

The Exploration of Blockchain Technology in Supply Chain Finance

Ye Wang^{1,*}

¹*School of Marketing and Logistics Management, Nanjing University of Finance & Economics, Nanjing 210023, China*

**Corresponding Author*

Abstract: *Today's world has officially entered the information age, bringing great convenience to people's work and life, especially financial institutions based on the Internet. Through the construction of information platforms, information resources can be effectively integrated and financial institutions realizing the reasonable allocation of resources and applying blockchain technology to supply chain finance are currently research hotspots. Based on this, the article summarizes the significance of blockchain technology, and studies the application and practical exploration of blockchain technology in supply chain finance, hoping to provide useful suggestions.*

Keywords: *blockchain, supply chain, supply chain finance*

1. Introduction

Supply chain finance refers to the enterprise as the core and the bank as the management and control institution to manage the enterprise's capital flow and logistics. This kind of management mechanism can effectively transform the uncontrollable risk factors in the operation of the enterprise into controllable risk factors. Through the effective integrated marketing of information resources, the risk and financial problems faced by the enterprise operation can be maximized and reduced to satisfy the current normal operation in the market. Blockchain technology based on Internet technology, when applied in the supply chain financial system, can effectively solve the problem of asymmetry in traditional enterprise information transmission, improve the efficiency of information exchange within the enterprise, and increase the trust of the enterprise it has a promoting effect [1]. In addition, the financial operation system based on blockchain technology can break the original tripartite credit mechanism and provide an effective way for the development of business models. In terms of the current development trend of China's financial system, the application of blockchain technology can effectively promote the transformation of the supply chain financial industry, and at the same time can provide effective guarantee for the construction of the enterprise's own credit mechanism and information transmission mechanism.

2. Concept definition of blockchain technology

The technology of the subject is based on the computer network as the core, through the distributed operation and storage of data to realize the identification of information resources. The uniqueness, trust, and decentralization of this kind of technology have great applications in the current industry Advantage. First, in terms of uniqueness. The irreversibility of data information in blockchain technology is the core to ensure the one-way operation of the entire data. In fact, it is realized through the hash algorithm. The current information and the corresponding starting point in the network structure are analyzed through the definition of the data information itself. Then use the mapping form of the distributed data structure as the storage mechanism, so that the one-way transmission of data information can be effectively guaranteed. Secondly, in terms of trustworthiness. Blockchain technology does not require other information intermediaries to participate in the specific implementation. The data information is directly applied to the object to complete the information record. At the same time, the information verification and data maintenance associated with the information record can also effectively realize the transaction process. The information identification in the Internet, for the Internet information transmission mechanism, can effectively improve the overall information security protection. Finally, the decentralization aspect. Regional centralization refers to

the integration of information in the process of third-party participation, that is, in the actual transaction process, the circulation behavior of information and funds presents an interaction. When the transaction behavior is presented, the information will directly affect the seller and buyer. In this way, a third party is not required to transfer data on the inter-data platform, which effectively reduces the risk of data loss during the transmission process. At the same time, such information can also be used as important data authentication.

3. Current status of the application of blockchain technology in supply chain finance

3.1 Bill financing

As a product of the development of the market economy, bills are actually an important link in the current capital circulation process. Users can discount the bills to the bank accordingly. After the bank recognizes the authenticity of the bills, the bills are then paid to the user, the corresponding amount. The financing function of the bill itself has now become a representative product of the economy for banks and enterprises. The short-term capital circulation advantage of search seeds is a kind of financing holding performance for capital supervision itself, but from a legal perspective, the bill itself is a kind of no real transaction. In laws and regulations, this such behavior is prohibited. But its role in the social economic system is beneficial to the steady development of the market economy, which indirectly expands the scope of the use of bill financing. In the above-mentioned design financing, it is clear that in the conversion behavior, due to the lack of its own regulatory mechanism, criminals use the duplication of the bill itself to sell one more ticket. For example, if two companies have a connection between the top and bottom, the upstream company can go to the bank to return the bill through the counterfeiting of bills, and then the downstream company can cash out the bills.

Under the application of blockchain technology, bills can be uniquely processed. By encrypting bills, the bill itself has a one-way function, so that the bill can be identified [2]. In the information platform, the bill itself will show the characteristics of docking. When the company holds the bill to exchange with the bank, the bank will automatically distinguish the authenticity of the bill through the information system, and at the same time, it can find out the various associations corresponding to the bill information. In addition, in the information platform, the information stored by the enterprise cannot be changed. Once the information node in a certain type of data structure is qualitative, it will accompany the enterprise for life. This is a norm and constraint for the enterprise, mechanism, and then improve the basic guarantee for the stable operation of the social system.

3.2 Credit financing

Credit financing refers to companies that use their own economic development, capital holdings, and influence in the social system as a benchmark to obtain funds from banks during the development process. Banks use capital expenditures to maintain the operational development of enterprises. Generally speaking, in the process of credit financing, enterprises, intermediaries, and banks are the three realization carriers, through which enterprises recommend intermediaries to banks, and then use goods as capital output points to provide banks with corresponding protection. This type of credit financing has the characteristics of a long cycle and various types of business are relatively complex. Once a problem occurs in a certain link of capital circulation, it will cause a decline in loan efficiency, and serious situations will cause a break in the business chain.

