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Development status and problems of digital economy in the context of the post-epidemic era—Take Guizhou Province as an example

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Abstract: *Against the backdrop of both the digital wave and the post-epidemic era, the digital economy has become a key driver of economic growth. Guizhou Province, as China's first national big data comprehensive experimental area, has topped the nation in digital economy growth for eight consecutive years. This remarkable achievement has played a pivotal role in fueling the economic development of Guizhou Province. This study analyzes the current development status of the digital economy in Guizhou Province, identifies the key factors hindering its further development, and develops targeted and practical strategies for digital economy growth. The study also provides valuable insights for the sustainable and healthy growth of the digital economy in Guizhou Province. Through in-depth research, this study identifies key challenges in Guizhou Province's digital economy development, such as intensifying market competition, a shortage of digital talent, and potential data security risks. In response to these challenges, this study proposes recommendations on enhancing the cultivation of digital talent and strengthening data privacy protection, with the aim of facilitating the high-quality development of the digital economy in Guizhou Province.*

Keywords: *Digital Economy, computing power, Guizhou Province*

1. Introduction

Amid global digitization, the digital economy has become a core driver of economic growth and social development. Particularly in the post-epidemic era, it has demonstrated remarkable resilience and vitality, driving economic recovery, upgrading, and transformation. According to the Research Report on the Development of China's Digital Economy (2023) issued by the China Academy of Information and Communications Technology, the scale of China's digital economy reached 50.2 trillion yuan in 2022, a year-on-year increase of 10.3%. The digital economy accounted for 41.3% of GDP, up 2.9 percentage points from 2020. This data underscores the significant role of the digital economy in China's economic system.

The Fifth Plenary Session of the 19th CPC Central Committee outlined the strategic direction for digital economy development and proposed promoting the integration of the digital and real economies, as well as building internationally competitive digital industry clusters [1]. From a medium- and long-term development perspective, digital economy development faces both opportunities and challenges, with prominent issues including unbalanced regional development and several shortcomings in the new digital economy. According to the 52nd Statistical Report on China's Internet Development (2023) by CNNIC, eastern provinces and cities dominate the regional distribution of IPv4 addresses, while the central and western regions lag behind, and the development gap between eastern and western regions is significant.However, certain underdeveloped western regions have also experienced rapid digital economy growth[2], with Guizhou Province as a notable case. As China's first national big data comprehensive pilot zone, Guizhou has topped the nation in digital economy growth rate for seven consecutive years, greatly boosting local economic growth [3].

Existing research mainly examines the impact of digital economy development. On the one hand, scholars explore the connotation and value of the digital economy, arguing that it significantly enhances economic structures [4]. On the other hand, scholars emphasize the dynamic mechanisms and pathways of digital economy development, highlighting its role as a major economic growth driver in China.

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Integrated development has spurred new models, expanding from consumption to production [5]. However, in the post-epidemic context, few studies have explored the status and challenges of digital economy development. Therefore, this paper uses Guizhou Province as a case study, analyzing the current status and challenges of its digital economy development and proposing corresponding strategies, aiming to enrich research in this field and provide insights for digital economy development in other regions.

Compared to prior research, this paper contributes in two main ways. First, prior research on this topic is limited, especially in the post-epidemic context. This study addresses this gap. Second, Guizhou Province, a pioneer in the big data industry, has experienced rapid digital economy growth, making it an ideal case study. Studying its development strategies in the post-epidemic context provides valuable insights for other regions.

2. Literature review

Innovations and breakthroughs in new-generation information and Internet technologies have fueled the growth of the digital economy. In 1996, Don Tapscott introduced the digital economy as an economy based on "bits rather than atoms." Since then, it has expanded rapidly, playing an increasingly vital role in the global economy and profoundly reshaping economic development.

