Research on the Integration Construction and Operation of Regional Ecological Industry and Modern Service Industry under the Background of Big Data

Zhichun Sui
Shenyang Institute of Technology, Fushun, China
Email: 58077869@qq.com

Abstract. Based on the analysis of the current situation of the development of regional ecological industry and modern service industry, the data of regional ecological industry and modern service industry are extracted, the statistical index system based on the integration of the two big data tools is established, the big data tools are used to extract the large amount of data, and the relevant mathematical models of big data are used to analyze and predict the regional ecological industry and modern service industry, according to the calculation results. By analyzing the reasons, we can improve the strategy of the integration of ecological industry and modern service industry in the whole region, make it run effectively, and promote the overall development of the whole national economy.

1. Introduction
As a discipline studying the law of human economic activities, economics cannot do without data collection, processing and analysis. With the development of a series of information technology, such as data processing speed and storage mode, people's research methods and thinking patterns have also changed. First, they are no longer satisfied with the sampling survey with less sample size and pursue to analyze all relevant data and information. Second, they abandon the pursuit of absolute accuracy and accept the complexity and diversity of data. Finally, they attach importance to the relevance and no longer pursue the causes that are difficult to verify fruit relationship.

1.1. Changes in Research Objects
In the research process of traditional economics, due to the limitation of a series of data collection conditions, such as human and material resources, sampling survey is often used for quantitative research, which has been used up to now. However, on the one hand, it is difficult to guarantee the data quality of the samples, which results in the accuracy of the research results being affected; on the other hand, the samples of sampling survey cannot cover the complex diversity of modern society, and people prefer to pursue the integrity of the overall data analysis. Big data technology can meet the economic research requirements of taking the whole data as the object [1]. It not only speeds up the data processing speed, but also improves the accuracy of the research results.

1.2. Changes in Research Methods
Popper’s perjury line is a research method adopted by traditional economics. Generally speaking, it is to put forward a hypothesis according to the main content of the research, then build a mathematical model according to the hypothesis, and finally verify the hypothesis with the statistical results. Big
data technology makes economic research no longer rely on hypothesis verification. Big data can easily provide a large amount of data for research [2]. With the support of information technology, the data can be mined and processed, and the relationship between data can be analyzed to get various possibilities. Through the above big data technology research, there are thousands of conclusions, which are incomparable to the single conclusion of the traditional economic hypothesis.

1.3. Changes in Statistical Means and Tools
Big data has completely changed the statistical means of traditional economics. Traditional data statistics mainly uses index calculation, and uses multivariate statistical technology to calculate and analyze data. Big data technology makes economic research abandon this kind of long-time and expensive statistical means, and the results can be easily calculated by web page click rate, search volume and website browsing frequency [3].

1.4. Impact of Big Data on Causality
The research focus of traditional economics is to analyze and explain all kinds of economic phenomena in human society, and pay attention to the research of causality. However, the diversity and complexity of modern society cannot be explained by a single causality [4]. Big data is better at exploring the potential relationship between complex things, and provides economists with more reliable explanations than a single causality.

Big data economics is the inevitable outcome of the development of modern society. By combing and analyzing the relevant literature, we can define big data economics as follows: with the support of big data technology, it is an interdisciplinary subject that conducts in-depth research on the development law of human economic activities. Moreover, big data economics is also a subject of great significance for the study of big data and traditional economics [5]. Its research content includes big Data Economic, big data statistics for the study of statistical methods and technologies, and big data application economics for the study of economic application fields. As a new discipline, big data economics is still in its infancy stage, although it has high research efficiency and broad development prospects, and its theoretical basis is not mature enough to completely replace traditional economics. Therefore, the relationship between big data economics and traditional economics should be complementary and develop together.

2. Analysis on the Integration Situation of Regional Ecological Industry and Modern Service Industry
In 2016, with the further implementation of the overall strategy of regional development, China’s regional economic development shows a trend of intensified regional economic growth differentiation, emerging industries are increasingly becoming an important support for China’s stable economic growth, regional supply side structural reform is further promoted, the pace of regional innovation capability construction is accelerated, and the leading role of national new areas in regional economic development is gradually emerging five new trends.

