

# Research on Sharing Economic Development of “Big Data + Block Chain”——Based on Industry Convergence Theory

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**Abstract:** Sharing economy as an important product of the Internet Era, its essence is to rely on Internet technology, especially big data technology to reuse the idle resources of society and creating new market value. However, with the increasing scope of the sharing economy, the problems of data security, circulation, sharing and privacy protection are gradually emerging, and big data technology has become the biggest bottleneck for further development of shared economy. The block chain technology is composed of a variety of technology and communication protocol to form a new Internet architecture, it through cryptographic sharing, distributed books and other feathers to provide new methods and ideas for data distribution and sharing and complementary with big data technology. Therefore, through the combination of block chain technology and big data technology, they can subvert the traditional shared economic business model and provide a new opportunity for sharing economic development.

**Key words:** Big data; Block chain; Sharing economic; Industry convergence

Sharing economy is also called sharing economy. Relying on emerging Internet technologies such as big data technology, cloud computing technology, and internet of things technology, and as a new economic

development model, it re-joins some social resources which cannot be fully involved in economic production due to limitations in technology or business models into the social economic operation. It can be said that the sharing economy development model is an important product of the Internet economy era and a new business model based on the sharing of idle goods or services in the mobile Internet era. Its concept and development model has penetrated into various industrial fields. The essence of the sharing economy is to use virtual Internet technical rules to entrust the use rights in reality to other people under certain conditions in order to maximize the efficiency of the use of social resources. The sharing economy breaks the constraints of time and space through Internet technology, eliminates the problem of economic information asymmetry in the society, re-uses idle social resources, and creates new market values. Therefore, under the combined influence of the Chinese economy entering the new normal, the disappearance of demographic dividends, and the increase in environmental pollution, the sharing economy must be an important trend in China’s economic transformation and upgrading. In particular, after the “Internet +” strategy was put forward, the development mode of promoting the sharing economy with big data technology is diverging and merging in various traditional industry sectors, and the sharing economy enterprises relying on big data technology have also developed rapidly (Table 1). Relying on big data technology, DiDi, the company mainly engages in the travel business, obtains nearly 5 billion in equity financing. And Guang Lian Sai Xun which mainly provides smart car services, provides big data technology

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services for 4S stores, and provides value-added services to customers, has received a financing amount of 150

million in the A round of financing.

**Table 1 financing statistics over 100 million of sharing economy enterprises in 2016**

Sharing economy enterprises	Financing Amount	Financing stage	Service and Business
DiDi	\$4.5 billion	Equity financing	Engages in big data technology research and development, mainly in traffic travel
Pingan Health Cloud Company	\$500 million	A Round	Medical Health Big Data Analysis
Hao Zu.com	250 million yuan	A Round	Housing sales and lease information matching service
Tree Bear	200 million yuan	B Round	Engages in sharing WIFI and conduct personalized marketing services in accordance to WIFI data in malls
Guang Lian Sai Xun	150 million yuan	A Round	Main service: smart car service, and provides big data for 4S shop and value-added services for customers
More Health	100 million yuan	A Round	Personal mobile health data analysis
DuduBus	100 million yuan	B Round	Internet-sharing buses. Provides users with smart travel services through big data matching.

The sharing economy development model has been recognized by the society and the financing scale of sharing economy enterprises is increasing. However, with the continuous development of the sharing economy, its problems are also emerging. For example, due to its immature development model, the currently popular sharing bike model leads to continuous negative news such as vehicle destruction, illegal parking, private occupation, and traffic accidents, which shows that the sharing economy business model relying solely on big data technology is still flawed and still needs new technologies to improve it so that they can be reasonably integrated into the socio-economic development.