As China's economic growth slows, the digital economy continues to grow rapidly[6]. This stems from the deep integration of the digital economy with industries, generating correlation, innovation, and integration effects across industries. These effects have spurred new opportunities and momentum for the adjustment, transformation, and upgrading of China's industrial structure[7]. Amid the epidemic, traditional industries have faced significant challenges. The digital economy has emerged as a key driver of high-quality real economy development[8]. It also supports the coordination of epidemic control with socio-economic development. It drives industrial transformation and upgrading while spurring economic recovery during the epidemic, bolstering socio-economic stability[9].

The digital economy treats digital knowledge and information as key production factors, leveraging modern information networks and information and communication technologies to drive its development. It encompasses both digital industrialization and industrial digitization [10]. Increased investment in the digital economy can significantly enhance the development of other industries [11]. During the COVID-19 pandemic, the digital economy played a pivotal role in facilitating the resumption of work, production, and education, highlighting its vast potential and promising prospects. Clearly, the digital economy is crucial for achieving high-quality economic development. As China’s first national big data pilot zone, Guizhou Province has established a robust foundation for the digital economy in the field of big data, and the digital economy has also offered substantial support for Guizhou’s economic recovery. In 2022, the General Office of the State Council designated Guizhou as the “Digital Economy Development and Innovation Zone.” Given this context, this paper will conduct an in-depth exploration of the development status of the digital economy in Guizhou Province, analyze the current factors constraining its development, and propose targeted solutions. The study aims to provide valuable insights for the sustainable and healthy development of the digital economy in Guizhou Province.

3. The Current Situation of the Development of the Digital Economy in Guizhou Province

3.1 Digital Economy Indicators

Developing the digital economy is essential for promoting high-quality economic development in Guizhou Province. As China's first national big data comprehensive pilot zone, Guizhou Province has achieved remarkable progress in digital economy development, with its digital economy growth rate leading the nation for eight consecutive years. In 2022, Guizhou Province's total digital economy investment reached 20.539 billion yuan, a 30.35% year-on-year increase, with big data investment surging and surpassing the 20 billion yuan mark for the first time in four years.

Of these investments, 11.986 billion yuan was allocated to information infrastructure, accounting for 59.8% and making it the primary focus of investment. Industrial digitization received 4.83 billion yuan, accounting for 24.1%, while digital industrialization received 3.226 billion yuan, accounting for 16.1%. The development of emerging digital industries has been prioritized. Furthermore, Guizhou

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Province has accelerated the formation of leading industrial clusters. The leadership role of enterprises has been further strengthened, major projects have provided robust support, and new business models and formats are flourishing. By 2023, the size of the digital economy in Guizhou Province had reached 787.9 billion yuan, with a growth rate of 14.3%, and its added value accounted for 39.1% of the province's GDP, surpassing the national digital economy growth rate of 4%. According to the latest 2023 China Big Data Industry Development Index, China's big data industry demonstrated a positive development trend in 2023, characterized by leadership from the eastern coastal regions and accelerated catch-up efforts in the central and western regions [12]. Guizhou Province has secured a position among the top 15 in China's big data development rankings, but further improvements are needed in innovation and industrial ecosystem development.

3.2 Digital infrastructure

Digital infrastructure construction is the foundation of a robust digital economy. Guizhou Province has consistently advanced information infrastructure construction, achieving significant results. Among these, Guiyang was included in the 2022 list of cities (prefectures) recognized for outstanding achievements in information infrastructure construction and industrial digitization and, along with Zunyi City, was designated a national 'Gigabit City'. This reflects strong recognition of its digital infrastructure development.

In 2022, Guizhou Province made significant progress in network communication. The total outbound Internet bandwidth reached 38,000 Gbps. Newly laid optical cable spanned approximately 235,000 kilometers. Optical ports expanded by 1.446 million. Fiber-to-the-home (FTTH) connections reached 1.452 million households, providing more users with access to high-speed fiber-optic networks. Radio and television cloud service gained 250,000 new users, bringing the cumulative total to 4.06 million. High-definition users grew by 160,000, totaling 6.28 million, enriching users' audio-visual experience. These achievements have enabled a high-speed, stable network environment and contributed to the flourishing development of Guizhou's digital economy.

