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Retraction

Retracted: Analysis of Digital Economy Development Based on AHP-Entropy Weight Method

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] S. Yang and J. He, "Analysis of Digital Economy Development Based on AHP-Entropy Weight Method," *Journal of Sensors*, vol. 2022, Article ID 7642682, 8 pages, 2022.

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Research Article

Analysis of Digital Economy Development Based on AHP-Entropy Weight Method

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At present, China's economic development is in a critical period of transformation, which needs to get rid of the dependence on the real estate industry and low-end export processing industry, and is in urgent need of new growth engines. The emergence of the digital economy has provided a boost to economic upgrading, but to give full play to the potential of the digital economy, we must have an accurate and full understanding of it. At present, the development of digital economy has become the focus of all circles. Digital economy is a multilevel and complex concept, so this paper establishes a multi-index comprehensive evaluation system and uses AHP-entropy weight method to measure the development level of China's digital economy and, on this basis, analyzes the development level, dynamic changes, and regional differences of China's digital economy. The results show that China's digital economy is on the rise, which is mainly driven by the construction of digital infrastructure and the application of digital technology. By region, there is a big gap between different regions in the development of digital economy, and this gap is expanding continuously. The digital economy in the eastern region is in a leading position, but only in the development of the digital industry.

1. Introduction

Since the 21st century, China's digital economy has developed vigorously. According to the White Paper on The Development of China's Digital Economy, China's total digital economy has risen from 22.6 trillion yuan in 2016 to 39.2 trillion yuan in 2020, and its share in GDP has also risen from 30.3 percent to 38.6 percent. With the emergence of a new generation of Internet technology, the development of digital economy has been further, creating huge economic benefits in a short period of time. Digital industry giants such as Alibaba, Google, and Tencent have emerged in various parts of the world, and digital economy has also occupied a pivotal position in the world economy [1]. At the same time, digital economy has gradually shown excellent driving force of economic development since the concept was put forward. With the in-depth application of digital technology and data elements in the production and operation of enterprises, the vitality of microeconomic subjects has been significantly enhanced. For example, digital simulation and scene simulation based on virtual algorithm can realize the testing process that originally needs a lot of money and materials in the computer, reducing the cost of trial and error [2, 3]. The more convenient information interaction capability in digital economy enables enterprises to quickly capture users' recognition of existing products with the help of big data and Internet technology, discover users' core and potential needs, and promote enterprises to carry out targeted innovation [4]. This shows that digital economy is not only a major component of China's economy but also an important lever to promote high-quality economic development. A detailed and accurate understanding of the development status of digital economy is the fundamental premise to make full use of the development dividend of digital economy and promote high-quality economic development. Therefore, it is of rich theoretical and practical significance to calculate and analyze the current development of digital economy.

At present, the definition of digital economy in the academic circle can be roughly divided into narrow sense and broad sense: the narrow sense of digital economy mainly includes digital industry, that is, information communication

Table 1: 1-9 scale method.

Scale	Meaning
1	The two factors are equally important
3	Comparing the two factors, the former is slightly important
5	Comparing the two factors, the former is more important
7	Comparing the two factors, the former is very important
9	Comparing the two factors, the former is absolutely important
2, 4, 6, and 8 are the intermediate values	

industry and e-commerce industry as well as the infrastructure supporting the digital industry, while the broad sense of digital economy also includes organizational and social economic changes caused by the application of digital technology and data elements [5]. It is obvious that, in a broad sense, the digital economy is no longer limited to specific industries such as computer and Internet commerce but transformed into a new economic model. Therefore, digital economy is defined in this paper as digital industry, infrastructure supporting digital industry, and digital improvement of traditional industry by using data elements and digital technology. It is a new economic form based on digital industry such as information technology industry and characterized by integration with traditional industry.