## 1 The Dilemma of Sharing Economy Development Based on Big Data Technology

Big data technology, as the underlying technology for sharing economic operation and development, will have a direct impact on the healthy development of the shared economy, because the key to the development of the shared economy lies in the accuracy of credit data collection and analysis, especially the lack of credit data has become an important factor hindering the development of financial institutions. From a macro perspective, although there are various data in the society in the Internet age, but due to the lack of specific and uniform standards for data information between industries, the collected data cannot be used directly and needs further processing or translation, resulting the lack of accuracy in the original data. At the same time, the big data sharing and dissemination mechanisms in various industries are not clear, and

data may be lost in the process of dissemination, which also affects the accuracy of the data; from a micro perspective, enterprises with data advantages are unwilling to be open to the public due to their interest problems, because having more data means more profit opportunities, and also, the data may contain personal or business privacy concerns, so they will not let data open to public. This shows that the current maturity and security of big data technology are still imperfect and have become an important factor hindering the further development of the shared economy.

### 1.1 The degree of informatization is different in different industries and the basic data missing is serious

Big data is the underlying technology foundation of the shared economy, and data sources are the prerequisite for the development of big data technology. Therefore, the lack of basic industry data will inevitably affect the development of the shared economy. At present, in addition to industries like Internet finance, logistics and express delivery which have Internet-based technology have high informatization and relatively complete basic data, other industries, such as education, medical care, transportation, and industry, have much lower informatization degree than the basic requirements for implementation. Take the medical industry as an example, according to the data from the Information Management Professional Committee of the Chinese Hospital Association, the highest degree of informatization in the Chinese medical industry is drug management, which reaches 79%, while the patient information is only 13%.

Therefore, the informationization of the medical industry is obviously insufficient. In addition, the sharing economy of the medical industry is still faced with constraints such as data integration and storage. With the continuous expansion of medical data, the hospital's computer equipment storage capacity will not meet the basic requirements of big data technology, and data management is more difficult. And with the continuous accumulation of medical data, the scheduling of medical data may be delayed, which is a great challenge for the healthcare industry that fights against time. Therefore, a new technology is needed to initiate the data revolution, so that data also becomes a kind of social public resource. However, as the underlying technology of sharing economy operation and development, big data technology still needs to be further improved in terms of its technology maturity and security.

### **1.2 Over-reliance on big data technology models, over-expectation on the sharing economy market**

In 2016, in the context of the country's economic supply-side structural reform and the cold winter of the capital market, the sharing economy has made great achievements. According to statistics, in 2016, the total financing in the Chinese shared economy reached 171 billion yuan, an increase of 130% over the same period of last year. All walks of life want to share a piece of cake in the sharing economy. Many Internet industries, service industries, and manufacturing industries are divided into the sharing economy and create a variety of shared economic models. However, the successful model of shared economic development does not rely solely on market demand of big-data technological analysis, and it uses the data analyzed to build a business model and integrates it with traditional industries. The successful sharing economy model still requires rigorous logic analysis and demonstration and bears the test of the market. As economist Gansky said, the key to the success of the sharing economy model is the value of shared products and the frequency with which shared products are used. For example, for an individual consumer, renting a car is more valuable than renting a drill. Therefore, compared with electric drills, cars are more valuable and more frequently used. This also shows that the development of the sharing economy model cannot blindly rely on big data technology. Market conclusions derived from big data can be used as a reference, but direct use of conclusions

may bring risks.

### **1.3 Security of data cannot be guaranteed in Sharing economy, and customers' privacy have leaking risks.**

The right to use the goods in the traditional economy represents the complete use right. It is acquired by people through purchase, and the owner of the goods can always use it alone. And the sharing economy is to reintegrate fragmented resources in the society and gain additional benefits by transferring the right to use the goods at a specific time. When the right of use and ownership are combined, the information data is only enjoyed by the owner of the commodity, so information data can be guaranteed. However, if the two are separated, the right to use and ownership of the goods is enjoyed by many people, which will certainly lead to leakage of customer information privacy to some extent. For example, if you are using a sharing economic and transportation software such as DiDi, you must share your location if you want to find a suitable nearby vehicle. Otherwise, you will not be able to obtain services. The same is true for sharing bicycles. If the customer wants to get the right to use the bicycle, he/she needs to unlock it through WeChat social software, and in the process of scanning, it means that the customer has delivered their social information to the operator. In the era of sharing economy, the customer's information data is increasingly being grasped by other people; and as the owner of the information, the customer does not know where their information data will be collected, where it will flow, and how it will be used. So, there is a great potential for information security.

