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Research Article

Research on Enterprise Strategy Based on Block Chain Security Sharing Mechanism

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As an emerging electronic information technology, block chain is gradually entering the public's field of vision. The two major advantages of this emerging technology are security and efficient sharing of information. It is known for its data immutability, traceability, distributed ledger, joint maintenance of each node, and cost reduction. At present, most enterprises still use the traditional data ledger recording mode and the way of sharing the data of the alliance enterprises. Therefore, some enterprises still face problems such as large data errors and artificial tampering with the contents of the ledger, which damages the interests of the company and slows down the company development. In terms of information sharing, enterprises adopt traditional methods to transmit and share data, but also face data distortion and slow data sharing efficiency, which is not conducive to the company's strategic deployment. Therefore, the use of block chain technology is introduced. Under the security sharing mechanism of the block chain, we use data screening algorithms such as genetic algorithms and sorting calculation algorithms such as entropy algorithms to process the information on the block chain to get the desired part. In the experimental part of this paper, the traditional method and the method using block chain technology in this paper are used to compare the relevant factors affecting the enterprise strategy. Finally, the strategic tendency of the two enterprises is analyzed according to the intuitive graph obtained by calculation, and the method of this paper is highlighted.

1. Introduction

When the network exchanges information and related transaction records, the block chain can become a general information technology for this series of processes [1]. In the modern information society, if you want two subjects without trust basis to carry out related transactions, only relying on block chain technology, it does not require a third-party authority to testify and relies on the characteristics of no center and unmodifiable information records, becoming a powerful distributed platform for safe sharing [2]. Because the block chain allows decentralized transactions to be recorded and the ledger cannot be modified, its technology has been applied in the fields of finance, credit, and physical manufacturing [3]. In the actual first exploration and application, the literature [4] mentioned that the energy Internet can also be used. Using block chain technology to promote development analyzes it from multiple

perspectives and illustrates the specific ways of block chain technology in multiple contexts. On the enterprise side, under modern technology, when enterprises conduct network cooperation, there are also risks of important information leakage in transactions, credit, and platform resource sharing, and cooperative enterprises maliciously use information to operate other risks. Therefore, it is a good method to integrate block chain technology [5].

Whether the strategic positioning of an enterprise conforms to the development direction of the times, whether it faces the market, whether the strategy plans for the future, etc., are the cornerstones for the survival and development of the enterprise [6]. In the current era, the environment is constantly changing, and relevant managers of enterprises should pay attention to the formulation of corporate strategies, consider factors from multiple perspectives, analyze them in combination with the overall and local aspects of the enterprise, formulate corporate strategic frameworks

according to the main body of the new current environment, and then analyze them. In the current era when enterprises need win-win cooperation and sharing of resources, the first consideration should be block chain technology. The current era based on block chain technology is different from the strategic choice of enterprises without block chain technology. Enterprises use block chain not only because of its security mechanism, but also because block chain can reduce some unnecessary costs [8]. In terms of examples, a foreign securities firm will use block chain technology to integrate into its corporate planning, using this technology to enhance its corporate management and expand the scope of electronic services [9]. Enterprises can build their own private block chain, that is, a private chain [10], and a wider public chain outside it. The private chain and the public chain can partially overlap to achieve the purpose of sharing resource information. On this basis, the enterprise adjusts its strategy according to the current technology, making it more integrated into the development trend of the current era.

2. Block Chain Security Sharing Mechanism and Information Screening

2.1. Block Chain Mechanism. Compared with the public chain that can be seen and participated by anyone, it is not very useful for the information that corporates strategy research needs to obtain. This article mainly introduces the concept mechanism of private chain and alliance chain. Private chain is limited to individuals such as enterprises and institutions. It can better improve the management of internal data, accounting, auditing, etc.; the alliance chain is limited to the use of alliance members, a smaller range of alliance chains is suitable for different enterprises and institutions, the entire chain is jointly maintained by alliance members, the read and write records cannot be tampered with, and some ledger information can be viewed, which is partially decentralized. The characteristics of the block chain are shown in Figure 1.

2.1.1. Private Chain. It is more reasonable, secure, and lower cost for an enterprise or organization to use block chain technology to record relevant information. In terms of enterprises, building a private chain is the first step in the use of block chain technology. The private chain has fewer nodes, and its read and write permissions are limited to effectively controlled enterprises. Therefore, compared with the traditional information recording method, the private chain is more efficient. It is safe, and data information and viewing information are traceable and cannot be modified as shown in Figure 2.

The subtree is a parallel structure, and the subtree corresponding to each node is its branch, which can be solved by adding arrows.

2.1.2. Alliance Chain. After the enterprise has built its own private chain, it can consider whether to join or form an alliance with other enterprise organizations to jointly build the alliance chain [11]. The decentralization of the alliance chain belongs to partial decentralization. By reducing the verification required for node transactions, it increases the efficiency, reduces the time required, and increases the speed of data exchange. Secondly, the alliance chain can use the available resources between various organizations to drive relevant data traded and recorded, thereby reducing costs for individual companies within the alliance. Because the alliance chain is partially decentralized and has fewer distributed nodes, members of the alliance can effectively manage it. Because of the sharing of resources in the alliance chain, information changes require the consent of all people, and data security is still guaranteed, as shown in Figure 3.

The alliance members in the alliance chain remain independent, and exchange and share some data under the block chain technology, and the authoritative regulatory agency conducts the same supervision. The regulatory line can be solved.

2.1.3. Advantages of Block Chain Mechanism. Using Internet big data technology, some data related to platforms or enterprises that use traditional methods and block chain technology are crawled out of it. The following uses a line chart to show the comparison of the security and data sharing capabilities of these two methods.

