



## ARTICLE

# Research on the Construction of China-Europe Cross-border E-commerce Ecosphere Based on Blockchain Technology

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### ABSTRACT

Based on the blockchain technology to construct the relevant research on the China-Europe cross-border e-commerce ecosystem, we must first define the main significance and combine the core technology application of blockchain to explore the blockchain China-Europe cross-border e-commerce ecosystem, thereby drawing effective measures such as establishing a cross-border e-commerce integrated service system, improving e-commerce credit risk management and establishing a blockchain supply chain intelligence system, which comprehensively elaborates on the importance of blockchain technology to build a China-Europe cross-border e-commerce ecosystem.

## 1. Introduction

In recent years, China's economy has continued to develop. The main import and export market is the European Union (EU). China and the EU countries have always maintained close ties. However, the development of China-Europe cross-border e-commerce is relatively backward, which is affected by the differences in market environment and economic structure. In the face of fierce market competition, we must build a harmonious and unified trade ecological environment, so as to improve the management level of China-Europe

cross-border e-commerce. Blockchain technology is a very advanced technology that not only solves the problems encountered in the development of China-Europe cross-border e-commerce, but also improves the integrated service platform for e-commerce, and on this basis, continuously improves the credit risk management system, which lays the foundation for the development of the China-Europe cross-border e-commerce ecosystem to develop a unified blockchain standard for the long-term development of China-Europe cross-border e-commerce, thereby improving the efficiency of block transactions and reducing the security risk index.

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## **2. The Significance of the Research on the Construction of China-Europe Cross-border E-commerce Ecosphere Based on Blockchain Technology**

The EU is an influential organization in the world, and at the same time, it is also an important cooperative trading partner of China. In recent years, China and the EU have always been friendly partners in the field of traditional international trade and cross-border e-commerce. Therefore, China-Europe bilateral trade has complementary advantages, and the cooperation between China and the EU comprehensively promotes the development of financial science and technology. The Chinese government advocates the Belt and Road and free trade programs, which are to achieve China-Europe cross-border trade and win-win cooperation and cooperation in various fields.

According to the survey of Eurostat, the trade volume between the EU and China has reached 600 billion in 2016, accounting for 15% of the EU's total foreign trade, and the trade volume between the EU and the US is not too much. Combined with the trend of development, the trade volume between the EU and the United States has been declining since 2011, while the EU-China trade volume has increased by 6% and averaged three times per year. By the beginning of 2017, the EU's exports to China increased by 20%, and the corresponding imports increased by 10%. The development of China-Europe cross-border e-commerce is relatively backward, but as the trade market continues to improve, it has innovated related technologies for e-commerce. In 2015, the distribution of China's export e-commerce market has gradually increased, and the EU only accounts for 70% of the transaction volume. This problem arises. The main reason is that because of the long transit time between China and Europe, in the process of transportation, it will be affected by many factors. European consumers believe that there are insecure factors in Chinese goods. There is still a lack of logistics tracking system, and the returned system is not perfect. In this regard, a sound legal system has not been established. At the same time, European consumers still worry that there will be many unsafe factors in cross-border sales. Many problems have constrained the development of China-Europe cross-border e-commerce.

## **3. The Application of Blockchain Core Technology**

### **3.1 Point-to-point Networking**

Point-to-point networking, for this approach, the net-

work center point has not yet formed. Within the system, the nodes of the network are distributed, but the way the system works is not independent. In the process of system trading information, the links between the various nodes are closely related and inseparable. For this kind of point-to-point networking, the security of the trading system can be guaranteed, and the central node and the single node can be avoided and the entire network system can be operated smoothly, thus reducing the cost input and promoting the healthy development of the economy.

### **3.2 The Timestamp Technology**

The timestamp technology is mainly applied in the blockchain. The timestamp technology is a relatively advanced technology. The main dimension is the blockchain time. At each time node, the timestamp technology is adopted. In the process of trading, fill in the information time and make a record. Finally, in each block, links are made in the order of the timestamps, and in the process of the transaction, the transaction time and data are saved in the block link of the record, such effective storage can be conveniently found.

