ISSN 2616-7433 Vol. 7, Issue 2: 35-46, DOI: 10.25236/FSST.2025.070206

Analysis on the Development Trend of Global Internet Economy Based on Network Security and Data Mining

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Abstract: *With the continuous progress of computer technology, the decision system driven by artificial intelligence has also been better developed, which also promotes the improvement of network security. The rapid growth of the Internet has led to better economic development in all areas. Various economic activities and commodity trading methods are constantly innovating and developing. This makes the Internet economy usher in the wind excellent development environment. In the meantime, with the increasing integration of the global economy, the development of the global Internet economy is becoming more and more relevant. But this also means that the global Internet economy will face many challenges while enjoying good development opportunities in the context of the new era. As the most important issue in the development of the Internet economy, the security of the network economy has been paid much attention to. At present, how to deal with the security problems in the development of the Internet economy and make the development trend of the global Internet economy become better and better is an urgent problem to be concerned and solved. As a product of the Internet situation, data mining can extract and analyze massive valuable data, and transform it into effective information. It has become a research hot spot of scholars, providing an effective way for us to analyze the development trend of the global Internet economy. At the same time, the emergence of AI driven security decision-making system also provides security for the Internet economy. This paper is based on in-depth research on network data mining. The study proves that global Internet economy based on network data mining can drive the Digital Economy by about 20%; promote a 40% increase in the amount of non-bank transaction network payments; and increase the employment rate by about 10%. It will have four development trends: the global Internet economy will become the new drivers of the improvement of economic quality; it will also be the only choice for countries to carry out technology innovation; during the process improving people's lives, it can play a more important role; open a new path to promote the modernization of national governance. At the same time, the research on network security will also help broaden the application of AI driven security decision system and promote its better development.*

Keywords: *Global Internet Economy, Development Trend of Internet Economy, Network Data Mining, Data Mining Algorithm, Network Security*

1. Introduction

Due to the continuous enrichment of AI theory, AI has also been widely used in various fields, which has promoted the generation of AI driven security decision-making system and also provided better guarantee for network security. At the same time, due to the rapid development of the current Internet, the network economy has become a new economic form, which makes the security of the network economy more and more serious. In particular, with the gradual strengthening of the globalization trend, the connection between the global Internet economy is also becoming more and more close. This also means that once an economic crisis occurs in a certain area of the global Internet economy, it will have an indelible impact on the global economic development. Therefore, it has become extremely urgent to analyze the trends of global Internet development. However, how to conduct more in-depth research on the development trend of the global Internet economy is also a

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dilemma faced by many scholars today. As a product derived from the Internet, data mining is favored by scholars today. Many scholars are committed to the research of network data mining and network security, and strive to deeply understand the development trend of the global Internet economy through network security and data mining, and make timely preparations to promote the healthy development of the global Internet economy. At the same time, they also hope that the research on network security can provide more theoretical basis for the promotion and application of AI driven security decision system.

In order to further study the development trend of the global Internet economy, many scholars have carried out researches at different levels. Zhou mainly studies the development characteristics and mechanisms of Taobao villages in Jiangsu under the e-commerce economy, and shows that with the further development of the Internet and e-commerce, more and more Taobao villages will be involved in the Internet revolution [1]. Fang X mainly analyzed the development trend of knowledge economy in the new economic era and stated that the management of knowledge economy is becoming an important part of enterprise development [2]. Calzada J mainly studies net neutrality in the hyperlinked Internet economy and shows that due to the increase in Internet traffic, subscription fees can be set higher, which can promote economic development [3]. Zhuo B mainly studies the evaluation of online media advertising marketing based on the needs of the Internet economy and verifies the factors that affect the profitability of this model through an experimental model [4]. From the research of the above-mentioned scholars, it can be clearly seen that there are limitations, and it is difficult to be used as a reference for the development trend of the global Internet economy. For this reason, some scholars turn their research direction to data mining, trying to find solutions from data mining. Guo Y mainly studies the optimal neural network strategy for fault diagnosis of VRF heating system based on data mining and shows that this analysis method can effectively eliminate redundant variables, and the association rule mining method can optimize FSs for fault diagnosis [5]. Gong J mainly studies network data mining based on artificial intelligence inference engine and shows that the approval rate of articles is very high [6]. Yun W mainly studies the mechanism of traditional Chinese medicine in angiogenesis using network pharmacology and data mining technology, and through the systematic analysis of traditional Chinese medicine components and their targets, it is possible to determine the potential mechanism of their anti-pathological angiogenesis, laying the foundation for the research and development of new angiogenesis therapeutic methods [7]. Fu N mainly studies computer communication and network development and application technology based on data mining technology, and discusses and analyzes the application and function coordination of computer and network based on data mining technology from the perspective of technology research and development [8]. These scholars mainly study the application of data mining technology in the field of electronics and network, but there are very few researches on using it in the economic field, especially the research on network data mining. However, it can be seen from the research of these scholars that the application scope of data mining is extremely wide. We have reason to believe that because of its unique characteristics and advantages, it is feasible to use network data mining to analyze the development trend of the global Internet economy.

