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C2C Electronic Commerce Tax Management Based on Big Data

Weibo Huang*
Education Technology Center, Experimental Teaching Center
Guangdong University of Foreign Studies
Guangzhou, China
172564946@qq.com

Yanjun Liao
School of Economics and Trade
Guangdong University of Foreign Studies
Guangzhou, China

Shaohui Li
School of English and Education
Guangdong University of Foreign Studies
Guangzhou, China

***Abstract*—This study was to find a more effective way for tax collection and management on C2C E-commerce with the help of Big Data technology. This study reviewed the current situation and features of C2C E-commerce in China. We analyzed the problems and necessity of the tax collection and management on C2C E-commerce. Through applying the network and Big Data technology to tax collection and management system on C2C E-commerce, the study promoted set up three models. By analyzing the procedure of promoting the use of tax identification number for tax registration, and sharing information between tax authorities and third-party agencies, and joining the tax payment into shops credit evaluation, we can conclude the application results. The results indicate that it is necessary to apply Big Data in tax work.**

Keywords—Big data; C2C e-commerce; Tax management

I. INTRODUCTION

The development of the Internet is promoting the pace of human constant change. The network technology and digital information gradually permeate into every part of people's life. With the explosion of data on the Internet, it is obvious that people are moving towards the age of Big Data. Big Data technology brings great changes to people's lives. It also brings new opportunities and challenges to tax collection and management. In recent years, China's digital economy has developed rapidly. E-commerce continues to grow rapidly and the scale of online retailing continues to break through historical records. However, both the buyers and sellers are individuals in C2C E-commerce. The acquisition of transaction data is difficult. Moreover, taxpayers' consciousness of paying taxes is poor, so that the tax collection and management of C2C E-commerce is facing great difficulties. It undermines the principles of tax equity. Therefore, to prevent the loss of the national taxation, we should strengthen the tax collection and management of C2C E-commerce. Furthermore, we should make good use of Big Data information management technology to improve the level of tax work. This paper will analyze the framework design of C2C E-commerce tax collection and management under the background of Big Data. [1]

II. CURRENT SITUATION AND FEATURES OF C2C ELECTRONIC COMMERCE

A. C2C Electronic Commerce Development Status

The E-commerce market has gradually entered a mature period. As a result of the standardized development of the market, consumers' requirements for products quality are constantly improving. The market scale of B2C E-commerce gradually exceeded that of C2C E-commerce. However, as the starting point of the rapid development of the E-commerce industry, C2C E-commerce still occupied 36 % of the market share in 2017. And due to the expanding sales volume of E-commerce and the advantages of a complete range of goods, C2C still has some room for growth in the future. [2]

B. Features of C2C Electronic Commerce

1) Virtual nature of transactions: The characteristic of electronic commerce is that the transaction is carried out only through the network. The seller only appears in the form of shop web page. The display and description of goods are all network pictures or words. Buyers can consult commodity information through the real-time communication software of the network. The payment for goods can be completed through a third-party payment platform. The freight transportation is carried out by a third-party express company. The after-sales service can also be directly solved on the network. There is no need for the buyer and seller to meet throughout the course of the transaction. For this reason, C2C electronic commerce has great virtual concealment [3]. Information of shop location, operators, source of goods, cost of goods is hard to know, which increases the difficulty of regulation and tax collection.

2) Making deals without paper: In the traditional trade, the paper contract, the trading bill and so on can be used as the

proof of the transaction. However, C2C E-commerce transactions are carried out on the Internet, except for order information and chat records with sellers, there is no paper contract and other proof material. In order to reduce costs, sellers usually do not issue invoices on their own initiative when selling goods or providing services. Buyers have to pay extra if they want to get an invoice. Therefore, most buyers do not require the seller to issue invoices, network shopping do not invoice seems to have become the industry practice. And many small-scale shops do not have the habit of keeping accounts. Accounting books, financial statements and other information are missing. C2C E-commerce transactions lack paper documents. [4] The basis of calculating tax is difficult to determine.