Combining Figures 4 and 5, it is not difficult to see that the use of block chain technology has certain advantages over traditional data exchange methods. In terms of data security, the data errors of 15 companies or platforms in the traditional method are all serious, up to 35%, while the other 15 companies based on block chain technology have small data errors. All are at 10% and below. In data sharing, the efficiency of enterprise data reception by traditional methods is also not as good as that based on block chain technology. The latter has achieved 98% of the required data sharing within 72 hours, which fully meets the needs of enterprises. The degree of data sharing under the traditional method is analyzed.

By comparison, the block chain is superior to the traditional data exchange mode in terms of data security and sharing, which highlights the necessity of integrating block chain technology into enterprises in the current era. The security sharing mechanism based on block chain is of great significance to corporate strategy.

This article only compares the security and information sharing efficiency of enterprises using and not using block chain technology, which can increase the comparison between the securities and sharing information efficiency of block chain and other technologies, and increase the persuasion of the advantages of block chain.

2.2. Information Filtering. After enterprises use block chain technology, information data can be traded and resource information shared on a more secure data platform than traditional ones. With this secure information sharing mechanism, if you want to obtain relevant data in the chain for sorting and analysis, and then study whether the corporate strategy needs to be adjusted, you need the help of relevant algorithms to screen.
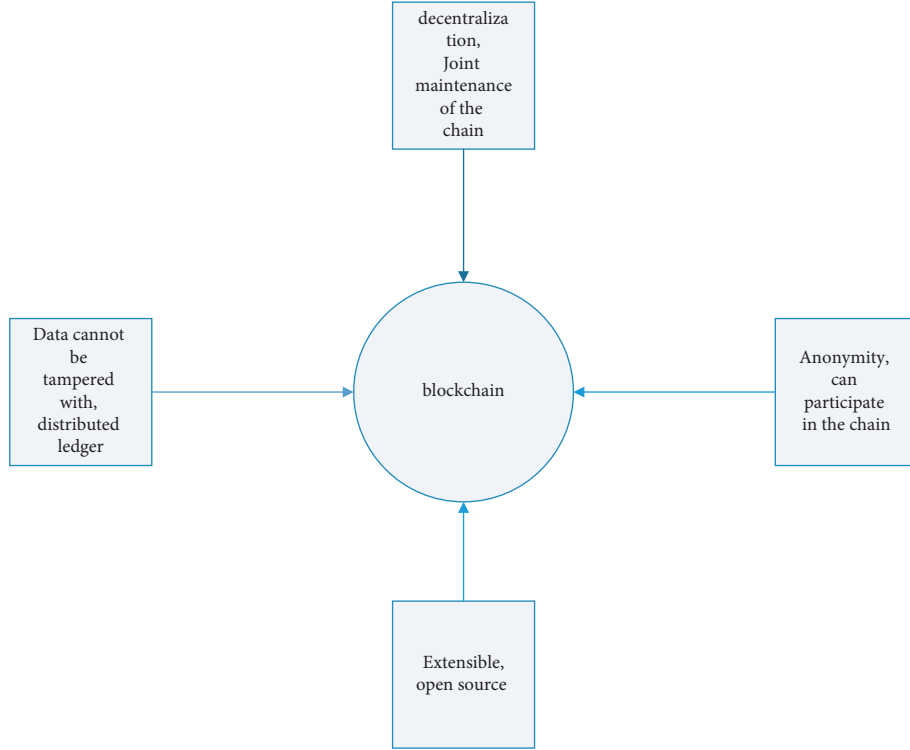
Figure 1: Basic features of block chain.

After using the relevant software to crawl the information on the block chain, you can use the algorithm to screen and analyze the transaction data on the basis of the crawled information to obtain the desired data information.

The algorithm part is divided into two parts, and the other part is data screening. To filter out the desired target data, the second is to sort out the analysis algorithm, automatically combine the factors affecting the enterprise, and then display it through the curve, which can increase the relevant algorithm analysis or compare it with other algorithms to enhance the credibility and observability of the data results.

2.2.1. Genetic Algorithm.

The genetic algorithm [12] is used to screen out some redundant data with poor performance and correlation. Define the dispersion of the data:

$$D(f(x_1), \ldots, f(x_n)). \tag{1}$$

Its data are generally scattered:

$$E(\|x_1 - g\|, \ldots, \|x_n - g\|), \\ G = E(X_1, \ldots, X_N). \tag{2}$$

A two-dimensional function is introduced, and after consuming algorithm resources to filter out the data that does not meet the requirements, the resources for searching data can be supplemented, which is conducive to further searching.

$$f(x_1, x_2) = 100(x_1, x_2^2)^2 + (1 - x_1)^2. \tag{3}$$

Then, perform crossover and Gaussian mutation operations on the obtained data:

$$x_{i,j} = \alpha_j x_{i,j} + (1 - \alpha_j) x_{k,j}, \quad \alpha_j \in (0, 1), \\ x_{i,j} = x_{i,j} + 0.2\xi_{i,j}, \quad \xi_{i,j} \in n(0, 1). \tag{4}$$

Descendants can be obtained by algorithms 4 and 5 $o = \{X_{n+1}, \ldots, X_{2n}\}$.