2.1. Situation I: China’s Regional Economic Growth Continues to Maintain the Trend of “Fast in the West and Slow in the East”
In recent years, the regional economic differentiation in China has been intensified due to the overall impact of the downturn of international market demand and the transformation of domestic economic development [6]. On the one hand, the provinces with fast pace of economic restructuring and good industrial development foundation have a good momentum of economic development; on the other hand, the provinces with large proportion of heavy industry and resource-based industry have increased downward pressure on economic development under the background of “reduce inventory” and “reduce capacity” due to the single industrial structure.

The pattern of regional economic growth continues the trend of “fast in the West and slow in the East”. Most of the eastern provinces focus on the development of export-oriented economy. In recent years,
affected by the downturn of global economic development, the economic growth rate has declined; the economic growth rate of the western region has maintained double-digit growth until 2013, although it dropped to 8.0% in the first half of 2016, but the growth rate of GDP continues to be in the first place of the “four plates”. Comparison of GDP growth changes in four major regions of China is shown in figures 1 and 2.

![Figure 1. Comparison of GDP growth changes in four major regions of China.](image1)

2.2. Situation 2: Strategic Emerging Industries Become an Important Support for Regional Economic Growth

In 2010, the output value of China's strategic emerging industries was 1.64 trillion yuan, accounting for 4% of GDP. In 2015, it grew to 541 million yuan, accounting for 8% of GDP. Since 2015, 27 emerging industries in China's strategic emerging industries have maintained rapid growth and played an increasingly supportive role in regional economy. The leading and supporting advantages of emerging industries are prominent, and the role of investment in high-tech industries is prominent. The output value of strategic emerging industries and its proportion in GD is shown in figure 3.

![Figure 2. Comparison of GDP growth changes in four major regions of China.](image2)

2.3. Situation 3: Deepening Regional Supply Side Structural Reform

In 2016, many provinces and cities in China successively formulated comprehensive and special plans for supply side structural reform. Among them, Northeast China has made great progress in “reduce
Stocking” and “reduce capacity”, optimizing the soft environment of enterprises and institutions and "making up for shortcomings"; the supply side reform in the eastern region focuses on the cultivation and innovation of emerging industries, and the central and western regions take “reduce capacity” as a breakthrough, and have achieved corresponding results.

![Figure 3](image)

**Figure 3.** The output value of strategic emerging industries and its proportion in GDP in 2010-2015.

2.4. **Situation IV: Accelerating the Pace of Regional Innovation Capacity Building**
Under the guidance of the national “mass entrepreneurship and innovation” policy, the innovation and entrepreneurship resources gathering area will accelerate the construction of entrepreneurship and innovation ecology [7]. With the in-depth implementation of innovation driven strategy, new industries and new industries are booming, becoming a new driving force for regional economic transformation. The industrialization of new technologies such as 3D printing, cloud computing and big data has developed rapidly. New industries such as Internet finance, mobile medicine and internet education have accelerated their development. Emerging industries such as biomedicine, energy conservation and environmental protection, and new energy have continued to develop.

2.5. **Situation 5: The Leading Role of National New Areas in Regional Economic Development is Gradually Emerging**
The distribution of state-level new areas in China is seven in the East, two in the middle, six in the West and three in the northeast. After the establishment of most new areas, the GDP shows a rapid growth trend. For example, the proportion of Tianjin Binhai New Area’s GDP in Tianjin is 56.2%. At the same time, the national level new area has also become the main source of regional financial revenue. For example, in 2015, Pudong New Area realized tax revenue of 265.81 billion yuan, accounting for 26.9% of the total tax revenue of Shanghai (excluding the stamp tax on Stock Exchange).

3. **Construction of Integration Model of Regional Ecological Industry and Modern Service Industry**
Based on big data technology, through data collection, data cleaning, index set building and analysis model building for regional economic industry and modern service industry, the current situation of regional economy and modern service industry is analyzed, market evaluation report is condensed, operation problems are found and feasible solutions are put forward.

3.1. **Data Acquisition**
Using Python language crawler technology, capture the relevant information of people’s web, economic web and other websites, including user evaluation data (comment + score), community data
(attention, fans), strategy experience and user’s real-time operation (click + query), to provide basic data support for statistics and analysis.

