

A STUDY ON SIMULATION AND REENGINEERING OF BLOCKCHAIN ON CROSS-BORDER E-COMMERCE BUSINESS DEVELOPMENT MODEL

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Abstract

In recent years, with the outbreak of the epidemic and the deterioration of the trade environment, the growth rate of China's import and export trade has slowed down significantly. The new trade model represented by cross-border e-commerce has shown a rapid trend of development, and gradually become an important engine of foreign trade growth. However, in the actual trade process, cross-border e-commerce still has many problems, and these problems also restrict the further development of cross-border e-commerce to a certain extent. This paper aims to explore the new development direction of cross-border e-commerce based on the features of blockchain technology by analyzing the current situation of cross-border e-commerce business development as well as the existing problems. The connection that exists between the both is explored by way of simulation and reengineering research. It further promotes the development of cross-border e-commerce and provides references for future related research.

Keywords: cross-border e-commerce; Blockchain; Simulation and reengineering research; development

1 INTRODUCTION

In recent years, influenced by the international financial environment, the growth rate of China's foreign trade has slowed down significantly. With the development of the Internet and e-commerce, the pattern of international trade is also changing, and cross-border e-commerce has gradually become a new form to promote the growth of China's foreign trade. In 2021, the size of cross-border e-commerce market was 14.2 trillion yuan. Despite this, there is no denying the existing problems. In 2017 and 2021, China's cross-border e-commerce market expanded, but the growth rate decreased by 8.6% and 5.7% respectively. At present, cross-border e-commerce enterprises are faced with a series of problems in logistics, payment, product quality control and other aspects. Due to the complex international environment, it is extremely difficult to solve these problems. The development of technology will revolutionize the cross-border e-commerce industry. The blockchain will help solve the problems of cross-border logistics monitoring, cross-border payment and cross-border e-commerce product quality traceability. Big data, cloud and computing will enable more precise, personalized marketing and faster supply chains. Supply chain finance will help solve the financing problems of small and medium-sized manufacturing enterprises and bring power to their operation.

2 DEVELOPMENT STATUS OF CROSS-BORDER E-COMMERCE BUSINESS

With the continuous development of China's society and economy, the in-depth promotion of digital

technology, and the impact of the epidemic in recent years, consumers are more inclined to consume online. All these factors have greatly promoted the development of cross-border e-commerce in China in recent years. The following will analyze the development status quo of cross-border e-commerce in China from multiple perspectives.

2.1 The Market Scale Is Expanding Continuously And Maintains a High Growth Trend

In recent years, China's cross-border e-commerce has developed rapidly and maintained a rapid market growth. It has become an important force for stabilizing foreign trade, a new driving force for foreign trade transformation and upgrading, a new channel for innovative development and a new bridge for the construction of "The Belt and Road". Especially against the backdrop of the epidemic, cross-border e-commerce is playing a more prominent role in stabilizing foreign trade and supporting the "double cycle". Statistics show that the size of China's cross-border e-commerce market in 2021 is 14.2 trillion yuan, a year-on-year growth of 13.6% compared with 12.5 trillion yuan in 2020. As shown in Figure 1&2.

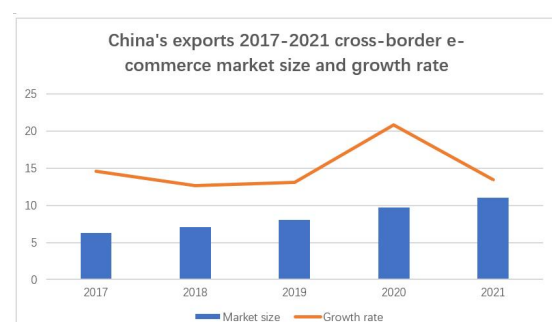


Figure 1 China's exports 2017-2021 Cross-border e-commerce market size and growth rate

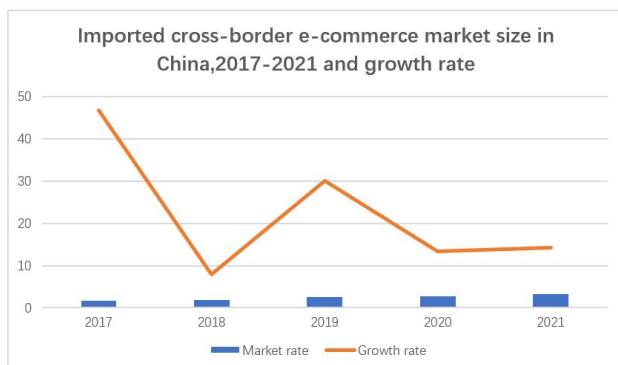


Figure 2 Imported cross-border e-commerce market size in China, 2017-2021 and growth rate

2.2 Continuous Improvement Of The Penetration Rate

According to the data, the penetration rate of cross-border e-commerce in China increased from 29% in 2017 to 36.32% in 2021. It is predicted that with the continuous growth of the industry scale in the future, the penetration rate will continue to increase, and it will play a bigger role in China's import and export trade.

