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Research on Strategies for High-Quality Development of Digital Economy Innovation in the Context of High-Level Opening-Up: A Case Study of Wenzhou, Zhejiang

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Abstract: In the context of high-level opening-up, the digital economy has become a key driver of economic growth and industrial upgrading, emerging as a central issue in China's modern economic development. This study explores the significance of digital economy innovation in this context and addresses the challenges it faces, such as the need for technological advancement, incomplete legal frameworks, and a shortage of relevant talent. Strategies to enhance technological innovation, improve legal systems, and streng1hen the cultivation and attraction of digital economy talent are proposed. The feasibility of these strategies is validated through a case study of Wenzhou, Zhejiang, providing insights for the development of China's digital economy in the new era.

Keywords: Digital Economy; Opening-up; Development Strategies

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Introduction

With the deepening of globalization and the acceleration of technological revolutions, the digital economy has gradually become a new engine driving economic growth and social development [1]. At its core, the digital economy leverages data as a key production factor and modern information technology as its driving force, integrating emerging technologies such as the Internet, big data, cloud computing, and artificial intelligence to revitalize traditional industries [2,3]. In the context of high-level opening-up, maximizing the role of digital economy-driven innovation to improve quality and efficiency is a crucial issue facing governments and enterprises. This economic model's rapid development has not only transformed production, transaction, and lifestyle patterns but also reshaped the global economic landscape [4]. The opportunities and challenges presented by high-level opening-up make researching strategies for promoting digital economy innovation particularly relevant and valuable.

Combining the current state and existing problems of digital economy innovation under high-level opening-up, this study aims to propose effective development strategies, using Wenzhou, Zhejiang, as a practical example to provide a reference for China's economic growth in the new era.

1. The Significance of Digital Economy Innovation in the Context of High-Level Opening-Up

1.1 Promoting Economic Growth

Digital economy innovation serves as a new driver of economic growth by enhancing production and resource allocation efficiency. The application of digital technologies, such as big data, artificial intelligence, and the Internet of Things, facilitates faster and more precise flows of production factors and information, thereby promoting intelligent and automated production processes [5]. In a globalized economy, high-level opening-up accelerates the cross-border diffusion and application of these technologies, enabling local economies to more rapidly absorb cutting-edge technologies and advanced production models, thereby increasing total factor productivity.

Moreover, digital economy innovation drives economic growth by fostering new industries and business models. Through high-level opening-up, local economies can access broader market demands and benefit from favorable policy environments that encourage digital technology innovation. The rapid development of the digital economy has given rise to various emerging industries and business models, such as the sharing economy, digital finance, and smart healthcare, which extend economic growth potential by breaking traditional industry boundaries and forming related upstream and downstream industrial chains.

1.2 Facilitating Industrial Upgrading

Digital economy innovation in the context of high-level opening-up contributes to increasing the technological content and value-added of industrial chains, steering industries toward mid- to high-end development. Supported by digital technologies, traditional manufacturing can achieve significant improvements in production efficiency and product quality through intelligent and digital transformations, leading to refined management and flexible production. This helps optimize resource allocation and production processes within industries while enhancing product functionality and diversity, making companies more competitive in the market [6]. The shift to technology-driven production helps companies adapt to changing global market demands, thereby boosting their international competitiveness and resilience.

1.3 Creating Employment and Entrepreneurship Opportunities

The digital economy, through the establishment of online platforms, removes spatial constraints and enables diverse forms of employment, such as remote work, freelancing, and online jobs. High-level opening-up further promotes the development of these new employment models, generating numerous new jobs domestically while allowing workers to participate in the international division of labor through digital platforms, thereby increasing employment flexibility. Additionally, digital economy innovation creates opportunities for entrepreneurship by nurturing new industries and business models. The free flow of technology, capital, and management experience under high-level opening-up creates a more favorable and diverse entrepreneurial environment, especially in the digital economy sector, where new technologies and platform economies offer low-cost startup conditions and greater market access opportunities [7].

2. Challenges in the Development of Digital Economy Innovation

2.1 Insufficient Technological Advancement

Although progress has been made in digital technologies in recent years, there are still significant gaps in key areas such as high-end chip design, artificial intelligence algorithm optimization, and large-scale data processing compared to leading global standards. The core patents and key technologies in many digital fields remain concentrated in a few developed countries, limiting domestic technological autonomy and affecting the efficiency of technology transfer and industrialization.

Basic research is essential for technological breakthroughs and industrial transformation, yet there is a structural imbalance in

resource allocation and funding for basic research in digital economy-related fields [8]. A large portion of resources is focused on applied research, while exploratory and high-risk basic research is underfunded, hindering potential technological breakthroughs and limiting the digital economy's ability to lead in new fields.

2.2 Incomplete Legal Frameworks

Digital economy legislation lags behind its rapid development, covering areas such as e-commerce, online payment, big data processing, and AI applications. Existing legal frameworks are often designed for traditional economic activities and fail to comprehensively address the unique characteristics and requirements of the digital economy. This results in vague and inconsistent legal guidelines, creating uncertainty in regulatory compliance [9].

In terms of market regulation and competition oversight, current laws struggle to address new challenges posed by digital platforms, such as monopolistic practices and unfair competition. Additionally, legal provisions for consumer protection fall short in certain digital economy scenarios, such as disputes over virtual property ownership and responsibilities in online transactions.

2.3 Shortage of Relevant Talent

The rapid growth of the digital economy has led to a strong demand for high-level technical talent, which current reserves cannot meet, especially in fields like data science, AI, and blockchain. The scarcity of talent with deep theoretical knowledge and practical skills impedes companies' R&D capabilities and the large-scale application of new technologies [10].

