

Application and Prospect of Blockchain Technology in China's Commercial Banks

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ABSTRACT

For the traditional financial industry, blockchain technology has brought an unprecedented revolution. In recent years, blockchain technology has become one of the most important research directions of financial technology in commercial banks in China. The application of blockchain technology in commercial banks can help optimize payment and settlement system, improve credit risk management and control mode, improve the operation efficiency of the middle and back office, and develop smart finance. At the same time, blockchain technology brings many challenges. Based on the introduction of the evolution and characteristics of blockchain, this paper analyzes the necessity of the application of blockchain technology in China's commercial banks, puts forward the policy advices of the application of blockchain in commercial banks.

Keywords: Blockchain technology, Commercial banks, China

1. INTRODUCTION

To solve the "Byzantine general problem" and "double spending problem" is the real root of the core idea of blockchain technology. Blockchain is the most subversive and shining technological invention in the field of financial network in the past 10 years. In the foreseeable future, it will reshape the entire financial ecosystem.

As we all know, trust is the foundation of the transfer, transaction, storage and payment of value in the world. Without trust, human beings will not be able to complete any value exchange. Originally, people relied on blood and religion to build trust. With the progress of people's cognition of social, moral restraint and religious belief became the basis of trust building among people. Then, the progress of science and technology created a strong demand for rule consciousness. Through building trust by laws and organizations, different kinds of value transfer and exchange are completed. In the Internet era, people begin to take "self-media" and "self-finance" as authority instead of the information center of traditional society. Every single person has become an information center and human society therefore enters the "multicentric era". Based on the above, blockchain technology decentralize with a pure mathematical

method, establish a strong connected trust relationship between the weak relations between the two sides of the transaction, so as to complete a kind of value exchange with low cost [1].

By continuing and enlarging the decentralization trend of Internet technology, blockchain technology has been highly concerned and recognized by various industries, and has become the major field of research and test direction in the new round of technological innovation. As the basic supporting technology of Internet finance, Internet of Things finance and big data application, blockchain technology has the characteristics of decentralization, tamperability, traceability and programmable intelligent contract, which makes it have better commercial application value in digital currency, financial transaction, asset registration and right confirmation.

Blockchain, with its core competitive advantages of high performance, high security, high-speed access and efficient operation, has attracted extensive attention from all sectors of society. With the rapid development of blockchain, China complies with the needs of globalization, keeps up with the pace of international development, and actively promotes the development of blockchain related research, standardization and industrialization.

2. THE NECESSITY OF APPLYING BLOCK CHAIN TECHNOLOGY TO CHINA'S COMMERCIAL BANKS

According to the survey, most of the Internet finance in China's commercial Banks at the present stage is based on the traditional electronic, and the transactions must be built on the basis of mutual trust still. To be specific, especially in China, which is a traditional trust-based country, the business model is also based on the social organization structure[2]. The premise of the transaction between the two sides is to have a trust system, which can be completed by the government supervision department, bank credit system and other institutions. Without this kind of trust system, unfamiliar parties will not trade. However, blockchain technology can completely change this traditional mode. Due to the characteristics of decentralization and autonomy, blockchain technology can establish a trust system in each blockchain by establishing a set of trust-based electronic algorithm. So, both parties of transaction can carry out economic activities without trust system, which reduces enterprise costs, achieves the lowest value transfer and gains higher profit. It can be said that blockchain technology is a creative revolution in the history of human social credit, which is very likely to reconstruct human production and life style. At present, the in-depth study and application of blockchain technology will have a positive and far-reaching impact on the payment and settlement, risk prevention and control, IT architecture and other aspects of China's commercial banks.

2.1. Rebuild and upgrade payment and settlement system of commercial Banks

At present, the payment and settlement of commercial banks need firstly to go through the payment and settlement center of the people's Bank of China, and then through the complicated process of payment and settlement instruction initiation, information feedback, payment and settlement bookkeeping, bilateral transactions and balance reconciliation. The whole process takes a long time and costs a lot. If joining the blockchain alliance, commercial banks can realize the direct payment and settlement of both parties through the blockchain system instead of the payment and settlement center of the people's Bank of China, with higher efficiency, better experience and lower cost.

2.2. Innovate and improve credit risk management and control mode for commercial banks

At present, the risk control model of commercial banks mainly relies on the data of credit investigation

center of the people's Bank of China, cooperation data of relevant government departments, data of domestic credit investigation institutions, third-party payment and settlement and e-commerce data. With the development of blockchain technology, transaction data of various enterprises and individuals, especially financial transaction data, will be stored in the blockchain system. Because every block node in the blockchain system can automatically copy and share all the information data, commercial banks can obtain all kinds of transaction data by joining the blockchain alliance, which overcome the adverse factors such as information asymmetry, incomplete information, untimely information update and high information transaction cost.

