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Evaluation on Accounting and Financial Management Control System Based on Blockchain under the Internet

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Abstract: *The accounting and financial management control system can improve the business understanding of practitioners. Computer vision multimodal learning for human-computer interaction plays a leading role in the design of accounting and financial management control system. In this paper, the financial intelligent management intelligent system is a typical management information system. The creation of this system mainly includes two aspects: application program and large data repository. The main requirements for the establishment of the database are that the data obtained must be complete, safe and true. For the establishment of the program, all functions of the program must be perfect, with the characteristics of simple and convenient use. This paper mainly discussed the management of the financial industry and the intelligent application of finance, a basic construction idea of the design, and mainly designed a large data repository and the improvement of system functions. The creation of the system mainly focuses on the management of the financial incoming and outgoing accounts, relevant information and financial summary reports. Using Visual Basic as the main development system software, and using it as a targeted tool, the developed software has the function of intelligent management of property. In the survey data, there are only 5 financial personnel with bachelor's degrees, accounting for 21.7% of the total number of financial personnel. The successful establishment of the new system in this paper would greatly relieve the pressure on the department, and also eliminate the loss caused by some data errors caused by manual operation.*

Keywords: *Accounting Financial Management Control System, Blockchain Finance, Internet Environment, Human-computer Interaction, Computer Vision*

1. Introduction

Financial personnel can select Excel or Crystal Xcelsius to process data as needed, or combine them organically. Through these two easiest financial intelligent tools, they can realize the visualization and interaction of enterprise data accumulation, so as to improve business understanding and help enterprise managers make timely and correct judgments on business management and development, and realize the role of financial data in providing good services for enterprise decision-making. However, due to the complexity of the business of some enterprises, a large number of complex electronic statements must be made to meet the requirements of decision-makers. The more complex the requirements are, the more complex the formulas would be used, which would lead to errors in the use process. The accounting and financial management control system can solve these problems well.

Because of the superiority of blockchain technology in solving traditional financial problems, the financial industry's investment in financial management control system has increased year by year. Du believed that in traditional supply chain finance, core enterprises with strong competitiveness and scale play an irreplaceable role in managing the information flow, logistics and capital flow of the supply chain [1]. Varma believed that blockchain is a decentralized replication ledger technology based on Bitcoin and other cryptocurrencies, which provides a potentially attractive alternative for organizing modern finance. At present, the financial system depends on some centralized trusted intermediaries [2]. Zhang believed that blockchain technology can help the financial industry automatically and accurately identify customer credit status, restructure the credit system of the financial market, and improve cross-border payment efficiency. At the same time, it also challenges the development of the financial industry. Blockchain technology and its application, status quo and challenges in the financial and

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economic fields have been systematically analyzed [3]. Treleaven believed that the banking and financial services industry has noticed many advantages of blockchain technology. He interviewed global financial blockchain technology experts [4]. Vakhrushina believed that management accounting system is an important tool for financial management information support, which aims to ensure the coordination, interaction and consistency of various management elements to achieve strategic objectives [5]. However, the financial management control system they proposed is not very mature. This paper introduces blockchain technology to optimize it.

Blockchain financial enterprises have entered a growth period of rapid growth. Tetteh used the new institutional sociology to discuss how the institutional pressure Ghana faces affects the government's decision to adopt, implement and use the comprehensive financial management information system to manage public financial resources [6]. The data collected by Nkwoji is from the annual report of 2012-2017, including the annual financial statements; this in turn would lead to better financial accounting performance in terms of profitability [7]. Naranjo Tuesta analyzed carbon management accounting and its impact on financial performance under the scenarios attached to the trading system. The results prove the importance of carbon management accounting control and its impact on financial performance [8]. Ocampo-Salazar used these financial information for decision-making, and finally adopted international standardization and comparability to show how the government modernized the public financial management system [9]. Wang believed that the implementation of the "Internet+" policy has driven the rapid development of Internet finance. On the basis of theoretical research, he analyzed supply chain financing and blockchain technology [10]. However, the blockchain finance they proposed lacks practicality.

The research on financial analysis and control has advantages, that is, when designing the indicator system of financial intelligence, it is necessary to give full play to its advantages and expertise, and design a good intelligent template according to the knowledge of relevant experts and the research results of other countries; with the help of data mining technology and expert knowledge, users are assisted in teaching to help them analyze finance and make decisions; an open financial intelligence platform is established to provide users with dynamic financial intelligence analysis functions at any time; the design shall adopt open distributed component technology, which can conduct efficient and real-time financial analysis and monitor financial changes of enterprises. The proportion of external financing has increased in recent three years, reaching more than 30% in 2019.

2. Accounting and Financial Management of Blockchain under Multi-mode Human-computer Interaction

2.1 Accounting and Financial Management Based on Blockchain

(1) Prepayment financing mode

The prepayment financing mode is that the core enterprise acts as the seller and the small and medium-sized enterprises act as their downstream purchasers. As SMEs do not have sufficient working capital, they would choose to pledge their goods in warehouse receipts to obtain loan support from financial institutions. The specific operation mode is that the downstream purchaser signs a goods procurement contract with the seller's enterprise, and the seller's enterprise provides assistance for the purchaser to borrow money from financial institutions to pay for the purchase of the goods. Financial institutions would review the authenticity of contract transactions, evaluate the operation of core enterprises, investigate the sales of small and medium-sized enterprises, and require core enterprises to repurchase goods and sign corresponding repurchase agreements as a guarantee when the financing enterprises are unable to pay in time. If the buyer wants to pick up the goods, it needs to pay a certain amount of deposit, and withdraw the corresponding amount of goods according to the amount of deposit. After receiving the deposit paid by the enterprise, the financial institution would timely arrange the logistics enterprise to deliver goods. When the deposit paid by SMEs is the same as the price of goods, all goods are delivered to SMEs. After all the goods are distributed, the warehouse receipt pledge contract, repurchase agreement and other materials signed previously shall be terminated at the same time [11-13]. The advance payment financing process of supply chain finance is shown in Figure 1.