Existing research has a preliminary understanding of the development of digital economy. Liu et al., Cai and Niu, and Han et al. respectively established a digital economy scale accounting framework, respectively measured the added value and total output value of China's digital economy, and obtained the consensus that China's digital economy has been developing at a high speed in the past decade [6–8]. Xu and Zhang pointed out from the perspective of international comparison that the growth rate of added value of China's digital economy was significantly higher than that of developed countries in Europe and the United States [9]. Chen and Zhang further analyzed the structure of digital economy and found that the structure of China's digital economy was constantly changing in recent years, and the growth rate of digital integration sector was higher than that of digital substitution sector [10]. Through literature review, it can be found that first of all, previous researches on digital economy focused more on the overall development of digital economy, without in-depth analysis of the development status of each component of digital economy. Second, there are few studies to distinguish the development of digital economy in different regions of China. Finally, the current digital economy measurement index system and methods are still not unified. Therefore, this paper will carry out research from the following aspects. Firstly, based on the understanding of generalized digital economy, the evaluation index system of regional digital economy development is established, and the China digital economy development index from 2011 to 2019 is calculated by AHP-entropy weight method. Secondly, based on the calculation results, the paper analyzes the development of China's regional economy from two dimensions of space and time, focusing on the development differences of each component of digital economy in recent years and the performance of digital economy in different regions.

Table 2: Average random consistency index.

n	1	2	3	4	5	6	7	8	9
RI	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45

2. Methods and Theories

2.1. Selection of Evaluation Methods. As digital economy is a complex concept involving production, consumption, infrastructure, and other fields, and its evaluation indicators are complex and diverse, accurate weighting of each indicator is helpful to measure the real situation of regional digital economy development. Therefore, this paper combines subjective and objective weights and uses analytic hierarchy process (AHP) and entropy weight method to assign weights to each index reflecting the development of regional digital economy.

2.1.1. Analytic Hierarchy Process. The analytic hierarchy process (AHP) is a systematic and hierarchical analysis method. The research object is decomposed into different factors at different levels and the relative importance of each factor is determined by pair comparison [11, 12]. The procedure for calculating index weights using AHP is as follows.

Step 1. The judgment matrix was determined by experts in related fields according to 1-9 scale method. The meaning of each score is shown in Table 1.

X is the judgment matrix:

$$X = x_{mm} = \begin{matrix} x_{11} & x_{11} & \cdots & x_{1m} \\ x_{21} & x_{21} & \cdots & x_{2m} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{11} & \cdots & x_{mm} \end{matrix}. \quad (1)$$

Step 2. Normalize X and obtain vector: w_i.

$$w_i = \sqrt[m]{x_{i1}x_{i2}x_{i3}\cdots x_{im}}. \quad (2)$$

Step 3. Calculate the weight coefficient of indicator i: ω_i.

$$\omega_i = \frac{w_i}{\sum_{i=1}^{m} w_i}. \quad (3)$$

Table 3: Digital economy development level evaluation index system.

The total indicator	The first-level indicators	The second-level indicators
Digital economy development index	Digital infrastructure (X1)	Length of optical cable (X11)
		Number of Internet broadband access ports (X12)
		Number of mobile phone base stations (X13)
	Application of digital technology (X2)	Mobile phone penetration rate (X21)
		Online mobile payment level (X22)
		Digital financial inclusion coverage (X23)
	Development of digital industry (X3)	Number of Internet domain names (X31)
		Telecommunications traffic (X32)
		Information service industry practitioners (X33)
		Output value of information service industry (X34)

Step 4. Calculate the maximum characteristic root of the judgment matrix: $\lambda_{\max}$.

$$\lambda_{\max} = \sum_{i=1}^{m} \frac{(X\omega)_i}{n\omega_i}. \tag{4}$$

Step 5. Conduct consistency test on the judgment matrix:

$$\mathrm{CI} = \frac{\lambda_{\max} - n}{n-1}, \tag{5}$$

$$\mathrm{CR} = \frac{\mathrm{CI}}{\mathrm{RI}}, \tag{6}$$

where CI is the consistency index and RI is the average random consistency index of the matrix. When CI = 0, the judgment matrix has complete consistency. The greater the CI, the lower the consistency. When CR ≤ 0.1, the consistency of the judgment matrix is acceptable. The values of RI of order 1-9 are shown in Table 2.