The digital economy also requires interdisciplinary talent, combining expertise in technology, management, law, and marketing to facilitate the commercialization and market adoption of innovations. However, there is a lack of systematic training mechanisms for cultivating such talent, limiting the effectiveness of digital technology in transforming traditional industries.

3. Strategies for High-Quality Development of Digital Economy Innovation in the Context of High-Level Opening-Up

3.1 Enhancing Technological Innovation Capacity

Increased investment in basic research is necessary to establish a multi-layered research support system, ensuring ongoing exploration in cutting-edge technologies. Governments should guide policies that encourage high-risk, high-potential research projects, diversifying funding across universities, research institutes, and enterprises. Promoting collaborative research between academia and industry will deepen and broaden technological innovation.

Building technology innovation platforms at national and local levels is crucial for supporting key fields in the digital economy. Standardization efforts should be encouraged through industry associations and technical alliances to facilitate the widespread application of new technologies. International collaboration should be integrated into platform development to enhance global influence.

3.2 Improving Digital Economy Legislation

Legislative systems should be updated to cover data protection, cybersecurity, platform economy regulation, and cross-border data flows. New laws should clarify issues like data sovereignty, algorithmic bias, and virtual property rights to form a comprehensive legal framework. Public consultation should be incorporated into the legislative process to ensure that

regulations are adaptable and enforceable.

Aligning domestic laws with international standards will enhance the transparency and global applicability of regulations, particularly in areas like data protection and cross-border e-commerce. This alignment will facilitate international cooperation and boost the competitiveness of domestic digital enterprises.

3.3 Cultivating and Attracting Digital Economy Talent

Higher education systems should optimize curricula for fields such as AI, big data, and blockchain, integrating theory and practical training. Universities should collaborate with industry to create training programs and internships, aligning academic output with market needs.

Targeted talent attraction programs should be implemented to bring in top international experts. Policies such as streamlined visa processes, tax incentives, and research funding will make the country more appealing to global talent. Establishing international recruitment networks and providing support for returning overseas students can further strengthen the talent pool.

4. Case Analysis: Wenzhou, Zhejiang

As one of China’s pioneering cities in the era of reform and opening-up, Zhejiang's Wenzhou has accumulated significant experience and exploration in advancing digital economy innovation and high-quality development. By actively enhancing technological innovation capabilities, continuously improving legal and regulatory frameworks, and strengthening the cultivation and attraction of digital economy talent, Wenzhou has gradually formed a distinctive model for digital economy development under the context of high-level opening-up.

Leveraging its well-established industrial base and market mechanisms, Wenzhou has actively promoted the transformation of traditional manufacturing industries towards digitalization and intelligentization. The city’s traditional industries, such as footwear, apparel, and pump-valve manufacturing, have gradually realized automation of production processes and refined management by integrating technologies like artificial intelligence, big data, and the Internet of Things. For instance, in the pump-valve industry, companies have implemented smart manufacturing workshops and IoT monitoring systems, achieving comprehensive digital management of the entire production process, significantly improving production efficiency and product quality. This technology-empowered industrial approach has effectively enhanced the core competitiveness of Wenzhou's traditional manufacturing sector.

Additionally, the local government has established special funds to support the research, development, and application of digital technologies, attracting a number of technology companies with strengths in cutting-edge fields like artificial intelligence and blockchain to set up operations in Wenzhou. The technological innovations of these companies have not only facilitated the transformation and upgrading of local enterprises but also advanced the city’s industrial layout in high-end digital technologies. This clustering effect has further strengthened Wenzhou's competitive advantage in regional digital economy development.

Wenzhou has implemented a series of proactive measures to create a favorable legal environment tailored to the characteristics of digital economy development. The local government has been a pioneer in enacting targeted local regulations and policies in areas such as data protection, cybersecurity, and platform economy oversight, providing detailed guidelines for data transactions, personal information protection, and corporate data compliance to ensure orderly development of the digital economy market.

In the regulation of platform economies, Wenzhou has strengthened the supervision of e-commerce platforms and the sharing economy to regulate market order and prevent issues such as monopolistic practices and unfair competition from adversely affecting the healthy development of the digital economy. These legal and regulatory improvements not only provide clear compliance guidelines for local businesses but also lay a solid institutional foundation for the long-term development of the digital economy, effectively mitigating potential legal risks associated with technology application.

Wenzhou has also made significant achievements in the cultivation and attraction of digital economy talent. The local government has collaborated with numerous well-known domestic and international universities and research institutions to establish several research centers and innovation and entrepreneurship bases in the digital economy sector, providing strong talent support for the city's digital economy development. Local universities such as Wenzhou University of Technology have introduced courses in fields like big data and artificial intelligence, and have co-developed practical training programs with companies to enable students to better master cutting-edge technologies and meet market demand.

At the same time, Wenzhou has introduced a series of incentive policies to attract high-level technological talent, such as offering housing subsidies, research funding, and entrepreneurship support, significantly increasing the city's appeal to top talent from other regions and abroad. Through a "local cultivation + external introduction" talent strategy, Wenzhou has built a well-established talent pool in the digital economy sector, providing essential human resource support for promoting technological innovation and industrial upgrading.

Wenzhou's successful experience indicates that in the rapidly evolving era of the digital economy, local governments should actively promote the deep integration of industry and technology, establish comprehensive legal and regulatory safeguards, and prioritize strategic talent development and attraction. Only by doing so can they seize development opportunities amidst fierce global competition and achieve high-quality economic transformation and upgrading.

5. Conclusion

The high-quality development of the digital economy requires coordinated progress in institutional innovation, technological advancement, talent aggregation, and global cooperation. The future path must incorporate international perspectives and local characteristics, balancing global best practices with independent exploration to propel the digital economy to new heights.

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