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Retraction

Retracted: Factors Influencing the Development of Digital Economy in Local Areas of China Based on Big Data Statistics

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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) Peer-review manipulation

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] L. Lu, J. Guan, and X. Wu, "Factors Influencing the Development of Digital Economy in Local Areas of China Based on Big Data Statistics," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 5034867, 6 pages, 2022.

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Research Article

Factors Influencing the Development of Digital Economy in Local Areas of China Based on Big Data Statistics

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With the rapid development of information technology, Internet technology based on big data promotes the formation of digital economy. As a key factor of production in the information age, digital economy has attracted the attention of all countries in the world. In 2017, the CPC Central Committee clearly proposed to build a digital economy with data as the key element. Digital economy is increasingly becoming the mainstream of global economic development. China is in a critical period of economic transformation, and the world is also facing the unprecedented changes in a hundred years. Whether we can seize this mainstream development and push China's economy to a new level is very important to the national economy. Firstly, this paper expounds the development history and significance of big data technology and digital economy, investigates the development status of digital economy in China, classifies digital economy based on big data ecology, and gives the evaluation principles and theoretical basis of digital economy. Finally, this paper explores the influence model of industrial structure on digital economy, combs the empirical analysis ideas of the influence model, and puts forward some relevant suggestions on the development status of digital economy in China. Based on the background of big data statistics, this paper uses structural equation to study the factors that affect the development of digital economy and gives the model empirical ideas, aiming at promoting the development of national digital economy.

1. Introduction

Since the third global industrial revolution in 1970s brought the popularity of computers and the Internet to the world, new economic forms based on computer technology and Internet communication technology began to appear [1]. The online trading platform represented by Amazon platform in the United States provides a good reference example for the development of global e-commerce [2]. Since the twenty-first century, computer technology and Internet technology have developed further, and a series of high-tech industrial chains centered on the Internet, such as big data, artificial intelligence, cloud computing, Internet of Things, and blockchain, have emerged. In recent years, these high-tech industries have gradually penetrated into many traditional industries, bringing subversive changes and good development prospects to many traditional industries [3–5]. This is the concept of internet plus. The new economic model brought by Internet plus to traditional industries is the digital economy that is vigorously developed all over the world. Digital economy is the leading factor leading the world to the fourth industrial revolution [6, 7]. Developing the digital economy in an all-round way is conducive to improving the competitiveness of traditional manufacturing industries in terms of production R&D, product quality, and production efficiency, helping traditional industries develop into new products, providing more employment opportunities, and further providing a good opportunity for China's economy and society [8–10]. In 2021, the CPC Central Committee pointed out that "we should build a digital economy with data as the key element. Building a modern economic system is inseparable from the development and application of big data."

Big data means that the required data is so large that the current mainstream processing software cannot handle it. He emphasizes that all data should be processed without

Table 1: Characteristics and interpretation of big data.

Big data characteristics	Capacity	The size of the data determines the potential information and value contained in the required data
	Kind	The data is diverse
	Speed	Speed of obtaining data
	Changeability	It hinders the process of processing and managing data effectively
	Realness	The quality of data
	Complexity	Huge amount of data and multiple sources
	Value	Using big data to achieve cost and create high value

using sampling survey [11–13]. Big data contains several characteristics as shown in Table 1.

The research significance of big data is not how much data and information we have to master, but that we have to analyze, manage, and store these data with different meanings. In short, big data is like an industry, and the key point of this industry's profitability lies in improving the comprehensive processing ability of data and realizing the value-added of data [14–16]. The composition of big data mainly includes structured, semi-structured, and unstructured data. At present, about 80% of enterprise demand data are unstructured data, and these data will increase exponentially by about 60% every year [17, 18]. According to the characteristics of big data, we conclude that its value is mainly reflected in the following aspects [19]:

(1) Enterprises can use big data to conduct precise marketing when providing products or services to a large number of consumers

(2) Small and medium-sized enterprises and micro-enterprises can use big data to transform and upgrade their services

(3) Promote the transformation of traditional industries to digital economy, and reduce the competitive pressure of traditional industries in internet plus

Big data is a manifestation of the development of the Internet. By relying on the support and application of emerging technologies such as artificial intelligence and cloud computing, the data that was difficult to collect and process has become easier to use [20, 21]. We believe that big data can create more value for us through its continuous application to innovation in all walks of life.

