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Application of Blockchain Technology in Credit Management of Commercial Banks

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Abstract

This paper discusses the application of blockchain technology in the credit management of commercial banks, and takes Bank A as an example to deeply analyze its status quo and existing problems in credit risk management. In terms of credit risk management, Bank A faces multiple challenges, such as imperfect organizational system, backward credit rating technology, backward credit risk measurement technology and credit compensation mechanism to be improved. In response to these problems, this paper proposes measures to improve credit risk management based on blockchain technology. These include smart contracts that introduce blockchain technology to optimize credit contract management and execution; Using blockchain technology to improve the lending process and increase transparency and efficiency; Use blockchain technology to improve the risk management of credit card business and enhance the ability to identify and control risks; And the use of blockchain technology to improve the credit investigation business of Bank A, improve the quality and availability of credit information. Through these measures, Bank A is expected to significantly improve its credit risk management.

Keywords

Blockchain Technology; Commercial Banks; Credit Management.

1. Introduction

With the development of economy, the risks faced by commercial banks become more complex and severe. Among many risks, credit risk is the most important risk that banks face. The traditional credit risk management of commercial banks has some shortcomings, such as imperfect credit compensation mechanism, backward credit risk measurement technology and high management cost, which lead to low efficiency of bank risk management. Banks urgently need to find new directions and ideas in the reform and innovation of credit risk management.

Since the emergence of blockchain technology, the Chinese government has adopted a positive attitude towards the development of blockchain technology, and successively issued documents such as the 13th Five-Year National Informatization Plan (Guofa [2020]73), the White Paper on the Development and Application of China's Blockchain Technology (2020), and the 13th Five-Year Development Plan for China's Financial Industry Information Technology (2021). Blockchain technology has risen to the level of national strategy. In response to the development trend of blockchain, various industries have successively made corresponding layouts in the development and application exploration of blockchain. In foreign countries, according to the report of relevant financial evaluation institutions, blockchain has many application scenarios, including in the Internet of Things supply chain management, payment clearing and digital currency, as well as information records and identity management. Blockchain technology originated from Bitcoin, which involves a number of interdisciplinary technologies behind it. Blockchain can be seen as a distributed shared database, with immutable, decentralized, traceable, open and transparent characteristics. Due to the above

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characteristics of blockchain, in practical applications, it can be applied to many different scenarios, which can effectively solve the problem of information asymmetry and achieve the unity of credit between multiple subjects. Specifically, blockchain is a shared database where data is stored and recorded in a distributed manner. There is no central body in this database, and the data blocks are related through node connections. All the information flow data in a certain period of time in the system is stored in a data block, and each data block will generate a secret key of its own. The authenticity of the data in the data block is verified by the secret key and the link between the data blocks is carried out by the key.

This paper adopts the method of case analysis, takes Bank A as an example for specific analysis, analyzes the status quo and problems of Bank A's credit risk management, and finds the problems existing in Bank A's credit risk management. At the same time, it puts forward the improvement measures of A bank's credit risk management in combination with blockchain technology. On the one hand, it can provide reference for other banks to introduce blockchain technology into the optimization and upgrading of credit risk management, and on the other hand, it can summarize the suggestions and measures for Chinese commercial banks to introduce blockchain technology from the macro level.

2. Status Quo of Credit Risk Management of Bank A

Table 1. Proportion of the top five loan industries

Industry	End of 2021	Industry	End of 2022	Industry	End of 2023
Real Estate	14.46%	Real Estate	13.22%	Real Estate	11.9%
Wholesale and Retail	13.02%	Leasing and Business Services	10.46%	Leasing and Business Services	10.23%
Leasing and Business Services	9.85%	Wholesale and Retail	9.88%	Wholesale and Retail	7.77%
Water Conservancy, Environment, and Public Facilities Management	8.82%	Water Conservancy, Environment, and Public Facilities Management	5.33%	Water Conservancy, Environment, and Public Facilities Management	4.56%
Construction	3.86%	Construction	4.73%	Construction	3.46%
Total	50%	Total	44%	Total	39%