(2) Inventory financing mode

This financing method generally occurs when the enterprise has a large amount of goods or a slow turnover, and uses existing goods to cash in. In order to ensure the value of the goods, in the financing

ISSN 2616-5902 Vol. 6, Issue 5: 102-113, DOI: 10.25236/AJBM.2024.060515

involving the core enterprise, the financial institution also needs to issue a commitment. When the financing enterprise cannot make normal payments, the core enterprise would buy back the pledged goods at a certain price. In addition, in order to ensure the safety of goods, financial institutions need to entrust professional logistics enterprises to store and supervise goods and sign custody agreements. The supply chain financial inventory financing process is shown in Figure 2.

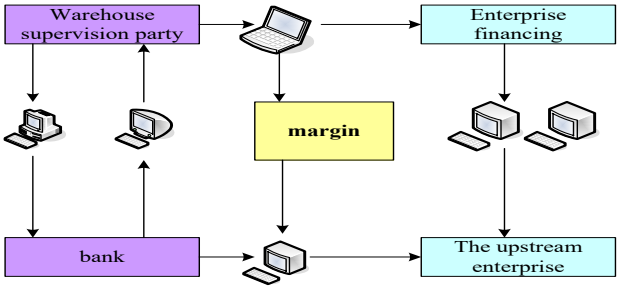


Figure 1: Supply chain finance prepayment financing process

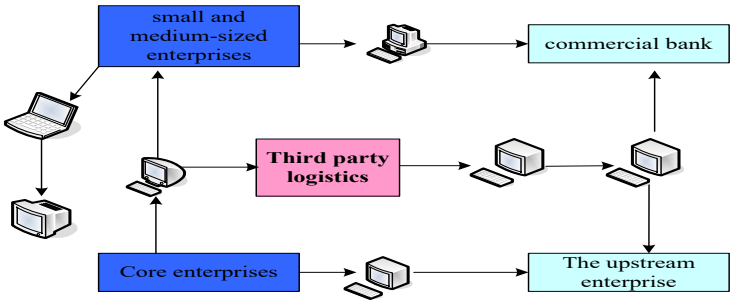


Figure 2: Supply chain financial inventory financing process

(3) Financing mode of accounts receivable

The financing mode of accounts receivable is that after the upstream supplier delivers goods to the core enterprise, the core enterprise cannot settle in time. The supplier forms accounts receivable for the core enterprise, and uses the accounts receivable to pledge financing to financial institutions. The upstream supplier applies to the financial institution for financing by virtue of the accounts payable certificate. After receiving the application, the financial institution confirms the authenticity of the accounts payable to the core enterprise, and requires the core enterprise to guarantee the financing and issue relevant payment certificates. After receiving various supporting materials and reviewing them, financial institutions would make loans to SMEs, and then the funds would reach the accounts of SMEs. After receiving the payment for goods, the core enterprise directly pays the funds that should have been paid to upstream small and medium-sized suppliers to financial institutions. When the financial institution receives the payment for goods, it cancels the pledge contract and completes the pledge financing of accounts receivable [14-15]. The advantage of using blockchain technology to manage financial risks in the supply chain is that suppliers pass on the risks, breaking the situation that only direct trade with core enterprises can obtain loans from financial institutions in the past. The first tier supplier can use the signed accounts payable voucher to finance from financial institutions, or transfer the accounts payable digital voucher to the second tier supplier on the platform. By analogy, digital vouchers can be transferred to N-level suppliers. With the support of blockchain technology, the credit of core enterprises has been transferred to more suppliers on the platform.

Financial intelligence needs to optimize its system architecture and good architecture and improve financial work efficiency θ_r.

$$\theta_r = \frac{|M(Q) - M_r(Q)|}{H} \tag{1}$$

$$\mathrm{G} = \mathrm{r_R(D)} = |M_R(Q)|/|K| \tag{2}$$

The analysis, monitoring and decision-making $\mathrm{S(A, R, K)}$ of financial intelligence is:

$$\mathrm{S(A, R, K)} = \mathrm{r_A(K)} - \mathrm{r_R(K)} \tag{3}$$

Now is the information age. The biggest feature of the information age is that computer intellectuality $\varepsilon_{\mathrm{R}}(\mathrm{M})$ has penetrated into every detail of enterprise management.

ISSN 2616-5902 Vol. 6, Issue 5: 102-113, DOI: 10.25236/AJBM.2024.060515

$$\varepsilon_R(Y) = \frac{\underline{RY}}{\overline{RY}} \tag{4}$$

$$\varepsilon_R(M) = \frac{\sum_{i=1}^{n}(\underline{R}Y)}{\sum_{i=1}^{n}(\overline{R}Y_i)} \tag{5}$$

$$\gamma_{\mathrm{R}}(\mathrm{G}) = \frac{\sum_{\mathrm{i=1}}^{\mathrm{n}}(\overline{\mathrm{G}}\mathrm{Y_i})}{|\mathrm{K}|} \tag{6}$$