On top of the in-depth analysis of web data mining techniques, experimental description that the research method of global Internet economic development trend based on network data mining is feasible. Its analysis of the global internet trends economy is relatively accurate, which can better help us analyze the development trend of the global Internet economy and take preventive measures in time, and ultimately the normal development of the global Internet economy. In order to promote the research on the development trend of the global Internet economy of network data mining, we can start with the following.

2. The Global Internet Economy of Network Data Mining

In order to conduct an in-depth analysis of the development trend of the global Internet economy based on network data mining, it is first necessary to understand its related concepts and other information. This section mainly introduces the related concepts and algorithms of network data mining related to the global Internet economy.

2.1 Internet Economy

2.1.1 Overview of Internet Economy

The Internet economy is a collection of various internet-based economic activity, and is a brand-new economic phenomenon produced in the Internet era [9]. Internet economy has two broad

ISSN 2616-7433 Vol. 7, Issue 2: 35-46, DOI: 10.25236/FSST.2025.070206

and narrow senses. Broadly speaking, the Internet economy is a variety of economic forms based on the Internet and centered on modern information technology; in a narrow sense, the Internet economy can be divided into five types: e-commerce, Internet finance, instant messaging, search engines, and online entertainment. This is an important way of developing today's Internet economy, and new specific forms will appear in the future. The characteristics of the Internet economy determine its globalization trend, so the Internet economy is also called the global Internet economy in some ways.

From the degree of development of network technology and the dissemination of the network at different levels in economic and social life, the Internet economy can be divided into three levels: network economy, information economy and cyber development stages [10]. The era of network economy is a critical period for the dissemination of network culture. In this era, the most prominent feature of the combination of network and economy is the vigorous development of e-commerce and the rise of online shopping. The Internet economy period is the primary stage of the development of the Internet economy. During this period, the most notable feature of the integration of the Internet and the economy is the rapid development of e-commerce and the prevalence of online shopping, online transactions account for an increasing proportion of trade flows. The information age is the second stage of the Internet economy. In the age of information economy, the combination of the network and the economy is no longer just a form. During this period, the Internet economy has penetrated into business, finance, communication, entertainment and other aspects. With the development of information resources, network transactions have shifted from pure commodity trade to service trade, and gradually expanded to the field of service trade, a new network technology is emerging. The third is the cyber economy stage, which is the most advanced stage of the development of the Internet economy. During this period, the Internet has covered all walks of life and has become a global Internet. Its production and organization are undergoing tremendous changes. One of the notable features is the in-depth use of the Internet of Things.At present, the Internet economy has gone through these three stages and is gradually developing. Research by the research institute shows that most countries are still in an earlier period of the Internet economy, that is, the Internet era; while China has successfully entered the information economy era in the past two decades of development; from a global perspective, there are only a handful of countries that have truly entered the cyber economy, and only a few developed countries can achieve this.

2.1.2 Classification of Internet Economy

Since the development of the Internet economy, there have been five basic forms: e-commerce, Internet finance, instant messaging, search engines and online entertainment [11]. E-commerce is a kind of business activity that uses Internet technology to conduct online transactions. Recently years, the development of e-commerce industry in various countries has been relatively rapid. Through the open network, buyers and sellers can conduct various long-distance commercial activities as long as they have an Internet terminal. It can be said that e-commerce is a new business method that combines online shopping, online payment, etc. with various business activities. Internet finance is the combination of the Internet and the traditional financial industry. It is a new financial form in which traditional financial institutions or companies realize functions such as fund raising, currency payment, financing and information services through network technology. At present, some classifications of online financial management are difficult to cover its development status. The most well-known ones are: third-party payment, online financial management, and online lending. Instant messaging is a service that can receive and real-time delivery of information on the Internet. It is the most widely used communication tool on the network today. Various communication software are constantly emerging, and service providers are constantly adding various applications, which greatly facilitates people's daily communication and communication. The Internet has become a true information superhighway. The search engine refers to a service that collects information on the Internet and, after sorting, provides relevant information inquiry services for the vast number of netizens. There is still huge room for development in China's search engine market, which also shows that the focus of search engine development in the future will turn to mobile phones. Internet entertainment refers to a series of entertainment activities that people perform on the Internet. In Internet games, people's first impression of online games is often negative, but with the development of the times, people's understanding of online games has gradually become more rational, and online games have gradually become an important tool people to relax and enrich their lives. Digital media includes online video, online live broadcast, online music, online news, etc. The impact of the development of digital media is no longer limited to information technology, it will change the behavior of users in other aspects. Social communication refers to making friends on the Internet and carrying out corresponding social activities on the Internet, thereby combining virtual society and real society as a new social form. With the continuous development of social software, online dating has gradually become more convenient and

ISSN 2616-7433 Vol. 7, Issue 2: 35-46, DOI: 10.25236/FSST.2025.070206

more suitable for different groups of people, thus achieving the combination of virtual social and real social.

