

# Research on the Application of Blockchain Technology in Supply Chain Finance

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**Abstract:** The supply chain industry has restructured the global industrial landscape, and its development has profoundly changed people's work and lifestyle. However, there are still some problems of through the implementation of the supply chain, such as information asymmetry and the difficulty of financing of small and medium-sized enterprises which have restricted the development of supply chain finance. The block technology has the characteristics of decentralization, traceability and information tamper-proof. The application of this technology to supply chain finance can effectively solve the existing problems.

## 1. Introduction

The state regards the development of supply chain finance as an important measure to promote the development of supply chains. According to the Guidance on Actively Promoting Supply Chain Innovation and Application, China's first supply chain policy, published in State Council General Office, we should "actively and steadily develop supply chain finance and promote supply chain finance to serve the real economy". However, at present, information asymmetry still exists in the implementation of supply chains, and it is difficult for small and medium-sized enterprises to raise capital. This has led to many risks in supply chain financial activities.

## 2. Development Status and Pain Points of Supply Chain Finance

### 2.1 "Platform + financial institution" as the leading factor

At this stage, financial institutions rely on a professional financial service platform that integrates information flow, business flow, logistics, and capital flow to expand the financial institution's penetration of business information from companies in the supply chain, with the help of Internet technology, business costs and operational risks have been greatly reduced.

### 2.2 Supply chain finance is applicable to a variety of industries

From the scope of application, the supply chain finance has a high penetration rate and many applicable industries. At the top of the list is the financial sector. In addition, in the automobile manufacturing industry, the wholesale supports the upstream enterprise financial, sales promote the new car financing and the after-sales service provides customers with intimate services. The flow of commodities related to industrial raw materials needs to be completed by the supply chain. It can be seen that supply chain finance has penetrated into various industries.

## 3. The Matching Analysis of Blockchain Technology and Supply Chain Financial Business

### 3.1 Blockchain technology and its functions

blockchain technology and its function blockchain is a revolutionary and decentralized recording technology, which was first proposed by Satoshi Nakamoto, it is defined as a multi maintenance data storage system with block structure and encryption technology to ensure data transmission and access. The commonly mentioned blockchain refers to the different block formats used for different

applications, as well as the linked data storage method formed by the blocks. With the characteristics of decentralization, data encryption, timestamp, distributed consensus and incentive mechanism, blockchain technology can greatly improve the existing supply chain system between banks and enterprises and thus enhance the efficiency, reduce transaction and management costs, its functions are as follows:

(1) Blockchain technology builds a new system trust model.

The blockchain uses information technology to build new rules of mutual trust between participants and provides system trust based on information technology. The transaction trust provided by the blockchain is determined by machines and algorithms, and by building a trust that depends on machines and algorithms. This transaction system solves the problem of mutual trust in the process of anonymous transactions. All participants determine their identities through cryptographic principles, adopt a self-organizing method, and rely on consensus mechanisms to achieve mutual trust. Just like "blockchain, a machine of trust" One article pointed out that the blockchain allows people to collaborate without mutual trust and a neutral central agency. It can be said that the blockchain can create trust in a new way, a solid foundation of trust, to make up for the lack of economic development relying on trust.

(2) Blockchain technology builds a new type of information infrastructure.

Blockchains store and associate information with cryptography, and link each block with chain structure, so that the stored information can be verified with each other, and the information can't be tampered after being linked. The blockchain stores the information in multiple places, which ensures the transparency and availability of the information in the form of distributed account books. When a transaction occurs, all participants in the chain receive information about the transaction in their books.

### **3.2 The matching analysis of blockchain technology and supply chain finance business.**

(1) Blockchain technology solves the problem of information asymmetry to a certain extent.

The blockchain is similar to a distributed bookkeeping system in which each entity is at the same level and no longer has a banking-like financial institution acting as an intermediary to bridge the gap. In a distributed architecture, digital signatures allow all users to access the same information, and everyone knows what's going on with all the traders, so there will no information asymmetry problem. The bank does not need to rely on the intermediary core enterprise as the supervisor to inquire about the actual situation of the small and medium-sized enterprises and thus saves the time cost and the human resources, banks will no longer be denied loans because they do not understand the strength of the business.

(2) Blockchain technology guarantees data is traceable and tampered proof.

The blockchain has a time stamp function and has the characteristics of traceability. It can help information traceability throughout the entire supply chain, determine the time of various transactions and procedures, and effectively solve the problem of product traceability and anti-counterfeiting. In the supply chain, each after the detailed information such as the time of the occurrence of each link, the operator, etc. are written into the blockchain, they will be time stamped, which directly and effectively reflects the sequence of occurrence of all transaction activities, and provides evidence for the traceability of transactions. The data provides query and retrieval functions to prove the ownership of the data, and the transaction process can be verified on a case-by-case basis, and cannot be forged. Once an economic dispute occurs, you can find out what happened from the source, and have evidence to rely on to completely restore the truth of the matter and define the parties' responsibility.

## **4. Development mode of supply chain finance under block chain technology**

### **4.1 Visual Management of "Four Flows in One".**

The supply chain finance business includes the circulation of goods, the circulation of commercial resources, the circulation of funds, and the circulation of various information. Without the

participation of blockchain technology, these four key parts of the supply chain finance business are difficult to achieve "four flows in one." Through blockchain technology, you can integrate logistics, business flow, capital flow and information flow data in the supply chain financial business into the blockchain database to achieve "four flows in one". At the same time, we use the technology of traceability to realize the visualization management of the whole process.

#### **4.2 Digitization of capital transactions.**

Without the participation of blockchain technology, capital transactions in the supply chain finance business are carried out in traditional forms such as bank transfer. With blockchain technology, it is possible to realize the digitalization of all parties' capital transactions in supply chain finance.

### **5. Conclusions and Outlook**

#### **5.1 Conclusion**

The application of blockchain technology effectively solves the problems of information asymmetry in the supply chain finance business, realizes the information transparency and credit sharing of the participating parties, significantly reduces business risks and the overall financing costs of enterprises in the supply chain, and further improves the financial supervision system. As a result, industrial efficiency is being released. Blockchain technology is still in the process of continuous optimization and development. The improvement of its hardware storage capacity and the construction of a global unified standardized identification system will further promote financial innovation in the supply chain. First, the privacy of data in the blockchain. For example, in accounts receivable operations, accounts receivable is financing-related information that requires a high degree of protection, while the issue of how to prevent the interception of important and sensitive data, and upstream and downstream data connection, and remains to be resolved. Second, data storage requirements. With the maturity of big data, cloud computing and other technologies, the data collection and analysis ability of blockchain technology is getting stronger and stronger. However, according to the current development trend, credit data will explode in the next few years, and how to solve the problem of data storage is more difficult. However, in the initial stage of blockchain technology investment, due to the consumer stickiness and the uncertainty of the business profit model, the advantages of blockchain technology have not been fully reflected, and blockchain technology has not shown its irreplaceable.

#### **5.2 Outlook**

Blockchain technology can be connected to the Internet of Everything Realize deep integration, real-time recording of key information by IoT devices, and use blockchain technology to achieve permanent and tamper-free storage, to form the combination of the most urgently needed physical and virtual worlds in the field of supply chain finance, forming a true world the closed-loop of trust. The blockchain can also be combined with the mobile Internet to improve the interoperability between the blockchain and the subjects on the chain; fused with big data technologies to improve the value extraction and development of data on the chain, and image and video recognition technologies and the combination of smart devices improves the automation and precision of supply chain finance-related operations on the blockchain.

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