2.3. Improve the operation efficiency of the middle and back office of commercial banks

The emergence of blockchain technology makes it possible to process financial transactions in real time. At present, the middle and back offices of commercial Banks need a large number of personnel for the registration and settlement of financial transactions. With the help of multiple signature technology, unique recording technology and intelligent technology contract, blockchain technology will promote the real-time and automatic processing of financial transactions, bookkeeping, settlement and other work, which will avoid repeated financial transaction processing and false transaction processing, improve the accurate processing of trigger conditions in multiple transaction subjects' transaction projects by commercial banks and improve the efficiency of collaborative work.

2.4. Develop intelligent finance and Internet of things finance of commercial banks

The important role of blockchain technology for Internet of things finance lies in not only building a comprehensive and low-cost communication bridge between Internet of things information system and many intelligent devices, but also improving the reliability and privacy of Internet of things information system through decentralization, reliability and consensus mechanism[3]. The important significance of blockchain technology for intelligent finance is that all kinds of financial intelligent devices can store financial information in the blockchain system, which is managed uniformly by the blockchain system and automatically copied and shared by each node of the blockchain, thus greatly improving the coordination of financial intelligent devices, promoting the interconnection of financial intelligent devices and automatic management according to the intelligent contract, and realizing the self-sufficiency of intelligent devices Governance.

3. PROBLEMS OF APPLICATION OF BLOCKCHAIN TECHNOLOGY IN COMMERCIAL BANKS

3.1. Social understanding constraints

From the perspective of the overall technical environment, all sectors of society still hold a cautious and even negative attitude towards blockchain technology. On the one hand, due to the lack of professional knowledge of blockchain and the news of bitcoin "roller coaster", it is easy for the outside world to equate blockchain with encrypted digital currency. On the other hand, there is a phenomenon of overstating the function of blockchain, and it is believed that blockchain will subvert all the existing Internet. These are all biased views. In terms of technology itself, blockchain is the supplement and innovation of Internet technology application level, but it is not subversion.

3.2. Technical constraints

As a new technology, blockchain has some problems, such as lack of practical data, unknown market tolerance, and market education needs a certain time. As a blockchain structure, all information participants in the blockchain have a "public information account book" to ensure that the information can not be tampered with and traceable. With the development of time, there are more and more nodes, which will lead to the increasingly serious problem of redundant storage, the dramatic increase of cost and directly lead to the problems of too long blockchain structure, slow data update and response. In addition to the performance may not be able to meet the high-frequency transactions, blockchain technology is still immature, and there are certain security risks, including whether the algorithm is reasonable, whether there is the possibility of cracking. In the application of smart contracts, once an error occurs, it may cause a "Butterfly Effect", thus causing major data security accidents. Therefore, it will take a long time for blockchain technology to fully enter the commercial application field. For commercial banks, the strict technical requirements will raise the entry threshold of blockchain and restrict the recognition and acceptance of blockchain finance in the banking industry[4].

3.3. Cost constraints

The development of blockchain finance in the banking industry will consume huge human and material resources. For banks, financial innovation should not only ensure economic benefits, but also comply with regulatory requirements. At present, blockchain technology is in the research and development period, and the relevant technology and use standards are not

unified. The current infrastructure of financial institutions has spent a lot of manpower and material resources after years of construction and maintenance, which is relatively perfect. The use of blockchain system will completely subvert this traditional mode and create a new transaction settlement and management system. In this process, the connection between the existing system and the blockchain system will cost a lot. At the same time, various obstacles from the bank will slow down the promotion of blockchain finance in the field of commercial banks.

3.4. Legal and institutional constraints

Although the decentralized supervision mode of blockchain technology will solve the problems of high supervision cost and low efficiency that commercial banks have been facing, its credit creation form will weaken the existing institutional advantages of the country[5]. Taking bitcoin as an example, it not only threatens the authority of the central bank to issue money, but also affects the monetary transmission mechanism and effect, and weakens the country's macro-control ability. The central bank has to be cautious about this. At present, China's legal establishment in this area is relatively lagging behind, and the mode of policy supervision is not clear.

4. RESPONSE STRATEGIES OF COMMERCIAL BANKS TO BLOCKCHAIN TECHNOLOGY

As a new technology, blockchain technology is still in the exploratory stage, there are many uncertainties, but in the core advantages of information co construction and sharing, decentralization, smart contract, credit creation, etc., it is bound to have a huge impact on the service means and operation mode of traditional commercial banks, and bring challenges and opportunities to banks. Commercial banks can strengthen the application of blockchain technology from the following points.