Filter out the data with low correlation according to the correlation of the required data, and make $\ni$ random adjustments to obtain the remaining data groups:

$$P = \left\{ \begin{array}{c} x, \text{and } \nabla i \neq j, \\ f(x_i) - f(x_j) \geq \ni \end{array} \right\}. \tag{5}$$

The overall scattered screening of the data inserts the pairs of σ and makes it dynamically adjusted immediately to get:

$$P = \left\{ x, \text{and } \nabla i \neq j, f(x_i) - f(x_j) \geq \ni, \|x_i - x_j\| \geq \sigma \right\}. \tag{6}$$

The larger σ and $\ni$, the more accurate the entire algorithm resource searches for the target data, but the corresponding adaptive assimilation ability will be reduced, so it is necessary to appropriately reduce σ and $\ni$:
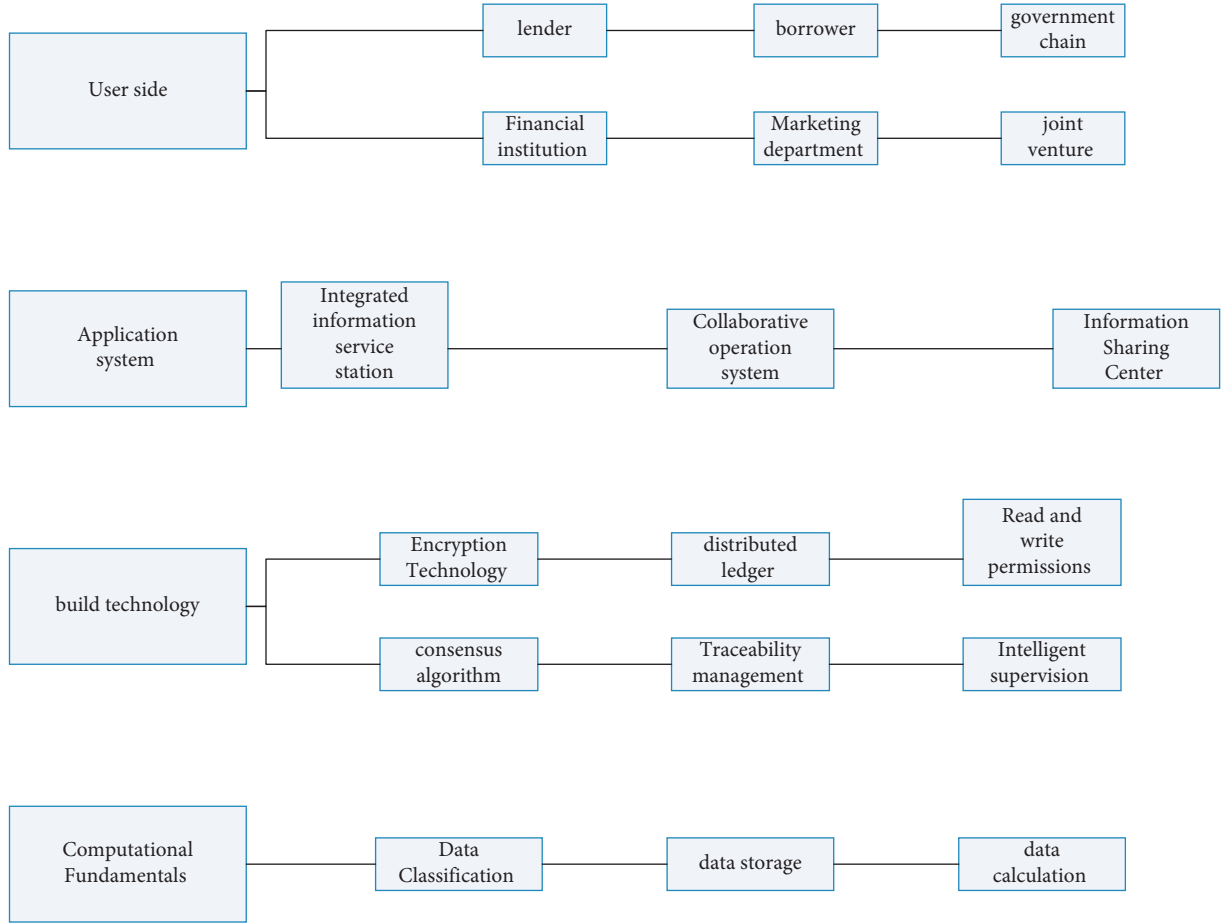
Figure 2: Basic system framework of enterprise private chain.

$$\beth_{k+1} = \lambda_1 \beth_k, \quad 0 < \lambda_1 < 1,$$
$$\sigma_{k+1} = \lambda_2 \sigma_k, \quad 0 < \lambda_2 < 1. \tag{7}$$

Finally, the data crawled from the block chain can be screened according to the genetic algorithm:

$$\begin{cases} \beth_k(1) = \beth_k \\ \beth_k(i+1) = \mu_1 \beth_k(i), \quad i = 1, 2, \dots; \mu_1 > 1, \end{cases}$$
$$\begin{cases} \sigma_k(1) = \sigma_k \\ \sigma_k(i+1) = \mu_2 \sigma_k(i), \quad i = 1, 2, \dots; \mu_2 > 1. \end{cases} \tag{8}$$

2.2.2. Artificial Intelligence Screening Algorithm. When there is a demand for large-scale cloud scheduling data, artificial intelligence algorithms [13] are also required to intelligently adjust the required data and adjust the resources for screening, so that data screening is always in a good state.

The corresponding algorithm resource constraints:

$$\sum_i x(i, j) \le y(j). \tag{9}$$

Approximate time required to filter data is

$$\sum_i t(i) \le T(i). \tag{10}$$

The cost of expending resources to find the required data:

$$u(j) \le \sum u(i, j). \tag{11}$$

Then, introduce the search focus cost, related system time, and data correlation:

$$\text{cost} = \left(y(j) - \sum u(i, j) \right),$$
$$\text{time} = \left(t(i) - \sum L(i, n) x(i, j) - D \right),$$
$$\text{work} = \frac{A_1}{A_2}. \tag{12}$$

Build Lagrangian functions. $L = \Delta 1 \text{time} + \Delta 2 \text{cost} + \Delta 3 \text{work}$.

Combining the above construction functions, the desired target data can be filtered out.