## **2 Block Chain Technology Values and Application Benefits in the Sharing Economy**

### **2.1 Block Chain Technology Values**

Block chain technology is essentially a distributed database technology. Data information is stored in separate blocks in the block chain system, and individual blocks form a chain of end-to-end links through cryptographic signature verification. In the block chain system, each individual block node has complete system information and all information is traceable. The advantage of block chain technology is that it needs to be checked every time it records or reads information. Because information needs to be recorded and read for multiple times in the actual transaction

process, resulting in the block chain, the transaction in the chain system must undergo multiple tests before it can achieve the ultimate transaction. Therefore, block chain technology that executes commands exactly in machine language is a reliable database that can effectively solve economic transaction credit problems. According to the 2016 McKinsey research report, block chain technology will be another revolutionary technology after the steam engine, electricity, and Internet technology. It has five characteristics: First, the block chain is a decentralized and centralized system. Compared with the Internet system, the block chain system has no central system. Its daily operation and maintenance rely on each block node in the system, and the obligations and rights of each block node are the same; Second, the block chain system is open. All data information in the block chain system is open and transparent. As long as participants know the location of the node and obtain the key, they can know the data information stored in the block node; Third, the block chain system is a de-trusted system. All data records and readings in the block chain system are performed under strict machine language rules, and no individual can intervene; Fourth, the data information in the block chain system cannot be tampered with. According to the design concept of the block chain system, to modify the data information in the system must master more than 51% of the nodes in the system. For a single participating block node, it is never possible to master 50% of the data in the block chain system; Fifth, the data information in the block chain system is traceable. The data information of the block chain is connected end to end according to the time generation sequence, and then form a chain, thus ensuring that the data information data of the block chain system is stable and reliable.

It is known from technical characteristics of the block chain that if block chain technology is applied to the real economy, there will be many commercial values such as connecting social economy, improving asset management efficiency, intelligent social assets, and optimizing social structure. This is based on the following aspects: First, the block chain technology will establish a new value network. With its trust-relief feature, the block chain can create a more secure value network system than the current Internet. In a value network based on block chain technology, not only enterprises can freely share their products and services, but ordinary consumers can also share

their own extra resources. And the advantage of the block chain value network compared to the economic market is that it does not have an absolute monopoly, and any block chain system participating node has the same information advantage, which coincides with the connotation of the sharing economy; Second, block chain technology can improve the efficiency of social and economic management by virtue of its irrevocable features. With the continuous development of the digital economy, any asset can be digitally stored and traded. Smart contracts based on block chain technology can achieve efficient asset management through digital encryption and data tamper characteristics. The basic idea of smart contracts is that under the current legal system, the contract code is written into the bottom of the block chain system and cannot be modified to ensure that transactions occur for whatever reason, and that disputes caused by credit problems can be effectively avoided; thirdly, with its de-trusted and open characteristics, block chain technology can optimize social structure and solve public decision-making problems. The de-trusting and openness features of block chain technology can achieve social decentralization and self-control, that is, under a circulation standard system, social participants have the same rights and obligations. For example, in the course of public decision-making, traditional voting methods may lead to self-serving fraud, but if you vote through a fully de-trusted distributed ledger in the block chain system, voters can fully trust the voting results and thus achieve the purpose of optimizing social structure.

## **2.2 Application advantages of block chain technology in the sharing area**

Block chain technology, as a more advanced and advanced Internet technology than Big Data technology, not only retains the open, fair, and interconnected nature of the Internet, but it is also more secure and accurate. Therefore, under the background of the stagnation of the development of the shared economy relying on the development of big data technology, the block chain technology will be integrated into the sharing economy, such as finance, healthcare, energy, etc., through the optimization and transformation of the sharing economy development model. Upgrading and leveraging the advantages of block chain technology will inevitably enhance the development prospects of the shared economy.