4.1. Formulate and improve corresponding laws and blockchain application standards

At present, many countries and regions at home and abroad have set foot in blockchain, and local governments have also issued relevant policies to support and encourage the development of blockchain, but there is still a lack of policy documents related to overall planning and top-level design in China. The legal and regulatory departments should start from the top-level design, based on the national development strategy, plan the application of blockchain technology in the field of commercial banks, issue corresponding

industrial policies, and guide the orderly development of blockchain technology.

In addition, in view of the existing problems in the development of blockchain, such as technical heterogeneity and inconsistent standards, domestic commercial banks should strengthen cooperation, establish a competitive blockchain alliance, actively participate in the formulation of industry standards, refine the industry application standards in line with their own development, and strive for more voice. In 2016, the first blockchain alliance in China - distributed general ledger basic protocol alliance was established. The alliance is launched in the existing commercial network to realize the real name of digital identity between nodes, which greatly improves the efficiency, but this is only the beginning. Only by formulating the application standards of blockchain in line with China's national conditions, and promoting the development of domestic commercial banks, is the ultimate goal.

4.2. Strengthen talent reserve, change research and development ideas and application positioning

The competition of technology is actually the competition of talents. In this tide of blockchain development, if we want to catch up with and surpass, domestic commercial banks need to strengthen the absorption and reserve of blockchain technical talents, establish blockchain innovation laboratories within or between banks, and break the technical barriers[6]. In the research and development process of blockchain technology, we should take the stability of the economic and financial system as the starting point and end point, and change the application orientation of blockchain technology from "decentralization" to "value interconnection, information co construction and sharing". Based on this positioning, in the practical application process, it can not only avoid the link between virtual currency and existing legal currency, ensure the stable and healthy operation of the financial system, but also reduce the impact of blockchain technology on the existing monetary and economic system, participate in domestic and international banking cooperation with an open mind, and rationally promote the application of blockchain technology.

4.3. Conduct multi-directional data information management and control to enhance the safety and reliability of network system

Undoubtedly, the core of "decentralization" of blockchain technology is actually the distributed storage and dynamic update of data. With the increasing degree of decentralization and the number of participating nodes, redundant data storage becomes difficult. This

requires finding a proper balance between redundant data storage and decentralization, system response speed and customer satisfaction. Therefore, commercial banks need to strengthen investment in infrastructure and R & D, as well as cooperation among different departments such as business, operation, risk control, it, etc., focus on encryption algorithm, data collection and storage, carry out comprehensive security control and dynamic tracking, and improve the ability of multi-party data information

5. CONCLUSION

The characteristics of the blockchain of business management of commercial banks are process simplification, storage optimization, cost reduction and so on. It has many intersections with the business of commercial banks. However, there will be many difficulties before the implementation of blockchain technology, such as improving transaction speed, privacy protection, confirmation process, data capacity limitation, etc. Blockchain has the nature of network sharing. In the large-scale application of blockchain technology, there are some phenomena such as improper protection of privacy information, illegal embezzlement of core data, etc. Therefore, we should pay attention to the development potential of blockchain technology. Blockchain technology continues the Internet technology. With the win-win cooperation of technology companies, private equity funds, venture capital funds and other markets, we will tap the commercial value of blockchain, promote more institutions to participate in blockchain technology, better organize and layout blockchain, and change the way of financial transactions.

At the same time, the extensive application of new technologies needs to experience the test of practice. Although blockchain and commercial banking business have certain adaptability, they still have certain obstacles in the combination. The technology of blockchain itself has also been constantly improved in trials, and its development cannot be achieved overnight. In the future, it still needs constant innovation and active cooperation and communication from all market players to promote greater breakthrough and development of blockchain application.

REFERENCES

- [1] T. Zhang, Application and Prospect of blockchain technology in China's commercial banks. *New finance*, 2019 (07): 50-57
- [2] Z. Hu, Y. Chang, Application and Prospect of blockchain in commercial banks. *New finance*, 2017 (10): 44-48

- [3] T. Jin, T. Lei, Prospects, challenges and Countermeasures of bank's application of blockchain. *New finance*, 2017 (07): 36-40
- [4] Y. Guan, Zhong ma, Blockchain and Commercial Banks: application and prospect. *Modern finance*, 2017 (05): 38-40
- [5] R. Zhang, Blockchain Finance: structure analysis and prospect. *Southern finance*, 2017 (02): 57-63
- [6] H. Cheng, Y. Yang, Research on the development trend of blockchain and the coping strategies of commercial banks. *Research on financial supervision*, 2016 (06): 73-91