, & Liu, 2019). The National Independent Innovation Demonstration Zone effectively breaks the restrictions and segmentation of administrative divisions along the route, accelerates the rational flow and sharing of various resource elements inside and outside the demonstration area, accelerates the optimal layout of innovation elements, and effectively builds an efficient operation, coordinated and orderly element allocation system.

# **3.2 The Transformation and Upgrading of the industrial System in the Demonstration Area Is More Obvious**

The National Independent Innovation Demonstration Zone not only helps the formation of industrial clusters and stimulates new industrial vitality, but also provides effective support for the cultivation and development of high-precision and cutting-edge industries and emerging industries, promotes the transformation of the industrial system from mainly factor-intensive to technologyand knowledge-intensive, and creates a new innovative and high-quality industrial system with coordinated development. As the main position of the development of advanced manufacturing industry in Tianjin, Tianjin National Independent Innovation Demonstration Zone has a certain agglomeration scale in its advanced manufacturing industry cluster; Strategic emerging industries such as quantum communication and artificial intelligence have flourished, with an output value growth rate of more than 20% for three consecutive years.

#### 3.3 The Benefits of Scientific and Technological Innovation Achievements in the Demonstration Area Are More Significant

As a pioneer base for innovation-driven development, the National Independent Innovation Demonstration Zone fully attaches importance to the key role of scientific and technological innovation in promoting high-quality development. The construction of the innovation ecosystem of the national independent innovation demonstration zone is conducive to joint research breakthroughs in key technologies and increases the supply of high-quality scientific and technological achievements. On this basis, the National Independent Innovation Demonstration Zone has continuously improved the mechanism for the transformation of scientific and technological achievements, improved the efficiency of achievement transformation and industrialization, and driven high-quality economic development. The number of effective patents in Zhongguancun is 6.7 times the national average; in 2018, driven by the Lanbai National Independent Innovation Demonstration Zone, Gansu Province successfully transformed 245 application technology achievements and created economic benefits of more than 60 billion yuan, fully demonstrating the innovation-driven high-quality development achievements of the National Independent Innovation Demonstration Zone.

## 3.4 The Effect of Talent Agglomeration in the Demonstration Area Is More Obvious

Talent is the first resource of innovation, and the national independent innovation demonstration zone has become a high-end talent gathering area. The National Independent Innovation Demonstration Zone has always placed the cultivation and attraction of talents in a prominent position, continuously improved various scientific and technological talent policies such as talent incentives, continuously strengthened the guarantee of talent services, and strived to create an innovation and entrepreneurship highland where high-level talents gather freely and flow. By 2017, Shanghai Zhangjiang has more than 200,000 talents of all kinds; According to statistics, the average annual growth rate of scientific and technological talents in the three demonstration zones of Beijing, Wuhan and Shanghai is 10.83%, 10.32% and 16.78% respectively, of which the per capita creative income of talents in Optics Valley and Zhongguancun exceeds 1 million yuan / person, and Optics Valley has reached 1.8882 million yuan / person (Xie & Lei, 2019).

### 4. THE ROLE MECHANISM OF DIGITAL ECONOMY IN PROMOTING THE HIGH-QUALITY DEVELOPMENT OF NATIONAL INDEPENDENT INNOVATION DEMONSTRATION ZONES

The digital economy promotes the high-quality development of the national independent innovation

demonstration zone is a process of comprehensive penetration, full integration and continuous upgrading, in which data elements are cross-integrated with traditional capital, labor and other factors to drive the quality of the supply system, optimize the allocation of innovation factors, and continuously optimize the industrial structure. Digital technology continues to improve the efficiency of scientific and technological innovation, give birth to new formats and models, play an important role in optimizing the industrial structure and establishing a highquality development system, and inject new vitality into the high-quality development of the national independent innovation demonstration zone. See Figure 1.