2.3 The b2b Trading Model Dominates

Since 2017, B2C transaction mode of cross-border e-commerce has risen rapidly in China, accounting for an increasing proportion in the cross-border e-commerce transaction mode, currently accounting for 23%. However, overall, although the proportion of B2B transaction mode has declined, it is still the mainstream cross-border e-commerce transaction mode at present, accounting for 77% in 2021.

2.4 Cross-Border e-Commerce Logistics

Logistics is an important factor affecting the development of cross-border e-commerce. Cross-border e-commerce logistics is mainly divided into two modes: direct mail and overseas warehouse. Direct mail includes postal parcels, international express and cross-border special lines. Due to the long chain of direct mail, this mode has high requirements for the resource integration of the whole chain of enterprises. In the overseas warehouse mode, goods are transported to the warehouse in the destination country in advance. After consumers place an order, the goods will be shipped directly from the warehouse in the destination country to the consumers. There are mainly three types of warehouses: FBA overseas warehouse, third-party overseas warehouse and self-built overseas warehouse. At present, cross-border e-commerce logistics is in the stage of optimization and development.

2.5 Level Of Government Support

In recent years, with the needs of economic development, the Chinese government has gradually increased its policy support for cross-border e-commerce, and continuously built new comprehensive

pilot zones for cross-border e-commerce. After the expansion in 2020, the number of comprehensive pilot zones for cross-border e-commerce in China has increased to 105 by June 2021, covering 30 provinces, autonomous regions and municipalities, forming a development pattern featuring interlinkages between land and sea, and two-way economic interaction between east and west. In addition, many local governments have also introduced many corresponding supporting policies to support the development of local cross-border e-commerce economy.

3 PROBLEMS IN THE DEVELOPMENT OF CROSS-BORDER E-COMMERCE BUSINESS WITH BLOCKCHAIN TECHNOLOGY

Even though cross-border e-commerce is currently developing at a rapid pace, we still cannot ignore the fact that cross-border e-commerce is still facing a series of problems in terms of logistics, payment and product quality control.

3.1 Cross-Border Payments

As the "last mile" in the merchant sales chain, cross-border payments determine the success of the entire business loop. Even if the initial product and marketing are perfect, all efforts will be in vain if there is a problem with the cross-border payment chain. Therefore, cross-border payment is the foundation for completing cross-border e-commerce sales, and its importance to cross-border e-commerce cannot be overstated. However, today, there are still many problems with cross-border payments, and these problems are to some extent hindering the development of cross-border e-commerce.

3.1.1 High cost

On the demand side, the high price of cross-border payments not only significantly inhibits international payment transactions, but also contributes to the illegal underground flow of funds, undermining the legal and compliant operation of the payment system and financial stability. Large enterprises, especially multinational corporations, have strong bargaining power and a global network of institutions, which can reduce the cost of payment services, but still face liquidity and foreign exchange conversion costs. For individuals and SMEs, cross-border payment transaction costs are high and the process of receiving and paying is cumbersome. On the supply side, financial institutions provide cross-border payment services, involving compliance costs, network costs, agency costs, currency conversion costs and liquidity costs, which will raise payment rates or narrow the scope of services.

3.1.2 Low timeliness

Cross-border payments involve a long chain of links and, for the participants, there may be delays in payments, creating a range of liquidity and credit risks. At the same time, cross-border payments involve different agent systems, and the lack of harmonization between different systems and the fact

that they do not operate 24 hours a day will inevitably lead to payment time lags.

3.1.3 Limited coverage

On the one hand, individuals and SMEs have relatively narrow channels for cross-border payments and in some cases have to turn to high-cost, inefficient and unregulated third-party institutions, thereby disrupting the financial order and increasing the risk of illicit financing and terrorist financing. On the other hand, due to the high threshold for cross-border payments, most banks and other financial agents are unable to connect directly to cross-border payment systems and are highly dependent on correspondent intermediaries, which in turn affects cross-border payment services.