3.2. Data Cleaning
Using mathematical model to sort out the collected data, eliminate the impurity data, delete the duplicate information, correct the existing errors, and provide data consistency and security.

3.3. Establishment of Indicator Set
It includes the data index value of regional economy in recent years, modern service industry category, satisfaction index, national economy index set, modern service industry social index set.

3.4. Analysis Model Construction
Build a big data analysis model, which is divided into four layers: hardware resource layer, data processing layer, big data analysis layer and application service layer. The analysis model is shown in figure 4.

![Big data analysis model](image)

**Figure 4.** Big data analysis model.

4. Operation Effect of Integration of Regional Ecological Industry and Modern Service Industry

4.1. Promote Industrial Upgrading
Under the background of big data, the regional economy and modern service industry have been continuously integrated, which has fundamentally realized the upgrading and development of service industry. With the gradual application of the Internet of things to various fields in China, the boundaries between them have become increasingly blurred. According to the development model of service industry, more and more new industries have evolved [8]. Under the role of big data, modern service related entities The Department has also been enriched unprecedentedly. At present, in many service industries, advanced information technologies such as cloud computing and big data have been applied to them; in addition, other novel service modes are emerging constantly, and have been developed rapidly in the service industry, such as intelligent mobile community service platform, third-party payment security system, etc.

4.2. Reform the Business Model of Service Industry
With the continuous integration of big data related information in the modern service industry and
various new service models based on the Internet are also growing, which also changes the relevant service industry. For example, in the logistics industry, the advanced technology such as GPS is used in the process of distribution and transportation, which can fundamentally improve the management level; the traditional e-commerce is also constantly updating the technology, including mobile payment technology, which also makes its rapid development.

4.3. Optimize Resource Allocation
The continuous application of big data technology in the modern service industry will widen the business scope of the service industry to a certain extent and promote the integration of business [9]. For example, many service platforms of software companies also use the big data of “Internet +” to support. In the ecology of the whole process industry, the “three flows” of information flow, logistics and capital flow are created, which fundamentally expand the service field.

5. Conclusion
The impact of big data on traditional economics is revolutionary. With the application of big data technology in modern society, it changes the traditional way of using sample data to predict, makes the research of overall data possible and improves the integrity of research results. However, the big data economy is still in the primary stage of development, and the theoretical basis is not perfect. It needs to be improved while bringing impact and influence to traditional economics. There is no doubt that the development prospect of big data economics is broad and bright. What it brings to traditional economics is not only a new way of research, but also a mode of thinking. I believe that with the support of information technology, the theoretical system of big data economics can be continuously improved, adapt to the development needs of modern society, and promote rapid economic development. In order to develop our economy rapidly, we need to support the development of the third-party industry, and the public service industry is the most important part of the third-party industry. With the rapid development of the times, the traditional service industry has been unable to meet its needs, but in the current new situation, it is more necessary to innovate the modern public service mode. We need to constantly strengthen and expand the application scope of regional economy and modern service industry under the background of big data, so as to ensure the rapid development of China’s economy.

Reference
[1] Su Z A 2017 Big data and big data economics Financial Age (1).
[2] Liu M and Zhu J 2018 A brief introduction to the contemporary big data and big data economy Modern Industry (11).
[3] Wu Y 2016 An analysis of the significance of the Internet big data era for enterprise management--Taking Dongfeng Motor Company as an example Journal of Hubei University of Economics: Humanities and Social Sciences Edition (2).
[4] Zhong S 2018 Research on the development of general equilibrium economic theory by big data economics Information system engineering (3).
[5] Cheng P and Zhao J 2017 Performance management of financial sharing center based on cloud accounting in the era of big data Friends of Accounting 8 (4) 130-133.
[6] Wu T 2016 Cost control of financial sharing center of big data era group based on cloud accounting China Economy and Trade 1 (15) 178-179.
[7] Tian W and Zhao J 2018 Performance management of financial sharing center based on cloud accounting Cooperative Economy and Technology 2 (3) 160-161.
[8] Zhou Y 2017 Performance management of financial sharing center of cloud accounting in the era of big data Accounting and Accounting Studies 2 (23) 69-69.
[9] Cheng P and Bai Y 2016 Big data audit research based on financial sharing service model China Certified Public Accountant 1 (5) 84-87.