3.3 The project of "Eastern Data Western Computing" has been steadily promoted

In 2022, China fully launched its "Eastern Data, Western Computing" project. China initiated the construction of national computing hubs in eight regions, such as Beijing, Tianjin, Hebei, and Guizhou. Since its launch, the project has effectively addressed the uneven distribution of computing resources between eastern and western regions, promoting a more centralized resource distribution. In the post-epidemic era, Guizhou's digital economy has prioritized computing power. According to the 2023 China Comprehensive Computing Power Index, Guizhou ranks ninth nationally in computing power, playing a pivotal role in the national computing strategy. To enhance its computing power, Guizhou has focused on industrial chain development, spanning the entire digital industry chain. In 2022, 50 projects related to 'Eastern Data, Western Computing' were under construction, with a 3.913 billion yuan investment, significantly boosting computing infrastructure. Currently, Guizhou's computing platform supports 2.25 million units, with a 56.5% average utilization rate, highlighting significant progress in computing power and resource efficiency. These achievements not only bolster Guizhou's digital economy but also contribute to the Digital-China security system, fostering high-quality development of the national digital economy.

4. Problems Existing in the Development of the Digital Economy in Guizhou Province

Although Guizhou Province's digital economy has achieved remarkable progress, its digital economy indicators have shown outstanding performance, its digital infrastructure construction has yielded significant results, and the 'Eastern Data, Western Computing' project has progressed steadily, it is important to note that challenges remain in Guizhou's digital economy development, primarily in the following key areas:

4.1 The pressure of competition has increased, and the challenges of digital economy development have intensified

Amid the global wave of digitalization, the digital economy has become a key driver of economic growth and innovation globally. To seize opportunities in this competitive landscape, regions have implemented comprehensive digital economy support policies, including industrial subsidies, tax

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incentives, and talent support, to attract investments, enterprises, and foster a unique industrial ecosystem.

In this context, Guizhou Province is actively developing its digital economy. Despite some achievements, it faces significant challenges. On one hand, Guizhou must compete globally for limited resources, such as high-end digital talent and cutting-edge technologies. On the other hand, domestically, Guizhou ranks in the second tier of the digital economy, lagging behind first-tier eastern provinces like Guangdong, Zhejiang, and Jiangsu. With a strong economic foundation, well-developed industrial infrastructure, and abundant talent, the eastern region attracts investors and enterprises and holds a clear advantage in attracting large Internet companies to establish regional headquarters or R&D centers. As a result, Guizhou faces significant pressure in attracting investment and talent and urgently needs to explore a differentiated development path to strengthen its competitiveness in the digital economy.

4.2 Difficulties in technological innovation and talent introduction

According to 2024 winter job-hunting salary data, the average monthly salary in Beijing was 12,390 yuan; in Shanghai, it was 12,180 yuan; while in Guiyang, Guizhou's capital, it was only 7,850 yuan, revealing a significant salary gap.

In terms of higher education and scientific research institutions, Guizhou's limited educational resources have significantly hindered technological innovation and talent development. As of 2024, Jiangsu Province has 168 higher education institutions, including 16 'double first-class' universities; Beijing has 34 'double first-class' universities and 93 other higher education institutions. In contrast, Guizhou Province has only 75 higher education institutions and one 'double first-class' university.

In terms of scientific research institutions, Guangdong Province has over 3,000 provincial-level or higher scientific research platforms, while Guizhou has fewer than 500 provincial-level or higher platforms. The significant gap in educational resources poses serious challenges for Guizhou in cultivating high-level, innovative talent independently.

