

Research on Digitalization and High-Quality Economic Development of Shaanxi Province

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Abstract: This study focuses on digitalization and the high-quality economic development of Shaanxi Province, conducting an in-depth exploration of the digital development in Shaanxi. Regarding the current development status, it first elaborates on the connotations of economic digitalization and the digital economy, and then analyzes Shaanxi's digitalization level, covering aspects such as its national ranking, digital infrastructure construction, scale of the digital economy, policy support, and achievements in digital industrialization and industrial digitalization. The analysis reveals that Shaanxi faces a series of problems in digital development: there are shortcomings in systematic planning, including deficiencies in top-level design, overall coordination, and the allocation of development goals, powers, and responsibilities; the development of new digital economy formats is unbalanced, manifested in uneven regional development and industrial integration, lagging legal supervision, and a severe digital divide; the development environment is unfavorable, with issues in the marketization of data factors, shortages in infrastructure and talents, sharing of government data, and information construction. Based on these findings, this study proposes suggestions such as strengthening top-level design, promoting university-enterprise cooperation, enhancing digital government construction, and accelerating the development of digital platforms, so as to drive the high-quality economic development of Shaanxi Province.

Keywords: Digitalization; Shaanxi Economy; High-Quality Development; Digital Economy; Digital Infrastructure Construction

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1. Definition of Core Concepts and Current Status of Shaanxi's Digital Development

1.1 Economic Digitalization and the Digital Economy

Economic digitalization refers to the transformation of production methods, operation models, and service approaches in traditional industries through the adoption of digital technology and information technology. The core of economic digitalization lies in the in-depth integration of digital technology with the real economy, thereby improving efficiency and optimizing the economic structure. Essentially, it represents an efficiency enhancement of traditional production models—empowering traditional enterprises with modern technological means to boost production efficiency and economic benefits. Unlike the digital economy, which forms an independent economic system, economic digitalization serves as a supplement and improvement to the existing economic system^[1].

The digital economy refers to a series of economic activities that take digitized knowledge and information as key factors of production, modern information networks as the main carrier, and realize efficiency improvement and economic structure

optimization through the effective application of information and communication technologies. It consists of two major components: digital industrialization and industrial digitalization. Digital industrialization mainly refers to the development of the information technology industry, such as the electronic information manufacturing industry and the software and information service industry; while industrial digitalization refers to the comprehensive transformation of traditional industries with the support of digital technology, enabling intelligent and digital upgrading. As a new economic form, the digital economy emphasizes that data has become a new factor of production, and information technology is deeply integrated with the real economy ^[2].

The digital economy is a form of expression and an advanced stage of economic digitalization. Through the application and innovation of digital technology, the digital economy promotes the optimization of the economic structure and the improvement of productivity, while economic digitalization provides the foundation and support for the development of the digital economy. The two complement each other and jointly drive the comprehensive digital transformation of the economy and society. However, the digital economy is an entirely new economic form, with data as its core factor of production, covering both digital industrialization and industrial digitalization, and featuring distinct digital, intelligent, and networked characteristics. In contrast, economic digitalization focuses more on the optimization and upgrading of traditional economic activities driven by digital technology, representing the process of transforming the traditional economy into a modern one. Although both rely on modern information technology means, they embody completely different production methods and economic development models.

1.2 Current Status of Shaanxi's Digitalization Level

1.2.1 Analysis of Shaanxi's National Ranking in Digitalization Level

According to the content released in the China Digital Economy Development Index Report 2023 by the Fifth Research Institute, at the national level, Shaanxi Province ranked 16th in the 2023 Digital Economy Development Index, standing at the forefront of the third tier nationwide, and demonstrating a certain degree of competitiveness in the national digital development landscape. Among the 12 provinces and autonomous regions in western China, Shaanxi, together with Sichuan and Chongqing, constitutes the first tier of digital economy development in the west, highlighting its significant advantages in digital development in western China. Specifically, Shaanxi has achieved remarkable results in the development of the digital economy, with both digital industrialization and industrial digitalization levels significantly improved. The total scale of its digital economy has successfully exceeded 1.4 trillion yuan, accounting for over 40% of its GDP, and ranking among the leading positions in western China.

1.2.2 Progress of Digital Infrastructure Construction in Shaanxi Province

Shaanxi has achieved remarkable results in the field of digital infrastructure construction. By the end of 2023, the province had built and put into operation a total of 88,000 5G base stations, realizing full 5G network coverage in administrative regions at and above the township level, with the 5G network coverage rate in administrative villages reaching 85%. Meanwhile, the coverage capacity of gigabit optical networks has exceeded 26 million households, and all prefecture-level cities in the province have met the gigabit city construction standards. Looking ahead to 2024, Shaanxi Province plans to build and put into operation more than 110,000 5G base stations, aiming to construct a layout across the province where "multiple networks coexist in high-traffic areas and a single network provides basic coverage in remote areas", so as to further optimize the digital infrastructure environment.