Through the investigation of Bank A, it is found that in 2023, Bank A's lending customers are mainly concentrated in the real estate industry, leasing and business services, and the new major project loans account for 35% of the increase in public loans. In Bank A's credit plan for 2020, the focus of credit investment in the New Year is still the real estate industry and major projects in key areas. In the business service industry and leasing industry and other customers,

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projects, high concentration. At the end of 2023, Bank A's loans are still concentrated in real estate and leasing business services, and the loan balance of the top five industries accounts for 38% of the total loans, although it has decreased compared with the past situation, but it is still relatively high. In response to this situation, Bank A has gradually implemented strict credit control policies on the real estate industry. By the end of 2023, the concentration of Bank A's loans in the real estate industry has reached 11.9%, and the balance is as high as 35.049 billion yuan. The total loans of the real estate industry and the related construction industry account for 15.36%, although it has decreased compared with last year. But it is still at a high level. The uncertainty of real estate and related industries due to the impact of national policies will bring certain credit risks to banks.

In terms of loan objects, the current loan and advance business objects of Bank A are mainly concentrated in A few regions, although it has decreased compared with 2021, the concentration is still very high, which also indicates that Bank A's loan plan has relatively concentrated regional credit risks, and there is uncertainty in the change of regional economic development status, which brings potential credit risks to the bank. And due to the limited business coverage, the loan competition is more intense.

Table 2. The proportion of loans by region

Region	End of 2021 (Billion Yuan)	Proportion (%)	End of 2022 (Billion Yuan)	Proportion (%)	End of 2023 (Billion Yuan)	Proportion (%)
1	1023.38	60.41	1426.32	59.46	1700.44	57.73
2	209.72	12.38	182.46	7.61	234.61	7.97
3	155.21	9.16	136.44	5.69	115.48	3.92
Others	305.77	18.05	653.26	27.24	894.76	30.38
Total	1694.11	100	2398.49	100	2945.30	100

Table 3. Growth of personal loans

Year	Personal Loans (Billion Yuan)	Proportion (%)
2020	288.16	21.18
2021	512.90	30.28
2022	987.24	41.16
2023	1327.29	45.06

On the whole, the customers of Bank A's loan and advance business are mainly concentrated in three regions: 1, 2 and 3, and the three regions account for 69.62% in 2023. Among them, the

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proportion of region 1 has reached 57.73% of the total loan volume, although it has decreased from 2021, but the concentration is still high, and regional credit risks continue to accumulate. (3) At the same time, in terms of personal loans, Bank A's individual loan business has developed rapidly, increasing from 28.816 billion yuan in 2020 to 132.729 billion yuan in 2023. However, the analysis of the loan object found that the loan object is relatively scattered, the business scope is wide, the single business amount is small, the loan term is long, the credit investigation is more difficult, the service is strong, and the intermediate link of the loan operation link is more, so that the efficiency of credit risk management is low.

3. Bank A's Problems in Credit Risk Management

3.1. The Organizational System of Credit Risk Management is Not Perfect

At present, although Bank A has set up A credit risk management organization system, there are certain problems and defects in the actual operation process, which is not in line with the operation and development management of Bank A. Mainly caused by the following defects:

The adjustment of Bank A's credit risk management structure was designed by the bank's internal risk management department. However, when it comes to the adjustment, the staff of the risk management department of Bank A did not fully evaluate and analyze the development of the bank's internal business and the status quo of its employees, and they were mainly responsible for designing the structure. Later, the suitability assessment of the structure was not fully carried out, which resulted in the risk management organizational structure they set up was not completely suitable for Bank A.

As the credit risk management organizational structure is completely designed by the upper department of the bank, the internal engineering staff of Bank A does not have sufficient understanding of the new organizational ideas and contents, and certain deviations are prone to occur in subsequent practical operations, so it is impossible to improve and revise it.

The phenomenon of buck-passing often occurs, which makes the work efficiency of the bank low.

The division of responsibilities of personnel in each department is not clear, and the responsibility of business work is defined among departments. (4) The leadership of the board of directors and relevant departments is not enough. The Board of directors and relevant departments did not exert sufficient efforts in credit risk management and did not play the maximum role of their functions, which finally led to errors in the credit risk management decisions of Bank A.