4.3 Lacking Effective Management of the Development of the Digital Economy

In 2023, Guizhou Province was home to over 9,500 big data enterprises, and a number of benchmarking enterprises, such as Truck Gang, came to the fore [13]. However, as the digital economy deepens, Guizhou's digital economy development is characterized by extensive fields, cross-field integration, and high specialization, posing challenges for management.

On one hand, the digital economy spans a wide range of sectors, including primary, secondary, and tertiary industries. Guizhou's fragmented management across industries hinders unified coordination. This often results in redundant management, burdening enterprises and departments unnecessarily. On the other hand, the digital economy has spurred the growth of numerous high-tech industries, making information disclosure a key management focus. However, the digital economy's high specialization and the expertise required by relevant departments have led to incomplete disclosures. Guizhou lags behind and has yet to develop tailored solutions for its digital economy.

4.4 Data security and privacy issues

Guizhou Province ranks among the top regions in China for the number of big data enterprises, but some enterprises face issues in data collection practices. According to the 2023 Guizhou Information and Communication Industry Development Report, some apps excessively collect users' personal information, including sensitive data like location and camera access permissions. Users are often unaware of this excessive data collection, leading to information asymmetry between enterprises and users. Additionally, some enterprises collect personal information without user consent. This exacerbates challenges in data security and user privacy protection in the digital economy.

5. Recommendations

5.1 Improve the level of Digital Trade Facilitation

With the rapid development of the global digital economy, enhancing digital trade facilitation has

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become the key to promoting economic growth and expanding international markets. Guizhou Province should leverage its big data advantages and accelerate the digitization of international trade. On the one hand, Guizhou Province can strengthen digital economic cooperation with the Belt and Road Initiative to participate in the construction of cross-border e-commerce platforms. This will help develop international markets for its characteristic agricultural products and ethnic handicrafts. On the other hand, Guizhou Province can rely on its technological expertise to propose initiatives on cross-border data flow and digital intellectual property protection. These efforts will help the province gain more international influence and create a favorable global environment for local enterprises. Additionally, they will expand the international development space for its digital economy.

5.2 Strengthen the training of digital talents

The innovation-driven nature of the digital economy determines that its development is highly dependent on high-quality digital talent. The digital talent pool in Guizhou Province does not meet industrial demand, so it requires a collaborative effort from multiple stakeholders to cultivate.

On the government's side, the government should increase investment in digital talent education. It should establish a dedicated training system for vocational colleges and universities, such as short-term training programs for basic positions in vocational colleges, and introduce master's and doctoral programs in high-end fields at universities. Additionally, the government should implement incentive policies to attract top talent.On the enterprise side, enterprises can collaborate with local universities and scientific research institutions to conduct industry-oriented research projects. For example, Guizhou's big data enterprises can partner with Guizhou University and the Guizhou Academy of Sciences to offer hands-on opportunities for students.As for universities, they can align their academic programs with local industrial needs, develop specialized courses, and supply skilled talent to support the growth of the digital economy.

5.3 Strengthen data security and privacy protection

Data security and privacy protection are the keys to the development of the digital economy, which are crucial to the survival of enterprises and the interests of the public. Therefore, the government and enterprises need to work together to develop and enhance the data security management system and technical safeguards.

The government should strengthen top-level design and improve laws and regulations tailored to Guizhou’s needs. It should standardize data processing and related procedures, increase penalties for illegal activities, and support the research and development of data security technologies.Enterprises should take primary responsibility by developing and enhancing internal management mechanisms, strengthening staff training on data security, and standardizing operational procedures.In addition, the government and enterprises should promote awareness of laws and regulations related to information privacy protection, enhance public awareness and capabilities in privacy protection, and collaborate to build a secure and trustworthy digital economy environment through lectures and online campaigns.