#### Figure 1

The mechanism of high-quality development of digital economy driving national independent innovation demonstration zones

#### 4.1 The Digital Economy Is Conducive to Driving the Transformation and Upgrading of the Industrial Structure of the Demonstration Area

The development of the digital economy has formed a basic industry of the digital economy with the information and communication industry as the core. More importantly, the digital economy is an integrated economy, with significant enabling effects, and is continuously integrated with the real economy in depth and breadth. Promote the continuous improvement of the digitalization and intelligence of traditional industries, especially the manufacturing industry, in the National Independent Innovation Demonstration Zone, and new manufacturing models continue to emerge. Driven by "enterprise cloud" and "ET industrial brain", Hangzhou National Independent Innovation Demonstration Zone has taken the lead in embarking on the road of intelligent manufacturing. The digital economy continuously improves the degree of digital construction of the national independent innovation demonstration zone, promotes the development of emerging industries in the national independent innovation demonstration zone and the transformation of traditional industries, and promotes the establishment of a high-quality industrial system.

#### 4.2 The Digital Economy Is Conducive to Improving the Allocation Efficiency of Innovation Elements in Demonstration Areas

After China enters the stage of high-quality development, the structure and constraints of factor resource endowments have changed, and the national independent

innovation demonstration zone must play the key role of each factor in related fields in order to achieve highquality development. The development of the digital economy has spawned new data elements, broken through the constraints of traditional factors, become a key element to promote the sustainable economic development of the demonstration area, further optimized the allocation and use efficiency of resources, and opened up a new source of economic growth. More importantly, the digital economy has promoted the marketization of factors in the national independent innovation demonstration zone, continuously broken the institutional barriers of resource factors in reasonable pricing and free agglomeration and flow, and driven the reduction of transaction costs. Inspur Group in Shandong Peninsula Demonstration Zone comprehensively uses digital technology to create a quality co-governance ecosystem - the quality chain covers the whole country, effectively promoting the efficient combination of innovative resources and production factors in various regions, and greatly improving total factor productivity.

#### 4.3 The Digital Economy Is Conducive to Accelerating the Rapid Transformation of Innovation Achievements in Demonstration Areas

Data elements have become the key production factors to promote the high-quality development of the demonstration area, digital talents have become the cornerstone and guarantee for the development of the digital economy, digital technology has continuously improved efficiency and released vitality, and the digital economy has become a direct driving force for the high-quality development of the national independent innovation demonstration zone. In 2018, the benefits of China's digital industrialization reached 6.4 trillion yuan, accounting for 7.1% of GDP, and the benefits of industrial digitalization exceeded 24.9 trillion yuan, accounting for 27.6% of GDP; In the first half of 2019 alone, the digital economy industry revenue of Chongqing Liangjiang New Area reached 70.2 billion yuan. In addition, the digital economy has made the connection between innovation subjects inside and outside the national independent innovation demonstration zone closer, and the continuous improvement of the innovation ecosystem has driven the innovation organization to evolve in the direction of networking and ecology. Various elements jointly help basic research and core technology research to make breakthroughs, rapidly transform scientific and technological achievements, and continuously improve the innovation ability and level of the demonstration area.

#### 4.4 The Digital Economy Is Conducive to Improving The Quality of the Economic Development Supply System in the Demonstration Area

The digital economy has driven the improvement of the quality of the economic development supply system of the national independent innovation demonstration zone, first of all, the quality of technology supply. With the support of the Internet and big data, the National Independent Innovation Demonstration Zone continues to promote the cross-integration and innovation of multiple technologies. Secondly, the quality of supply entities has been improved, and the development of the digital economy has driven national independent innovation demonstration zones to give birth to a number of high-quality innovation subjects with strong independent innovation capabilities and high brand awareness in various fields. The Shenzhen National Independent Innovation Demonstration Zone has cultivated a number of high-tech leading enterprises such as Huawei, ZTE, and Tencent. Meiyapaike in Fuxiaquan Demonstration Zone has become the world's largest electronic data forensics company, and the cloud pulse technology Chinese character OCR recognition technology is the world's leader.