### (1) Application advantages of block chain technology in the field of financial intelligence

The core of the development of sharing finance lies in the accuracy of the collection and analysis of credit information, so the lack of credit data has become an important obstacle to the development of financial institutions. Although with the development of big data technology, China has established an alliance of online loan credit service companies and intends to ensure the accuracy of credit data through the sharing of data within the alliance. However, as the data volume of the shared data system continues to grow, its problems continue to emerge: First, data storage is too concentrated, and the risk of being stolen is extremely high. Second, with the large amount of data, the data is increasingly delayed; thirdly, traditional big data sharing forms require high hardware configuration, and data aggregation and update speed will be slower and slower. After adding the block chain technology to the financial information system, it can effectively solve the drawbacks of traditional big data credit sharing: First, the data storage method is changed from centralized to distributed, and the data is distributed in the internal nodes of the block chain, and data can't be stolen; second, data sharing under block chain technology uses node synchronization. As long as the node data is stored, all nodes in the entire block chain system can query new data, so real-time data sharing can be ensured; thirdly, the data uploading and querying methods adopt P2P mode, which is point-to-point mode. Each node can set data query permission, if you want to query the data of this node, you must have a key and an address to access the required data.

### (2) Application advantages of block chain technology in the medical field

Although China's large-scale medical institutions are currently conducting Internet medical services, patients can register and consult basic medical services through the Internet, saving a lot of time and resources. However, due to the severe inequality in the distribution of medical resources in China, large medical institutions have become overcrowded every day. People with any kind of illness are flocked to large medical institutions, leading to not only a waste of time but also a waste of medical resources. In addition, each medical institution's network system is independent, even if there are patients for other medical institutions can not immediately send information, and relying on

the existing Internet technology, the patient's medical information privacy and security is also difficult to be protected. The medical industry data sharing system built by block chain technology will effectively solve the problem of isolated islands of information in the medical industry and maximize the effectiveness of medical resources. The specific process is shown in Figure 1. Specifically: In the medical block chain system, patients can visit the nearest hospital without having to go to a large, congested medical facility. For patients who they cannot handle, the medical institution will transfer their medical data to the block chain system. The system analyzes patient medical data and distributes it to other suitable medical institutions to maximize existing medical resources. At the same time, the Health and Development Planning Commission can also conduct real-time audits and data traces on the block chain system. On the one hand, it can supervise the charging of medical structures, and on the other hand it can prevent patients from fraudulent protection and prevent collusion between inside and outsiders.

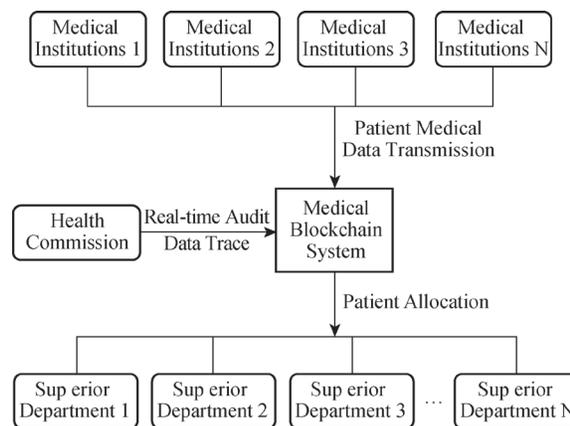


Figure 1 Medical block chain system

### (3) Application advantages of block chain technology in energy

The pain point of traditional energy development is that electricity often comes from large power stations. These electromechanical facilities are often far from urban areas, so the energy consumption of electric energy during transportation is enormous. According to statistics, the loss ratio of electricity energy from production to transportation then to consumer use is 9%, which is really huge. And as China's urbanization process continues to deepen, the city's demand for electricity and energy will be more demanding. If the urban power grid cannot provide electricity continuously due to accidents, it will cause huge

economic losses. In addition, because China's energy has always been monopolized by public utilities, for those companies or households that have installed solar energy, even if there is excess energy, they cannot buy, resulting in a waste of energy resources. If the block chain technology is applied to energy, the development of an energy sharing economy will change the existing energy development: First, reduce energy consumption and make cities more secure. The distributed storage technology of block chain technology can realize distributed storage of energy: the more reliable the distributed energy storage is, the more efficiently it can match the demand for electricity; second, energy decentralized management can achieve free trade of energy. Energy can be decentralized with the help of block chain technology, then for consumers with energy surplus, free energy can be freely traded, and relying on the indispensable modification and traceability of block chain technology, and the security of transaction can be guaranteed. Then energy sharing can be truly achieved.