Intelligent financial software closely connects the huge financial database and financial data warehouse $\mathrm{K}^{\mathrm{N+1}}$, and provides users with various tools to explore the deep information behind the data . As users, enterprises need these information to provide basis for future decisions. It can be seen that modern enterprises are about to usher in a new "information war", which is the most important task $\mathrm{M_{total}}$ of enterprises at present.

$$K^{N+1} = F(x, K^N) \tag{7}$$

$$M_{total} = \frac{T_F}{M} \tag{8}$$

$$\mathrm{BPK} = \frac{\mathrm{B_{VS}}}{\mathrm{B_{max}}} = \frac{\mathrm{N_M}}{\mathrm{N_{VS}}} \tag{9}$$

The development of enterprise information system has to go through three stages: simple transaction processing stage $\mathrm{B_g}$, complex transaction processing stage $\alpha(\theta)$ and transaction decision-making stage $\mathrm{L_M}$. With the rapid development of network technology, the financial information of enterprises originally in a subordinate position has leapt into the decision-making level.

$$B_g = G_{FS} - G_S \tag{10}$$

$$\alpha(\theta) = \frac{\Delta \mathrm{M}}{\Delta \mathrm{z} * \mathrm{M}} \tag{11}$$

$$L_M = \frac{G}{\mathrm{A}(\lambda)} \tag{12}$$

2.2 Design of Accounting and Financial Management Control System

Based on the use characteristics of the financial analysis management system of the business department, the overall architecture of the financial expense analysis management system adopts the B/S architecture, namely the Browser/Server architecture. Browsers exist on special clients. The application server is the main part of data processing. As an intermediate server, it is responsible for handling all data related matters such as data query, deletion, insertion and function control. The application server is the only channel to connect to the database. The database server is the main part of data storage. As a data management server, it is responsible for classifying and storing all kinds of data. The B/S architecture interface is simple, easy to operate, easy to maintain, and flexible to use. It can be used only by installing a client browser. Therefore, the system is safe and reliable, with strong scalability, and meets the overall technical requirements of the financial system.

(1) System function module design

The design of the system is essentially a process of converting the requirements obtained in the analysis phase into abstract system implementation schemes that meet the cost and quality requirements in the software field, that is, mapping the user's requirements directly to the design results that can be realized by the computer. The function module design is mainly the process of sorting out all the user's requirements, and dispersing the function modules according to the same attribute or business requirements. The main function modules of the financial expense analysis management system are system management, accounting management, analysis management and data verification.

(2) System management module design

The system management module is designed to mainly use the system, some basic information items necessary for the management system and the main functions such as permission control management. Its function nodes mainly include: public module parameter management, budget module parameter management, indicator module parameter management, reimbursement module parameter management, account module parameter management, allocation module parameter management, user module parameter management, log management, batch management, and business vehicle management.

ISSN 2616-5902 Vol. 6, Issue 5: 102-113, DOI: 10.25236/AJBM.2024.060515

(3) Design of accounting management module

The design of the accounting management module is mainly aimed at the entry of business data (including various reimbursement data, document data, indicator data, and budget data), the processing of business processes (submission, submission, approval, export, etc.), and the control of expenses. Its function nodes mainly include the following functions: reporting information collection, reimbursement data processing, budget management, indicator management, query and reply, account management, and template management.

(4) Analysis and management module design

The analysis and management module is designed mainly for basic business information, data mining, and classified statistics based on statistical principles, and finally presented in the form of reports to provide managers with the basis for financial management. Its function points mainly include: input-output analysis, operating expense analysis, operating expense category analysis, budget analysis, indicator analysis, and financial accounting monitoring analysis.

(5) Design of data checking module

The design of the data check module is mainly aimed at the data comparison between the financial expense analysis management system and the production system to check the data and ensure the consistency of the data between the expense system and the production system. Its main functions include the check of reimbursement information, the check of indicator information and the import of production daily records.

The task local rate is expressed by the following formula:

$$\mathrm{DatalocalityRate} = \frac{1}{\mathrm{N}} \tag{13}$$

A total of A_i person has selected this indicator, that is, A_i persons think this indicator is important and more subordinate to this fuzzy set, so the membership degree R_i of this indicator is expressed as:

$$R_i = A_i/N \tag{14}$$

The calculation formula of index correlation coefficient is as follows:

$$\mathrm{R} = \frac{\sum \mathrm{XY} - \frac{\sum \mathrm{X} \sum \mathrm{Y}}{\mathrm{N}}}{\sqrt{\sum \mathrm{X}}} \tag{15}$$

Next, the discrimination of other indicators is analyzed. When an indicator gives a high or low score to any enterprise and there is no significant difference, it is considered that the indicator does not have discrimination, that is, it is impossible to distinguish an enterprise from other enterprises. Discriminatory power is usually reflected by variation coefficient, which is derived from the slope of the indicator's characteristic curve. The larger the value, the stronger the discrimination ability. The specific expression is as follows:

$$\mathrm{V_i} = \frac{\mathrm{S_i}}{\sqrt{\sum \mathrm{X}}} \tag{16}$$

Among them, $\mathrm{S_i}$ is the standard deviation of X_i indicators, and the average value of financial management data is:

$$\overline{\mathrm{X}} = \frac{1}{\mathrm{N}} \sqrt{X_i} \tag{17}$$

The last is the Logistic regression model, which uses the Logistic function as the regression formula:

$$\ln \frac{\mathrm{P}}{1-\mathrm{P}} = \beta_0 + \beta_0 \mathrm{X}_1 + \beta_1 \mathrm{X}_1 + \beta_2 \mathrm{X}_2 + \cdots + \beta_\mathrm{K} \mathrm{X}_\mathrm{K} \tag{18}$$