3.2. Backward Credit Rating Technology

The credit rating system can be divided into external and internal, and the combination of the two forms the main system. After years of development, China's commercial banks have gradually established an external rating system for enterprises. However, due to the lack of experience and guidance, the system has not formed a certain scale, and the lack of standardization in the operation process, it is difficult to carry out credit rating for most enterprises in our country. And with the help of foreign rating agencies to rating Chinese enterprises, the results may have certain deviations. Therefore, in the absence of external rating, Bank A mainly conducts credit risk management through internal rating.

Bank A's internal rating system mainly focuses on the customer's past situation and fails to fully evaluate the customer's future repayment ability. At the same time, the quality of the personnel responsible for the operation of the internal rating system needs to be improved, and the fairness and authenticity of the evaluation needs to be improved. In practice, there is often an unclear division of labor, and there are certain differences in communication with loan officers, which will affect the efficiency of bank credit risk management to a certain extent.

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In addition, Bank A lacks an effective evaluation system for debt rating and debtors' credit rating, and its own evaluation system has certain shortcomings. Due to the lack of technology, Bank A cannot accurately measure credit risk in actual operation.

3.3. Backward Credit Risk Measurement Technology

With the development of economy, credit risk has also changed to some extent. For Bank A, the traditional method of expert analysis and calculation of loan risk is difficult to keep up with the requirements of development. Because the indicators and weights of this method are subjective, and different departments have different grasp of the weights, it is difficult to make A horizontal comparison of credit risk. Meanwhile, the data used in these methods are static, and the credit rating and repayment ability of customers are likely to change after obtaining loans, and Bank A cannot quickly grasp these changes. Although these methods have some positive effects, banks still need to improve and update the risk quantification technology in order to achieve comprehensive and dynamic credit risk management.

3.4. The Credit Compensation Mechanism Needs to Be Improved

In the process of credit risk management, Bank A adopts different management methods for different types of credit risks, one of which is to transfer credit risks through mortgage or guarantee. As for the mortgage method, Bank A will require the borrower to provide collateral in the loan, but in actual operation, the handling of mortgage loan is very complicated and inefficient, the value of the collateral may change during the registration process, and the bank is often unable to grasp these changes in time. For enterprises, the handling of mortgage loan increases the cost of loan. Thus affecting the profits of enterprises. At the same time, because the domestic market mechanism is not perfect, Bank A is faced with many problems in the processing of collateral. As for the guarantee method, due to the lack of standardized guidance in actual operation, Bank A has caused the phenomenon of mutual guarantee and multi-head guarantee among enterprises, and the credit risk assumed by the guarantor has been transferred to the bank, and the bank cannot effectively transfer the risk. In general, mortgage and guarantee can transfer A certain credit risk for Bank A to a certain extent, but due to the above-mentioned problems, the effect is not good, and the bank urgently needs to find new ways to disperse and avoid risks.

4. A Bank Credit Risk Management Blockchain Technology Application Necessity Analysis

4.1. Feasibility Analysis

(1)Improve credit risk measurement techniques

In supply chain finance, when enterprises and financial institutions on the chain conduct mutual transactions, they obtain data through a centralized database system for review, and the daily operation and maintenance of the database is completed by the manager. There is a risk that hackers or even registered users may modify the data in the database. However, there is no centralized maintenance for the database established through blockchain technology. The data is stored in a distributed record and cannot be modified, and the authenticity and validity of the data have been verified, and a good trust mechanism can be built between various transaction parties. At the same time, after ensuring the true validity of the data, the bank's data analysis and processing have been effectively guaranteed, which provides convenience for the bank to formulate plans and measures against credit risks.

In the past cases, in order to conceal unfavorable information to obtain loans, borrowers would falsify financial data and try to increase accounts receivable and payables to increase the scale of payments, and adopt false operating income and a series of financial indicators. In the

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blockchain, the capital and logistics information of upstream and downstream enterprises are accurately and timely recorded, and each enterprise establishes its own file, which cannot be modified, greatly improving the authenticity and reliability of the data and the degree of convenience. In the risk management of borrower access, commercial banks obtain the accumulated data of automatic comparison from the blockchain, and then cross-verify the credit rating data of enterprises on the chain to judge the credit risk of enterprises.