### **3 Feasibility Analysis of Development of Sharing Economy of “Block Chain + Big Data”**

The success of the shared economy depends on the ability of the enterprise to schedule and control data in real time. Most of the data under the traditional sharing economy model is monopolized by the market oligopoly. Even if some small businesses have a novel or innovative sharing economy model, it is difficult to achieve. Therefore, what really restricting the development of the shared economy is not the data itself, but the use of data. Therefore, a new technology is needed to initiate the data revolution and make data become a kind of social public resource and an infrastructure like water and electricity in people's daily life. This technology is block chain technology. Relying on big data technology's ability to collect data and analyze data, coupled with block chain technology's storage methods, security features, and lower usage costs, it is foreseen that the “block chain + big data” sharing economy model will be more efficient, open up the problem of information islands, and establish a new industrial ecosystem. At the same time, the new shared economic development model will benefit the implementation of government supervision and policies, and the evaluation of corporate and personal credit will be more fair and accurate.

#### **3.1 More reasonable resource allocation**

The traditional sharing economy development model relies on the high-speed and low-cost features of Internet technology for information transmission, and it concentrates the idle resources in the society. Because of the use of additional resources to create value, the cost of value creation is far less than the cost of providing products and services for businesses, and thus it is socially recognized. However, with the development of the sharing economy model, people realize that the value created by the sharing economy actually comes from the financial support and subsidies of the enterprise. When the enterprises stop subsidizing the sharing economy model, the sharing economy model will be lack of motivation, which has even led to more problems than the traditional economic model. Take traffic travel sharing economic model like DiDi for example, because there is a fixed cost for taxis, when consumers have a certain distance from their own, if they want to get orders, they will have to spend more than normal running time. At the same time, in rush hours, traffic travel sharing economic model is not so friendly to consumers, because the cost of taxis is no longer settled in the usual way, but the one provides the most fee can get the service. It is often more costly to enjoy the same services as usual. In addition, when a taxi driver is driving, it may easily cause traffic accidents and cause more serious injuries if he wants to get orders at the same time. However, if the block chain technology is combined with big data technology, each taxi in the market will be put into the block chain system through the book-type distribution feature of block chain technology, and then big data technology will analyze the specific location of each vehicle, and the system will automatically allocates vehicles to consumers, not only can reduce the operating costs of taxis, but also enable consumers to use the lowest consumption to obtain maximum service, and the distribution of sharing resources is more reasonable.

#### **3.2 More accurate credit information**

In the economic society, credit is one of the important reference tools for whether the parties to the transaction implement the decision and is one of the cornerstones of economic and social development. The greater the amount of money involved in a market transaction or the longer the trading time, the greater the role of credit. Similarly, credit is also important for the sharing

economy, and as the value of shared services or shared products increases, the value of credit will be higher, and even the key to sharing the economy. For example, sharing a bike requires personal credit to ensure that the vehicle will not be lost or damaged. But compared to it, shared-economy models such as shared housing or shared apartments need significantly higher dependence on credit. Because compared to give the good to strangers, there are more things to consider when let them sleep for a night. However, the “block chain + big data” model of sharing economic development can eliminate the drawbacks of traditional credit collection and increase the credibility of credit information. This is because: First, block chain technology can guarantee that all credit data is open and transparent, and there is no possibility of falsification. The traceability feature of the block chain can be used as an endorsement of credit, and after knowing the key of the node, the block chain system can freely browse the above information and facilitate the information search. For example, in the early stage of the sharing economy, both parties of the transaction can find each other’s credit records through the block chain system to see if there are any bad records. Since the data recorded by the block chain system is needed to be verified, it cannot be modified, and its authenticity can be guaranteed. Second, in the transaction stage of the sharing economy, the smart contract of the block chain technology can ensure that the transactions between the two parties can proceed normally and that the transaction will not be canceled because of the repentance of one party.