2.1.3 Characteristics of Internet Economy

Internet economy as a newly created form of economy. It has greatly improved the level of economic interdependence between countries or regions, the expansion of the product and marketing market reduces the restriction of the market size to economic development to a minimum. It has a total of four more obvious characteristics[12]. The application of network technology has promoted China's economy from a resource-led industry to a knowledge-led Internet economy; secondly, the Internet economy is a fast economy, which breaks the constraints of the original time, space and other factors on economic development, and 24-hour network service makes it possible to obtain faster speeds than any previous economy, thereby greatly improving economic development; and the Internet economy is an innovative economy, which includes technological innovation, organizational innovation, business model innovation and other aspects. The Internet economy is a highly permeable economy, which can quickly integrate into the three major industries and driving development the three industries to a certain extent. The Internet economy has had various impacts on the industrial structure. On the one hand, the Internet economy enables traditional industries to undergo industrial transformation. On the other hand, the Internet economy can promote the optimization and enhancement of industrial structure and make the economy develop in a better direction.

In economic globalization, foreign trade, technology transfer, capital flow, and service supply are interrelated and interdependent, forming an organic economic system. It is the inevitable result of the development of the world economy, science and technology, and to a certain extent meets the needs of the development of social productive forces, is a major feature of today's world economic development and an important trend of world economic development [13]. As an important part of economic globalization, the global Internet economy is both an opportunity and a challenge for the global Internet economy. Only by accurately predicting the development trend of the global Internet economy can it better promote its development. Next, the research focus will turn to network data mining.

2.2 Network security and data mining

2.2.1 Network security

Internet security means that the hardware, software and data in the network system are protected from being damaged, changed or leaked due to accidental or malicious reasons, and the system operates continuously, reliably and normally without interruption of network services.

Therefore, network security is not a simple concept, it needs to be solved by cooperation of many parties. The goal of network security mainly includes eight aspects: first, the identification of the authenticity of the identified communication entities by the identity authenticity performance; The second is the confidentiality of information to ensure that confidential information is not disclosed to unauthorized individuals or entities; The third is the integrity of information to ensure the consistency of data, which can prevent unauthorized users or entities from creating, modifying or destroying data; Fourth, the availability of services to ensure that legitimate users will not be unjustly denied the use of information and resources; Fifth, non-repudiation, establishing an effective accountability mechanism to prevent entities from denying their actions; Sixth, system manageability, which can control the way users or entities use resources; Seventh, the system is easy to use. Under the condition of meeting the safety requirements, the system should be simple to operate and easy to maintain; Eighth, it is reviewability, providing the basis and means for investigating the network security problems.

2.2.2 Overview of Data Mining

Data mining is to mine hidden laws and valuable information from massive, seemingly disordered and unsystematic data, and combine it with statistical software or modern computer technology [14]. The application scope of data mining is more and more extensive, which can dig out deeper information to meet various needs and learners of different levels, and at the same time, it can also provide decision support for users and reduce the occurrence of risks. Data mining is also a multidisciplinary research topic, specifically as shown in Figure 1.

The task of data mining is to find patterns in a multitude of data. There are various types of models, which can be divided into two types: prediction and description according to their functions. The first category is a prediction model that can accurately determine a specific outcome from the numerical value of a data item. The data needed to mine predictive models is also obvious. The second is

ISSN 2616-7433 Vol. 7, Issue 2: 35-46, DOI: 10.25236/FSST.2025.070206

descriptive mode, which describes some regularities in the data, or classifies them according to similarity, but cannot directly use descriptive mode for prediction. Data mining involves multiple fields such as machine learning, pattern recognition, and neural networks.

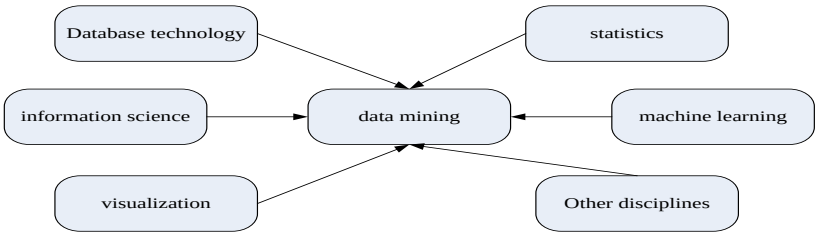

Figure 1: Discipline structure involved in data mining

2.2.3 Overview of Network Data Mining

Starting from the concept of data mining, the network data mining is defined. In short, web data mining is to obtain the information that users care about from web servers [15]. Data mining is a new method for analyzing web page content, web page structure, user access information and e-commerce information. In data mining, data is mainly divided into three categories: web documents, the structure between web pages (hyperlink information), and user access information. Compared with traditional databases, network data has a certain mathematical model, which can describe the data in detail; however, due to the complexity of network data, there is no specific model to describe, so that the data are independent, and these data are self-describing and dynamic. Due to the strong semi-structure of network data and a large amount of information, a huge heterogeneous database is formed.