3) Easily modified transaction information: In the C2C E-commerce industry, all of the transaction information and logistics information are electronic information. This information is transmitted through the Internet. However, electronic information has the disadvantage of easy modification, and the trace of modification is not easy to find. It is difficult to ensure the authenticity of the data. Moreover, C2C E-commerce transactions are relatively free. The seller sets the price dependently. The sales content is changeable. The number of C2C sellers is huge, and the amount of transaction information generated each day is very large. Statistics and monitoring data are very difficult. [5]

III. Problems of Tax Collection and Management in C2C E-commerce

A. Ambiguity of Tax Subject

The market access threshold of C2C E-commerce is very low. For example, the registration of personal stores in Taobao only needs to provide the photos of ID card, business locations, and the bank card identification. There is no mandatory requirement for sellers to complete business registration and tax registration. Therefore, its convenience attracts many people to use the C2C model to open stores or start a business. In the C2C E-commerce industry, transactions are conducted through the network, so the real store operators do not have to be the one who was registered in Taobao. There is also a lot of variability and ambiguity in the business sites. But the E-commerce platform doesn't check the information. In traditional trade, the taxpayer must be identified before tax collection. [6] However, due to the lack of tax registration, the R*eal Name Authentication* of C2C E-commerce stores is virtually non-existent. Taxpayers are difficult to determine.

B. Ambiguity of Tax Jurisdiction

Because of the fictitious nature of the C2C model, it is impossible to ensure that the location of service, business, residence and so on are consistent with the information registered by the seller on the E-commerce platform. In the absence of business and tax registration, the tax authorities are unable to determine the location of the operation. At the same time, the popularity of the Internet makes the location of commodity trading unrestricted. The seller's actual place of running business, the buyer's place, the source of goods and the company registration place of the third-party E-commerce platform may all come from different cities. However, China's tax law does not specify which transaction location should be used as the tax place for electronic commerce. So the tax jurisdiction is unclear. [7]

C. Difficulty of Tax Supervision

China is now implementing a self-reported tax system, and the tax bureau will calculate the amount of tax payable by taxpayers based on their self-reported business conditions. But there is serious information asymmetry in C2C E-commerce. On the one hand, the technology development of tax department lags behind the development speed of E-commerce industry. Lack of full and timely access to large quantities of electronic data, it is difficult to know the operating conditions of business operators. On the other hand, article 25 of the Electronic Commerce Act requires E-commerce operators to provide data on electronic commerce as required when requested by the relevant authorities. [1] But many businesses think that business information is the core secret of them. In order to maximize profit, or directly to avoid paying taxes, they will not submit their related business and transaction data on their own initiative. Information asymmetry makes it easy for operators to modify or conceal data. So there are always many problems of tax supervision.

D. Weak Tax Consciousness

C2C electronic commerce transaction has the fictitious and hidden nature. In order to reduce costs, many trading entities will not voluntarily file their taxes. Knowledge of China's tax laws is not yet widespreaded enough. And many C2C E-commerce transaction subjects have low academic qualifications so they don't know much about the tax laws. [2] Therefore, people's tax consciousness is weak. Moreover, for small individuals, the volume of transactions is relatively small. Even if they do not pay their taxes in time, the punishment is not severe. The cost of breaking the law is small, resulting in low tax compliance of transaction subjects.

IV. The Present Situation of Big Data's Technological Development

A. Application of Big Data Technology

The huge scale of data brings many challenges to information processing. Many data analysis techniques have also been developed. Big Data algorithms extract value from massive data by building a powerful data processing platform. Nowadays, Big Data technology has certain application in every industry. Banks use the credit demand information provided by Big Data to intelligently recommend eligible credit products and credit cards for customers to handle business. E-commerce platforms can understand the commodities that consumers are interested in through Big Data technology. Moreover, Big Data technology has been applied in telecommunications, governments and the financial market. [8]