(2) Improve management efficiency and reduce costs

In a blockchain database, each participant's information is stored separately in separate blocks, which are linked by nodes. Information is shared throughout the chain, and the permissions of each block are independent and equal, so there is no problem of information asymmetry. In the process of transaction, both sides of the transaction directly operate on the chain, avoiding the participation of third parties, which reduces the risk of third parties and reduces the cost of transactions. In addition, the traditional credit business of commercial banks covers a large number of transaction entities, and its complexity makes the maintenance cost of trust very high. By trading financial assets on the blockchain, information sharing becomes transparent, further reducing the cost of credit maintenance for enterprises.

The credit risk management of commercial banks is a complicated process, which involves more complicated business processes and is not easy to operate, which ultimately makes the efficiency and accuracy of management low. The blockchain technology added to the smart contract can make the signing and supervision of the loan business intelligent, simplify the operation process, and thus improve the efficiency and accuracy of credit risk management of commercial banks.

(3) Improving the effectiveness of credit guarantee policies

At present, when banks deal with collateral loans, they need to register the information of collateral in a specialized institution, and only after completing the registration procedures, the collateral will have a legal effect, and the decentralized blockchain technology can effectively solve this problem. In terms of equity, equity owners can use their own user private key to prove the ownership of the equity on the chain, and realize the transfer of equity through on-chain operation, which is very convenient. Moreover, the user's operation will be accurately recorded on the blockchain, and the source can be completely tracked, and the entire process does not require the participation of third-party institutions, which greatly improves the accuracy and timeliness.

Blockchain technology forms a distributed database, which records the relevant data of enterprise business activities, and realizes real-time update and sharing through nodes. Commercial banks can apply this technology to business risk management such as pledge financing and accounts receivable factoring, which will greatly simplify the credit assessment and review process of enterprises, indirectly reduce the cost of enterprise financing and improve financing efficiency. The smart contract mechanism is used to programmatically set the rights and obligations agreed above the transaction in the smart contract, which reduces the artificial operation, reduces the problem of repeated guarantees and multiple guarantees, and also reduces the loss cost caused by contract default.

(4) Strengthen post-loan management

After the loan is issued, the bank implements dynamic monitoring of the economic status of the borrower through blockchain technology, and the information changes of the borrower will be recorded on the blockchain in a timely manner, so that the bank can track and analyze the post-loan credit status of the borrower and change the risk warning in real time. In case of adverse conditions, the bank can take action immediately. Similarly, in the business of asset securitization, security holders can dynamically track the repayment and interest payment ability of the issuer through blockchain technology.

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Blockchain requires each block on the chain to compete with each other in order to obtain the recording rights of data, and then connect to reach a consensus through a certain consensus mechanism. In this way, all the data is consistent, and the data in the block is labeled with a time label when it is recorded and stored, and the data can be traced through the time label. In this way, the transparency and traceability of data are guaranteed, and the operational risks and credit risks faced by commercial banks are also reduced.

4.2. SWOT Analysis

(1) Advantage analysis

The overall competitive advantage is obvious: Bank A is headquartered in Guangdong Province in the Pearl River Delta region, with rich business development resources and a complete set of branches in the region. Its customers are enterprises with leading positions in the industry and high net worth customers in the region.

Huge amount of data: In the process of operation and development for many years, Bank A has accumulated hundreds of millions of customers' basic information through a large number of loan transactions, including their transaction information and the amount of deposits and loans.

Sufficient capital: As A leading large urban commercial bank in China, Bank A has sufficient capital. In the era of financial technology development, Bank A can configure blockchain-related hardware and software facilities to support the development layout of blockchain by establishing equipment such as blockchain service systems.

Internal control process standard: Bank A's compliance line fully focuses on the main business of compliance, and has built a relatively sound compliance management policy and system to ensure compliance operation and steady development, and escort business development.

