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Research Article

Application of Engineering Science Model Based on Fuzzy Sets in Enterprise Financial Evaluation Index

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With the continuous development of society and the increasingly fierce competition among enterprises, it is necessary to analyze the production and operation conditions of enterprises in a timely and effective manner. In the context of the development of information technology, many companies analyze financial data, and corporate financial analysis indicators are the analysis of various report data of the company's operations, which can effectively reflect the company's debt repayment, operation, profit, and development capabilities. Enterprises can judge the operation status of the enterprise and make strategic changes in time according to the indicators of enterprise financial analysis. However, due to the large amount of operational data of enterprises and different relationships among different types of data, the analysis of enterprise financial data is not accurate enough when using traditional enterprise financial analysis indicators for analysis. This paper established an engineering scientific model through fuzzy sets and improved the data analysis ability of enterprise financial analysis indicators in enterprises by means of fuzzy analysis. By comparing the enterprise financial analysis indicators of the engineering science model based on fuzzy sets and the traditional enterprise financial analysis indicators, the experimental results showed that the average financial information analysis accuracy of the enterprise financial analysis index based on the engineering science model based on fuzzy sets and the traditional enterprise financial analysis index are 84% and 74%, respectively. Therefore, applying the engineering science model based on fuzzy sets to the corporate financial analysis indicators can effectively improve the accuracy of financial information analysis.

1. Introduction

The financial status of an enterprise is an important part of enterprise management. During the normal operation of the enterprise, a large amount of enterprise operation data would be generated, which records the operation status and economic situation of the enterprise. However, enterprises do not fully apply these operational data, and most of the data are abandoned and eventually disappear. With the continuous development of information technology, people use information data more and more frequently, and various information analysis techniques are applied in various fields. By establishing a data warehouse for enterprise operation data and realizing data transformation, it can obtain analytical indicators for evaluating enterprise finance. Enterprise financial analysis indicators directly reflect the operating status of the enterprise and evaluate the financial status, operating status, and profitability of the enterprise by analyzing the data in the financial statements of the enterprise. The enterprise financial analysis index is a common and effective enterprise evaluation method, which can adjust the operating status of the enterprise in time through the analyzed data to maximize the economic benefits of the enterprise. However, the traditional enterprise financial analysis index analysis is not accurate enough, and the comprehensive analysis ability of various types of data is not good enough. How to improve the accuracy of the analysis of enterprise financial indicators is very important. However, enterprise financial indicators have fuzzy attributes, so it is necessary to build an engineering scientific model through fuzzy sets for analysis. The use of fuzzy sets to build an engineering scientific model can improve the analysis accuracy of enterprise financial analysis indicators, hereby improving the accuracy

of the enterprise's grasp of business data. Therefore, this paper has research significance.

The operation status of the enterprise is hidden in the various report data of the enterprise, and many people have studied the financial analysis indicators of the enterprise. Among them, Abutaber et al. effectively analyzed the annual operation status of the enterprise through data analysis of the annual financial statements of enterprise transactions [1]. Law and Yuen used enterprise financial analysis indicators to study the profitability indicators, financial liabilities, and operating performance of the enterprise to adjust the economic weight of the enterprise in time, so that the capital operation of the enterprise is more timely and effective and enterprises can make correct decisions according to financial information data, thus effectively improving the business performance of enterprises [2]. The research of Muhmad showed that the use of enterprise financial analysis indicators can effectively analyze the financial status and operating results of the enterprise and can effectively find the weak links in the production and operation of the enterprise [3]. Prasetya et al. conducted a detailed analysis of the corporate financial information of Polish companies and made the company clear about its own development status by analyzing its profitability, corporate reputation, and corporate development scale [4]. The analysis of enterprise financial analysis indicators can enable enterprises to fully understand their own operating conditions, but the analysis of data by enterprise financial analysis indicators is not accurate enough.