1.2.3 Development Trend of the Digital Economy Scale

The scale of Shaanxi's digital economy has continued to expand. In 2022, the total volume of the province's digital economy reached 1.2618 trillion yuan, accounting for 38.5% of the province's total GDP. By 2023, the scale of the digital economy exceeded 1.4 trillion yuan, accounting for over 40% of GDP. As the provincial capital, Xi'an has achieved outstanding performance in the digital economy, with a total volume of 524.9 billion yuan, accounting for 45.6% of the city's total GDP, and playing a crucial leading and supporting role in the development of the province's digital economy.

1.2.4 Policy Support for Digital Economy Development

Shaanxi attaches great importance to the development of the digital economy and has issued a series of policy measures

and plans to provide solid policy guarantees for the development of the digital economy. For example, the Shaanxi Digital Economy Development Plan clearly proposes that by the end of the 14th Five-Year Plan period, the output value of the province's electronic information manufacturing industry will reach 330 billion yuan, and the operating income of the software and information service industry will reach 500 billion yuan. In addition, the Shaanxi Provincial Party Committee and the Shaanxi Provincial Government have issued the Policy Measures for Promoting the High-Quality Development of the Digital Economy, putting forward 37 specific measures covering key areas such as the construction of new digital infrastructure, the digital transformation of industries, and the innovative development of digital industrialization, which point out the direction and provide strong support for the development of the digital economy.

1.2.5 Achievements in Digital Industrialization and Industrial Digitalization

Shaanxi has achieved remarkable results in digital industrialization and industrial digitalization^[3]. Xi'an has been successfully approved as a National Pilot Zone for the Innovative Development of the New Generation of Artificial Intelligence, injecting new impetus into the development of the digital industry. The number of enterprises "migrating to the cloud" in the province has exceeded 10,000, effectively promoting the digital transformation of enterprises. In the industrial field, Shaanxi has actively promoted digital construction. By the end of 2023, the number of enterprises in the province that have passed the certification of the upgraded version of the Integration of Informatization and Industrialization Management System had reached 1,690, ranking third in the country, which demonstrates a sound development trend of digitalization in the industrial field.

Shaanxi has achieved excellent results in the national and western regional rankings of the digital economy development index, and made significant progress in digital infrastructure construction, the expansion of the digital economy scale, policy support, as well as digital industrialization and industrial digitalization, demonstrating strong competitiveness and extensive influence in the national digital development landscape.

2. Analysis of Major Problems in the Digital Development Process of Shaanxi Province

Currently, the added value of the core digital economy industry in Shaanxi Province accounts for approximately 5% of the regional GDP. Although the digital economy in Shaanxi started relatively late, it has maintained a rapid development momentum, with the growth rate of its digital economy scale ranking among the top in western provinces and autonomous regions. Various cities in the province have shown bright spots in development, and achieved remarkable results in breaking through development difficulties. However, in the process of further promotion and development, it still faces a series of prominent problems that cannot be ignored.

2.1 Shortcomings in Systematic Planning

2.1.1 Inadequate Top-Level Design and Policy Guarantee System

Although Shaanxi has achieved certain development results in the field of the digital economy, its top-level design and policy guarantee system are still incomplete. This has led to the lack of a strategic plan for the development of the digital economy, making it difficult to clarify the goals and directions of industrial development and unable to provide solid and powerful guarantees for industrial development. Due to the lack of guidance from systematic top-level design, the development of the digital economy lacks unified layout and planning at the macro level, and it is difficult for the development of various fields and links to form a synergy effect.

2.1.2 Weak Overall Coordination

There are obvious deficiencies in overall coordination in promoting the development of the digital economy. The coordination and cooperation between different regions and departments are not close enough, resulting in poor information communication and difficulties in resource integration, which in turn leads to low overall development efficiency and unsatisfactory results. Different regions act independently in the development of the digital economy, lacking unified planning and coordination, which easily causes resource waste and redundant construction; the division of responsibilities between various departments is not clear enough, and there are phenomena of shirking responsibilities in the process of policy formulation and implementation, which affects the effective implementation of policies.

2.1.3 Unclear Development Goals and Allocation of Powers and Responsibilities

When formulating plans for the development of the digital economy, Shaanxi has failed to clarify specific development goals, and the allocation of powers and responsibilities is also not clear enough. This makes it difficult for various policy measures to be effectively implemented in actual operations. The lack of clear goal guidance makes it difficult for local governments and enterprises to determine their positioning and direction in the development of the digital economy; the unclear division of powers and responsibilities leads to confusion in project promotion and resource allocation, affecting the orderly development of the digital economy.