6. Conclusion

In the post-pandemic era, the digital economy has become a key driving force for global economic development, and Guizhou Province has made significant progress in this field by leveraging its unique advantages. However, the development of the digital economy in Guizhou Province faces significant challenges. Amid intensifying competition, Guizhou Province faces numerous challenges, including difficulties in attracting investment and encouraging enterprise participation, barriers to technological innovation and talent acquisition, and issues related to data security and privacy protection. These challenges not only impede the sustainable growth of the digital economy in Guizhou Province but also threaten its competitive position in the global digital economy landscape.

To address the aforementioned challenges, this paper proposes targeted and actionable recommendations, including improving the level of digital trade facilitation, enhancing digital talent training, and strengthening measures for data security and privacy protection. These measures are designed to optimize the development environment for the digital economy in Guizhou Province, improve the quality of digital economic development, and strengthen its competitiveness in the global digital economy landscape.

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With the acceleration of digital transformation, the importance of data as a key factor of production has become increasingly prominent. Guizhou Province should seize the strategic opportunities presented by the development of the digital economy, leverage its strengths, proactively address challenges, and foster deeper integration between the digital economy and the real economy. These efforts will establish a solid foundation for achieving high-quality and sustainable development of the local economy. At the same time, this study aims to offer valuable insights for digital economic development in other regions.

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References

[1] Jaeggi, Statistical analysis on the development level of China's digital economy and its influencing factors [D]. Liaoning University, 2020. Doi: 10.27209/d.cnki.Glniu.2020.001355

[2] Liu Gang, Zhang Xinwei, Research on the driving force and mechanism of digital economy development in underdeveloped areas - Taking the development of digital economy in Guizhou Province as an example [J]. Economic aspect, 2019, (06):88-100. DOI:10.16528/j.cnki.22-1054/f.201906088.

[3] Zhu mingshuang, Statistical measurement of China's digital economy scale: Theory and method [D]. Shandong University of Finance and economics, 2021. Doi: 10.27274/d.cnki. Gsdjc. 2021. 000766

[4] Liu Jiahui, Gao Shanxing, Cross-border connotation of enterprises in the digital economy environment: value proposition perspective [J]. Scientific and technological progress and countermeasures, 2021, 38 (01): 63-70

[5] Sheng Lei, Digital economy leads high-quality industrial development: power mechanism, internal logic and implementation path [J]. Price theory and practice, 2020, (02):13-17+34. DOI:10.19851/j.cnki.cn11-1010/f.2020.02.261.

[6] Jing Wenjun, sun Baowen Digital economy promotes high-quality economic development: a theoretical analysis framework [J]. Economist, 2019, (02):66-73. DOI:10.16158/j.cnki.51-1312/f.2 019.02.008.

[7] Kong Cunyu, Ding Zhifan, Internal mechanism and realization path of digital transformation of manufacturing industry [J]. Economic system reform, 2021, (06):98-105.

[8] Zhu Fulin, Constraints and promotion paths for the high-quality development of China's digital service trade [J]. Academic forum, 2021.44 (03): 113-123. Doi: 10.16524/j.45-1002.2021.03.009

[9] Zhang Jiayi, China Institute of information and communications released the China Digital Economy Development Report (2022) [J]. Science and Technology China, 2022, (08):104.

[10] G20 summit, 2016: G20 digital economy development and cooperation initiative, http://www.g20chn.org /hywj /dncgwj /201609 /t20160920_ 3474.html.

[11] Xiao Guoan, Zhang Lin, Research on the impact of digital economy development on China's regional total factor productivity [J]. Journal of Hefei University of Technology (SOCIAL SCIENCE EDITION), 2019, 33 (05): 6-12.

[12] Cheng Jingqi, On the development trend and Countermeasures of China's digital economy in the "post epidemic era" [J]. China storage and transportation, 2021, (08):189-190. DOI:10.16301/j.cnki.cn12-1204/f.2021.08.096.

[13] Wang Qingde, Looking at the high-quality development of digital economy in Western China from "digital Guangxi" [J]. China price, 2021, (05): 27-29.