2.1.2. Entropy Weight Method. Entropy weight method is a kind of weighting method based on the dispersion degree of data, which has been widely used in different fields of comprehensive evaluation. The entropy weight method is completely based on the information entropy contained in the index to assign weight to the index, so its accuracy is higher, its objectivity is stronger, and it is more suitable for the weight determination of complex system [13, 14]. The basic steps are as follows.

Step 1. Construct the original evaluation matrix with m samples and n indicators.

$$X = \begin{matrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} & \cdots & x_{mm} \end{matrix}. \tag{7}$$

Among them, the X_{ti} is the value of the i indicator in the t sample.

Table 4: Descriptive statistics of raw data.

Variables	(1) N	(2) Mean	(3) Sd	(4) Min	(5) Max
X11	279	891198.40	736372.61	50642.62	3679239.00
X12	279	1852.17	1613.53	26.70	8538.98
X13	279	14.78	12.23	0.64	75.84
X21	279	96.97	24.64	52.04	189.56
X22	279	173.75	89.15	10.82	379.51
X23	279	583.14	3018.01	1.96	29145.12
X31	279	87.35	137.41	0.39	882.54
X32	279	1075.54	1420.07	23.90	12046.44
X33	279	21.66	26.59	0.49	167.40
X34	279	1481.86	2301.05	32.56	15947.12

Step 2. Standardize the evaluation matrix.

$$r_{ti} = \frac{x_t - \min(x_t)}{\max(x_t) - \min(x_t)}. \tag{8}$$

Step 3. Calculate the entropy value of indicator i: H_i.

$$H_i = -k \sum_{t=1}^{m} f_{ti} \cdot \ln f_{ti}. \tag{9}$$

Among them, $f_{ti} = r_{ti} / \sum_{t=1}^{m} r_{ti}$, $k = 1/\ln m$.

Step 4. Calculate the entropy weight of indicator i: ω_i.

$$\omega_i = \frac{1 - H_i}{n - \sum H_i}, (i = 1, 2, \cdots, n). \tag{10}$$

2.1.3. Comprehensive Weight and Digital Economy Development Index. As a subjective weighting method, analytic hierarchy process (AHP) can better explain the results obtained, but it also has strong arbitrariness. Entropy weight method is completely calculated based on mathematical formula, and its objectivity is beyond doubt. However, sometimes the weight obtained may be inconsistent with the actual importance, which affects

Table 5: China's digital economy measurement results.

Year	Digital infrastructure	Application of digital technology	Development of digital industry	Digital economy development index
2011	3.17	3.25	10.75	17.17
2012	4.07	5.38	12.21	21.66
2013	4.79	7.44	14.05	26.28
2014	6.19	10.40	15.04	31.64
2015	8.11	12.27	17.67	38.05
2016	9.62	14.72	18.01	42.36
2017	10.65	15.91	19.56	46.12
2018	11.47	17.31	26.08	54.85
2019	12.67	18.19	30.28	61.15
Rate of increase	299.68%	459.69%	181.67%	256.14%

the accuracy of evaluation results. Therefore, AHP and entropy weight method are combined here, and the combined weight is taken as the final result to ensure the accuracy and practicality of the evaluation results.

$$\omega_i = \alpha\omega_i^{'} + (1-\alpha)\omega_i^{''}, \tag{11}$$

where α, $\omega_i^{'}$ are the proportion and calculation result of AHP in combination and $1-\alpha$, $\omega_i^{''}$ are the proportion and calculation result of entropy weight method in combination.

Finally, after determining the weight of each evaluation index, the digital economic development index can be calculated by combining the data of each index.

$$C = \sum_{i=1}^{n} \omega_i X_i \times 100, \tag{12}$$

where C is the digital economy development index, ω_i is the index weight, and X_i is the index value. In order to give full play to the advantages of both subjective and objective methods, the proportion of AHP is set at 50% and the weight of entropy method is set at 50% when calculating the comprehensive weight.