(2) Disadvantage analysis

Lack of composite professionals: the application of blockchain technology needs to rely on external institutions to provide technical support, and Bank A urgently needs financial professionals and blockchain technical talents to cooperate with each other, so only composite talents can really promote the introduction of blockchain technology in Bank A, but at this stage, Bank A is still relatively short of composite talents, and there is a certain gap between the needs of business development.

Lack of industry chain information: When Bank A developed industry chain finance, it was difficult to collect and maintain information about all relevant enterprises in the entire industry chain due to the large amount of information involved.

Lack of unstructured data processing ability: Bank A has accumulated a lot of experience in the field of structured data application, but lacks experience and ability in the analysis and processing of unstructured data. It needs to rely on third-party institutions such as large e-commerce platforms to help establish a credit risk management system based on blockchain technology. Lack of some behavioral data of customers: Bank A stores most of the basic information of customers in the existing system, including identity information and transaction flow information data, but the bank is not fully prepared for the unstructured data of customers' family income, consumption habits, interests and so on.

(3) Opportunity analysis

Industrial opportunities: The Pearl River Delta region is more economically and financially developed, and the advantages of development are more obvious, and therefore the region has driven the development of the blockchain industry. In 2019, there were more than 7,000 blockchain startups nationwide, focusing on Beijing, Shanghai, Guangdong and Zhejiang regions and cities, accounting for nearly 80% of the domestic total. North Policy support: Guangdong is one of the earliest provinces in China to promote the development of blockchain technology. Governments at all levels have issued a number of policy documents to support the

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development of the regional blockchain industry and attach great importance to the development of the blockchain industry, including the development of the blockchain industry layout planning and support, and the introduction of relevant technical talents. It provides A good environment for Bank A to introduce blockchain technology.

Preconceived opportunities: Bank A's blockchain application layout strategy should start from the overall level, build a strategic system for the development of blockchain technology, specify the implementation strategy in line with its own development situation, break through the homogenization of traditional applications, gain market share first, and bring competitive advantages to the bank.

Opportunities for fine control of credit risk: Bank A improves its level of credit risk management by promoting the application of blockchain technology in credit risk management, and establishes a loan process based on blockchain technology to improve the management efficiency of loan business so as to effectively carry out more refined risk management.

(4) Threat Analysis

The threat of blockchain security: as an emerging technology, the development and application of blockchain are not mature enough, such as the network security risks existing in the blockchain database, the immature regulatory laws on blockchain, and the immature technology of blockchain itself. These problems will bring certain challenges to the introduction of blockchain technology by Bank A.

Threat of cooperation with the third party: the rapid development of Internet finance in recent years has brought great competitive pressure to the traditional financial model. More and more customers choose Internet finance for asset allocation and investment. When facing these potential customers, Bank A needs to effectively introduce and manage them through the cooperation and participation of third-party institutions. At the same time, Bank A also needs the assistance and participation of third-party institutions when establishing the blockchain credit risk information database, which brings certain challenges to Bank A.

The threat of new technologies bringing new risks: The development of innovative technologies such as artificial intelligence and big data has challenged Bank A to deepen the application of blockchain technology, innovate its business model, and establish a risk prevention and control system with matching mechanism.

Threat of Internet financial competition: In recent years, the Internet has been gradually popularized, resulting in rapid development of Internet finance, accelerating financial disintermediation, and transferring some customers' investment and financial choices to Internet finance, which is A huge challenge for the operation and development of Bank A.

5. Bank A Credit Risk Management Improvement Measures based on Blockchain Technology

5.1. Smart Contracts that Introduce Blockchain Technology

In the loan business, Bank A can replace the traditional loan contract by adding smart contracts through blockchain technology. Smart contracts are stored in the block of the blockchain through certain logical rules. For different customers, banks can use the same smart contract for management and use, avoiding the trouble caused by too many contracts and the existence of arbitration parties. From the essence of the technology, the smart contract is written into the blockchain through the provision and content of the contract through the way of programming code, as long as the customer's information is updated to meet the trigger conditions of the contract, then the contract will automatically take effect, and after taking effect for the change of customer information, can make a timely judgment to determine whether the contract can continue. Such smart contracts eliminate the central control link, the process efficiency is more

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transparent and concise, and can effectively reduce the workload of bank management and the cost of loans. The operating mode of smart contracts is shown in Figure 1.