2.2.4 Classification and Technology of Network Data Mining

Usually, web mining can be divided into three types: web content mining, web structure mining and web usage pattern mining, specifically as shown in Figure 2:

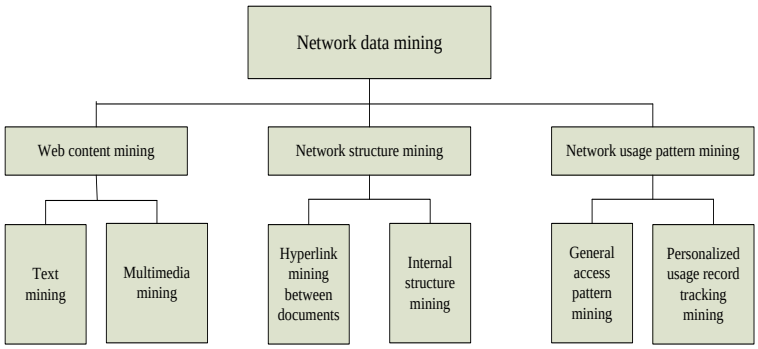

Figure 2: Schematic diagram of network data mining classification

Web content mining is a way of extracting knowledge from the content of a document or the description of a document. Resource discovery based on concept indexing, web document content mining based on proxy technology, and proxy-based technology are all categories of such technologies. Currently, there are two ways to mine network content: one is to mine the content directly from the document, and the other is to use other tools. According to the mining results, it can be divided into text and multimedia. The mining of network structure is mainly from the perspective of network organization and link. From the perspective of scientific citation analysis, the correlation information between these documents is very rich. Traditional search engines cannot handle the structure of web pages very well, and only treat web pages as simple files, ignoring the structural information of web pages. By mining the structure and network structure of web pages, users can be guided to classify, cluster, find authoritative web pages and central web pages, and improve search efficiency. The system can effectively guide the data collection of the website, and can effectively improve the speed of data collection. The mining of network structure mainly includes: internal structure mining of network files and hyperlink mining between files. Network usage pattern mining is to use user access logs on the server or extract interest types from users' browsing information, and analyze them to improve the structure of the website or provide users with personalized services.

Network data mining technology is divided into classification, estimation, prediction, association analysis, clustering and so on. Classification is the most used method in data mining, for example, to

ISSN 2616-7433 Vol. 7, Issue 2: 35-46, DOI: 10.25236/FSST.2025.070206

determine whether credit card consumption has been stolen, and whether a type of loan application is classified as "good" or "bad". Classification refers to the description of the concept of a certain category, the overall information of this type of data, that is, the implicit description of this type of data, usually expressed in the form of rules or decisions. This mode converts tuples in a repository into concrete categories. A connotation description can be divided into two types: feature description and difference description. Feature description refers to describing the common characteristics of objects in a category. The difference description is the difference between two or more kinds. Functional description can use the same function for different classifications, while discriminative description cannot show the same characteristics in different classifications, and it uses partial descriptions more. The classification is a sample library consisting of tuples and categories in a known database, obtained by a related algorithm. There are several commonly used classification decision trees such as ID3, C4.5, IBLE and so on. The commonly used classification methods are: AQ method, rough set method, genetic classification method, etc. Estimation is to obtain an unknown attribute value from existing data. Correlation analysis, regression analysis and neural network are the hotspots of current research.

The difference from estimation and classification is that prediction is analyzed by past data, rather than prediction of current behavior. In this article, the regression analysis method is used, and a large amount of historical data is used to regress the linearity and nonlinearity with time as the variable. When making predictions, as long as the parameters are input to the specified time point, the regression equation is used to solve it. BP model is a new type of neural network developed recently years. It can learn nonlinear samples and identify nonlinear functions.

Data association is an important database knowledge. When two or more variables have some kind of rule, we call it an association. For example, if the values of two or more data items occur repeatedly and with a high probability, then there is some connection between the two. Association can be divided into simple, time series, causal association and so on. Association analysis is to find correlations between data items.

In a database, data can be divided into a set of meaningful subsets, or classes. In the same classification, the distance between individuals is smaller, and in different classifications, the distance between individuals is larger. Clustering can give people a better understanding of objective reality, that is, using clusters to build macro concepts. The main research contents of clustering are: statistics, machine learning, neural network and so on. In statistical analysis, cluster analysis is mainly based on Euclidean distance and Ming's distance. This cluster analysis is a clustering based on an overall comparison, which entails classifying each individual. Clustering is an unsupervised way of learning in machine learning. Here, the distance is determined based on the description of the concept. Therefore, clustering is also called concept clustering, and self-organizing neural network is used for clustering. ART model, Kohonen model, etc. all belong to the category of unsupervised learning. After setting the distance threshold, different categories are classified according to the threshold.

2.2.5 Network Mining Data Algorithms

At present, data mining technology and algorithm are the current research hotspot. The research in this article is mainly based on two methods, fuzzy clustering and grey prediction.

Fuzzy cluster analysis is a hot issue that domestic and international scholars have paid attention to in recent years. The basic idea of fuzzy cluster analysis is to classify by similarity. The essence of fuzzy cluster analysis is to construct a fuzzy matrix based on the characteristics of the target itself, and then judge its classification relationship by similarity. This method normalizes and formats the attributes of the original data, and uses the attributes to construct a fuzzy similarity matrix.

