

Literature Review on Digital Economy Enabling Green Development

Zhihui Xiong

Gaungzhou college of commerce, Guangzhou Guangdong, 510000, China

Abstract: "Green water and green mountains are gold and silver mountains", green development is one of the major national strategies, but also the only way to achieve high-quality economic development. As a new factor of production, the resource value of data has become increasingly prominent, and has penetrated into all fields of production and life, and is gradually becoming a key force for restructuring factor resources and reshaping economic structure. This paper expounds the concept connotation, basic characteristics and development trend of digital economy, and sorts out the promotion mechanism of digital economy to green development, in order to provide certain reference value for the subsequent research of scholars.

1. Introduction

As China's economic development has shifted to the stage of high-quality development, the past extensive economic development model at the cost of sacrificing resources, environment and ecological damage is no longer suitable for the current stage of economic development. How to balance economic growth and pollution control, adjust energy structure and industrial structure, and form a resource-saving and environment-friendly green industrial system is an important research topic to achieve sustainable economic and social development. Green development is a mode of economic development that focuses on ecological and environmental protection, and takes harmony, efficiency and sustainability as its core values, which has become a new trend of current global development. The report to the 20th National Congress of the CPC clearly points out that we adhere to sustainable development, adhere to the principle of giving priority to conservation, protection and natural restoration, and protect nature and the ecological environment like protecting our eyes. We will embrace new opportunities to promote green development and build a beautiful China. It can be seen that green development is the inherent requirement and the only way to achieve high-quality and sustainable development.

With the deepening of a new round of scientific and technological revolution, digital technologies such as artificial intelligence, big data, cloud computing and blockchain have had a profound impact on China's social, economic and industrial development. The 20th National Congress of the Communist Party of China proposed to vigorously develop the digital economy, promote the integration of "data and real", promote industrial transformation and upgrading, and accelerate the construction of digital China. The digital economy is not only an important path to help industrial transformation and upgrading and create new forms and models of business, but also a "golden key" to solve the dual dilemma of resources and growth and achieve green development.

Therefore, this paper reviews the theoretical logic and internal mechanism of enabling green development of digital economy through literature, and contributes certain reference significance to the subsequent research of scholars.

2. Related Research on Digital Economy

Conceptual and characteristic aspects of digital economy. Different researchers have defined the concept and characteristics of digital economy from a variety of perspectives. Digital economy is an economic activity in which digital information (including data elements) is the key resource, Internet platform is the main information carrier, digital technology innovation is the driver, and a series of new models and business forms are the manifestation (Chen Xiaohong et al., 2022); Yang Qingfeng et al. (2021), based on the theory of complex economics and technological economy paradigm, redefined digital economy as the integration of various economic activities with intelligent technology cluster as the core driving force, network connectivity as the basis, data as the production factor, and the connotation of technological economy paradigm transformation. Zhang Wenkui (2022) summarized the four endogenous characteristics of the digital economy on the basis of sorting out the relevant definitions and connotations of the digital economy. They are: information products are non-competitive, the marginal cost of information is approaching zero, the digital market is not present online, and big data has become a key input.

Measurement aspects of digital economy. There are quite a lot of studies on the measurement of the development level of digital economy in the academic circle, most of which are evaluated by constructing an index system. The evaluation index system of the development level of digital economy is constructed from three dimensions: digital infrastructure, digital industry development and digital economy environment (2023). The paper analyzes the development level, spatial-temporal pattern and regional differences of China's digital economy by using Topsis evaluation method of entropy weight, Moran index, Dagum Gini coefficient and its decomposition, and spatial convergence model. Shen Yang et al. (2023) constructed a comprehensive evaluation system for the development level of digital economy from four dimensions: digital foundation, digital application, digital innovation and digital benefit; Zhang Xiuqin et al. (2023) selected four dimensions of digital infrastructure, digital industrialization, industrial digitalization, government and social digitalization to build an indicator system based on the

city level.