B. The Application of Big Data in Taxation

Big Data is affecting our lives almost in everywhere, and has already begun the development of integration with government agencies. In recent years, China pays more attention to the application of Big Data in tax work. This technology was used successfully in the project of *Third of CTAIS*. [7] After the combination of state and local taxation bureaus, tax management will be tighter. Big Data's Supervision is also being strengthened. The tax bureau can check the income, inventory, cost and other data of the enterprise to calculate the tax payable. [8] This will facilitate the implementation of tax internet intelligent supervision. However, due to the technical problems, the ability of tax data application needs to be further improved. In reality, there are still shortcomings in data collection, such as lack of integration, and low application level. And the diversity of Big Data can help increase the tax base for E-commerce and fill the gap in tax work. Therefore, strengthening the use of Big Data technology can effectively build the tax collection and management system of C2C E-commerce. We can improve the efficiency of tax collection and reduce the loss of tax revenue.

V. Design of C2C E-commerce Tax Collection and Management System

A. Promoting the Use of Tax Identification Number for Tax Registration

According to the law, if the taxpayer has a Chinese resident identify card number, it shall be the taxpayer identification number. The taxpayer identification number shall be extended to all natural persons so that the natural person taxpayer of the C2C electronic commerce can use the ID number to register the tax identification number. The Electronic Commerce Law, which will be put into effect on January 1, 2019, also stipulates that E-commerce operators should register and pay taxes in accordance with the law. Although relevant regulations require operators to register their taxes, the compliance degree of C2C E-commerce transactions is still low. More importantly, the E-commerce platform should respond to legal norms and implement relevant business rules to effectively promote tax registration of C2C shopkeepers. What's more, it's important to include tax registration as part of the store opening requirements and implement the real name system strictly. It is also necessary to approve whether the information of the operator is consistent with that of the tax register. The specific requirements are shown in Fig. 1.

Fig. 1. E-commerce platform shop tax registration check.

New application users should provide the bank card, the ID card and tax registration certificate with real name authentication. It is also necessary to register in detail information such as the place where the business is located, the actual operator, and the content of the operation. For the old shop, if there is no tax registration, it shall be filled in within the prescribed time. And important information such as the place of operation, the operator and so on need to be modified in the information registration system immediately if any changes are made. Information Verification should be carried out on E-commerce platform. Stores without tax registration and information inconsistent with reality should be closed for rectification.

B. Information Sharing Between Tax Authorities and Third-party Agencies

Due to the virtual nature of C2C E-commerce, all transaction information is electronic. This requires tax collection and management to adapt to the electronic environment.

The number of shops in C2C E-commerce model is huge and the uncertainty is very strong. In order to achieve tax administration, we need to master large amounts of data, such as the type of goods traded, the cost, the selling price, the actual turnover and so on. Due to the extremely low initiative of taxpayers to declare independently, it is necessary to establish a platform for sharing information between tax authorities and third-party organizations. In this way, tax authorities can get a real-time understanding of the data needed for tax collection and management. Information sharing platform requires the E-commerce platform, the third-party payment platform, banks and logistics companies to upload real-time data together. Using Big Data analysis technology for information integration analysis, after which the information sharing platform can transmit it to tax authorities. The specific frame design is shown in Fig. 2.

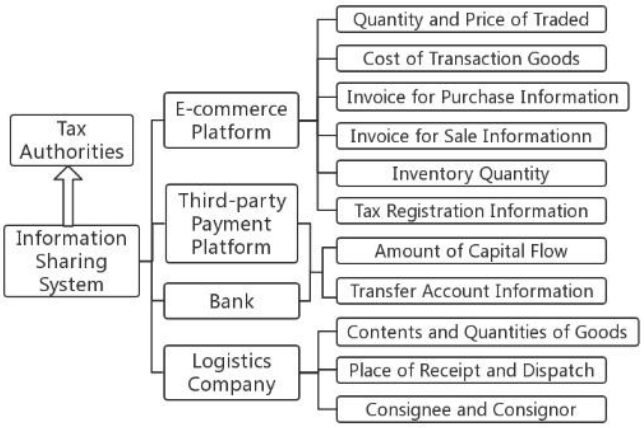

Fig. 2. Information sharing platform.