2. Materials and Methods

2.1. The Development Status of China's Digital Economy. At present, countries around the world are standing at the intersection of the third and fourth industrial revolutions, and China's new digital economy industries such as big data analysis, cloud computing, and artificial intelligence have entered a stage of rapid development. On the basis of traditional manufacturing industry and by integrating Internet + digital technology into the digital economy after industrial transformation, it not only reduces the professional needs of traditional machine operators, logistics, transportation, and equipment maintenance, but also creates new products and services, promotes engineers such as data analysis robot coordinators and new professional production such as on-site service engineers, and provides more employment opportunities. Now all countries in the world are standing at the threshold of the fourth industrial revolution. China's new digital economy industries such as big data analysis, cloud computing, and artificial intelligence have entered a stage of rapid development. Taking the traditional manufacturing industry as an example, after the transition from digital technology to digital economy, new products and services have been created, and new occupations such as data analysis engineer, robot coordinator, and field service engineer have also been born. At the same time, the demands of traditional occupations such as machine operators, logistics, and transportation and equipment maintenance have been reduced, and more employment opportunities have been provided. In the big environment of digital economy, the boundary between all walks of life gradually disappears. Manufacturing-oriented enterprises enter the service field, thus transforming into service providers providing solutions, while information enterprises use big data technology to enter the manufacturing field and then develop new products. According to the White Paper on China's Digital Economy Development (2021), the market size of China's digital economy will reach 39.2 trillion yuan in 2020. Compared with 2019, the market size will increase by about 3.4 trillion yuan, up 2.4% year-on-year, accounting for 38.6% of the national GDP. In 2022, the market size of China's digital economy will continue to increase, and it is expected to exceed 45 trillion yuan. Since China began to explicitly develop the digital economy in 2003, the scale of China's digital economy has been showing a steady growth trend. In 2010, the proportion of digital economy in the national economy began to rise rapidly, and the growth trend in recent five years is shown in Figure 1. With the national GDP changing from high speed to medium-high speed, the scale of digital economy can still maintain a high-speed growth trend, which shows that the development prospect of digital economy in the future market economy is very considerable.

2.2. Classification of Digital Economy Based on Big Data Ecology. The core element of the development of digital economy is big data, and the realization of big data processing is inseparable from cloud computing. It can be said that a series of related industries in internet plus, such as big data, cloud

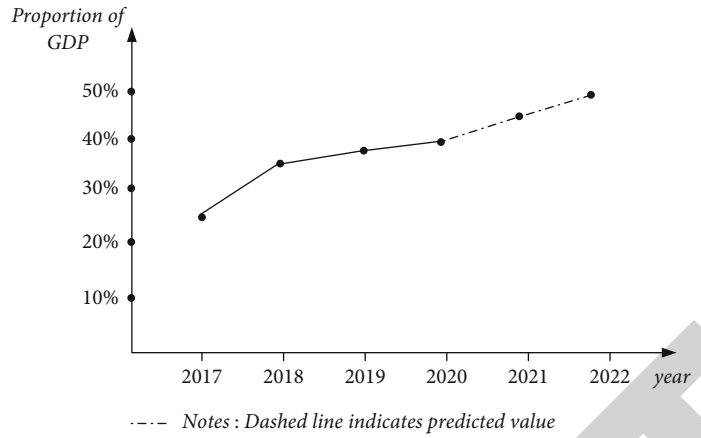

Figure 1: Line chart of digital economy scale development in recent five years.

computing, artificial intelligence, and Internet of Things, are interrelated organisms. Only by building or updating traditional industrial technologies in these technological industries can the real digital economy develop in an all-round way. It is an important way to develop the digital economy that we analyze the industrial structure of big data and upgrade the digital industry according to its different structures. At present, China's digital economy has the following types:

2.2.1. Technical Digital Economy. The related industries with big data as the core are the basic part of the digital economy industry and are the technological production factors for developing the digital economy. The technology digital economy industry mainly provides the market with R&D and update of related intelligent products, construction of basic information technology facilities, and technical service guarantee of big data industry chain.