The expression of logistic regression formula shall be:

$$\ln \frac{\mathrm{P}}{1-\mathrm{P}} = -3.31 + 1.1\mathrm{F}_1 + 1.2\mathrm{F}_2 + 1.3\mathrm{F}_3 + \cdots + \beta_\mathrm{K} \mathrm{F}_\mathrm{K} \tag{19}$$

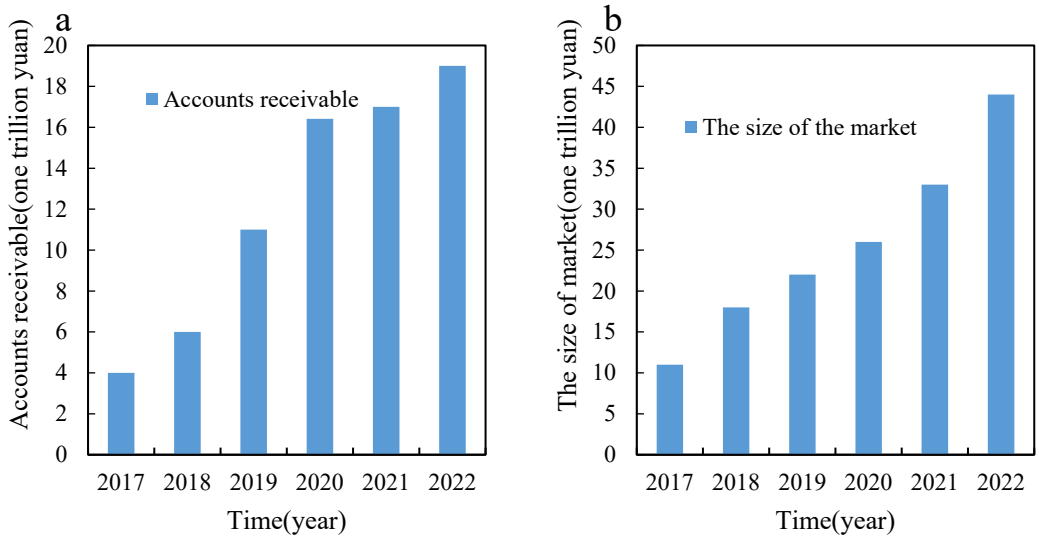
Financial management data can also be expressed as:

$$\mathrm{P} = \frac{1}{1+e^{-3.31+1.1\mathrm{F}_1+1.2\mathrm{F}_2+1.3\mathrm{F}_3+\cdots+\beta_\mathrm{K}\mathrm{F}_\mathrm{K}}} \tag{20}$$

ISSN 2616-5902 Vol. 6, Issue 5: 102-113, DOI: 10.25236/AJBM.2024.060515

3. Evaluation Results of Accounting and Financial Management System

As the scale of the supply chain financial market expands year by year, the industry is considering using new technologies to solve the pain points faced by development. Blockchain technology is more suitable for solving the problems faced by the development of supply chain finance. Therefore, after 2018, blockchain technology would be applied to supply chain finance, which is highly sought after in the industry. Financial institutions expand their business scope and increase their operating income through self creation or through cooperation with technical platforms. In the era of digital economy, financial institutions embrace the tide of science and technology, combine traditional supply chain finance with financial technology, and promote digital transformation and development. In China, only a small part of the market resources of supply chain finance has been tapped and utilized, and the potential for future development of supply chain finance is huge. By the end of 2020, the total accounts receivable of industrial enterprises above designated size in China had reached 16.41 trillion yuan. The continuous rapid growth of the total amount of accounts receivable shows that the pressure of real economy funds is relatively large, which shows that China's current problems of difficult and expensive financing of the real economy are still outstanding and have not been fundamentally solved. In 2019, the market size of China's supply chain finance has reached 22 trillion yuan. According to the prediction of Zhongguancun Internet Finance Research Institute, the scale of the supply chain financial market is expected to reach 40 trillion yuan by 2022. By tapping the current asset resources of the supply chain financial market, and through the empowerment of financial technology, the financing difficulties of real enterprises would be alleviated. The situation of China's supply chain market is shown in Figure 3 (total accounts receivable are shown in Figure 3 (a), and the scale of the supply chain financial market is shown in Figure 3 (b)).



(a) Total accounts receivable *(b) The size of the supply chain financial market*

Figure 3: China's supply chain market

Table 1 shows the main department settings of the enterprise. It can be seen from the table of main departments of BY enterprise that the main departments of BY enterprise include production department, technology research and development department, sales department, management department and financial department. The intellectualization of financial software would certainly become the mainstream trend in the future bank development, and the intelligent financial software would play a more and more critical role in the future enterprise operation and management process. The banking industry would still develop, but its development speed would be very slow. If the bank does not develop according to the social development and continues to adhere to the unchanged operation mode, it would be gradually replaced by various intermediaries with banking business in the society, thus stopping the development and facing a dangerous situation. The principles of creating a new banking model are openness, mobility and financial ecology. This requires the modern banking industry to strive to create a smart bank, which is one of the important strategic measures to highlight the "intelligent" business development characteristics of the banking industry. Its core concept originates from the rapid development of information technology in the world today, and brings great changes to current life and more convenience to production.

ISSN 2616-5902 Vol. 6, Issue 5: 102-113, DOI: 10.25236/AJBM.2024.060515

Table 1: Setting of main departments of the enterprise

Project	Number of enterprise departments
Production Department	3
Technology R&D Department	2
Sales Department	1
Management Department	1
Finance Department	2
Procurement Department	2

The financial department distribution of BY enterprise is shown in Table 2. The accounting department of BY enterprise is set. At present, there are two accounting departments of BY enterprise, which accounts for 50% of all financial departments.