Under the integration of blockchain technology, a unique credit channel can be established for credit financing, especially for small and medium-sized enterprises. By linking financing channels with credit channels, a credit guarantee can be formed. Banks actually lend in the process, only the credit records can be used to effectively check the various operating information of the enterprise, and timely verify the irregular operation behaviors of the enterprise [3-4]. In addition, when providing funds, the fund output behavior can be simultaneously recorded on the official credit letter, and the remaining credit limit can be calculated based on the verification of the benchmark information in the platform. For small and medium-sized enterprises with shortage of funds, corresponding funding gaps can be quickly filled to maintain the normal operation of the enterprise.

4. The practical exploration of blockchain technology in supply chain finance

4.1 Internet of Things

The Internet of Things integrates the Internet, communication technology, and physical sensors to link objects, people, and networks to information processing, and accurately locate various types of information in the network model. However, because the Internet of Things is based on an open network, it has certain loopholes in information security, such as privacy issues, data security issues, etc. Once such information is stolen by criminals, it will cause serious damage to enterprises and individuals the economic loss [5]. With the support of blockchain technology, the information in the network can be anonymized, making the data information present a point-to-point transmission form. For example, in international transactions, the use of blockchain technology to connect with the Internet of Things can monitor the transportation of the most internationally traded goods in real time, effectively solving the problem of asymmetry in information transmission, and relying on GPS and GIS positioning systems. Effectively ensure the real-time update of the information generated by the transportation of goods. For the current economic and trade, the Internet of Things can give full play to the intelligent and refined advantages of blockchain technology. When the goods are traded, they rely on the blockchain the technical one-way information transmission mechanism automatically settles the payment. The entire information exchange process is open. It guarantees information security, optimizes the traditional cross-international logistics transaction mode, greatly solves the problem of information lag, and makes the economy goods interact effectively.

4.2 Medical field

Medical care is the foundation of the development of my country's people's livelihood. Whether it is a large hospital or a clinic, it needs to purchase medical equipment and various medical materials during its operation to maintain its own operations and provide basic protection for the society and people's livelihood. However, in recent years, incidents such as inferior vaccines and inferior drugs in the medical industry have caused some damage to the public. Although my country has strengthened drug safety supervision, due to the huge profits of drugs and equipment, some manufacturers or hospital management personnel take risks and conduct illegal operations, pretending to be high-quality products with low-quality products. Under the application of blockchain technology, the purchase of medical supplies will be equipped with traceable anti-counterfeiting labels, and a separate information identification mechanism will be established for each type of medical products and equipment, so that the production, operation and sales of the products have relevant information orientation. As a result, a trust system can be established between suppliers and contractors [6]. For supply chain finance, the financing process centered on trust can be realized based on medical products and information traceability functions, thereby ensuring that the circulation of medicines can meet the actual operational needs of the medical industry.

4.3 Retail industry

The retail industry is to carry out independent circulation of products, and its undertaking carrier can realize the integrated relationship between consumption and supply through corresponding economic services for individuals collectively. With the current improvement of people's living standards, the quality of its retail products and performance requirements have also increased. Therefore, to ensure the stable operation of the retail market, it is necessary to increase the quality of retail products themselves. The advantages of irreversibility and information traceability provided by blockchain technology can establish an information identification mechanism for retail products, and use encryption technology to make the product generate a unique QR code or barcode, which is equivalent to an identity for the product certification marks, such as in the production and operation of milk retail products, can accurately collect the origin of milk products, the growth parameters of dairy cows, and the information of manufacturers through this type of identity authentication technology. At the same time, the uniqueness of this type of information increases the anti-counterfeiting function of the data, which can provide users with authentic and real-time information. When a certain type of information changes, the irreversibility of the information transmission of the blockchain technology will be timely. Class information is updated to ensure that the way consumers obtain information is consistent with the production way of retail product information, and truly synchronizes information between "buy" and "use".

5. Conclusion

Based on the above research, the combination of blockchain technology and supply chain finance can provide security protection for information in the financial network. At the same time, with the support of the Internet of Things and the Internet system, it can track the whole process of things related to financial and economic behavior. In the process of information transmission, the unique and concealed functions greatly improve the efficiency of system application and provide a secure communication channel between enterprises and financial institutions to facilitate the effective circulation of funds.

References

- [1] Feng Qiang. *Application of blockchain technology in supply chain finance*[J]. *Financial Economics*, 2018 (22): 122-123.
- [2] Liu Shiming. *Discussion on the application of blockchain technology in supply chain finance* [J]. *Modern Economic Information*, 2019 (23): 250-253.
- [3] Liu Jun. *Research on the Application of Blockchain Technology in Supply Chain Finance—Taking Smart Confirmation Warehouse Financing as an Example* [J]. *Shangxun*, 2020 (3): 5-7.
- [4] Xu Ming. *Analysis of the application of blockchain in the supply chain* [J]. *Chinese and foreign entrepreneurs*, 2018 (33): 76.
- [5] Zhu Xingxiong. *The application of block chain technology in supply chain finance* [J]. *China Circulation Economy*, 2018 (3): 111-119.
- [6] Zhang Rui. *Traditional financial reform and innovation based on blockchain technology* [J]. *International Finance*, 2016 (9): 24-31.