Assuming that A is all objects to be classified, then establish the A similarity R;

$R(a, b)$—The degree of similarity between a and b;

R—Similarity coefficient matrix.

There are many ways to establish a matrix, since this paper adopts the correlation coefficient method and the absolute value method, so only these two methods are introduced here.

The correlation coefficient method is expressed by the formula:

$$r_{ab} = \frac{\sum_{j=1}^{n}(x_{aj}-\bar{x}_a)(x_{bj}-\bar{x}_b)}{\sqrt{\sum_{j=1}^{n}(x_{aj}-\bar{x}_a)^2\sqrt{\sum_{j=1}^{n}(x_{bj}-\bar{x}_b)^2}}}, (a, b \le m) \quad (1)$$

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Among them:

$$\bar{x}_a = \frac{1}{n}\sum_{j=1}^{n} x_{aj} \tag{2}$$

$$\bar{x}_b = \frac{1}{n}\sum_{j=1}^{n} x_{bj} \tag{3}$$

The absolute exponential method is expressed by the formula:

$$r_{ab} = e^{-\sum_{j=1}^{n}|x_{aj}-x_{bj}|}, (a, b \le m) \tag{4}$$

The grey forecasting model is constructed based on the grey module concept. Grey system theory holds that all randomness is grey in a certain period of time and will change in a specific time and region. When dealing with gray quantities, it is not necessary to analyze and study statistics and probability distributions, but to find rules from irregular raw data. That is, the original data is processed to form a relatively regular time series, and then modeled. The grey series forecasting technique is to use the GM (1,1) pattern to forecast the quantity of time series. The following is the basic steps of GM(1,1) pattern.

First, first-order accumulation is performed on the following sequence to generate 1-AGO:

$$\left\{\mathrm{a}^{(0)}(\mathrm{m})\right\} = \left\{\mathrm{a}^{(0)}(1), \mathrm{a}^{(0)}(2), \cdots, \mathrm{a}^{(0)}(\mathrm{I})\right\} \tag{5}$$

Among them: m—data sequence moment;

0-0 times accumulation sequence.

First-order accumulation is performed on it to generate 1-AGO:

$$\left\{a^{(1)}(m)\right\} = \left\{a^{(1)}(1), a^{(1)}(2), \cdots, a^{(1)}(I)\right\} \tag{6}$$

Among them:

$$a^{(1)}(m) = \sum_{j=1}^{m} a^{(0)}(j), m = 1,2,\cdots,i \tag{7}$$

Constructing the accumulation matrix and the constant term vector, the first-order mean of $a^{(1)}$ is 1-AVG:

$$\mathrm{a} = \left(\mathrm{a}(2), \mathrm{a}(3), \cdots, \mathrm{a}(\mathrm{i})\right) \tag{8}$$

Among them:

$$\mathrm{a}(\mathrm{m}) = \frac{1}{2}\left(\mathrm{a}^{1}(\mathrm{m}) + \mathrm{a}^{1}(\mathrm{m})\right), \mathrm{m} = 1,2,\cdots,\mathrm{i} \tag{9}$$

Then,

$$\mathrm{A} = \begin{pmatrix} -\mathrm{a}(2) & 1 \\ -\mathrm{a}(3) & 1 \\ \vdots & \vdots \\ -\mathrm{a}(\mathrm{i}) & 1 \end{pmatrix} \tag{10}$$

$$B_I = \begin{bmatrix} a^{(0)}(2) \\ a^{(0)}(3) \\ \vdots \\ a^{0}(i) \end{bmatrix} \tag{11}$$

Using the least squares method to solve for the gray parameters:

Constructing the white differential equation to get:

$$\frac{da^{(1)}}{dy} + cx^{(1)} = \omega \tag{12}$$

Solving the parameters c and ω according the following:

$$\hat{c} = \begin{pmatrix} c \\ \omega \end{pmatrix} = (A^S A)^{-1} A^S B_I \tag{13}$$

Bringing in the gray parameters, the gray prediction mode of a^0 is obtained as:

$$\hat{a}^{(0)}(m+1) = \left(a^{(0)}(1) - \frac{\omega}{c}\right)e^{-cm} + \frac{\omega}{c}, m = 0,1,2\cdots \tag{14}$$

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The gray prediction model of A is:

$$\hat{a}^{(0)}(m+1) = (1-e^{-c})\left(a^{(0)}(1) - \frac{\omega}{c}\right)e^{-cm}, m = 1,2\cdots \quad (15)$$

In the case of large residual error and low accuracy of the built model, the residual GM mode is used for modeling analysis to improve its accuracy.

3. The Development Trend of the Global Internet Economy Based on Network Data Mining

In order to verify the global Internet economic development trend based on web data mining, this article takes China's Internet economic development trend in 2021 as the research object and conducts an experimental verification of the global Internet economic development trend based on web data mining.