Table 2: Distribution of financial departments of BY enterprises

Project	Number of financial departments
Accounting Department	2
Finance Department	1
Investment Department	1
Treasury Department	0

The cultural level of financial personnel in BY enterprises is mostly college level or below, accounting for more than 70% of all financial personnel in the enterprise; there are only 5 financial personnel with bachelor's degree, accounting for 21.7% of the total number of financial personnel. The cultural level of financial personnel is shown in Table 3.

Table 3: Cultural level of enterprise financial personnel

Project	Number of financial departments
Junior College and below	18
College students'	5
A graduate student	0
Dr.	0

The current financing status of BY enterprises is shown in Table 4. In terms of endogenous financing, about 70% of the funds in 2018 are mainly obtained through endogenous financing. In terms of external financing, the proportion of external financing has increased in recent three years, but the growth is slow, reaching more than 30% in 2019.

Table 4: Current financing status of BY enterprises

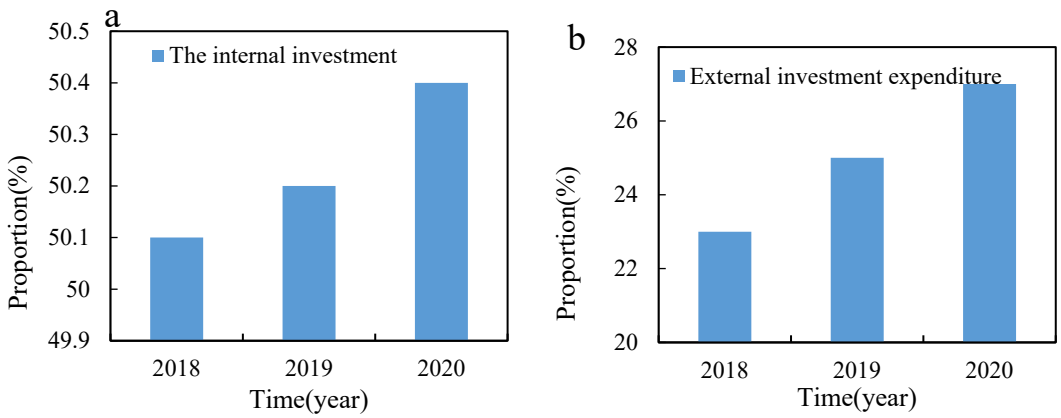
Time(year)	Endogenous financing(%)	Exogenous financing(%)
2018	70.3	29.7
2019	64.6	32
2020	67.6	32.6

After satisfying the internal investment needs, BY enterprises would invest the remaining funds in external investment, mainly in real estate and stocks, of which the stock investment expenditure is greater than the real estate investment expenditure. External and internal investment expenditure is shown in Figure 4 (internal input expenditure is shown in Figure 4 (a), and external investment expenditure is shown in Figure 4 (b)).

It is understood that for a long time, Bank T's understanding of accounting operational risk has been greatly misunderstood. For example, the case information disclosure system is not perfect, and the record of historical data on accounting operational risk is not paid much attention. This phenomenon has caused little quantitative analysis of Bank T's accounting operational risk in the academic field and industry, making it very difficult for Bank T to study and manage operational risk. This paper collects the loss events of Bank T as the research sample, and makes statistics on the current characteristics of accounting operational risk of Bank T, and finally shows the internal control status of accounting operational risk of Bank T through data. According to the statistical analysis of sample data, the characteristics of accounting operational risk of Bank T at this stage are: in terms of loss amount, the largest loss amount is the customer, product and business activity events, and external fraud and internal fraud of Bank T, accounting for 21.9%, 27.6% and 37.8% respectively. However, in terms of the number of events, the largest proportion is customer, product and business activity events, with 7 events accounting for 29%. The second is execution, delivery and process management events, with 6 events, accounting for 25%. The proportions under different risk types are shown in Figure 5 (different

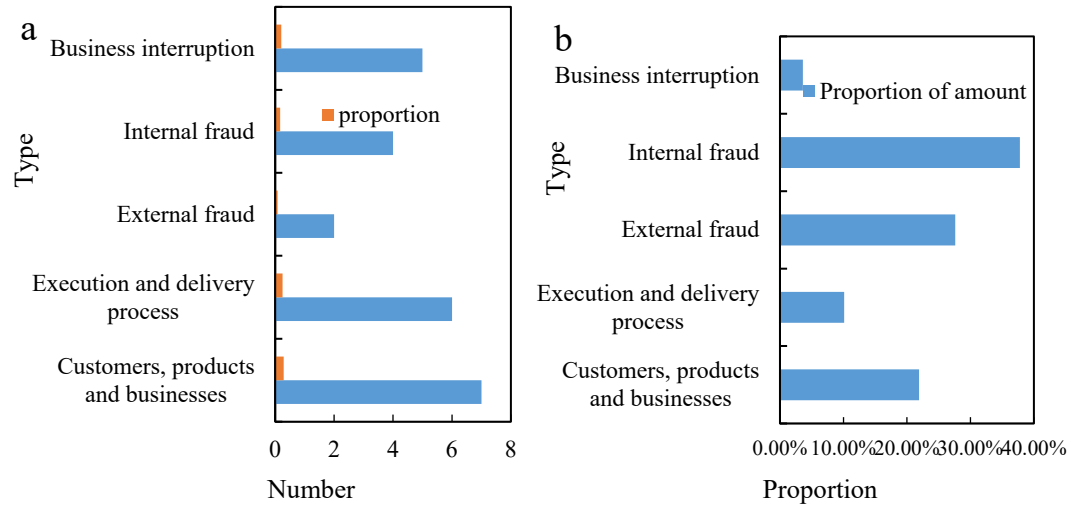
ISSN 2616-5902 Vol. 6, Issue 5: 102-113, DOI: 10.25236/AJBM.2024.060515

pieces are shown in Figure 5 (a), and different amounts are shown in Figure 5 (b)).