E-commerce platform should provide business information of C2C E-commerce sellers in detail. It also need to upload real-time sales data, inventory, sales voucher information, invoice information and other business related information. Third party payment platforms and banks monitor the flow of money between sellers and buyers. They also check that the

total amount accounted for in the transaction information is consistent with the payee. Tax authorities calculate the amount of tax payable on the basis of such information and compare it with the number of tax payers reported by themselves to prevent illegal acts such as evasion of taxes. In addition, logistics companies also upload the logistics information generated by each single C2C E-commerce platform to the information sharing platform. The E-commerce platform checks whether the actual goods sent are consistent with the order, whether the consignee is consistent with the payer, and whether the sale of the goods is true or not. Therefore, the "transfer only, not delivery" behavior could be prevented.

The establishment of the tax authority and third party information sharing platform, can also realize the Big Data network tax inspection, real-time data update, illegal trading behavior monitoring, and improve service quality monitoring of C2C E-commerce industry. Through data sharing, tax authorities can know the business status of each transaction entity clearly, then can compare the financial statements generated on the information sharing platform with the declared data to reduce the loss of tax payable.

C. Tax Payment and Credit Evaluation of Online Shop

The number of E-commerce shops is huge and the variety is great. In the intermingled network market, consumers often have to use E-commerce platform to evaluate the seller's credit as a reference. Generally, the higher the seller's credit, the higher the quality of the store's products, the better the service attitude and the more perfect the after-sale service. So the store credit system is an important part of the E-commerce market mechanism. For example, Taobao added the Tao Credit and Business Security Service Standard and established a shop credit system called Tao Credit, which came into effect on September 6, 2018. Through the evaluation of the seller's record of violation, the buyer relationship, the management history, qualification commitment and other dimensions, it can calculate the comprehensive score of the seller's ability. The higher the score, the more the security of the seller. So as to enhance the security of the compliance seller and increase the cost of the dishonest person.

The new credit system tries to monitor the store owner's untrustworthy behavior fully such as creating fake online sales in the Taobao online marketplace. But as one of the main items in credit evaluation, buyer's evaluation has subjectivity. In order to better evaluate the credit of C2C E-commerce sellers, we can establish a third-party credit evaluation system. Integrating all aspects of data to make the evaluation more objective. In the era of Big Data, the credit evaluation factors of shops should be more diverse and comprehensive. In addition to the information provided by the E-commerce platform and the buyer's evaluation, it should also have data connectivity with banks, payment platforms, and tax authorities. Joining the bank loan, credit card repayment, tax return, and other illegal acts such as tax evasion into the credit evaluation system. If the seller fails to register tax payment according to law, refuses to issue invoices, or fails to declare and pay taxes on time, Big Data's network tax audit system will transmit the relevant information to a third party credit evaluation system in real time. According to these information, the credit evaluation system could deduct the credit score of the store in an appropriate proportion. Failing to pay taxes on time will not only be subject to administrative punishment by the tax authorities, but will also have an impact on the credit of the shops, which is not conducive to the operation of the business. In this way, the degree of tax compliance of C2C E-commerce can be improved.

VI. CONCLUSION

In recent years, China's E-commerce has developed rapidly. However, due to the imperfect regulations and technology skills, the incomplete and asymmetric information in tax collection and management, it has led to the loss of tax revenue. The implementation of supervision has been difficult. That results in a very difficult situation for the tax collection and management of C2C e-commerce. Fair and tax receivables will have a great impact. In addition to perfecting laws and regulations, the value of data fusion is far more than the value of the single data. We can also use Big Data technology to establish information sharing platform between tax authorities and third-party organizations. By analyzing data and using big data technology to supervise tax revenue, we can effectively reduce the risk of tax loss and standardize tax behavior. Tax collection and management run through the whole process of tax collection organization, management and inspection. These measures can promote the tax collection and management of C2C E-commerce. There are many measures to be taken by many countries in the informationization construction of tax collection and management. The sharing of tax-related information, which, to a certain extent, urges China to further strengthen tax informationization and paves the way for the transformation of tax collection and management mode in China.

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