### 5. STRATEGIC MEASURES FOR PROMOTING THE HIGH-QUALITY DEVELOPMENT OF NATIONAL INDEPENDENT INNOVATION DEMONSTRATION ZONES THROUGH THE DIGITAL ECONOMY

In the 90s of the 20th century, the US economy showed high-quality development characteristics driven by the

digital economy and entered the era of "new economy". In the 21st century, especially after the 2008 financial crisis, countries around the world have accelerated the pace of formulating digital economy strategies, effectively promoting economic recovery. In 2018, the scale of China's digital economy reached 31.3 trillion yuan, accounting for 34.8% of GDP. Therefore, in the process of promoting the high-quality development of national independent innovation demonstration zones in the digital economy, it is necessary to combine the resource advantages and industrial foundation of the demonstration zones themselves, learn from the successful experience of developed countries in developing the digital economy, and formulate specific implementation measures in a targeted manner.

# 5.1 Improve the Construction of Digital Economy Infrastructure in Demonstration Areas

Information and communication infrastructure is the basic support for the development of the digital economy, and to promote the high-quality development of the national independent innovation demonstration zone, it is necessary to have a sound digital infrastructure. The infrastructure required for the digital economy is not only the transformation and upgrading of traditional physical infrastructure, but also the re-coverage of new digital infrastructure. It is necessary to strengthen the leading role of the government, on the one hand, accelerate the digital transformation of traditional physical infrastructure such as transportation networks, and on the other hand, accelerate the construction of a new digital infrastructure support system based on relevant digital enterprises in demonstration areas. It is necessary to strengthen investment in new digital infrastructure with innovative investment and financing models, build new infrastructure construction systems including high-speed broadband, 5G networks, IPv6 technology, smart grids, etc., and increase the construction of open source platforms for network data resource management and enterprise cloud facilities. The government and national independent innovation demonstration zones should also promote the establishment of enterprise big data information management databases, support the deployment of Internet enterprises on the data cloud platform, improve the service support capabilities of digital information companies, build and improve data interconnection and sharing channels, resolve digital barriers, strengthen the sharing of digital information resources between demonstration areas and among innovation subjects in demonstration areas, and improve the utilization rate of data resources.

# 5.2 Strengthen the Optimization of the Digital System in the Demonstration Area

The digital economy promotes the high-quality development of the national independent innovation demonstration zone, which is inseparable from the governance of the digital environment, the optimization of the policy ecology and the support of top-level design. In the current process of digital economy development, there are many problems such as poor data security and incompatible institutional mechanisms, and China stressed at the G20 Osaka meeting that data flow should be premised on security. To promote the high-quality development of the national independent innovation demonstration zone in the digital economy, we should first build a sound digital environment governance system, further innovate the supervision service model, strengthen the collaborative governance mechanism, determine reasonable laws and regulations, and standardize the market order of the development of the digital economy. Continue to strengthen institutional reform, improve market mechanisms, increase the intensity of breaking down barriers to factor reset, establish reasonable property rights, supply and demand and price systems, establish effective incentive market competition mechanisms, scientific resource and environmental management and ecological civilization systems, and improve foreign economic systems, and reduce obstacles in the process of digital economy promoting the high-quality development of national independent innovation demonstration zones. In the process of promoting the high-quality development of the national independent innovation demonstration zone by the digital economy, the expansion of industrial development space and depth depends on the toplevel design. In terms of strategic positioning, each national independent innovation demonstration zone should occupy the commanding heights of the strategic development of the digital economy in accordance with the principle of long-term and breakthrough. A leading group for the digital economy should be established, toplevel design should be done, digital maturity should be improved in key aspects such as strategic positioning and support systems, relevant opinions and plans should be issued in a timely manner, overall planning capabilities should be improved, and various work should be scientifically promoted in the digital construction of the national independent innovation demonstration zone, so as to steadily realize digital transformation and do a good job in the new layout of digital development in the demonstration area.