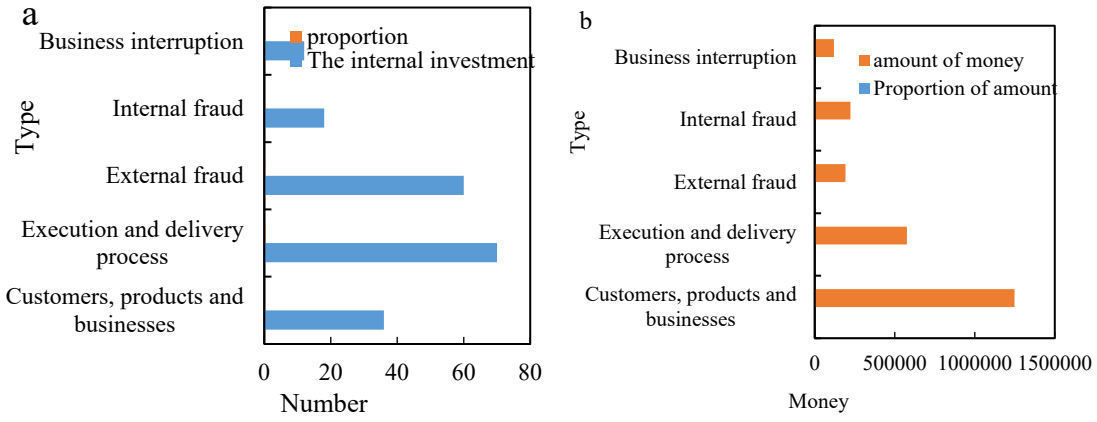
(a) Internal input expenditure *(b) External investment expenditure*

Figure 4: External and internal investment expenditure



(a) Number of pieces *(b) Amount*

Figure 5: Proportion under different risk types



(a) Number of pieces *(b) Amount*

Figure 6: Accounting operational risk of Standard Chartered Bank in China

The current situation of accounting operational risk losses of internationally active banks is mainly analyzed in the following paper based on the current situation of accounting operational risk of Standard Chartered Bank in China. In terms of a single incident, the number of incidents with a loss amount between 1 million yuan and 2 million yuan is the largest. The accounting operational risk of

ISSN 2616-5902 Vol. 6, Issue 5: 102-113, DOI: 10.25236/AJBM.2024.060515

Standard Chartered Bank in China is shown in Figure 6 (different pieces of Standard Chartered Bank in China are shown in Figure 6 (a), and different amounts are shown in Figure 6 (b)).

The user basic information data table contains the following fields: user code, name, gender, part, date of birth, major, school of graduation, education level, telephone number, etc. The basic information data is shown in Table 5.

Table 5: Basic information data

Name of the paragraph	Field Type	Field Length
Identity document(ID)	Int	4
Job ID	Int	4
Department ID	Int	2
Employees ID	Int	2
Employees ID	Nvarchar	30

The researchers compared the output of the network with the actual detection value through the simulation function, and found that the error between them was within the required range. Because there is no certain amount of correlation between the test sample data and the training sample data, this paper uses the test sample data as the test data to study, which can directly reflect the survival of the fittest in the network. When researchers use the sin function to study the analog output of the network, the error between the output value and the actual value is small, which can express the credit rating model to a certain extent. This paper also studies the predictive value and actual value of some test samples. The predictive value and actual value of test samples are shown in Figure 7. This paper can directly see that the error rate of the predicted value and the actual value of the sample data tends to be stable. It can be seen from this that the simulation ability of the asset management evaluation index is very good.

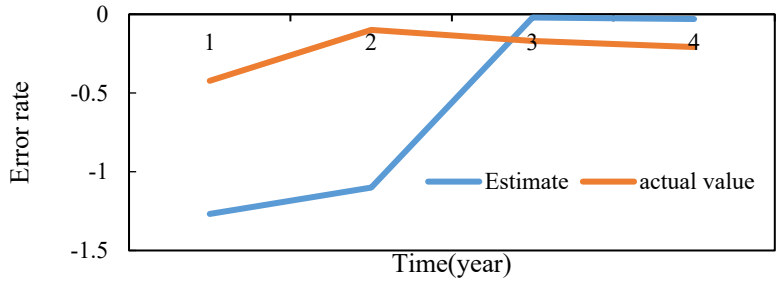


Figure 7: Error value between predicted value and actual value of test sample

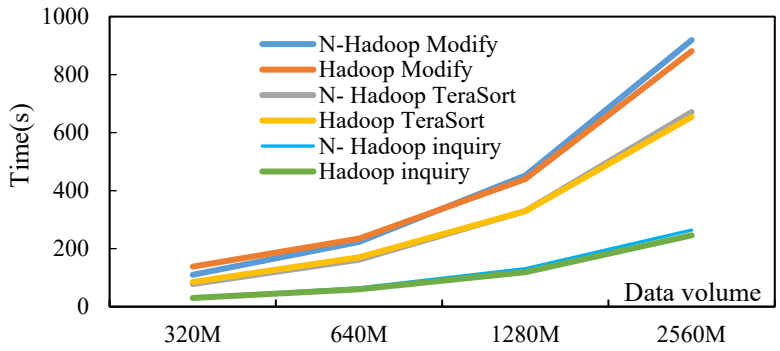


Figure 8: Response time of Hadoop platform operating system for different data volumes