Research on social and economic effects of digital economy. Scholars mainly study the impact of digital economy on economic growth and industrial structure upgrading. Ren Baoping et al. (2022), the development of digital economy mainly empowers high-quality economic development through improving the quality of the entire supply system and improving the total factor productivity. Jiao Shuaitao et al. (2021) studied the effect and internal mechanism of the development of digital economy on the upgrading of industrial structure by means of instrumental variable method, differential method and intermediary effect model, etc., and found that the development of digital economy has a positive role in promoting the upgrading of industrial structure.

3. Related Research on Green Development

The connotation of green development. Innovation, recycling, low-carbon, green has become the main sustainable development in the new era. The development of green economy helps guide the traditional industrial society to achieve energy revolution in the fields of production, circulation and consumption, and change the extensive development model of "high energy consumption, high pollution and high emissions". The improvement of green productivity level and the development of circular economy are high-level requirements for sustainable economic development. Therefore, in the process of high-quality economic growth in China, ecological efficiency and green sustainable coordinated and unified development must be taken into account. Measure the level of green development. Wu Zunjie et al. (2021) adopted the Super-SBM model to calculate the green development efficiency of each province, but failed to consider the resource input factors. Based on the panel data of 38 cities in the Yangtze River Delta urban agglomeration from 2004 to 2018, Chen Litai (2023) evaluated the regional ecological efficiency by using the super-efficiency SBM model, and explored the impact of market integration on the green development efficiency of the Yangtze River Delta urban agglomeration by using the spatial econometric model. Zhang Wei (2021) selected three first-level indicators, namely economic development, social development, resources and environment, and 20 second-level indicators, including gross regional product (GDP), to build an index system and make an empirical analysis of the green economy development status of 30 provinces in China by using factor analysis.

Analysis of factors influencing the development level of green economy. The improvement of the development level of green economy is conducive to the high-quality development of China's economy and the coordinated development requirements of economy and environment, so it is necessary to further clarify the main factors affecting the development level of green economy. Lin Jiangbiao (2023) investigated the temporal and spatial characteristics and influencing factors of green development level in the Yellow River Basin from 2010 to 2018 based on entropy method, GIS natural break point classification method, grey correlation analysis and other methods, and found that the investment in environmental pollution control and the proportion of financial science and technology expenditure were the main factors affecting green development in the basin. Based on the

balanced panel data of 245 cities in China from 2010 to 2018, Liu Jibing (2023) empirically analyzed the impact and mechanism of fintech on green development by using panel fixed effect model and intermediary effect model. It is found that fintech promotes green development by promoting supply-side green technology innovation momentum and demand-side industrial structure upgrading momentum.

4. Relevant Research on The Impact of Digital Economy on Green Economy Development

The development of digital economy has penetrated into every link and stage. Scholars have conducted extensive studies on the impact of digital economy on regional innovation ability, industrial structure optimization, high-quality economic development, etc. However, as a kind of integrated economy, the driving role of digital economy on green development cannot be ignored. At present, most scholars agree that digital economy plays a positive role in improving green total factor productivity and promoting high-quality economic development. For example, Zhao Wei (2022) studied the mechanism and threshold effect of digital economy's impact on green total factor productivity by using the data of 279 cities at the prefecture level and above in China from 2011 to 2020. The research shows that, overall, digital economy significantly promotes the improvement of urban green total factor productivity; Zhang Ailing et al. (2022) conducted an empirical analysis based on the panel data of 280 cities from 2011 to 2019 by using panel data model, instrumental variable method and intermediary effect model. The results show that the development of digital finance effectively improves the green total factor productivity, and has a long-term positive impact on it. Optimizing factor allocation and promoting technological innovation are important intermediaries for digital finance to improve green total factor productivity. Using the panel data of 281 prefecture-level cities in China from 2006 to 2019, Zhang Dongling et al. (2023) constructed a differentially differential model and tested the impact of digital economy on green TFP based on the "Broadband China" policy. The study found that the "broadband China" policy had a positive impact on green TFP.