Due to the complexity of economic activities, the change of an indicator is often affected by many factors, so corresponding control variables must be introduced to avoid the inherent problems caused by the lack of explanatory variables. Its influencing factors are: capital investment and labor investment.

3.1 Variable Selection

Internet Economic development takes the Internet penetration rate as the main indicator and examines the development of the Internet economy. However, given the limitations of this study, coupled with the fact that the scale of the Internet economy tends to undergo structural changes in the initial stage of development, and China's Internet economy is still in its infancy, so the scale of the Internet does not reflect the degree of development of the Internet economy. Finally, it is more appropriate to use the Internet population as an indicator to evaluate the development level of the Internet economy. Therefore, this paper will select the Internet access population in each local city as the index system to evaluate the development level of the Internet economy.

3.2 Experiment on the Development Trend of Global Internet Economy Based on Network Data Mining

This article believes that the development of the Internet economy will drive the integration and reorganization of the Internet market, the cross-border competition of Internet companies, the Internetization of industries, and the rapid development of cross-border e-commerce.

3.2.1 Scale of Netizens

So far, the development momentum of network applications is still very good, and the scale of network users is constantly expanding. Except for travel booking, various types of applications have shown a great growth trend. The details are shown in Table 1: Unit (10,000)

Table 1: Internet usage of local netizen

application	User size	Utilization rate	Annual growth rate	application	User size	Utilization rate	Annual growth rate
Instant messaging	95126	96.5	8.8	Travel reservation	43461	44.1	5.1
Search Engines	81418	82.6	4.6	Online takeout	49909	50.6	3.1
Network news	71273	72.3	3.1	Webcast	49555	50.3	3.6
Network video	71666	72.7	2.7	micro-blog	40316	40.9	2.3
Online shopping	87367	88.6	14.9	Online car Hailing	36277	36.9	3.7
Online payment	83456	84.7	12.1	Online education	29178	29.6	5.3
Network music	66194	67.1	2.4	Internet Finance	17045	17.3	2.1
network game	62319	63.2	5.8	Short video	84225	85.4	7.2
Network literature	61345	62.2	10.1				
Online banking	48529	49.2	4.6				

From Table 1, as you can see that in terms of mobile phone applications, the users of mobile online education and short videos have grown the most, and the utilization rate has increased to 29.6% and 85.4%. The growth of online education is obviously mainly due to the better development space for online education due to the impact of the epidemic, and short videos, as a product of today's fast food culture, have grown rapidly. This shows that the scale of netizens continues to grow today, and the

ISSN 2616-7433 Vol. 7, Issue 2: 35-46, DOI: 10.25236/FSST.2025.070206

influence of the Internet is also growing.

3.2.2 Scale Trend of Internet Economy

Up to now, the scale of China's Internet economy has continued to grow, maintaining a good momentum of development, and both the digital economy and e-commerce have continued to grow. Taking the growth of the local digital economy as an example, the details are shown in Figure 3: Unit (100 million yuan)

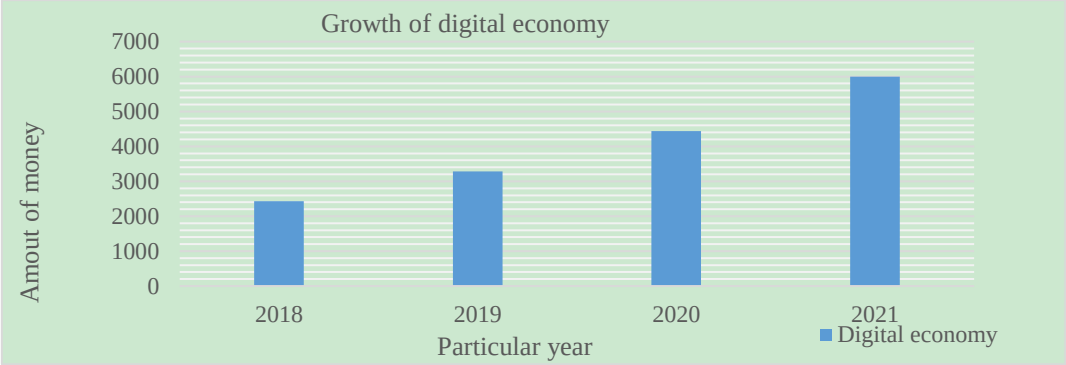

Figure 3: Local digital economy growth recently years

It can be seen from Figure 3 that, taking the growth of the local digital economy as an example, the local digital economy has maintained steady growth, with an average annual growth rate of 26%. This shows that the scale of China's digital economy is expanding and showing a relatively stable growth state, and the nominal annual growth rate of the digital economy can reach about 20%. As for the retail transaction volume of e-commerce in China, the details are shown in Figure 4: (unit: 100 million yuan)