Fuzzy sets have excellent data analysis capabilities, and many researchers have applied engineering science models based on fuzzy sets to corporate financial analysis indicators. Among them, Sun used fuzzy mathematics to comprehensively analyze the financial data of the enterprise, which improved the analysis of the solvency of the enterprise [5]. Docekalova et al. built an engineering scientific model through fuzzy sets to analyze the financial statement data of the enterprise, which effectively improved the management ability of the enterprise [6]. Ruzakova proposed a fuzzy set modeling method to analyze the financial status of enterprises, which improved the ability to analyze the financial data of enterprises [7]. The research of Muhacheva indicated that the financial status of an enterprise can be effectively analyzed by establishing an engineering mathematical model of fuzzy sets, and the operational capability of an enterprise can be accurately judged through the financial analysis indicators of the enterprise [8]. The engineering mathematical model based on fuzzy sets can be applied to the financial analysis indicators of enterprises to accurately analyze the financial status and operating results of enterprises, but it lacks the comparison with traditional financial analysis indicators of enterprises.

Fuzzy sets are often used to solve multidata analysis problems. They are used to construct engineering scientific models and systematically analyze the financial data of enterprises [9, 10]. The innovation of this paper is as follows: the engineering mathematical model of fuzzy sets is used to study the financial analysis indexes of enterprises, and the analytic hierarchy process (AHP) is used to analyze the factors that affect the financial analysis results of enterprises. Comparing and analyzing the enterprise financial analysis indexes of the engineering science model based on fuzzy sets and traditional enterprise financial analysis indexes, the enterprise financial analysis indexes based on the engineering science model of fuzzy sets can effectively improve the management ability of enterprises.

2. Methods of Business Financial Evaluation

As the main participants in market economic activities and the direct undertaker of social production and circulation, enterprises maintain sustainable operations. The purpose of sustainable management of enterprises is to keep the profit growth of enterprises for a long time, adapt to the changes of the time environment, and make them prosperous for a long time. In the process of production and development, enterprises must generate a series of added values. The development of the entire market economy is closely related to the production and operation of enterprises [11, 12]. For example, enterprises create jobs, pay taxes, invest in public welfare projects, etc. Therefore, in order to assess the comprehensive management level of an enterprise, discover the weak links in its production and operation activities, analyze its causes, and then propose effective improvement measures, it becomes necessary to establish a complete set of comprehensive financial indicators system.

Enterprises would generate a large amount of data in the production process. These data describing the operation status of the enterprise play a key role in the management and decision-making of the enterprise. Corporate financial analysis is to describe the data generated by corporate finance and provides visual financial information for corporate managers. The process of corporate financial analysis is shown in Figure 1.

In Figure 1, the process of enterprise financial analysis is described. Through enterprise financial analysis, enterprise managers can analyze the financial information of the enterprise intuitively, effectively analyze the operating conditions of the enterprise, and make reasonable enterprise management decisions.

2.1. Corporate Financial Evaluation Indicators. The enterprise financial analysis index is the evaluation of the analysis of various financial information of the enterprise. The enterprise financial index is comprehensive, and the enterprise manager can accurately know the business operation status of the enterprise through the enterprise financial analysis index [13, 14]. Corporate financial analysis indicators are generally divided into four parts, namely, corporate debt repayment indicators, corporate operation indicators, corporate profit indicators, and corporate development indicators. The structural model of corporate financial analysis indicators is shown in Figure 2.

In Figure 2, the importance of corporate financial analysis indicators and the main manifestations of corporate financial analysis indicators are described. Enterprise managers can improve the efficiency of enterprise production and development through the analysis of various indicators.

