

Exploration of Digital Intelligence for Personal Credit Sharing Platform Based on Blockchain Technology

Xin Peng¹

xinpeng@bcu.edu.cn

¹Department of Economics and Management, Beijing City University, Muyan Road, Yang Town, Shunyi District, Beijing, PRC.

Abstract: The decentralized, untrusted, timestamp, asymmetric encryption and other features of blockchain support limited and controllable credit data sharing and verification while effectively collecting and protecting data privacy. The smart contract of blockchain has created conditions for the digital construction of personal credit sharing platforms. This article explores two modes of personal credit reporting business based on blockchain technology, At the same time, it is also pointed out that in the current situation, there are still situations such as inconsistent data collection standards and difficulties in data integration and sharing during the construction of personal credit sharing platforms, But there is no doubt that with the assistance of blockchain, the construction of digital intelligence has a very broad prospect for accelerating the sharing and co construction of personal credit data.

Keywords: Blockchain; Data Sharing; Personal Credit Reporting; Digital Intelligence.

1 INTRODUCTION

Personal credit reporting refers to the activities of legally established personal credit reporting institutions that collect and process personal credit information, and provide personal credit information query and evaluation services according to user requirements. During this process, a personal credit record will be formed, which is a personal credit record provided by credit institutions to the searcher after processing the personal credit information collected in accordance with the law. In the development process of China's credit system, it can be traced back to the Chinese Credit Bureau in the 1930s. The real beginning of personal credit reporting was after the reform and opening up. Today, personal credit reporting has become an important link in the economic life of the general public. The most authoritative personal credit data in China currently comes from the People's Bank of China, which is mainly divided into enterprise credit basic data and personal credit basic data. The enterprise one was established in 1997 and achieved nationwide data networking in 2006. The Personal one was established in 1999 and officially began operating in 2006[1]. At present, China has completed the construction of the world's largest personal credit system, which has collected credit information from 1.05 billion people, 26.78 million enterprises, and other related organizations. The daily credit queries of individuals and enterprises have reached 6 million and 300000 times, respectively.

Blockchain is a distributed infrastructure and computing paradigm formed by the high integration of multiple core technology systems such as cryptographic algorithms, consensus mechanisms, peer-to-peer communication protocols, and distributed storage[2]. Its decentralized, untrusted, timestamp, asymmetric encryption, and smart contract features ensure that limited and controllable credit data sharing and verification can be achieved on the basis of effectively protecting data privacy from a technical perspective. Especially its decentralized technology can avoid the collapse of the current centralized network once it is subjected to network attacks or large-scale access, playing a crucial role in protecting the security of personal credit data.

The digital intelligence construction of personal credit sharing platform based on blockchain technology refers to the establishment of a distributed personal credit system based on it, and the intelligent decision-making of personal credit verification and personal credit sharing with the help of digital intelligence.

2 EXPLORATION OF DIGITAL INTELLIGENCE CONSTRUCTION OF PERSONAL CREDIT REPORTING PLATFORM BASED ON BLOCKCHAIN

2.1 Blockchain participation in personal credit data collection

The immutability, traceability, timestamp, and de trust of blockchain are its technical advantages in participating in personal credit reporting. Blockchain can achieve personal credit data collection through the following channels (Figure 1): (1) Build each data collection center into a distributed data center to collect corresponding data; (2) Utilize smart contracts to achieve smaller granularity data transaction modes, ensuring timely data linking; (3) Solve the problem of data authentication through traceable paths on the chain; (4) Prevent data abuse by refining the scope of authorization.

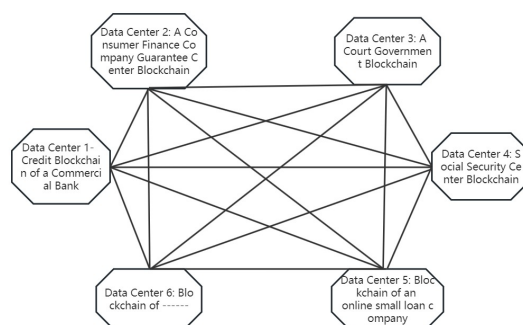


Figure 1. Distributed Personal Credit Data Collection

Blockchain can formulate transaction rules through smart contracts and ensure the execution of rules through technology. Once the smart contract is reached, the transaction will automatically proceed.