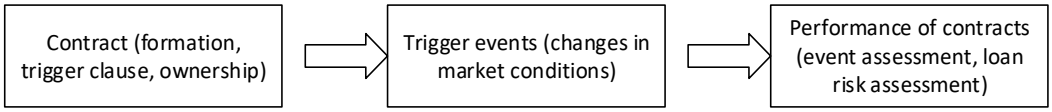

Figure 1. How smart contracts work

Bank A introduced smart contract technology in the loan business, one of the important links is to record and verify customer information. Through blockchain technology, the customer's identity information is stored in a separate block, including the customer's education, economic status and other detailed data, and the data belonging to the customer's block in the verification process, as the original material to verify the customer's identity, so as to form a customer's own data block. The bank then records the information of all customers in the same way, and each block is connected by nodes to each other, and finally forms the bank's blockchain customer database. Such a database has high confidentiality and accuracy when storing and verifying customer information. When a customer initiates a loan application, bank users can securely and confidentially access the customer's information and relevant verification on the chain to judge the customer's credit risk level. At the same time, in cooperation with smart contracts, banks can use blockchain technology to build a management system for property. In the process of lending and borrowing transactions, the ownership of property is recorded in the blockchain system, the property is recorded in a digital way, and the customer can realize the change of data and the sale of ownership through simple operations through this system. Through the above-mentioned smart contract, identity verification and property management system, the lending business of Bank A can be greatly simplified, and the potential risks are reduced due to the decentralized model structure, which facilitates the credit risk management of Bank A.

5.2. Introducing Blockchain Technology to Improve the Loan Process

In the preliminary work of Bank A's loan business, the traditional database structure makes the problem of information asymmetry widespread, and the bank and the borrower are in different positions in the loan transaction. At the same time, in the centralized data, the customer's data record is not complete, and it is vulnerable to malicious tampering or concealment. When Bank A establishes a blockchain database, in addition to joining the above-mentioned smart contracts and identity verification and other technologies and links, it can expand the data dimension of customers, and the distributed recording function of blockchain enables it to record more structured and unstructured information of customers. The information data recorded by the customer is not only identity information and financial status, but also multidimensional information such as accounts receivable, bills and collateral information, and the customer's personal business records. After establishing such A complete blockchain database, Bank A can make a more comprehensive and in-depth judgment on the customer's credit risk and repayment ability in the preliminary analysis and preparation work of the loan.

On the basis of obtaining the authorization of the customer, Bank A allows the customer's information to be shared in the database. When the customer initiates the loan application, Bank A directly obtains the customer's data for analysis, avoiding the need to authorize the third-party credit bureaus, which greatly simplifies the loan approval process and reduces the approval cost. For customers, especially small and medium-sized enterprises, on the blockchain data platform established by banks, they can complete mortgage loans that could not be carried out in the past, obtain small loans, and reduce their own financing costs. From another perspective, when banks obtain complete information data and credit rating of customers, they

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can eliminate the problem of asymmetric bank information, so that banks do not have to have the influence of loss avoidance behavior on customers for the credit risk of default losses, and they can measure the relationship between risk and return more reasonably, so that banks can pursue higher returns.

5.3. Use Blockchain Technology to Improve the Risk Management of Credit Card Business

For the risk management of credit card business, Bank A can use blockchain technology to improve the control of capital flow and the management of collection business. First, credit card fund flow control, A bank in the participation of external institutions to establish a blockchain loan after the fund flow monitoring system. In this system, after the customer gets a loan, its money flow will be recorded in the blockchain, the block verifies the authenticity of the information, and adds a time label, so that the data cannot be tampered with. Once the customer's funds appear in other places, the block will immediately capture and record and then attach a time label. In this way, the flow of funds will be traceable, and the bank can clearly grasp the specific flow of the customer's funds, which solves the problem of the bank's difficult management of the flow of funds and lagging information.