3.1.4 Poor transparency

There is uncertainty about the speed of cross-border payments, and differences in rates and exchange rate fluctuations affect the sum of payments, increasing hedging and insurance costs. At the same time, the cross-border payment process is complex and the transparency of payment tracking status is limited, which affects the customer experience to a certain extent.

3.2 Cross-Border Logistics

Cross-border logistics is an important part of a cross-border e-commerce platform to gain the trust of consumers. From an operational perspective, timeliness will affect the consumer experience of buyers, which in turn affects the ability of sellers to acquire customers and customer retention; from a financial perspective, logistics timeliness will affect the efficiency of sellers' repayment and subsequently affect the liquidity situation. The complexity and specificity of cross-border e-commerce logistics can easily cause the following problems.

First, cross-border logistics and distribution lags. Cross-border logistics distribution routes are long, transportation methods are complex and delivery times are long. Second, the degree of informatization of the logistics system is low. There is the problem of difficulty in integrating information resources of several logistics companies, so that the parcels cannot be tracked throughout the whole process and the whole process cannot be transparent. Thirdly, it is difficult to maintain the rights of logistics after-sale. Cross-border logistics and distribution methods are complicated to interact with, and customs clearance procedures are cumbersome, etc., even resulting in customs clearance obstacles and broken or even lost packages, and the subject of consumer accountability is unclear. At present, most domestic test areas have not yet established a complete cross-border e-commerce industry chain, related supporting services are in the primary stage, there are many weak links, and need to be bigger and stronger.

3.3 Abuse Of Dominant Market Position By Platforms

In the cross-border e-commerce transaction chain, cross-border e-commerce enterprises and platforms are in a position of information asymmetry, and it is difficult for cross-border e-commerce enterprises to fully enjoy the right of meaningful autonomy. Faced

with non-transparent reasons for account blocking, non-transparent resolution processes, inappropriate levels of punishment, mistaken blocking and wrong blocking by some platforms, it is difficult for enterprises to achieve results in their complaints.

3.4 Uneven Levels Of Informatization

Differences in the level of informatization between regions have led to differences in the development of cross-border e-commerce in different regions of China. Compared to eastern cities such as Guangzhou and Shanghai, the level of informatization in the central and western regions is relatively low. Even in the more developed regions of cross-border e-commerce, there are differences between different enterprises. The uneven level of informatization between different enterprises tends to cause a break in the enterprise informatization chain.

4 THE RELEVANCE OF COMBINING BLOCKCHAIN TECHNOLOGY WITH CROSS-BORDER E-COMMERCE BUSINESS

4.1 Further Facilitation Of Cross-Border Settlement

Slow cross-border payments and expensive fees are ongoing problems with cross-border payments. The decentralized, convenient, secure and low-cost nature of blockchain technology allows cross-border payments to bypass third-party financial institutions, shorten arrival times and eliminate security risks.

4.2 Blockchain Technology Can Verify The Authenticity Of Online Purchases

In the cross-border e-commerce industry, one of the biggest concerns of brand sellers is product forgery. Blockchain can make verification of authenticity a reality through a decentralized trust institution and its tamper-evident, confidential nature.

4.3 Blockchain Technology Provides a Strong Guarantee For Information Security

The timestamp technology in blockchain technology can link transaction information into a chain in chronological order in the transaction data of cross-border logistics, and stamp each transaction data with a timestamp to be permanently stored in the blockchain system. In the cross-border customs clearance process, customs can solve the problem of return and exchange regulation and false trade control through this technology.

4.4 Protecting Private Data And Enabling Blockchain-Based Data Sharing

Node departments on the blockchain have access to all shared data based on smart contracts, and because the information stored on the blockchain is virtually unchangeable, the data is authentic and valid, eliminating the need for complex validation and auditing processes.

5 AN IMPLEMENTATION SOLUTION FOR COMBINING BLOCKCHAIN AND CROSS-BORDER E-COMMERCE

To plan for the long-term expansion of cross-border e-commerce platforms by establishing and

accumulating transaction volumes through fund settlement when the platform is small and the funding needs are not obvious, and introducing institutional funds with the accumulated big data self-certification when the scale is huge and the funding needs are obvious, in order to support the platform to improve its sustainable competitiveness.

ACKNOWLEDGEMENTS

This work is sponsored by College Student Innovation Project (cs2203001).

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