2.2. Selection of Evaluation Indicators. Since digital economy is a complex comprehensive concept, this study follows the principles of systematicness, availability, and scientificity to construct the evaluation index system of digital economy development. This system consists of three dimensions: digital infrastructure, application of digital technology, and development of digital industry. Each dimension contains three or four secondary indicators that reflect the state of the digital economy. The specific results are shown in Table 3.

2.3. Data Description. The data used in the empirical process are from the 2012-2020 China Statistical Yearbook, China Electronic Information Industry Statistical Yearbook, and the websites of statistics at all levels. In order to eliminate the influence of statistical bias, the original data was tailed by 1% at both ends, and the effect of inflation in the data was eliminated by subtraction. The descriptive statistical analysis results of the data are shown in Table 4.

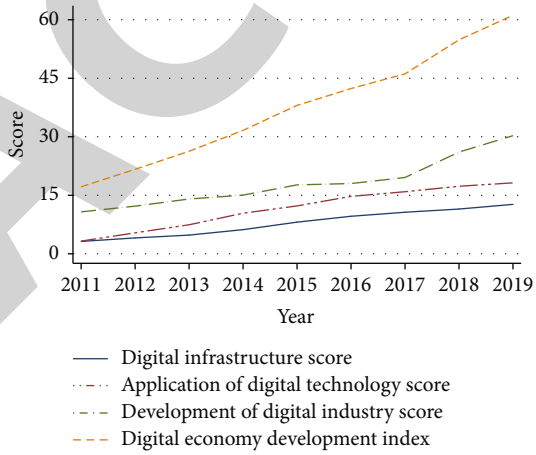

Figure 1: Variation trend of China's digital economy from 2011 to 2019.

Table 6: Annual growth rate of China's digital economy from 2012 to 2019 (%).

Year	Digital infrastructure	Application of digital technology	Development of digital industry	Digital economy development index
2012	28.54	65.78	13.54	26.19
2013	17.66	38.30	15.08	21.33
2014	29.13	39.77	7.10	20.37
2015	30.94	17.99	17.46	20.27
2016	18.74	19.94	1.95	11.33
2017	10.67	8.05	8.58	8.87
2018	7.70	8.78	33.32	18.94
2019	10.48	5.13	16.12	11.47

Table 7: Provincial regional division.

Region	Provinces
The eastern region	Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Shandong, Guangdong, Hainan
The central region	Shanxi, Jilin, Anhui, Jiangxi, Henan, Hunan, Hubei
The western region	Sichuan, Chongqing, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang, Guangxi, Inner Mongolia
The northeast region	Liaoning, Jilin and Heilongjiang

3. Empirical Results and Analysis

3.1. Dynamic Analysis of the Development Level of China's Digital Economy. Table 5 and Figure 1 show the annual average of the digital infrastructure score, digital technology application score, digital industry development score, and digital economy development index of 31 provinces in China from 2011 to 2019. It is obvious that, from 2011 to 2019, China's digital economy development index increased from 17.17 to 61.15, with an increase of 256.14%. China's digital economy as a whole has achieved leapfrog development. Digital infrastructure, digital technology application, and development of digital industry have achieved remarkable growth. Digital infrastructure and digital technology application increased by 299.68% and 459.69%, respectively, exceeding the overall level of growth. Development of digital industry, grew by 181.67%, not more than the overall growth level. Compared with the digital industry in recent years, digital infrastructure and digital technology applications are more fully developed. In fact, compared with the development of digital industry, it is easier and more effective to carry out digital infrastructure and application of digital technology, such as the construction of mobile signal base station and the promotion of online payment [15–17]. Although only developing these aspects can also promote the development of digital economy, it may produce a large amount of low-level repetitive investment, which is not conducive to the sustainable development of digital economy. Digital industry is an important pillar of the development of digital economy and also the main source of economic benefits of digital economy [18]. Whether the digital industry can be fully developed will directly determine the development prospect of digital economy.