### **3.3 Improve the industrial ecosystem**

The “block chain + big data” sharing economy model has the decentralized feature, which can get rid of the traditional business model’s dependence on market oligopoly services and rely on the block chain technology’s public trading platform to complete market transactions. In addition, unlike the traditional sharing economy, the sharing economy that incorporates block chain technology can realize the problem of information sharing among industries, open up the problem of big data technology information islands, and fully realize healthy and transparent industrial development. In addition, bitcoin electronic currency unique to block chain technology can achieve good cooperation between different countries and different industries. Relying on a decentralized electronic money system, it solved

problems such as laws and exchange rates that impeded the integration of industries into the development of the whole world and realized the globalization of shared economy.

## **4 Suggestions for the Development of “Block Chain + Big Data” Integration**

With the continuous development of the sharing economy, the symbiotic development of block chain technology and big data technology can be said to be the trend of the times. On the one hand, block chain technology can solve the bottleneck of the current big data technology and can better serve the shared economy. On the other hand, the mature big data technology also needs an application entity to reflect its own value. Big data technology and block chain technology are two kinds of independent Internet technologies. To achieve full integration, it is necessary not only to overcome technical difficulties, but also to require the government and enterprises to integrate the two through market forces.

### **4.1 The technical integration of block chain and big data**

Since big data technology has been developed for some time, it can be said to be a more mature Internet technology. Therefore, using the big data technology as a carrier, it is relatively easy to implement in actual operations to incorporate the block chain technology into the big data technology as a new technology. First, the block chain technology is used as a data collection technology for the big data technology platform to break the data island phenomenon. The essence of block chain technology is a distributed storage technology, which belongs to the computer’s underlying technology. With the existing computer technology capabilities, as long as a set of procedures and interfaces that comply with the block chain technology are developed based on the big data platform, the block chain technology and the big data platform can be directly integrated and provide services and realize the integration of block chain technology and big data technology. Moreover, the open-sharing, non-destructive, and traceability features of block chain technology in data can ensure that the data collected by the big data platform using block chain technology will be true and reliable; second, using block chain technology’s check of the data, block chain data can be a data source for big data platforms to protect data

security. As one of the important factors restricting the sustainable development of the sharing economy, data privacy protection relies on the private key signature verification form of block chain technology to effectively protect data security. It is recommended that various industries establish their own block chain alliance platforms, and enterprises in the industry will be added to the block chain system in the form of nodes, only authorized economies are eligible to view the data; Thirdly, the stored data in the block chain system can be freely traded on the big data platform as assets, so as to achieve the purpose of integration of the two technologies. For example, establish a data integration system. When an enterprise uploads data to a block chain system, the system can give it certain points according to the data value. When companies need to make data inquiries, certain points will be deducted. By using data as a form of assets, block chain technology and big data technology are merged in a transactional manner.

#### **4.2 Government promotes the integration of block chain technology and big data technology**

Promoting data-based reforms in various sectors of the society and raising the industry's data-based development to a national strategic height. First, formulate unified standards for the development of industry data, and provide the basis for the development of block chain technology and big data technology. At the same time, pay attention to the combination of industry-based data development, production, study and research, and encourage institutions of higher learning or research institutes to cooperate with industries that are undergoing data transformation and form a benign development cycle that encounters difficulties—solves difficulties—discovers difficulties. Second, provide technical support and financial assistance for the industry transformation. Provide technical support to pioneer companies in the industry transformation, including providing opportunities for pioneer companies to study advanced foreign block chain technologies or big data technologies, or invite foreign Internet technical experts to the company to provide the latest technical explanations and provide technical assistance. At the same time, we can also provide national financial support for the transformation of the industry, provide research funds for R&D companies engaged in big data technology or block chain technology to ensure the sustainability of

their research. Thirdly, introduce laws and regulations concerning big data and block chains to strengthen the supervision of data information.