2.2.2. Resource-Based Digital Economy. The practical application process of big data technology is divided into three aspects: data collection, data processing, and data application. Resource-based digital economy industry is based on data collection and processing, emphasizing the improvement of data processing efficiency for the purpose of promoting the application and development of resource-based digital economy industry.

2.2.3. Converged Digital Economy. E-type digital economy refers to the traditional transformation industry in which a large part of digital economy industry is integrated with internet plus's series of industrial technologies. This part of industry takes big data technology as the transformation foundation; improves product production efficiency, quality and after-sales service guarantee, etc.; and radiates to a complete industrial chain. They occupy a large proportion in the digital economy.

2.2.4. Service-Oriented Digital Economy. Service-oriented economy combines traditional service industry with digital technology to innovate service and change the format of service industry. At present, there are two main types of service-oriented digital economy. One is the commercial service based on e-commerce, social platform, and digital finance. The other kind is public service based on e-government, online education, and intelligent health management.

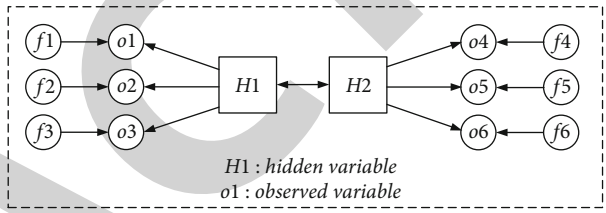

Figure 2: Structural equation constitutes the model.

2.3. Digital Economic Evaluation Principles and Theoretical Basis. During the development of digital economy, the optimization of industrial structure and the application of digital technology are mutual, which not only enhances the digitalization and intelligence of traditional industries, but also injects new vitality into the development of digital economy and further expands the scale of digital economy. The development of digital economy also has a whole-body influence. Accelerating the construction of digital economy is conducive to accelerating the integration of domestic economy with the world economy and promoting global resource sharing. To explore the influencing factors of the development of digital economy, we should make a comprehensive evaluation of the development of digital economy. The evaluation principle is based on objectively and truly reflecting the development level of digital economy.

2.3.1. Follow the Combination of Science and System. The fundamental purpose of the development of digital economy is to promote the national economy as a whole, and digital economy is a new economic form that integrates modern high-tech industries. Therefore, scientificity and systematicness are important indicators to reflect the development of digital economy.

2.3.2. Follow the Combination of Typicality and Generality. To explore the wide coverage of digital economy, the more indicators we need, the better. Too many indicators may cause problems such as increased calculation errors and

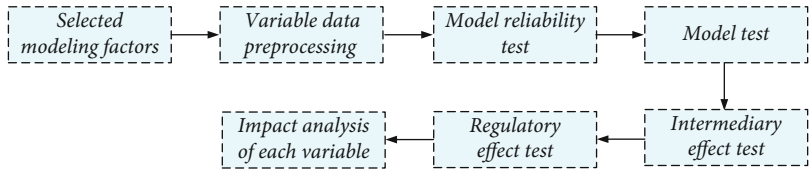

Figure 3: Empirical analysis ideas.

Table 2: China's strategy to improve the digital economy.