In addition, considering the optimization of the algorithm, it is necessary to add the following conditions:
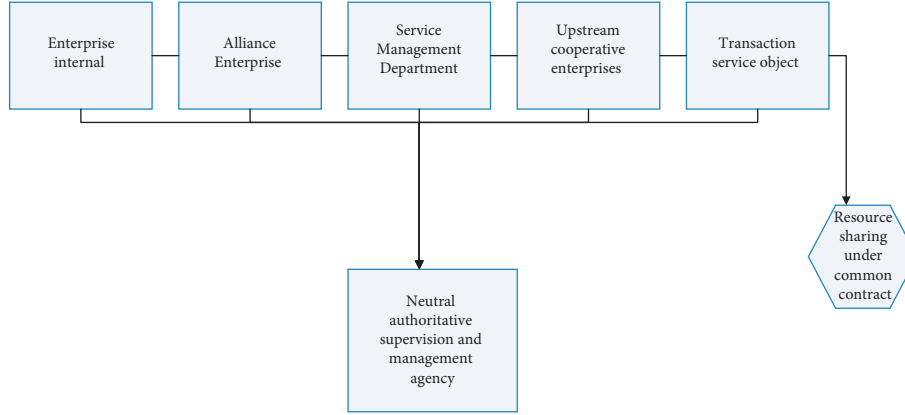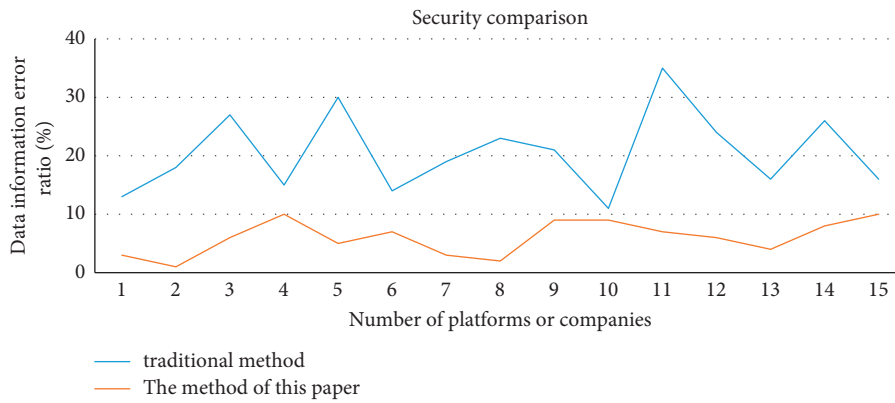
FIGURE 3: Enterprise alliance chain model.

FIGURE 4: Comparison of security between traditional methods and block chain technology in this paper.

$$\max \sum u(i, j)\lg x(i, j),$$
$$\sum_i x(i, j) \le y(j). \tag{13}$$

After combining all the conditions mentioned above, construct the Lagrangian function:

$$l = \Omega_1 \sum u(i, j)\lg x(i, j) + \Omega_2 (y(j) - x(i, j)). \tag{14}$$

After (14), the cost and resource allocation required to filter the data can be known.

3. Integrate Corporate Strategy Improvement Algorithms

The genetic algorithms and artificial intelligence algorithms mentioned above are only analyzed from the screening of simple data. This section will optimize and improve the above algorithms based on the research theme of corporate strategy. Regression function, CAGR or entropy algorithm improves the original screening algorithm, and the information obtained on the block chain is combined with the external big data information. In terms of strategy, enterprises should formulate the basic indicators needed, such as the company's P/E ratio, P/S ratio, dividend rate, operating income, input cost, cash flow, external policy environment, macroeconomic and market environment, etc. After introducing indicators, use algorithms to intelligently screen data, and further combine indicators to predict, calculate, compare, and display internal and external data information of the enterprise. Finally, it can be analyzed whether the corporate strategy needs to be adjusted and optimized according to the data sheet.

3.1. Regression Function and CAGR Analysis. The formula of the regression equation [14] will be shown below, then the required value can be calculated with the descending value, and then the corresponding model can be constructed with it for intuitive display:

$$\beta = \arg\max \beta \sum_{i=1}^{N} \left(y_i - \beta_0 - \sum_{j=1}^{P} x_{ij}\beta_j \right)^2. \tag{15}$$

Or

$$\beta = \arg\max \left\{ \beta \sum_{i=1}^{N} \left(y_i - \beta_0 - \sum_{j=1}^{P} x_{ij}\beta_j \right)^2 + \alpha \sum_{j=1}^{P} |\beta_j| \right\}. \tag{16}$$
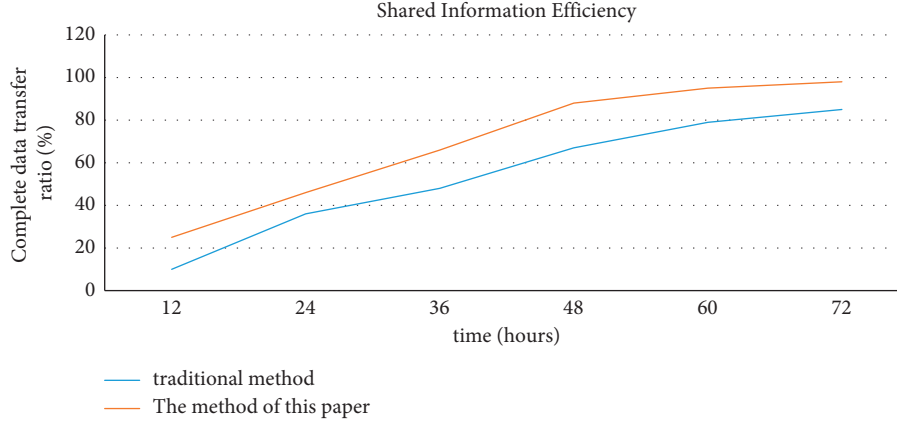
FIGURE 5: Comparison of sharing efficiency between traditional methods and block chain technology in this paper.