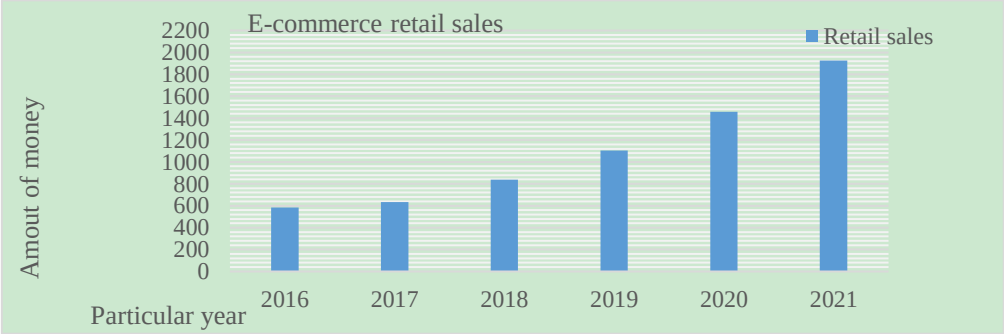

Figure 4: Local e-commerce retail transactions recently years

From which you can see Figure 4 that the total retail transaction volume of local e-commerce has continued to grow in recent years. This shows that the audience of e-commerce is getting higher and higher, the average annual growth rate is approximately 24%. The scale of the Internet economy is getting bigger and bigger, and the influence of the Internet economy is gradually increasing.

3.2.3 Internet Economic Support System

Up to now, the scale of China's Internet economy has continued to grow, and online payments have maintained rapid growth. The influence of online payment is also getting bigger and bigger, the specific situation is shown in Figure 5: (Unit: 100 million yuan)

From which you can see Figure 5, China's payment methods have undergone tremendous changes in recent years. The influence of online payment methods is growing, and the amount of online payment generated by non-bank payment institutions is also increasing, showing the trend is increasing year by year.The growth of non-bank online payment amount can basically be maintained at around 40% per year.

With the rapid development of e-commerce, the express delivery industry is also booming. The specific situation is shown in Figure 6.

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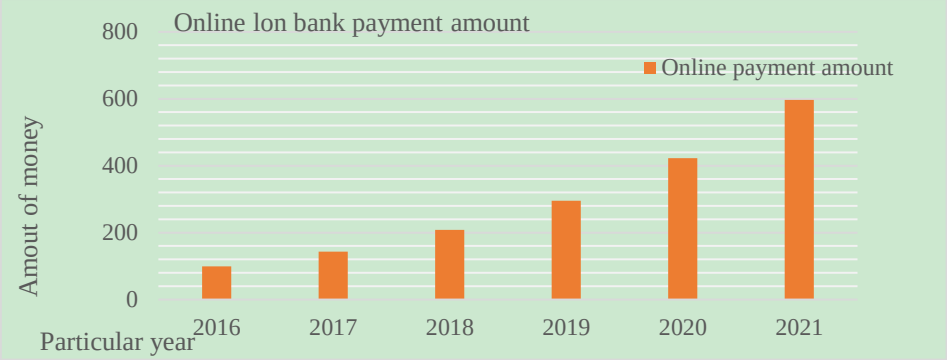

Figure 5: Online payment amount of non bank payment institutions in recent years

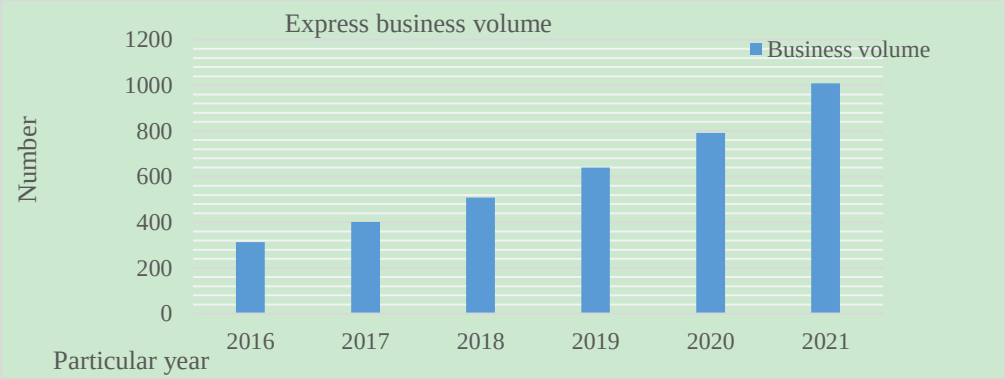

Figure 6: Changes in express business volume recently years

From which you can see Figure 6 that in recent years, the growth of China's express delivery business has been very stable, basically maintaining an annual growth rate of about 26%, which shows that the support system of China's express service industry has gradually improved, and the express delivery industry has developed steadily. China's express service support system has been gradually improved, and the express industry has developed steadily. This means that China's Internet economic support system is gradually improving, and the Internet economy is developing more vigorously. In the future, the governance environment of the Internet economy will continue to improve, including legislation, regulation, market order, and platform governance, so as to provide a favorable policy environment for the healthy development of the Internet economy.