The experimental part of the financial management system of rural mutual fund cooperatives mainly includes data localization, time effect, load balance and other parts. The fair load is analyzed and operated based on the Hadoop platform. In order to reflect fair scheduling, some tasks are run for each machine at the same time, and the amount of data used in the tasks is different. 100 Maps and 10 Reduces are set for each job. In the case of the same task input, the response time relationship of each task is: Modify is greater than Terasort, and Tersort is greater than Inquiry. This is because Terasort's Map and Reducer tasks are relatively simple, the job running speed is faster than the modification, and Inquiry's Reduce tasks are relatively low, so the time is the shortest. Through the analysis of the above figure, it is found that when the amount of data is small, the Hadoop platform is worse than the Hadoop platform. However, with the gradual increase of the amount of data, the effect of the Hadoop platform

ISSN 2616-5902 Vol. 6, Issue 5: 102-113, DOI: 10.25236/AJBM.2024.060515

is gradually obvious. The response time of Hadoop operating system for different data volumes is shown in Figure 8.

In the case of different job equal scheduling strategies, the OBDN scheduling strategy is superior to Fair as the number of reduce slots decreases. With the increase of slot numbers, Fair's advantages gradually become prominent. When the number of reduce slots is 8, the time for Modify is shortened from 449s to 413s, an increase of 8%, and Terasort is reduced from 326s to 291s, an increase of 10.7%. To sum up, the experimental results are satisfactory. The main reason is that the problem of "lagging behind" is effectively solved by balancing the load among nodes and allocating tasks corresponding to the processing performance of Reduce task slots. The job response time for different scheduling algorithms and reduce slot numbers is shown in Figure 9. The participants in the blockchain financial industry include financial institutions, financial technology enterprises and bottom level technology service providers. These entities serve each other and have made their own contributions to promoting the development of China's blockchain financial industry. Financial institutions include small and medium-sized banks, securities companies, insurance institutions, etc. These institutions provide specific scenarios of financial business for financial service products developed by financial technology companies, and help blockchain technology to be implemented as soon as possible. Financial technology companies are technology exporters of blockchain financial business. They develop solutions for various financial scenarios and help financial institutions solve financial problems.

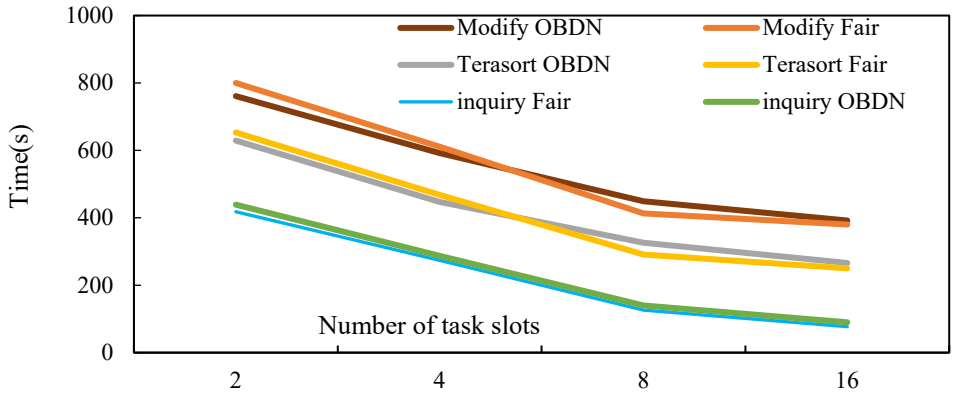


Figure 9: Job response time for different scheduling algorithms and reduce slot numbers

When the number of Map tasks increases from 4 to 10, the overall OBDN scheduling strategy does not change much. For Fair scheduling policy, when the number of task slots is 4, the local rate is slightly lower than that of OBDN. As the number of Reduce task slots increases, the local rate increases. When the number of Reduce task slots is 10, the local rate decreases. The main reason is that when the number of tasks is small, each job would compete for resources, and Fair would be delayed for a certain period of time, which would cause some tasks to miss the opportunity to be allocated locally. However, as the number of tasks increases gradually, Fair scheduling strategy can improve the probability of allocating a certain amount of Map tasks to the local, because the standard deviation of Map is much larger than the Reduce value. When the number of tasks reaches a certain value, the Map itself would have an obvious discrete distribution. At this time, because the rate of switching between Map and task slots increases significantly, the rate of executing tasks would be reduced to a certain extent. Usually, this situation can be solved by extending the matching time, but it would increase the response time of the system. At the same time, it should be pointed out that increasing the response time of the system would increase the load of the system and significantly reduce the efficiency of the operation. Therefore, it is necessary to make the Map value less than a critical value to make itself run at a high speed and achieve a good effect. The local task rate of different Map tasks with different scheduling methods is shown in Figure 10.

As the most widely studied type of supply chain financial risk, supply chain financial credit risk exists not only in SMEs that need financing, but also in other aspects. However, most of the current literature still focuses on the credit risk of small and medium-sized enterprises, while the research on such aspects as core enterprises, third-party logistics enterprises, and the value of collateral is less. Even now, the supply chain finance model of other financial service providers appears from the 1.0 traditional financing model to the 2.0 model, and the latest 3.0 model of supply chain finance where participants extend from direct stakeholders to indirect stakeholders, there is no detailed analysis of other credit risk generators. As an extension of the supply chain, supply chain finance, in which all the

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node enterprises are stakeholders in the supply chain, is designed in this paper. The newly designed supply chain financial credit risk system would be divided into two levels: the main level and the functional level. During multiple user visits, the system module can accurately handle data verification, deletion, addition and other operations, and maintain the page response time within 200 milliseconds. The system performance is shown in Figure 11.