### **3.3 The Asymmetric Encryption Technology**

The Asymmetric encryption technology mainly uses two kinds of asymmetric ciphers, namely public key and private key, which mainly encrypt or decrypt data. For the public key, the node is mainly exposed, but the private key is strictly confidential. Regardless of whether the public key or the private key is used in the process, there is certain security and reliability in the process of data transmission, which is mainly applied in asymmetric encryption technology, which facilitates the authentication and digital signature of the blockchain on the network.

## **4. Research on China-Europe Cross-border E-commerce Ecosystem Based on Blockchain**

### **4.1 The Overall Framework of the E-commerce Ecosystem**

There is a big difference in the trading market environment and market structure between China and the EU. A harmonious and perfect trade ecological environment should be established, and cross-border e-commerce should be guaranteed to proceed smoothly. Block link is an advanced collaborative technology, which mainly solves the problems in China-Europe cross-border e-commerce through centralization and district trust. In

combination with the main reasons for problems, build a communication platform in collaborative cooperation, and establish a credit risk system. As shown in Figure 1, in the framework of this figure, the block linking technology is a stratum with five built-in systems, and the main features of the block linking technology are used to achieve the synergistic effect. Meantime, it is necessary to establish an integrated service platform, build a data storage platform and a credit risk management system on the basis of improving the rational system, and effectively promote the data information docking to ensure effective cargo supervision and trade tracking of the internal data of the China-Europe cross-border logistics system. At the same time, customs supervision departments should also be established.

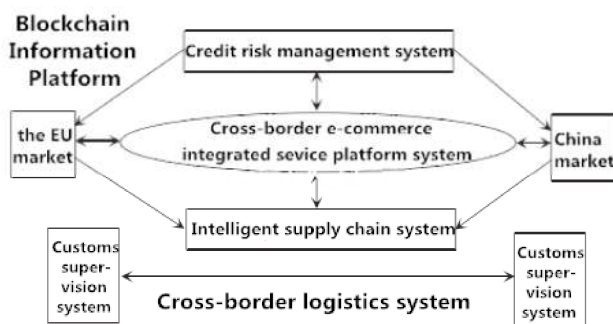


Figure 1. Blockchain Information Platform

## 4.2 Construct China-Europe Cross-border E-commerce Ecosphere

### 4.2.1 Construct Cross-border E-commerce Ecosphere

#### (1) Existing Problems in Cross-border E-commerce Integrated Services

At present, China-Europe cross-border e-commerce trade between mainly passes through many well-known e-commerce platforms, including Alibaba. There are many European consumers who have many problems with the quality and safety factors of Chinese products. Because the European market has developed for a long time, the related technology is more advanced than China's technology, and the e-commerce market mainly runs through the entire network management process. There are many people who complain that there is exaggerated publicity in the market e-commerce platform, not only the problem of customer information leakage, but also the negative information such as creating false transaction volume, which has seriously affected the reputation of the Chinese market, leading European consumers to doubt the quality of Chinese goods.

#### (2) Effective Solutions

To develop an effective solution, a complete blockchain basic data savings platform should be established. Relevant staff should strictly control the internal information and make a good connection with the supply chain. At the same time, customers can find their favorite products through the data interface, and can also see the certification of product quality and brand, thereby increasing the user experience and ensuring the authenticity of the product. Relevant staff should distinguish according to the requirements of consumers, collect relevant information of customers in time and improve the quality of service, and replace traditional advertisements with authentic advertisements.

Establish a decentralized trading platform, which is very different from the e-commerce platform, mainly through the third-party management of operating costs to collect fees, to achieve a peer-to-peer shopping model; the main advantage of this shopping model is to avoid the phenomenon of fraud in e-commerce companies. In this way, through the blockchain consensus mechanism, a multi-consumer co-management model and a common supervision mode can be used to reduce costs and increase the benefits brought by customers. The blockchain-based cross-border e-commerce business integrated service platform system, as shown in Figure 2.