5. Summarize

By reviewing the previous literature, it can be found that the existing research mainly has the following shortcomings: First, the current research on the digital economy has reached its peak, but the relevant literature is mostly theoretical analysis and logical sorting, and the quantitative research is insufficient and the regional level discussion is lacking. The index system of the measurement of the digital economy also needs to be further improved. Second, when measuring the level of green development, many literatures only take labor and capital as input factors while ignoring the relevant indicators of energy and resource factors. In terms of expected output, economic growth and ecological benefits are mainly concerned, while social benefits are rarely considered. Therefore, it is necessary to establish a scientific and reasonable indicator system to more accurately measure the green development of cities in various regions.

Acknowledgment

2021 University-level research Project of Guangzhou College of Commerce: Research on the Coupling Mechanism of Collaborative Innovation and Green Development of Manufacturing Industry in Guangdong Province (2021XJYB03).

References

- [1] Chen Xiaohong, Li Yangyang, Song Lijie et al. Theoretical system and research prospect of digital economy [J]. Management World,202,38(02):208-224+13-16.
- [2] Yang Qingfeng, Li Xiaohua. The structure, constraints and development strategies of techno economic paradigm of Digital Economy [J]. Journal of Hubei University (Philosophy and Social Sciences Edition),2021,48(01):126-136.
- [3] Zhang Wenkui. The endogenous characteristics and industrial organization of digital economy [J]. Management World, 2022, 38(07): 79-90.
- [4] Where, Zhao Xuanchao, Qi Qi. Research on the development level measurement, spatial-temporal pattern and regional differences of China's digital economy [J]. Industrial Technical Economics,2023,42(03):54-62.
- [5] Shen Yang, Zhou Pengfei. Measurement and spatial-temporal pattern analysis of the development level of China's digital economy [J]. Statistics and Decision,2023,39(03):5-9.
- [6] Zhang Xiuqin, Shi Xudong. Research on the measurement and spatial-temporal evolution of urban digital economy in Yangtze River Delta [J]. Theoretical Research of Finance and Economics, 2023(01):19-34.
- [7] Ren Baoping, He Houcong. Enabling high-quality development of digital economy: Theoretical Logic, Path Selection and Policy orientation [J]. Science of Finance and Economics, 2022 (04):61-75.
- [8] Jiao Shuaitao, Sun Qiubi. Research on the measurement and influencing factors of China's digital economy development [J]. Research World,2021(07):13-23.
- [9] Wu Zunjie, Wu Nanjie. Measurement, decomposition and Influencing factors of green economy efficiency in the Yangtze River Economic Belt: An analysis based on super-efficiency SBM-ML-Tobit model [J]. Urban Problems,2021(01):52-62+89.
- [10] Chen Litai, Bai Lei, LI Jinlin. Market integration and green development efficiency in the Yangtze River Delta urban Agglomeration: Theory, measurement and spatial test [J]. Journal of Southwest University for Nationalities (Humanities and Social Sciences Edition),202,43(07):108-122.
- [11] [Zhang W. Construction and demonstration of green economy evaluation index system in China. Statistics and Decision, 201,37(16):126-129.]
- [12] Lin Jiangbiao, Wang Yajuan, Ma Jing. Spatial and temporal differentiation of green development level and its influencing factors in the Yellow River Basin [J]. Statistics and Decision,2023,39(05):109-113. (in Chinese)
- [13] Liu Jibing, Tian Weilun, Zhang Chi et al. How Fintech impacts green development: Empirical evidence based on kinetic energy transformation and geographical structure [J]. Technical Economics,202,41(09):95-108.[1] Liu Qiang, Ma Yanrui, Xu Shengxia. (in Chinese) Has the development of digital economy improved the efficiency of China's green economy? [J]. China Population, Resources and Environment, 202, 32(03):72-85.
- [14] [Zhao W. Digital economy and urban green total factor productivity: mechanism and threshold effect. China Circulation Economy, 2022,36(11):15-26.
- [15] Zhang Ailing, Jin Weidong. Research on the impact of digital finance on green total factor productivity [J]. Journal of Qingdao University (Natural Science Edition), 2022, 35(04): 105-111. (in Chinese)
- [16] Zhang Dongling, Jiao Yuxin, Liu Min. Does the digital economy promote green total factor productivity in cities? Evidence - based on the pilot of the "broadband China" [J]. Journal of modern finance and economics (journal of tianjin university of finance and economics), 2023 lancet (07) : 38-56.