Table 6 shows the annual growth rates of various indicators of China's digital economy development. It is clear that, from 2012 to 2019, the growth rate of China's digital economy remained above 10% for a long time, except for 2017, which was 8.87%. By observing the three subindexes, it can be found that digital infrastructure and digital technology application achieved high growth from 2012 to 2016. However, since 2017, the development of both of them has declined, with the growth rate falling to about 10% and showing a trend of annual decline. On the other hand, the digital industry has been growing rapidly since 2017.

3.2. Analysis of the Development Level of Digital Economy in Different Regions. In order to analyze the specific performance of digital economy in different regions of China, this study divides 31 provinces into four regions, namely, east, central, west, and northeast, combining economic and geographical conditions. The partition results are shown in Table 7.

Table 8: Digital economy development index of different regions in China.

Year	Digital economy development index			
	East	Central	West	Northeast
2011	32.86	12.14	8.07	11.30
2012	39.62	15.87	11.30	14.84
2013	45.67	20.20	14.81	19.73
2014	52.01	26.24	19.20	24.28
2015	60.70	33.83	23.71	28.34
2016	64.25	39.53	28.16	31.90
2017	67.64	44.53	31.82	34.77
2018	74.65	59.90	39.45	40.40
2019	78.44	68.76	46.34	47.52
Rate of increase	138.71%	466.39%	474.23%	320.53%

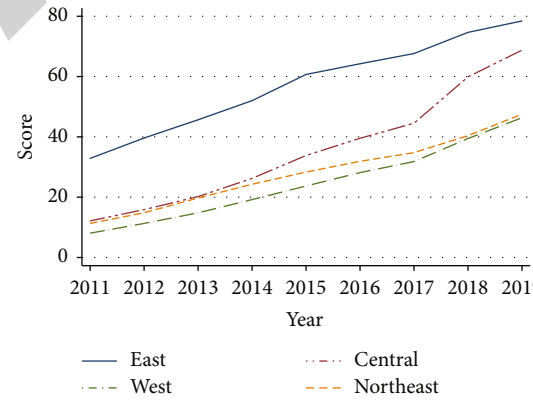

Figure 2: Variation trend of digital economy development index in different regions.

Table 8 and Figure 2 show the annual average of the digital economy development index in east, central, west, and northeast China from 2011 to 2019. It is clear that the development level of digital economy in eastern, central, western, and northeast China has been significantly improved during 2011-2019, with an increase of 138.71%, 466.39%, 474.23%, and 320.53%, respectively. The development level of digital economy in eastern and central China is higher than the national average. Although the growth of later area is extremely swift and violent, but because the base is too low, the absolute gap between regions maintains expansion state. In 2011, the digital economy

Table 9: Digital infrastructure scores of different regions in China.

Year	Digital infrastructure scores			
	East	Central	West	Northeast
2011	4.55	3.62	1.93	2.59
2012	5.97	4.55	2.49	3.16
2013	6.81	5.40	3.07	3.77
2014	8.73	7.02	3.93	5.10
2015	10.94	9.61	5.39	6.51
2016	12.04	11.92	6.88	7.99
2017	12.68	13.56	7.89	9.12
2018	13.15	14.55	8.90	10.00
2019	13.86	16.19	10.24	11.41
Rate of increase	204.62%	347.24%	430.57%	340.54%

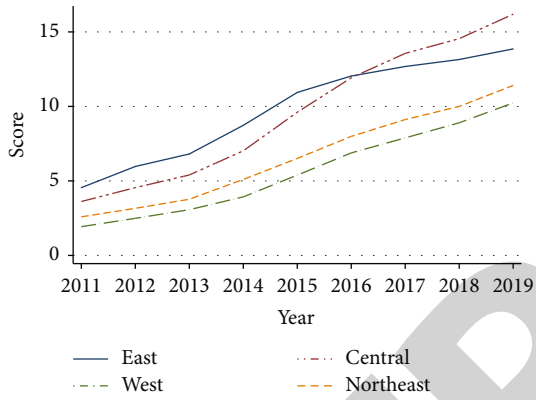

Figure 3: Variation trend of digital infrastructure scores in different regions.