Although the government should encourage all industries and companies to actively develop block chain technology and big data technology to achieve the industry's data development as soon as possible. However, in the age of digital information, only in the environment where data are supervised, and data information's security can be guaranteed, "block chain + big data" can be better integrated and have healthy development. For example, the government can set up a data protection department agency to supervise the behavior of various industries in the process of data transformation to see whether there are violations. And supervise the classification of data, be open to the data collected by big data, and strictly supervise the private data contained in block chain technology.

#### **4.3 Enterprises promote the integration of big data technology in block chain technology**

First, implement internal data-based operations and management, and accelerate the construction of block chain technology and big data technology. It is suggested that when companies implement data-based operations and management internally, they can first carry out experimental rectification in non-key businesses or departments. After the non-key business or department has experience, gradually transform and upgrade the key businesses or key departments. Second, strengthen the training of Internet technical personnel, and set up specialized data business departments. If an enterprise wants to realize the development of block chain technology and big data technology and gradually realizes integration, talents must be the basis. Enterprises can cooperate with universities in cultivating professional talents with block chain technology or big data technology. They can also directly recruit talents with Internet technology through social education and training institutions as a talent pool for enterprises. In addition, companies should also set up an independent department that specializes in R&D, management, and operation of Internet technologies to accelerate the transformation of enterprise data.

### **5 Conclusion**

Sharing economy is an important product in the era of Internet economy. Relying on emerging

Internet technologies such as big data technology, cloud computing technology, and internet of things technology and through the rules of virtual Internet technology, sharing economy regroups and reuses idle resources and factors of society and makes full use of them in economy and production, not only breaking the constraints of time and space, solving the problems of information islands, but also creating new market values and maximizing social benefits by reusing unused social resources.

With the deepening of the sharing economy model, a series of problems such as information security, privacy protection, and security supervision are also emerging. The sharing economy based on big data technology relies too much on the big data technology model, making the basic data of different industries extremely scarce. For example, the degree of informatization in such industries as education, medical care, transportation, and industry is much lower than the basic requirements for the implementation of big data technology. Second, over-reliance on big data technology models, or market conclusions derived from big data which are directly used as a reference and analysis conclusions may pose risks. Its market expectation is too high. In addition, in the era of sharing economy, more and more customers' information data are being mastered by others, sharing economic data cannot guarantee security, and customer privacy has risks of leakage. Therefore, the sharing economy model based on big data technology has become an obstacle to the further development of the sharing economy. And as the underlying technology for the sharing of economic operations and development, the technology maturity and security of big data technology needs to be further improved, and it is

necessary to be completed by injecting the big data technology into the development model of the sharing economy so that it can be continuously improved. As a decentralized centralized system and distributed database technology, block chain technology is a central system technology that forms the end-to-end chaining of related data in separate blocks through a cryptographic signature verification method. Having de-trusted and decentralized characteristics and reliable data, the integration of block chain technology and big data technology can not only solve the bottleneck of the current big data technology, but also provide new methods and ideas for the development of shared economy, upgrade the sharing economy development model, and promote rapid development of the sharing economy.

## References

- [1] Liu Yi, Xia Jiechang. Research on the Theory and Policy of Sharing Economy [J]. *Economics Information*, 2016(4): 116-125.
- [2] Wang Yali. Share Economy Under Reform of the Supply Side [J]. *Reformation & Strategy*, 2016(7): 87-90+154.
- [3] Li Wenlian, Xia Jianming. Business Model Innovation Based on "Big Data" [J]. *China Industrial Economics*, 2013(5): 83-95.
- [4] Wang Qin. Business Model Innovation Based on the Reconfiguration of Value Network [J]. *China Industrial Economics*, 2011 (1): 79-88.
- [5] Hu Hanhui, Xing Hua. Theory of Industry Merge and Implication on Development of Information Industry of China[J]. *China Industrial Economics*, 2003 (2): 23-29.
- [6] Fleura Bardhi, Giana M. Eckhardt. Access-based Consumption: The Case of Car Sharing [J]. *Journal of Consumer Research*, 2012.
- [7] James. Blockchain: Putting Theory into Practice [J]. Schneider, 2016.
- [8] Bughin, Jacques, Livingston, John, Marwaha Sam. Seizing the Potential of "Big Data" [J]. *Mckinsey Quarterly*, 2011.