The universal application of modern communication technology	A. Communication infrastructure construction B. Encourage digital transformation of traditional industries C. Promote artificial intelligence, big data, and cloud computing
Increase scientific research investment in digital economy	A. Scientific research institutes and universities bear the main responsibility B. Technology companies master core products and technologies C. Introduction, digestion, absorption, and recreation
Build a team of professionals	A. Building a talent training system for digital economy B. Build a high-quality modern team

repeated information. We should find a representative and general index evaluation system to build.

2.3.3. Follow the Combination of Inclusiveness and Specificity. The digital economy has an impact not only in the high-tech industries of artificial intelligence, such as the Internet of things, but also in many traditional industries that combine Internet + technology. Therefore, as an evaluation indicator of the development of the digital economy, we should pay attention to the selection of the inclusive evaluation indicators of traditional industries, and specificity refers to the principle of determining that a single indicator is the main indicator and compatible with other indicators.

3. Conclusion

3.1. Based on the Model of the Influence of Industrial Structure on Digital Economy. The idea of structural model is to verify the rationality of internal relations by constructing multivariate indexes, based on the assumption that there are internal relations among variables. As a statistical method in scientific research, this model is mostly used in psychology and economics. Structural equation optimization can effectively deal with the internal variables of complex relationships, and there are corresponding methods such as factor analysis and regression analysis. According to whether variables can be obtained by direct measurement, they can be divided into hidden variables (HV) and observed variable (OV). Hidden variables, also called latent variables, mainly include variables such as urban development capacity and future development planning that are difficult to be directly reflected by data. The corresponding explicit variables can be directly obtained through collection, observation, and measurement, such as regional GDP, industrial composition, and per capita income level. Therefore, explicit variables are also called measurement variables. Figure 2 shows the composition relationship between dependent variables and explicit variables of structural equation model. From the causal point of view, structural equations can also be divided into internal variables (in) and external variables (ev).

The measurement model and the structural model form the structural equation together. The measurement model is a model that uses confirmatory molecules to observe the expression of hidden variables, while the structural model is a model that represents the internal relationship of hidden variables. The mathematical description of the measurement model is

$$X = Qxf + p, \tag{1}$$

$$Y = Qy\,h + z. \tag{2}$$

In the above formula, X represents the external observation matrix, Y represents the internal observation matrix, F represents the external hidden variables, H represents the internal hidden variables, and Qx and Qy represent the relationship between external hidden variables and explicit variables and internal hidden variables and explicit variables, respectively. P and Z are residual matrices.

The mathematical description of the structure is shown in the following formula:

$$h = h * T + f * W + p. \tag{3}$$

T is the mutual interference coefficient of internal hidden variables, and W is the mutual influence of external hidden variables and implicit variables.

In traditional statistical analysis, it is often thought that there is no error in the measured variables, but in practice, the error can only be reduced but not eliminated. For hidden variables such as urban development potential or industrial planning that are difficult to be directly reflected by data, they can only be represented by some explicit variables with strong correlation with them. The error between the represented quantity and the real quantity will be added to the explicit variables by residual error, and at the same time, it will be integrated into higher-order factor analysis, which is more suitable for solving complex problems. Compared with regression analysis, factor analysis, etc., the structure equation can analyze the causal relationship between

multiple variables at the same time and give the specific influence route. The industrial structure of a region is complex and diverse. Using structural equation thinking can effectively contain multiple variables and involve a wide range of data. Causality analysis can also show the effect of hidden variables better.

3.2. Impact Model Empirical Analysis Ideas to Explore. The development of digital economy is influenced by various social factors, among which regional infrastructure, per capita education level, and regional scientific and technological innovation ability are the most critical. To explore the effects of various factors on economic development, we must first determine the number of factors involved in establishing the model. After determining the variables involved in the modeling, the influence of each variable on the development of digital economy is finally obtained through data preprocessing, model reliability test, model test, intermediary effect, and adjustment effect test. Figure 3 shows the schematic diagram of empirical analysis.