3.3 China Internet Economic Development Index

Based on the current situation of China's Internet economy, this article discusses the development of China's Internet economy in depth. While emphasizing the total scale of the network economy, it also emphasizes the impact of the network economy on economic and social development. This paper uses the method of variable factor analysis to objectively and truly reflect the development of network economy in each region. By comparing the current development of the Internet economy, China's Internet economy development index is established, and it is calculated and analyzed. Due to experimental limitations, this paper only illustrates the top six cities.

3.3.1 Comprehensive Index Ranking of Provinces

The China Internet Economic Development Index comprehensively reflects the development of each province in terms of Internet economy supply, demand, circulation and support. Compared with last year, the scale of the Internet economy has continued to grow, but the growth rate has slowed down. The Internet economy has had a deeper impact on the development of various provinces, and the development environment of the Internet economy has gradually improved. The details are shown in Table 2:

ISSN 2616-7433 Vol. 7, Issue 2: 35-46, DOI: 10.25236/FSST.2025.070206

Table 2: Top six rankings of China's Internet economic development comprehensive index

Ranking	Province	Supply index	Demand index	Circulation index	Support index	Internet economic development index
1	Guangdong	24.09	30.02	9.88	4.76	68.75
2	Beijing	26.35	29.01	2.05	9.99	67.40
3	Shanghai	15.78	24.10	3.26	6.09	49.23
4	Zhejiang	14.72	16.06	8.20	3.93	42.91
5	Shandong	18.33	17.96	2.02	2.11	40.42
6	Jiangsu	13.25	10.98	4.01	2.86	31.10

From which you can see Table 2 that the development of Guangdong's Internet economy is relatively balanced, and all indicators are at the leading level in the country. Beijing's advantage is better infrastructure, and Shanghai has higher demand, which shows that the Internet economy is a very dynamic market.

3.3.2 Supply Index

The evaluation results of the Internet Economic Supply Index show that the top cities have formed better economic supply capacity. The details are shown in Table 3:

Table 3: Evaluation results of Internet economic supply index

Ranking	Province	Supply scale	Supply infiltration	Supply potential	Internet economy supply index
1	Beijing	14.35	10	2	26.35
2	Guangdong	19.88	2.57	1.64	24.09
3	Shandong	11.65	2.65	4.03	18.33
4	Shanghai	10.25	4.01	1.52	15.78
5	Zhejiang	9.62	4.22	0.88	14.72
6	Jiangsu	10.02	2.06	1.17	13.25

From which you can see Table 3 that the top cities in the modulo dimension have strong supply capacity in the Internet economy; to a certain extent, Beijing's top ranking reflects that the Internet economy has a deeper impact on the traditional economy and occupies a larger proportion in the traditional economy. This also shows that some provinces with little economic advantages can achieve transformation and development through the Internet.

3.3.3 Demand Index

The evaluation results of the Internet economy demand index show that the demand index of the top-ranked cities is more and more obvious. The details are shown in Table 4:

Table 4: Ranking of Internet economic demand index

Ranking	Province	Demand scale	Demand penetration	Demand potential	Internet economic demand index
1	Guangdong	20.78	6.32	2.92	30.02
2	Beijing	17.28	9.22	2.51	29.01
3	Shanghai	12.31	10	1.79	24.10
4	Shandong	11.36	0.88	5.72	17.96
5	Zhejiang	5.65	7.93	2.48	16.06
6	Jiangsu	4.93	3.83	2.22	10.98

It can be seen from Table 4 that in Guangdong, Beijing and Shanghai, the demand indicators of the Internet economy show significant advantages. Guangdong and Beijing have significant advantages in scale and have formed a certain market demand scale; Shanghai has better penetration, indicating that its Internet economy is well integrated with the traditional economy on the demand side.

Through the analysis of the development trend of China's Internet economy, we can see that the global Internet economy is generally developing in four directions.

The global Internet economy will become a new driving force for the improvement of economic quality, which can promote the growth of the digital economy by about 20%; it is also the best choice for various countries to carry out scientific and technological innovation, providing economic index support for scientific and technological innovation, and promoting a 40% increase in the amount of non-bank transaction network payments; in the process of improving people's lives, it will play a more important role, which can increase the employment rate by about 10%, and it provides a new way for the modernization of national governance, which can continuously optimize the social governance environment of the country, and continue to innovate in legislation, supervision, maintaining market

ISSN 2616-7433 Vol. 7, Issue 2: 35-46, DOI: 10.25236/FSST.2025.070206

order, and strengthening platform management.

4. Conclusion

Due to the rapid economic development, the completion of the infrastructure and the improvement of the Internet-related infrastructure, the development of the global Internet economy has laid a good foundation, but also makes the network security problems are numerous. Based on an in-depth study of the development trend of the global Internet economy, this paper first introduces the relevant background of the article, then discusses the relevant work of previous authors, then introduces information about network security and data mining and the global Internet economy, and finally conducts an empirical study related to the development trend of the global Internet economy based on network security and data mining. Through the research and analysis of network security and data mining, four general trends of the development of global Internet economy are obtained: the global Internet economy will become a new driving force to improve the quality of the economy; it is also an indispensable choice for countries to carry out technological innovation; it will play a more important role in improving people's lives; and it can provide a new way to modernize national governance.

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