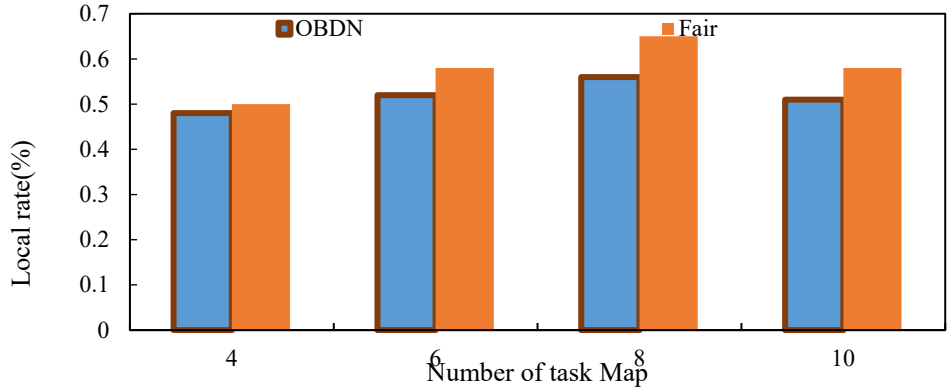

Figure 10: Local task rate of different Map tasks with different scheduling methods

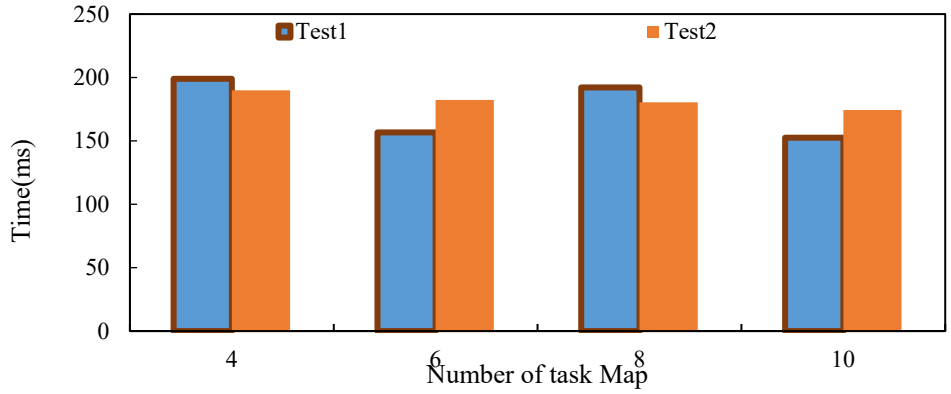

Figure 11: System performance

At present, China's traditional financial industry is in urgent need of digital upgrading. Due to the existence of information barriers, the financing difficulties of China's small and medium-sized enterprises coexist with the problem that banks cannot identify effective lenders, which indicates that the service capacity of China's financial institutions cannot meet the development needs of China's real economy. According to the survey, in recent five years, the loan demand scale of China's SMEs has continued to be higher than the loan issuance scale of China's banking industry. Limited by the financial service capacity of the banking industry, the current financing situation of SMEs is not optimistic. The blockchain financial industry relies on blockchain and big data to break the information barriers between industries and help small and medium-sized enterprises and banks achieve a virtuous circle. It faces a very broad financial market. In the new round of scientific and technological change in the financial industry, blockchain technology plays a very important role. The tamper proof nature of blockchain makes the payment and clearing between bills clearer. It can also rely on this feature to establish an information exchange channel to establish an integrated service system, help enterprises raise funds, and help regulators verify information. It can also combine many enterprise information data on the chain to help enterprises reduce credit risk. In the process of digital upgrading of the infrastructure of China's financial institutions, the importance of blockchain technology would become more obvious. In the future, it is necessary to conduct more in-depth research on the data processing, business processing and management details processing of the financial management platform, and constantly improve the functions and performance indicators of the financial management platform. In a word, the construction and development of the financial data management system have basically met the design requirements and reached the expected design goals. However, due to the limited technical level, there are still some problems in the system, which would be improved in the future.

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4. Conclusions

The results of the design and implementation of the financial data management system show that this system is a general system for financial data information management applicable to all kinds of enterprises. The system runs very stably, and its functions are more comprehensive, and its data processing is very fast, which has certain significance for the development of enterprise information management. The construction of financial data management system is one of the key tasks deployed by Chinese enterprises. It uses modern information technology to promote the financial management of enterprises. This development trend has become inevitable. Under this background, this paper has designed and studied the main process and content of financial data management system construction of financial enterprises, realized the common functions in the enterprise financial management system, and combined with SQL Server database technology to improve the performance of the system as a whole. The complexity of the development of the financial management system is significantly reduced. After the financial management system is improved, it is easier to continue to develop relevant work processes, which would be successfully run in the financial management department. The establishment of financial management system has a certain promotion function for the development of e-government informatization. It can improve the informatization degree and improve the information degree of enterprise financial management. Financial information management would improve the management level of financial information in varying degrees, and can maintain and manage financial information in a timely manner. In terms of technology, business function and system performance of system development, the research on financial management system still needs to be constantly updated and improved.

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