In the data preprocessing stage, it is necessary to select sample data according to the determined variables. In order to ensure the usability of model fitting, a large number of data samples are often needed. In actual operation, the ratio of sample number to measurement index is not less than 20 : 1. The sample sources should be accurate and reliable, usually government reports or statistical yearbooks of authoritative organizations, such as China Urban Statistical Yearbook and China Information Yearbook. The dimensions and statistical methods of all kinds of data are different. In order to facilitate the calculation of data in the model, the data need to be dimensionless first, which can often be normalized. Taking a fixed value as a reference benchmark and quantifying other data based on this benchmark, the processed data can still effectively represent the internal correspondence. To ensure the validity of the data, it is also necessary to check whether the data meet the normal distribution.

After the model is established, it is necessary to test its reliability. By evaluating the accuracy and stability of the model, the influence of external disturbance on the measured values is observed. Common reliability indicators include retest reliability, split-half reliability, and Cronbach coefficient. Taking Cronbach coefficient as an example, the data is analyzed by model. When the coefficient is greater than 0.7, the sample is considered to be highly reliable; otherwise, the sample should be re-screened.

Intermediary effect is that independent variables influence dependent variables through intermediate variables. Causality analysis and Bootstrapping method are often used in structural equations to analyze the interaction among variables. For example, scientific and technological innovation ability is the intermediate variable between per capita education level and urban development potential. Adjustment effect is that a variable has an interactive relationship with other variables. When the variable changes, all related variables will change.

3.3. China's Digital Economy Development Strategies. After years of development, China's digital economy has achieved certain results, but there are still some deficiencies compared with developed countries. In order to accelerate the development level of China's digital economy, on the one hand, we should accelerate the promotion and popularization of Internet communication technology, such as increasing the construction of cable broadband network, mobile base station, and other communication infrastructure, to ensure the smooth Internet communication. Second, increase the public's knowledge and use of artificial intelligence, big data, cloud computing, and the Internet, especially young people; encourage traditional industries to use big data technology and advanced intelligent methods to achieve digital transformation; improve enterprise efficiency; accelerate the integration of the digital economy and the two industries; and truly "let data run more and fewer errands".

On the other hand, the state should increase scientific research funds and personnel investment in the digital economy to ensure the steady development of digital technology in innovation. Digital economy is a rapidly changing hot technology based on big data and Internet technology. Only by continuously increasing investment in capital and personnel and promoting technological innovation and development can digital economy always take the lead in the world. In this process, scientific research institutes and universities take the main responsibility and should increase the research on digital economy, organize specialized scientific research personnel to tackle key problems, break through, and firmly grasp the core technologies. Enterprises in science and technology closely combine with the market to increase innovation of scientific and technological products, research and develop products and technologies with independent intellectual property rights, actively send them to the country to learn from the digital economy, and adopt the idea of introducing, digesting, absorbing, and recreating the difficulties that are difficult to overcome at present. As an emerging technology, the digital economy has a large talent gap. It is the foundation of talent innovation and development. Facing the complicated international environment and economic and technological forms, it is vital to have a team of talents with excellent professional quality. The specific coping strategies are shown in Table 2.

4. Results

With the development of digital economy under big data statistics as the research background, and the factors affecting the development of digital economy as the research object, this paper focuses on the current situation of China's digital economy, discusses the classification of digital economy based on big data ecology, gives the evaluation principle and theoretical basis of digital economy development level, focuses on the model of the influence of industrial structure on digital economy and the empirical analysis ideas of this model, and finally puts forward relevant suggestions for the current situation of China's digital economy.

With the gradual deepening of economic globalization and the continuous promotion of the Belt and Road strategy, China, as the second largest economy in the world, has an increasingly important influence in the world economy. As

one of the mainstream of future economic development, digital economy plays an important role in promoting the upgrading and efficiency improvement of China's traditional industries. This paper is based on big data statistics to discuss China's digital economy development model, and it is a theoretical attempt to analyze the influencing factors of digital economy development. The next step will be to combine more effective mathematical models and more accurate data.

Data Availability

The figures and tables used to support the findings of this study are included in the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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