2.2 Imbalanced Development of New Digital Economy Formats

2.2.1 Prominent Problem of Unbalanced Regional Development

The development of the digital economy in Shaanxi shows an obvious distribution characteristic of “high in the central region and low in the northern and southern regions”. The Guanzhong region has a relatively high level of digital economy development, followed by northern Shaanxi, and southern Shaanxi has the lowest level. There is a large gap in digital development levels between cities in the province. Large cities such as Xi’an and Xianyang have achieved relatively rapid digital development, while some small and medium-sized cities are relatively backward. This unbalanced regional development leads to uneven distribution of resources and policies, further widening the gap in digital economy development between different regions. Relying on their sound industrial foundation, talent resources, and technological advantages, large cities have taken the lead in the development of the digital economy; while small and medium-sized cities are restricted by weak infrastructure and talent shortages in their digital economy development ^[4].

2.2.2 Imbalanced Development of Industrial Integration and Application

Although Shaanxi has achieved a relatively high score in the indicators of industrial development and integration application, it has a low score in the development environment indicator. This indicates that although some industries, such as the electronic information industry cluster, have achieved rapid development, there are still many deficiencies in the overall digital economy development environment. In terms of infrastructure, some regions have insufficient network coverage and limited bandwidth, which affects the widespread application of digital technology; in terms of innovation capabilities, enterprises have insufficient R&D investment and a shortage of innovative talents, resulting in low technological content of digital products and services; in terms of digital governance, the digital management level of government departments needs to be improved, and the mechanisms for data sharing and business collaboration are incomplete ^[5].

2.2.3 Lagging Legal System and Regulatory Capabilities

With the rapid development of the digital economy, the existing legal system and regulatory capabilities have failed to keep pace in a timely manner. There are obvious shortcomings, especially in data protection and privacy security. Incidents such as data leakage and abuse occur from time to time, which not only damage the legitimate rights and interests of consumers but also affect the healthy development of the digital economy. At the same time, in the face of emerging digital business formats, regulatory authorities lack effective regulatory means and experience, making it difficult to conduct comprehensive and effective supervision of digital economic activities, increasing the operational risks of enterprises.

2.2.4 Severe Digital Divide

Although the digital economy has brought new development opportunities to Shaanxi Province, the problem of the “digital divide” remains relatively prominent. In rural and remote areas, the unequal access to information and services has exacerbated the imbalance in regional economic development. Due to weak network infrastructure, low penetration rate of digital equipment, and low digital literacy of residents in these areas, it is difficult for them to enjoy the dividends brought by the digital economy. The existence of the digital divide not only affects the quality of life of rural residents but also restricts the economic development and social progress of rural areas.

2.3 The Need to Optimize the Digital Economy Development Environment

2.3.1 Difficulties in the Marketization of Data Factors

Although Shaanxi’s digital economy has developed rapidly, it has encountered many problems in the marketization of data factors. Issues such as inconsistent government data standards and poor data circulation are relatively prominent, which have hindered the effective utilization of data and the further development of the digital economy. The standards for government

data formats and coding between different departments and systems are inconsistent, making it difficult to integrate and share data; the data circulation mechanism is incomplete, and the data trading market is underdeveloped, making it difficult for data factors to flow freely and be optimally allocated in the market.

2.3.2 Infrastructure and Talent Shortages Restricting Development

Shaanxi has deficiencies in digital infrastructure construction, especially the low popularization rate of science and technology and cultural facilities in rural areas. Problems such as incomplete network coverage and slow broadband speed have affected the digital life of rural residents and the development of enterprises. In addition, insufficient R&D investment in the software industry, shortage of compound international talents, and low innovation capabilities of electronic information industry clusters have all become bottlenecks restricting the development of the digital economy. The shortage of R&D funds makes it difficult for enterprises to carry out cutting-edge technology research and new product development; the talent shortage makes enterprises lack motivation in digital technology innovation and business expansion; the low innovation capabilities of industrial clusters affect the competitiveness of the entire industry.

2.3.3 Imperfect Mechanism for Government Data Opening and Sharing

Although Shaanxi has made certain efforts to promote the integration, opening, and sharing of government data resources, the overall progress is relatively slow. There are problems such as unclear organizational management and incomplete policies and regulations. The opening and sharing of government data involves multiple departments and levels, and the lack of a unified organizational structure for coordination and management makes it difficult to effectively promote the work of data opening and sharing; the incomplete policies and regulations result in unclear provisions on the scope, methods, and security of data opening and sharing, increasing the risks of data opening and sharing.