2.2 Intelligent transaction of personal credit data based on blockchain technology

Data sharing enables users who use different software and hardware in different places to read others' data and perform various operations, calculations, and analyses. Data sharing can enable more people to make full use of existing data resources and reduce repetitive work such as data collection. The degree of data sharing can reflect the level of information development in a region or country. There are at least two prerequisites for sharing personal credit data: firstly, a unified and legal data collection standard should be established to standardize the data format; Secondly, in order to achieve mutual trust and use of personal credit data, it is necessary to establish corresponding management measures for the use of personal credit data, formulate data protection regulations, and break the information monopoly between departments and regions under the premise of legality.

3 DIGITAL INTELLIGENCE PERSONAL CREDIT REPORTING BUSINESS MODEL BASED ON BLOCKCHAIN TECHNOLOGY

There are two types of digital personal credit reporting business models based on blockchain technology: The first method is to query users and directly obtain data from the corresponding credit reporting agency; The second type is that there is no user required data on the credit reporting agency's chain, and user data needs to be obtained from other institutions before being transmitted to him. Regardless of which mode it is, it is first required that all uplink data have a unified and legal data standard format, and the entire query and data transmission process adopts asymmetric encryption algorithms. The operation process is as follows :

Mode 1 (Figure2): Query user C1 to directly obtain credit information from credit agency A:

<1> Query user C1 to send credit data usage requests to credit reporting agency A, sign smart contracts, and pay corresponding fees;

<2> Credit reporting agency A queries local information and returns C1 data.

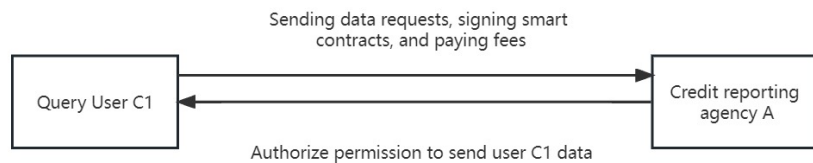


Figure2. Personal Credit Direct Query Mode

Mode 2 (Figure 3): Query user C2 to query the credit information stored in institution B from credit agency A:

<1> Query user C2 to send data usage requests to credit bureau A;

- <2> Credit reporting agency A searched for local information but did not find the data required by C2;
- <3> Credit reporting agency A broadcasts C2 identification information on the blockchain path and exchanges the data required by C2;
- <4> Credit reporting agency B receives a C2 credit information request for transaction, queries local data, and obtains C2 credit data;
- <5> Credit reporting agency B trades C2 credit data with credit reporting agency A;
- <6> Credit reporting agency A saves C2 credit information and returns C2 credit information.

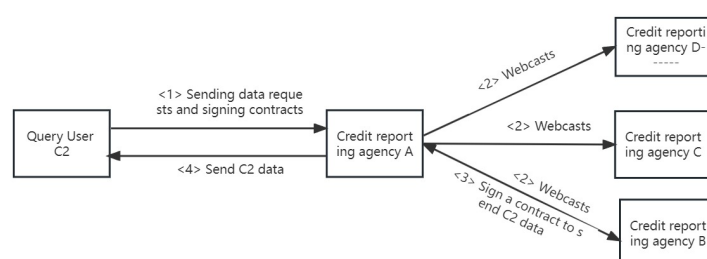


Figure 3. Information sharing mode on personal credit reporting chain

4 THE PROBLEMS FACED BY DIGITAL PERSONAL CREDIT REPORTING PLATFORMS BASED ON BLOCKCHAIN TECHNOLOGY

4.1 Questions about non-standard data, data collection standards, and authority

The data sources of the Personal Credit Center of the People's Bank of China are mainly commercial banks, non bank financial institutions, courts, provident fund management centers and other public utility institutions. The data quality is good and the degree of standardization is high, but the data content is relatively simple. And some of the data sources of individual credit centers with a corporate nature, such as Baixing Credit [3], come from the internet. The advantage of corporate credit institutions is that their data coverage is wide, covering not only commercial banks and non bank financial institutions, but also various fields such as online small loans, P2P platforms, consumer finance, automotive finance, and internet banking. The disadvantage is that the control ability of the source data is not good, and the reliability of the data needs to be verified. The degree of data standardization is far inferior to that of the central bank, and data integration is difficult and the cost of going online is high.