Here, the indicators required for enterprise strategic analysis are used as variables of CAGR to measure whether the enterprise has changed in a certain aspect, so as to construct a model analysis:

$$\text{CAGR} = \left(\frac{v_{t_n}}{v_{t_0}} \right)^{1/t_n - t_0} - 1 \approx \left(\frac{v_{t_n} - v_{t_0}}{\left| v_{t_0} \right| + 1} \right)^{1/t_n - t_0} - 1. \quad (17)$$

3.2. Entropy Algorithm. Regression function and CAGR [15] can provide a more intuitive global-related data of the combination of internal and external enterprises. If we want to obtain more specific analysis of related data caused by factors such as internal management and resources of the enterprise, we need to use the entropy value algorithm.

Set up corporate strategy and small-scale management resource data:

$$C_i^s = -\left(\lambda \sum_{j=1}^{n} p_{ij} \ln p_{ij} \right) \min_{1 \le j \le n} (s_{ij}), \quad (18)$$

s_{ij} is the $j (1 \le j \le n)$ for $i (1 \le i \le m)$ state of satisfaction, p_{ij} is standardized, $p_{ij} = t_{ij} / \sum_{i=1}^{n} t_{ij}$.

Then the corporate strategy and the overall scope of a project resource data:

$$C^s = \sqrt{\frac{\sum_{i=1}^{m} (C_i^s)^2}{m}}. \quad (19)$$

A model of data that can ultimately be used to manage corporate strategy and resources across the enterprise:

$$C^T = C^s \cdot C^p = \frac{1}{m} \sqrt{\sum_{i=1}^{m} (C_i^s)^2 \sum_{i=1}^{m} (C_i^p)^2}. \quad (20)$$

4. Experimental Comparison

In order to highlight the comparison of the enterprise strategy based on the block chain security sharing mechanism in this

paper, in the experimental part, this paper will compare the enterprise strategy based on the block chain security sharing mechanism and the enterprise strategy without the block chain security sharing mechanism. The data of these two companies can be sorted and displayed with the above-mentioned algorithms, then the corporate strategy orientation can be constructed with the Python programming language according to the sorted data display diagram, and the strategies related to the specific companies can be analyzed.

4.1. Data Curation

4.1.1. Traditional Method. Assume that the company using the traditional method is company A, the company using the block chain technology in this article is company B, and companies A and B are both technology industry companies that exist on the market. Set the accounting time of one year as the experimental observation time, use their relevant transaction data and other information in the past year, introduce standard parameters in the general environment, make the relevant factors affecting the corporate strategy as the standard, and finally adopt the above-mentioned screening and sorting algorithm. Use the algorithm to draw the factor method forecast curve and the enterprise factor actual value curve. First of all, without the use of block chain technology, the relevant data indicators of company A are as follows in Figures 6–9.

In terms of influencing factors, only four examples are listed. Factors such as enterprise market value analysis and data availability can also be added to increase the influencing factors and highlight the advantages of this method.

4.1.2. The Method of This Paper. The following is a study of the B enterprise based on the block chain. Under the condition of using the block chain technology, the remaining parameters are the same as the A enterprise, and the relevant data of the B enterprise are as follows in Figures 10–13.

Comparing company A and company B, it is not difficult to see that company B using block chain technology is better
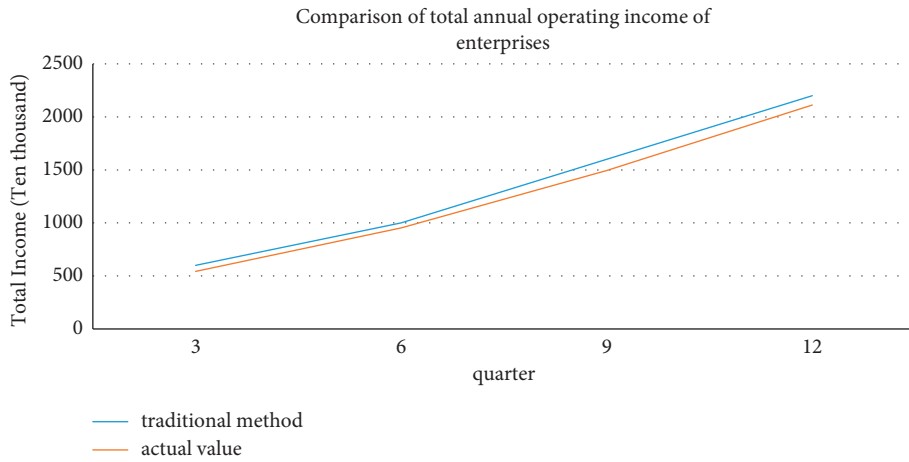
Figure 6: Comparison of the total revenue of enterprises under the traditional method.
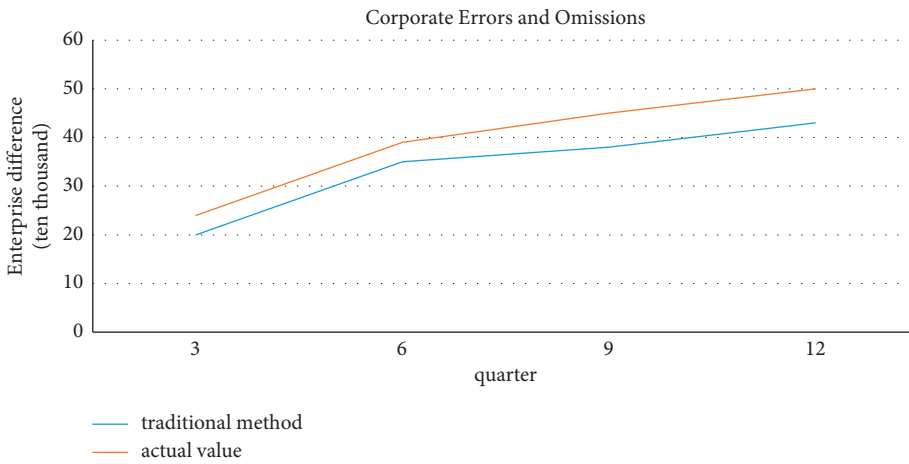