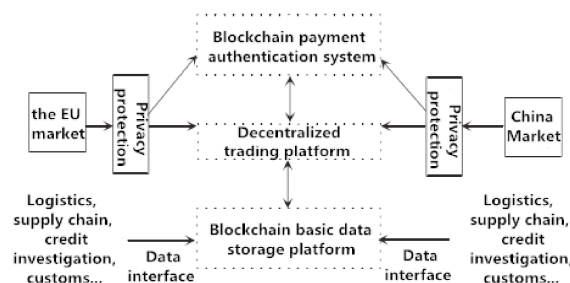


Figure 2. Blockchain-based Cross-border E-commerce Business Integrated Service Platform System

### 4.2.2 Blockchain Credit Risk Management System

#### (1) Existing Problems in E-commerce Credit Risk Management

In the e-commerce market, there will always be a credit crisis. Therefore, the Chinese government and related enterprises have continuously improved the electronic morning credit risk management system. However, the life cycle of SMEs in the Chinese market is relatively short. To establish a sound credit risk management system, it is necessary to adhere to efficient, transparent,

rigorous and comprehensive development, not only to protect personal privacy, but also to abandon the traditional e-commerce practices. Introduce the blockchain consensus mechanism from the technical level to build a China-Europe cross-border e-commerce credit risk collaborative management system.

#### (2) Effective Solutions

Focus on creating a blockchain basic data storage platform. This platform can mainly achieve the purpose of information sharing, ensure the authenticity of data, and cannot tamper with relevant information of data. At the same time, we must also establish a cross-border credit information platform, mainly relying on the blockchain consensus mechanism to objectively collect merchant and customer credit information. The establishment of a public credit service center to ensure the completion of credit inquiry and credit guarantees, and a series of assistance and coordination work on the basis of perfect system. The credit risk management system of the blockchain is shown in Figure 3.

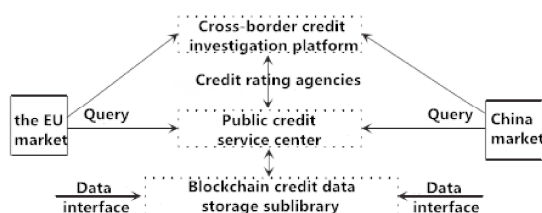


Figure 3. Blockchain Credit Risk Management System

### 4.2.3 Blockchain Intelligent Supply Chain System

#### (1) Existing Problems in the Supply Chain

At this stage, the development of cross-border e-commerce supply chain is relatively backward. Therefore, relevant personnel should develop and innovate the integrity of e-commerce. Compared with European suppliers, the main problems are life cycle, lack of work experience, no brand effect, and no perfect supply management. Although China's low-cost suppliers have a solid position in the domestic market competition, in the process of perfecting the supply chain, the company's healthy and sustainable development is guaranteed. At present, the China-Europe cross-border supply chain of has remained at the supply stage and has been innovated for its reputation. In order to win the competitiveness and development goals of the market, the cross-border supply chain should adhere to the development principles of informationization, branding, efficiency and service, to ensure that consumers can experience and obtain

high-quality services from merchants, and after-sales services of high-quality goods.

#### (2) Effective Solutions

At present, the establishment of the blockchain basic data storage platform and the sharing of data information are mainly based on time stamp technology. On this basis, the information traceability platform is established and improved, mainly for the raw materials to the production and processing, and then in the various sales links, there must be evidence to follow to ensure the reliability of China-Europe product standards and certifications, contractual technology should be adopted for filing. In the use of blockchain traceability anti-counterfeiting features to build a supply chain tracking platform, relevant staff should integrate and unify relevant information. If there is a problem, you should combine the preset instructions and then impose a penalty. It is best to set up a supply chain collaboration center so that it can ensure a consensus mechanism, establish an effective communication platform, promote the connection between the various platforms, and ensure the openness of the data.

## 5. Conclusion

In a word, in various industries, blockchain technology brings significant innovation, traditional fast virtual payment, and serves online e-commerce virtual transactions, which is the best evaluation of the blockchain. At present, with the continuous development of science and technology, cross-border e-commerce is also developing, mainly relying on the characteristics of centralization and trust, creating a new ecological environment for cross-border e-commerce. This paper mainly analyzes the core technology of blockchain, mainly adopting distributed consensus algorithm, asymmetric encryption technology, timestamp technology and point-to-point networking. Combining the problems of cross-border e-commerce integrated services, the problems of e-commerce credit risk management and the problems of supply chain, the paper draws effective measures to improve and perfect the problems of e-commerce. Promote cooperation between China and Europe in cross-border e-commerce, thereby improving synergy and innovation capabilities, laying the foundation for the development of cross-border China-Europe e-commerce, and providing new ideas and impetus for development.

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