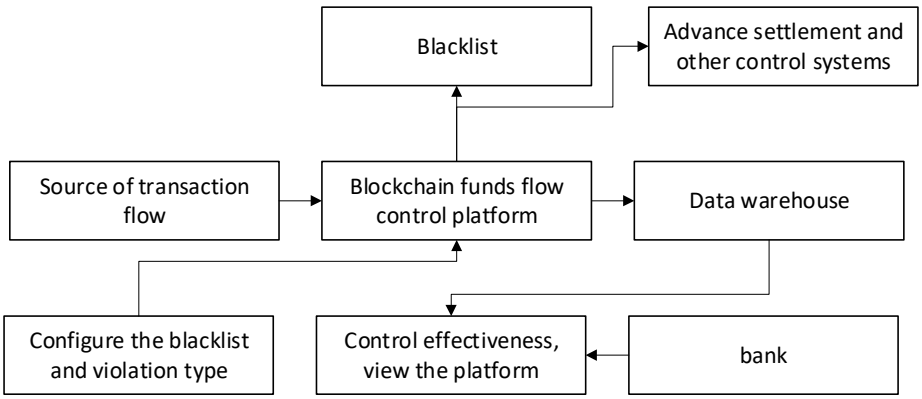

Figure 2. Blockchain fund flow control platform

5.4. Use Blockchain Technology to Improve the Credit Investigation Business of Bank A

Establish A bank's credit application blockchain. At present, the credit information of individuals and enterprises is mostly stored in the credit information center of the People's Bank of China, as well as Internet companies and government departments, and customers do not have control over their own information and data. The credit information database centered on the People's Bank of China lacks liquidity among information. Due to interests and other factors, it is difficult for the official data represented by Internet companies, online lending platforms and government departments to communicate with each other. Therefore, the utilization efficiency of data is very low and its use value cannot be fully brought into play.

At present, the types and structure of credit investigation products provided by emerging credit investigation institutions are relatively simple, and the authenticity and effectiveness are still to be investigated. The credit investigation services provided by these credit investigation agencies are used independently in the internal system. Bank A needs to break down these barriers and find the possibility of introducing these credit bureaus and products into the bank's own system. At the same time, it is also important to note that banks first need to improve the construction and upgrading of their infrastructure, because the local blockchain credit information system needs strong technical equipment support, and banks should increase their investment in it.

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For Bank A, it is necessary to establish its own credit information application blockchain system, and share information with each other on the blockchain system through cooperation with government departments and Internet enterprises. Among them, banks and Internet companies transmit customer information and related data, and credit bureaus process the data and then connect it to the chain. Because the data is encrypted and traceable, it is highly confidential to the customer. With the help of the cloud transmission system of external institutions, the data is transmitted, and the bank obtains the data through the block for analysis and report when handling the credit investigation business.

Bank A needs to set up its own Internet finance team, responsible for the construction of credit application blockchain, and increase investment in research in the field of credit investigation. When collaborating with related institutions, more dimensions of collaborative institutions can be considered to join the chain. For example, we can cooperate with local social and civil organizations to obtain unstructured data information of customers. We can also share information with more government departments, including relevant information exchange with traffic police departments, and collect traffic record data of customers into the chain. Or the customer's shared car use records, book borrowing records and other data are added to the database to form a more complete and multi-dimensional database.

6. Conclusion

Through in-depth analysis of the current situation and existing problems of Bank A in credit risk management, this paper clearly points out its shortcomings in organizational system, credit rating technology, credit risk measurement technology and credit compensation mechanism. In response to these problems, this paper proposes measures to improve credit risk management based on blockchain technology, including the introduction of smart contracts to optimize credit contract management and execution, the use of blockchain technology to improve the loan process to improve transparency and efficiency, and improve the risk management of credit card business to enhance risk identification and control capabilities. And the use of blockchain technology to improve the quality and availability of credit reporting services. The implementation of these measures is expected to significantly improve the level of credit risk management of Bank A and enhance its market competitiveness. Therefore, Bank A should actively explore the application of blockchain technology in credit management, promote the improvement of credit risk management level with technological innovation, and achieve sustainable development.

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