Figure 7: Comparison of errors and omissions of enterprises under the traditional method.
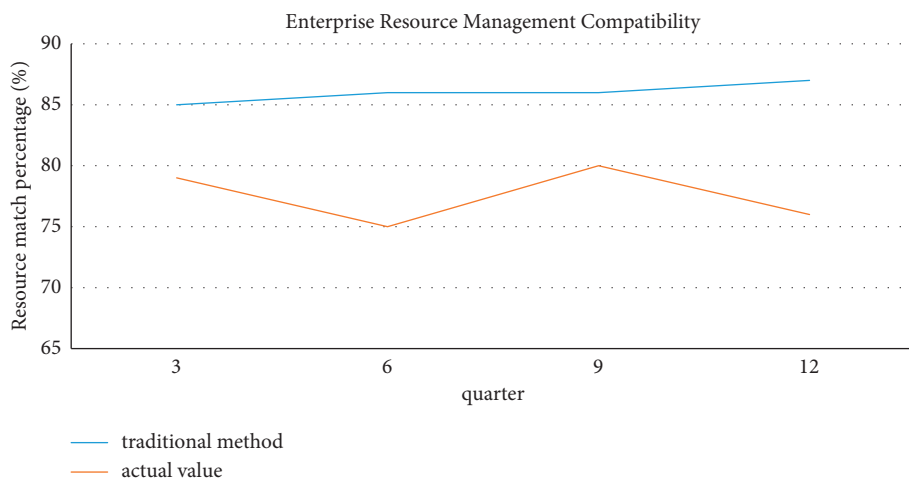

Figure 8: Comparison of enterprise resource matching degree under traditional method.

than company A in approaching algorithmic prediction and completing the cooperation progress of a certain project. In terms of total operating income, the final operating value of company B is higher than that of company A, and the actual operating income of company B is closer to, or even basically coincides with, the total annual operating income of company A in the forecast. In terms of corporate errors and omissions, company B is also better than company A. The
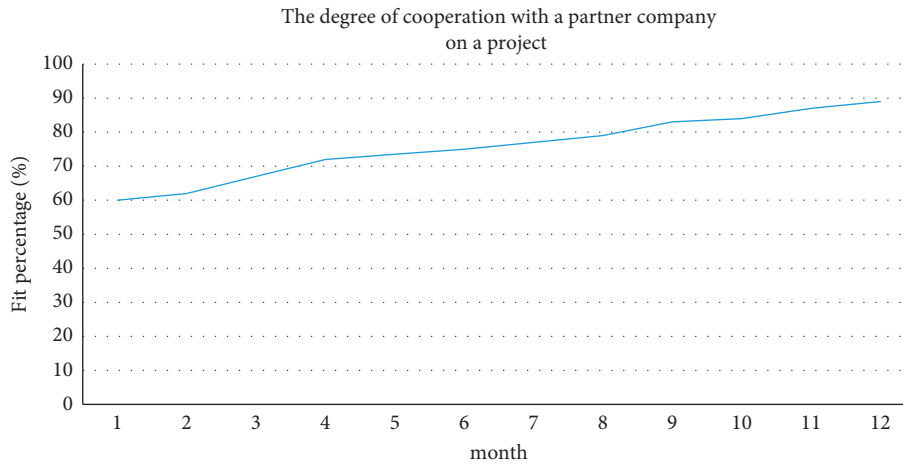
The degree of cooperation with a partner company
on a project

FIGURE 9: The degree of cooperation between enterprises and alliance enterprises under the traditional method.

Comparison of total annual operating income of
enterprises
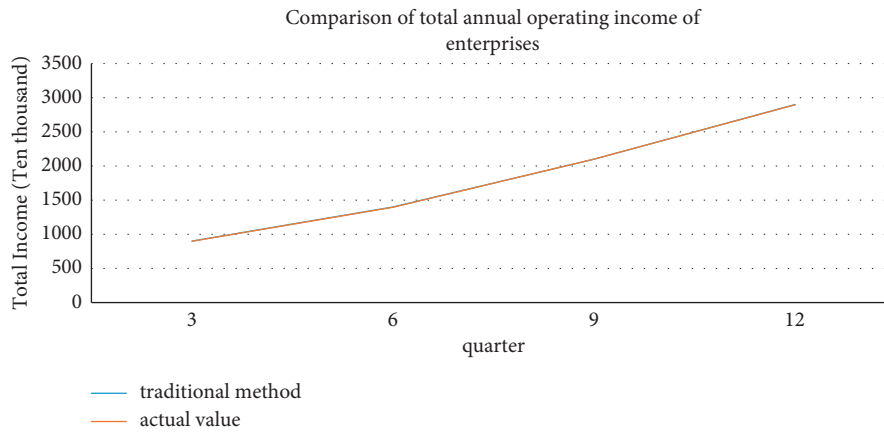

—— traditional method
—— actual value

FIGURE 10: Comparison of the total income of enterprises under the method of this paper.

peak error of company A reaches 500,000 yuan, while the peak error of company B is less than 90,000 yuan. The errors and omissions of company B are even partially lower than the prediction, indicating the advantages of the accuracy and integrity of company B's accounting under the block chain security sharing mechanism. In terms of resource management matching degree, the actual matching degree of company B also converges toward the forecast curve. At the same time, the resource management matching degree of company B is higher than that of company A from March to December, and its matching degree is higher than the prediction in some periods. Curve: in the project cooperation fit between the last two companies and the alliance company, the performance of company B still did not disappoint. When company B cooperates with the alliance company, the lower limit and upper limit of the fit degree are higher than those of company A. The fit curve shows that the monthly growth rate of the fit between company B and alliance company is also higher than that of a company, and at the end, the fit degree of company B is as high as 95%.