Table 10: Digital technology application scores of different regions in China.

Year	Digital technology application scores			
	East	Central	West	Northeast
2011	5.74	1.97	1.99	2.55
2012	8.00	3.93	4.10	4.67
2013	10.07	5.92	6.20	6.69
2014	13.03	9.05	9.06	9.76
2015	15.16	10.98	10.70	11.55
2016	17.45	13.48	13.19	14.28
2017	18.36	15.27	14.46	14.82
2018	19.25	16.93	16.22	15.91
2019	19.70	17.99	17.39	16.81
Rate of increase	243.21%	813.20%	773.87%	559.26%

development index of eastern and western regions was 32.86 and 8.07, respectively. In 2019, the figures were 78.44 and 46.34. The east's lead over the west widened from 24.79 in 2011 to 32.1 in 2019. Therefore, the development level of digital economy in the four regions is always ranked from high to low

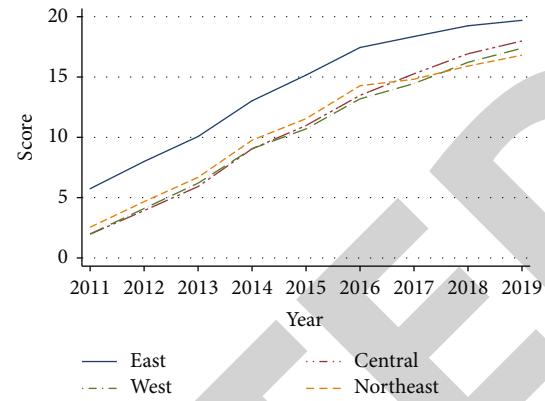

Figure 4: Variation trend of digital technology application scores in different regions.

in the order of east, central, northeast, and west. The eastern region is mostly developed coastal provinces with abundant capital and labor and obvious policy advantages. Most of China's leading Internet companies such as Alibaba, Tencent, and JD.com are located here. Therefore, the eastern region has always taken the lead in digital economy. The Internet and other industries in the digital economy are naturally monopolistic, and most of them are high-tech industries with high entry threshold [15, 19, 20], which is not conducive to the backward regions giving play to their late-mover advantages, thus increasing the difficulty of narrowing the gap in the development of the digital economy.

3.3. Analysis of Influence Factors of Regional Development Differences in Digital Economy. Balanced development is an important prerequisite for sustainable development of digital economy. However, it can be seen from the above analysis that there are great differences in digital development levels among different regions in China at present. Therefore, this paper will look for the root of the gap from three perspectives: digital infrastructure, digital technology application, and digital industry development.

Table 9 and Figure 3 show the scores of digital infrastructure in east, central, west, and northeast China from 2011 to 2019. It is obvious that, first of all, from 2011 to 2019, the scores of east, central, west, and northeast China increased from 4.55, 3.62, 1.93, and 2.59 to 13.86, 16.19, 11.41, and 10.24, indicating that the digital infrastructure of China's four major regions has been significantly upgraded and optimized in nine years. Second, the eastern region did not always maintain its leading position, being overtaken by the central region in 2017. In 2019, the difference between the highest and lowest scores was a smaller 5.95. This means there is not much difference between regions in terms of digital infrastructure construction.

Table 10 and Figure 4 show the scores of digital technology application in east, central, west, and northeast China from 2011 to 2019. It is clear that, from 2011 to 2019, the scores of digital technology application in east, central, west, and northeast China increased from 5.74, 1.97, 1.99, and 2.55 to 19.70, 17.99, 17.39, and 16.81, respectively. It shows that the application of digital technology in life and consumption in different regions of China has been rapidly

Table 11: Digital industry development scores of different regions in China.