4.2 The relationship between personal credit reporting and personal information protection needs to be straightened out

The main purpose of establishing a personal credit reporting system is to prevent credit risks, reduce information asymmetry among participating parties in transactions, and play a role in risk assessment and disclosure. The use of personal credit reporting system can expand credit

transactions, promote the achievement of credit transactions, and improve economic operational efficiency. The ultimate goal of personal information protection is to promote the rational use of data. On the premise of fully protecting personal information, we should explore and achieve more accurate data authentication, more convenient data transactions, more reasonable data usage, and stimulate the vitality and technological innovation ability of market entities[4]. Therefore, the two parties are not contradictory. The main problem in the current market is that economic entities intentionally confuse personal credit reporting with personal information protection, using personal credit reporting as a pretext to extract and use personal credit data, some credit reporting companies even use web crawler and other tools to illegally crawl, use and sell personal data. China's public security organs have seized and processed a number of enterprises and individuals. Some of the data illegally obtained by these enterprises and individuals have become the accomplices of "fraudulent loan", seriously infringing the legitimate rights and interests of citizens.

4.3 Data integration and sharing have become the biggest challenges at present

Firstly, the issue of data integration is obvious: the current credit reporting system is a centralized credit system. For example, the personal credit reporting system of the central bank generates native data through the branches of various commercial banks, after processed by the central bank, the data is shared within all financial institutions for query and use. Payment records, default records, and other information based on internet transactions cannot be found in this system, and vice versa. Secondly, the data collected by various credit reporting enterprises based on Internet transactions are inconsistent, such as Alipay Zhima Credit, Baixing Credit, Tencent Credit, Qianhai Credit[5], etc. among them, Alibaba and Tencent publicly refused to provide financial consumption data. Thirdly, some data rights and responsibilities are unclear, and the authority is questionable. Many enterprises are both providers and users of data, and even managers of data. In terms of data sharing, based on the aforementioned issues of data authentication, comprehensiveness, and security [6], various data institutions themselves lack mutual trust, especially in the timely and incomplete sharing of raw and core data, which poses challenges to the uplink data.

5 CONCLUSION AND PROSPECT

On the digital intelligence personal credit information sharing platform based on blockchain technology, commercial banks, internet companies, public utilities, individuals, etc. solved the "information silo" problem by means of data linking, shortened business processing procedures, reduced repetitive and heavy workload such as data verification, reduced operating costs, and improved work efficiency. Blockchain technology can record and accurately track data invocation behavior throughout the entire process, creating a favorable environment for personal credit information usage. In addition, blockchain applications can reduce the cost of data usage between departments, enhance the credibility of authoritative institutions, and reduce the workflow of people's affairs. In short, The personal credit sharing platform based on blockchain technology, as the foundation for the promotion and popularization of digital intelligence, has played a fundamental and bridging role in promoting digital intelligence in other industries and fields, and has a very promising future.

ACKNOWLEDGEMENTS: The work is supported by the Science Developing Foundation of Beijing City University (Grant KYFZZ202001): Feasibility Study on Shared Employees Based on Blockchain Technology.

REFERENCES

- [1] Ding Ling, Duan Dan, Han Jiaping, Ma Ziyou, and Mai Jialu. Research on the Optimization of Personal Credit Reporting Indicator System and Information Sharing Mechanism from the Perspective of Blockchain [J]. Credit Reporting, 2022,40 (05): 1-7.
- [2] Fu Hongyan. Research on the Application of Blockchain in the Integration and Sharing of Public Resource Trading Data [J]. Modern Computer, 2022-28 (12): 86-89.
- [3] Technical Specifications for Financial Distributed Ledger Security, February 2020, on the website of the People's Bank of China.
- [4] Xu Ruiyang. Exploration of Improving JD Baitiao's Personal Credit Reporting Model under Internet Finance [D]. Beijing Communication University. 2017.
- [5] Zhang Jing, Li Yudong. Preliminary exploration of the application of blockchain technology in market-oriented personal credit reporting in China [J]. Credit Reporting. 2020 (5): 17-23.
- [6] Fu Hongyan. Research on the Application of Blockchain in the Integration and Sharing of Public Resource Trading Data [J]. Modern Computer, 2022-28 (12): 86-89.