From the above data, it can conclude the difference between using block chain technology and not using block chain technology in the data of enterprise strategic elements; the core reason for the gap is the security sharing technology

of block chain. The characteristics of block chain technology have been mentioned above; that is, data cannot be modified and traceable, distributed ledgers jointly maintain the entire node, and private chains are used within the enterprise to reduce the omission of accounts and human malicious manipulation, and improve accounting efficiency and efficiency. Safety: specific to the alliance chain, the information processing efficiency is better, the time is shortened, the cost is reduced, etc., and the information resource sharing and project communication with alliance enterprises have more advantages than the traditional communication mode.

4.2. Business Strategy Comparison. The above is based on the relevant algorithms to sort out the four related factors that affect the corporate strategy. Next, based on these four related factors, use Python modeling to analyze the strategic types of the two companies in AB, and finally use Excel to express the two A and B corporate strategic differences, as shown in Figures 14 and 15.

The enterprise analysis in this paper is mainly explained by the strategic tendency of the enterprise, and the orientation is not clear enough. It can also increase the specific strategy implemented by the enterprise, not just the strategic

Corporate Errors and Omissions

FIGURE 11: Comparison of errors and omissions of enterprises under this method.
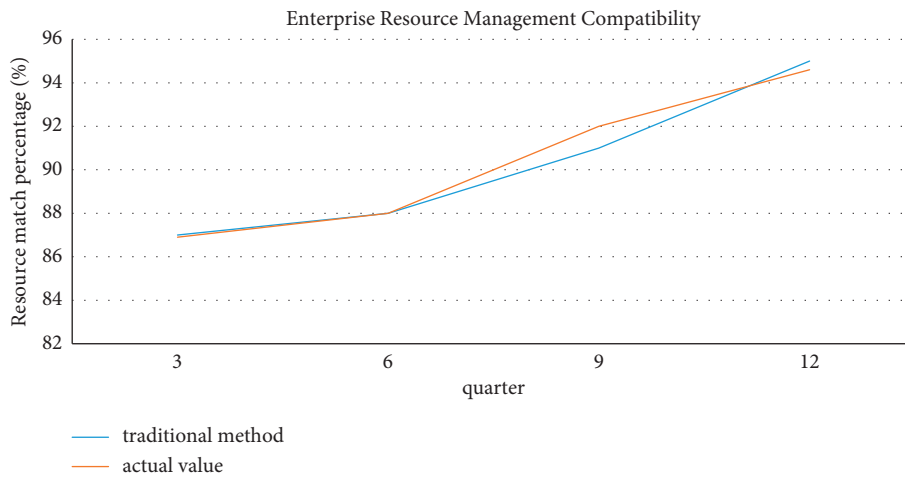
Enterprise Resource Management Compatibility

FIGURE 12: Comparison of enterprise resource matching degree under the method of this paper.

The degree of cooperation with a partner company
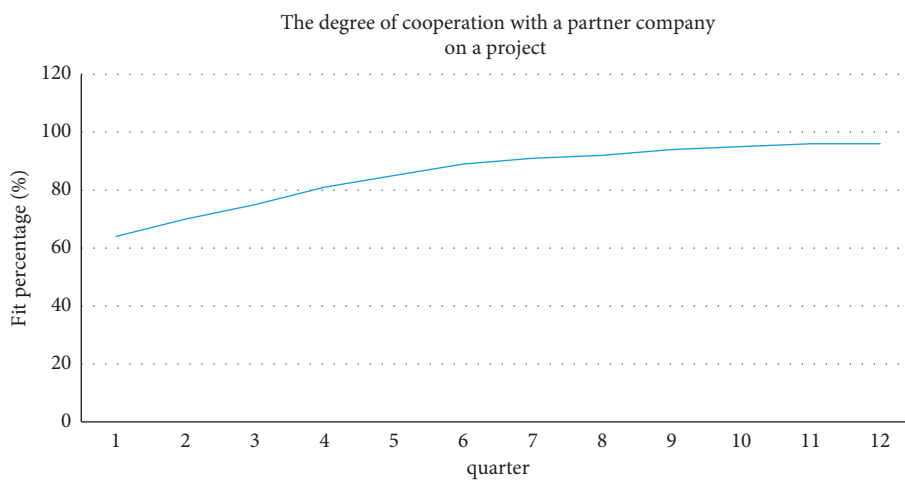on a project

FIGURE 13: The degree of cooperation between enterprises and alliance enterprises under the method of this paper.

suggestion and the effect analysis chart after implementation, so as to enhance the rigor and scientificity of the article.

Enterprise strategy is divided into development strategy, stability strategy, contraction strategy, merger strategy, and differentiation strategy. Development refers to the company's theme strategy based on development and expansion in the future; stability refers to the company's stable development in a period of time, reducing strategic expansion
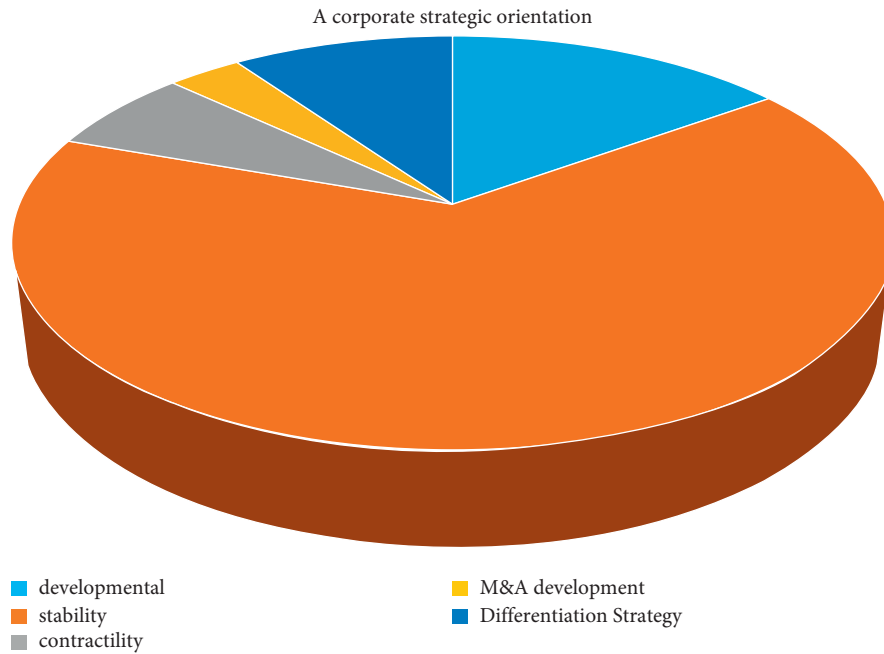
A corporate strategic orientation