Year	Digital industry development scores			
	East	Central	West	Northeast
2011	22.57	6.55	4.15	6.16
2012	25.65	7.39	4.71	7.01
2013	28.79	8.88	5.54	9.26
2014	30.26	10.17	6.21	9.42
2015	34.60	13.25	7.62	10.29
2016	34.76	14.13	8.09	9.63
2017	36.60	15.70	9.47	10.83
2018	42.25	28.42	14.33	14.50
2019	44.89	34.58	18.71	19.29
Rate of increase	98.90%	427.61%	350.80%	213.9%

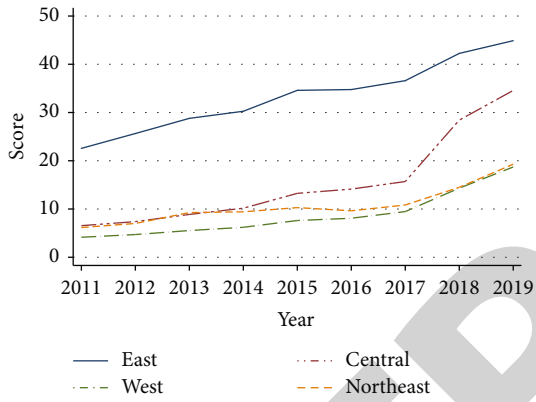

Figure 5: Variation trend of digital industry development scores in different regions.

popularized during this period, and people's acceptance of digital technology has been greatly improved. The east has always maintained a slight lead over the rest of the country, with a score difference of just 2.89 between the east and the lowest-scoring northeast in 2019, compared with 3.75 in 2011. This means that in the application of digital technology, the advantages of backwardness in backward regions have been fully brought into play, gradually catching up with the leaders, and the gap between different regions is disappearing.

Table 11 and Figure 5 show the development scores of digital industry in east, central, west, and northeast China from 2011 to 2019. It is obvious that, from 2011 to 2019, the scores of digital technology application in eastern, central, western, and northeast China increased by 98.90%, 427.61%, 350.80%, and 213.9%, respectively. Clearly, the leading eastern region is growing much slower than other regions, but that does not diminish its lead. The east scored 26.18 points higher than the west in 2019, compared with 18.42 in 2011. This means that the gap between the development levels of digital industries in different regions is widening over time. This is mainly because the initial development level of digital industry in backward regions is too weak. In 2011, the development score of digital industry in central, western, and northeast regions was 6.55, 4.15, and 6.16, while that in eastern regions was 22.57. Therefore, the huge difference in the development level of digital industry is the main factor leading to the differences in the development of digital economy in different regions of China.

4. Conclusions and Recommendations

4.1. Conclusions. By establishing the evaluation index system of digital economy development and combining AHP-entropy weight method and the comprehensive weighting method, this paper calculates China's digital economy development index from 2011 to 2019 and analyzes the development status of China's digital economy in time and space dimension according to the measurement results and draws the following main conclusions.

(1) The development of China's digital economy has always been on the rise, which is mainly driven by digital infrastructure and digital technology application. Around 2017, the development of digital infrastructure and digital technology application declined, but the digital industry has entered a period of rapid development since 2017

(2) Digital economy in different regions of China has maintained rapid development, but there is a large gap in the development of digital economy in different regions, and this gap is continuously expanding. Therefore, the development level of digital economy in the four regions is always ranked from high to low in the order of east, central, northeast, and west

(3) The development level of digital economy in eastern China is far ahead of other regions, which is not all-dimensional but only in the development of digital industry. After a long period of development, the central, western, and northeast regions have gradually caught up with the east in terms of digital infrastructure and digital technology application

4.2. Recommendations. First of all, digital infrastructure is the cornerstone of the development of the digital economy, so we should further promote the construction of digital infrastructure but pay attention to screening and avoid meaningless and repetitive investment. Secondly, we should give full play to the role of digital industry in promoting the development of digital economy, crack down on the monopolistic behavior of digital industry, improve the profitability of digital industry, and promote the endogenous development of digital economy. Finally, the comparative advantages of different regions should be explored, and regional linkage should be realized by using policies such as "channel more computing resources from the eastern areas to the less developed western regions" to make up for shortcomings and achieve balanced development of digital economy.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding this work.

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