# 5.3 Cultivate and Introduce High-Level Talents in the Digital Economy in Demonstration Areas

Digital literacy is considered to be the primary skill in the 21st century, and the digital economy promotes the high-quality development of the national independent innovation demonstration zone, which requires the support of new digital talents with digital literacy. Talent is the key innovation resource and basic innovation subject of the national independent innovation demonstration zone, and is the bridge connecting factor resources and enterprises. The digital economy puts forward higher requirements

for the literacy that talents need to have, not only professional skills related to production services, but also digital skills of a new generation of digital information technology such as information communication and big data, and higher requirements for talents' ability to absorb knowledge transformation and learn quickly. Starting from the introduction of talents, the National Independent Innovation Demonstration Zone introduces digital emerging talents at different levels that are in line with the integrated development of the digital economy and the real economy, absorbs new talent resources, and continues to expand the team of innovative talents. It is also necessary to pay attention to the cultivation of existing talents, establish a sound digital training platform, and improve the digital literacy of existing talents at different levels. Provide as much support as possible to new digital innovation talents according to different needs, improve the corresponding preferential policies and incentive mechanisms for talents, give innovation teams and talents greater right to control resources, continuously stimulate the enthusiasm of talents for innovation and entrepreneurship, and provide impetus for high-quality development.

#### 5.4 Promote the Integration of the Digital Economy and the Real Economy in the Demonstration Area

At present, the role of digital factors in improving the efficiency of other industries is constantly increasing, and it has become an emerging key force for innovation and change in the national independent innovation demonstration zone. In order to achieve the high-quality development of the national independent innovation demonstration zone, it is necessary to accelerate the smooth flow of digital elements in the demonstration area and interval, and innovation subjects such as enterprises, scientific research institutes, and public innovation spaces should take the initiative to attract, accept and promote the integration of digital elements and economic development, pay attention to increasing investment in digital research and development, and improve the quality level of enterprise development. The national independent innovation demonstration zone should give full play to its role as a pioneer, use data elements and digital technology to promote the transformation and upgrading of the real economy, innovate business models under the impetus of the digital economy, stimulate the new vitality of traditional industries, and realize the intelligent upgrading of the industrial chain. For example, the Red Collar Group in Shandong Peninsula uses big data and artificial intelligence to realize intelligent production and operation, perfectly integrating the personalization of demand with the scale of production, which can not only meet differentiated needs, but also achieve cost savings and improve management efficiency.

#### 5.5 Accelerate the Process of Digital Industrialization In Demonstration Areas

The National Independent Innovation Demonstration Zone should make use of the digital economy to promote the high-end development of industrial intelligence and improve the high-quality industrial system. While promoting the digital transformation of industries, the National Independent Innovation Demonstration Zone should accelerate the promotion of digital industrialization, and use the Internet and blockchain technology to accelerate the development of new business models such as new retail, new e-commerce, and new logistics. It is necessary to accelerate breakthroughs in key areas of big data and build a big data industry ecosystem; Accelerate the use of artificial intelligence technology to optimize from the workshop to the factory to the industrial chain. The National Independent Innovation Demonstration Zone should focus on promoting the introduction and implementation of new growth points of the digital economy such as 5G and artificial intelligence, give birth to a large number of digital economy enterprises with good growth in the demonstration zone, focus on consolidating and upgrading emerging industries such as cloud computing and digital security, and vigorously develop future industries such as virtual reality and quantum technology. Use the digital economy to vigorously cultivate new momentum, strengthen scientific and technological innovation, and cultivate emerging industrial power for high-quality development, so as to drive further cost reduction and efficiency increase, and continuously consolidate the foundation for high-quality development.

# 5.6 Create a Good Atmosphere for the Development of the Digital Economy in the Demonstration Area

National independent innovation demonstration zones should fully consider the particularity of digital elements, strengthen the optimization of the innovation environment, smooth the flow channels of digital elements, and continuously improve the efficiency of digital resource allocation. It is necessary to improve the financial support system for the digital economy to promote the high-quality development of the national independent innovation demonstration zone, optimize the financial market support for the common development of the digital economy and the real economy, innovate investment and financing models, and integrate all kinds of social funds. It is necessary to establish and improve the policy mechanism for digital technology innovation to promote high-quality development, provide a sound mechanism for scientific and technological transformation, create a good policy environment for digital technology to drive innovation and the effective transformation of scientific and technological achievements, accelerate the industrialization of innovation results, and improve the high-quality development level of national independent innovation demonstration zones.

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