developmental

stability

contractility

M&A development

Differentiation Strategy

FIGURE 14: A corporate strategic tendency.

B corporate strategic orientation

developmental

stability

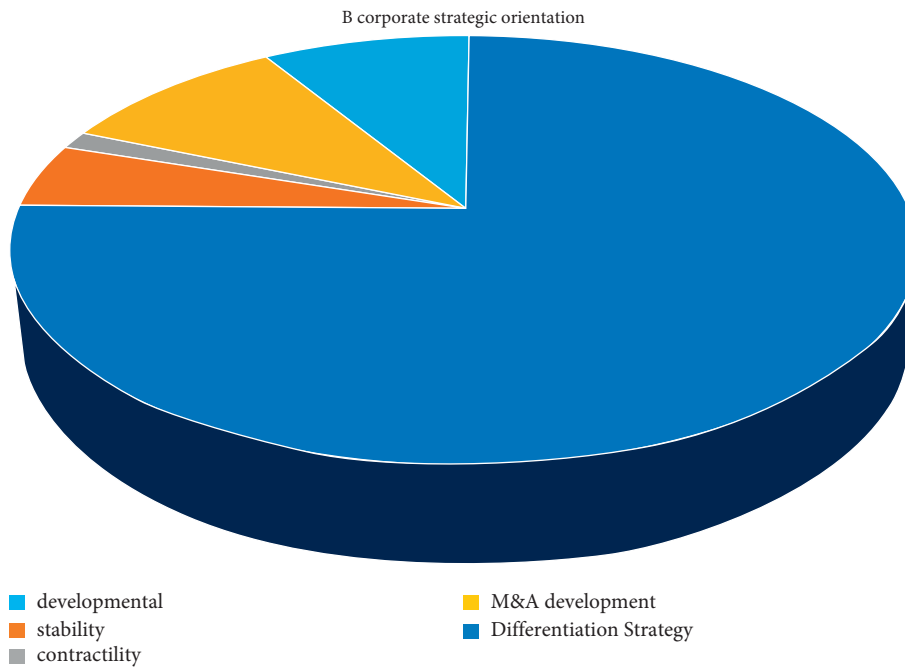contractility

M&A development

Differentiation Strategy

FIGURE 15: B's strategic orientation.

and radical expansion of enterprise scale, on the basis of existing stable progress; shrinkage refers to the strategic contraction measures taken by the enterprise to reduce the scale of the enterprise and economic activities after it suffers a certain economic blow in operation; mergers and acquisitions refer to the merger and acquisition of other enterprises under the support of a certain comprehensive strength A proactive strategy to expand the scale of the enterprise, the scope of business objects, etc.; the differentiation strategy refers to the enterprise facing different consumer groups,

implementing different business strategies, and recommending relevant products and services to the consumers according to the specific consumers. Lay the foundation for the enterprise to implement the diversification strategy, attract more consumers, and enhance the flexibility of the enterprise audience.

Here, it can be clearly seen that company A should formulate a stability strategy. Company A does not use block chain technology, and its internal accounting, auditing, and other related functional departments have certain hidden

dangers, such as missing accounts, bad debts, and loss of related functions and data. In the data exchange between company A and an alliance company, the improvement of its fit is also slow, and its ability to process data with external parties is weak. Therefore, it is concluded that company A is suitable for a period of time to formulate a stable corporate strategy in order to improve internal management capabilities, data processing, and communication capabilities within a period of time.

At the same time, company B can clearly see that it is suitable for developmental strategies. Company B uses block chain technology. Under the mechanism of block chain-based security sharing, company B has strong comprehensive business capabilities, and the data storage within the enterprise is more convenient and secure. The data cannot be tampered with and can be traced to the source. Company B's account management eliminates hidden dangers to the greatest extent and is more conducive to the internal management of the company. When cooperating with alliance enterprises, the degree of fit is high and the growth rate is considerable. When it communicates with external data, its processing performance is better. The analysis shows that company B is suitable for a development strategy in the future. Adopt a more active development strategy, expand the scale of its production and operation, promote enterprises to increase cooperation with other enterprises, and enhance their comprehensive strength.

5. Conclusion

Throughout this article, the concept of block chain is firstly proposed, then the concepts and advantages of private chain and public chain are proposed for this article, and then the related schematic diagrams are drawn. In the algorithm part, four algorithms are introduced. The first part is the data screening algorithm, and the second part is the calculation and analysis algorithm. After the calculation, the curve related to the strategic factors of the enterprise is drawn, and the two companies A and B are used for comparison. The same is true for the strategy part. The analysis shows that the indicators of company B are better than that of company A, and the strategic tendencies of the two companies are also different. Enterprise B based on the block chain security sharing mechanism performs well in internal management and external data information exchange and processing. It is a developmental strategy in future strategic choices, which is more conducive to the expansion and communication of the enterprise itself in the future.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding this work.

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