2.3.4 Information Construction Lagging Behind the Growth of Demand

Compared with the eastern coastal provinces in China, the information construction of small and medium-sized enterprises in Shaanxi is lagging behind. The demand for informatization continues to grow, but the development level is limited, which reflects the deficiencies of Shaanxi in informatization construction and application. Due to restrictions in funds, technology, and talents, small and medium-sized enterprises have insufficient investment in informatization construction and low levels of informatization application. This not only affects the production efficiency and management level of enterprises but also restricts their market competitiveness.

3. Conclusions and Recommendations

3.1 Strengthen Top-Level Design and Improve the Regional Coordinated Development Mechanism

Establish a provincial-level leading group for digital economy coordination to coordinate the overall planning, policy formulation, and resource allocation of the province's digital economy development. Formulate differentiated digital development strategies based on the regional characteristics of Guanzhong, southern Shaanxi, and northern Shaanxi: the Guanzhong region focuses on building a highland for the digital industry and a source of innovation; southern Shaanxi focuses on the integration of ecological economy and digital technology; northern Shaanxi focuses on the digital upgrading and green transformation of the energy industry. At the same time, improve the joint meeting system of provincial departments, strengthen the linkage between regions in digital infrastructure, industrial cooperation, and data sharing, reduce the "digital fragmentation" between regions, and promote the formation of a province-wide integrated digital development pattern^[6].

3.2 Promote University-Enterprise Cooperation and Enhance the Ability to Attract Digital Talents

Fully tap the potential of Shaanxi's scientific and educational resources, encourage universities to set up majors related to the digital economy, and strengthen the cultivation of professional talents in the digital economy. Relying on professional research institutions such as the Western Digital Economy Research Institute, carry out forward-looking research on major topics and evaluation consulting on major projects^[7]. Introduce talents in key development areas such as digital economy infrastructure construction, digital economy industrial development, digital technology R&D, and digital industry application, and guide compound economic management talents and key scientific and technological innovation teams to start businesses in Shaanxi. Implement a coordinated development plan and a cultivation plan for professional talents in the digital economy

to further enhance the ability to attract digital talents.

3.3 Strengthen Digital Government Construction and Build a New-Type Smart City

With digital technology as the core, accelerate the construction of government service platforms to realize cross-regional, cross-level, and cross-departmental applications, enhance the province's government service capabilities, and achieve "one-stop online service". Build smart cities by leveraging big data, cloud computing, and intelligent technologies to construct urban perception platforms, and promote the development of a comprehensive governance system and smart communities. Promote the development of digital villages, plan a digital industrial economic system, cultivate rural digital economy talents, and improve the informatization level of rural services.

3.4 Accelerate the Construction of Digital Platforms and Improve the Innovation Capability of the Digital Economy

Data is one of the core elements of the digital economy, and acquiring data is the key to developing data mining capabilities and promoting the development and utilization of data resources. Therefore, it is necessary to establish a robust data market, avoid regional data fragmentation, and promote coordinated regional development^[8]. In view of the current situation of digital economy platform companies in Shaanxi, it is necessary to formulate standards to guide the collection, integration, and analysis of data, build a basic platform for scientific and technological innovation, integrate innovative resources, promote the integration of science and technology, finance, industry, and talents, and promote the transformation of scientific and technological achievements into actual productivity. Utilize public service, technology, and policy platforms to attract investment, gather talents and technologies, and create digital economy demonstration industrial parks, making them important bases for the digital economy and technological innovation.

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Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

Reference

- [1] Liu, J. H., & Zhou, Z. B. (2020). Economic digitalization and global tax governance: Background, dilemmas and countermeasures. *Macroeconomic Research*, (06), 49–60.
- [2] Jing, W. J., & Sun, B. W. (2019). How does the digital economy promote high-quality economic development: A theoretical analysis framework. *Economist*, (02), 66–73.
- [3] Zhang, P., Zhou, E. Y., & Liu, Q. L. (2022). Measurement of digital transformation level of equipment manufacturing enterprises: An empirical study based on survey data of Shaanxi Province. *Science & Technology Progress and Policy*, 39(07), 64–72.
- [4] Liu, J. L. (2023). Implementing the "4+X" project to vigorously promote the digital transformation of higher education in Shaanxi. *China Higher Education*, (02), 31–36.
- [5] Li, Z. X., & Yang, Q. F. (2021). How does the digital economy affect China's high-quality economic development? *Modern Economic Research*, (07), 10–19.
- [6] Zuo, P. F., & Chen, J. (2021). Digital economy and economic growth from the perspective of high-quality development. *Research on Financial and Economic Issues*, (09), 19–27.
- [7] Hu, H. B., Zhou, J., & Lu, H. T. (2022). Digital transformation promotes high-quality development of manufacturing enterprises: Foundation, challenges and countermeasures. *Enterprise Economy*, 41(01), 17–23.
- [8] Yang, Z. F. (2020). Models, shortcomings and countermeasures of China's industrial digital transformation. *China Business and Market*, 34(07), 60–67.