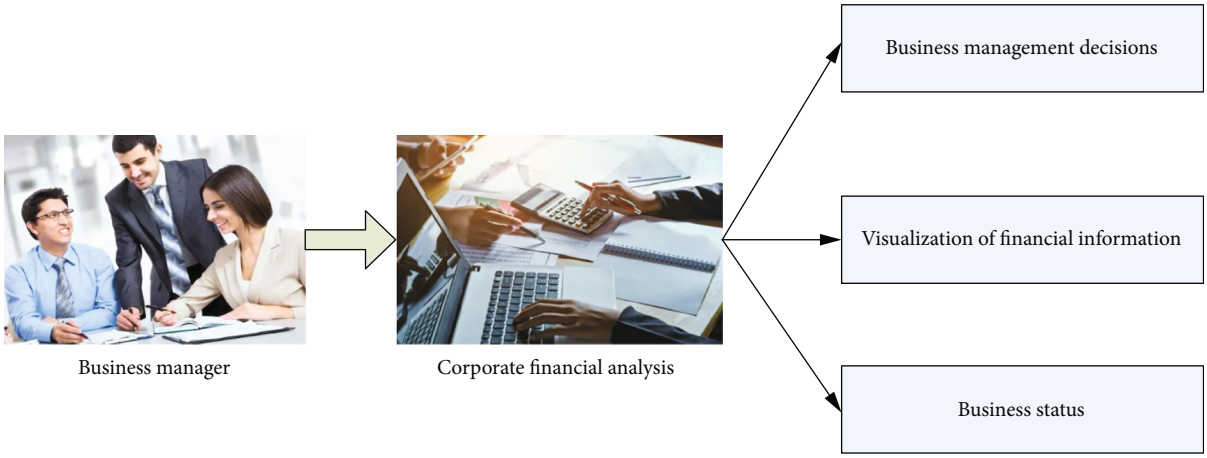

Figure 1: Process diagram of enterprise financial analysis.

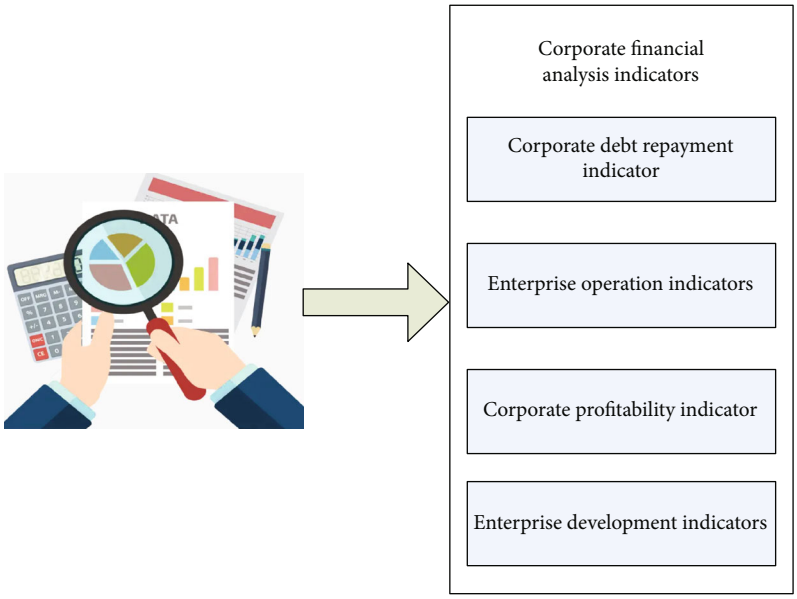

Figure 2: Structure model diagram of corporate financial analysis indicators.

Corporate debt repayment index: corporate debt repayment index analyzes and evaluates a company's solvency. It also provides information on corporate debt levels, the impact of debt management, and the efficiency of long-term and short-term debt [15].

Business operation indicators: business operation indicators show the effectiveness and efficiency of asset use and production. The profitability of a company depends to a large extent on the efficiency of its asset operation, which is also the main guarantee that it can repay its debts on time. The modification of the company's asset structure and the decision-making of creditors benefit from the analysis of this indicator.

Corporate profitability metrics: corporate profitability metrics measure a company's ability to generate profits and realize capital gains. Because it is a relative measure, the profitability of a business cannot be determined solely by its profit margin. Therefore, the profit margin indicator is mainly used to analyze the profitability of a business.

Enterprise development indicators: enterprise development indicators assess the ability of enterprises to transform resources and enhance overall value while pursuing self-sufficiency and sustainable development [16].

Through the accounting and analysis of the financial statement data of the enterprise, the development direction and strategic investment of the enterprise can be comprehensively evaluated, and the operation mode of the enterprise can be adjusted in time through the enterprise financial analysis to maximize the economic benefit of the enterprise.

The company's statement data is incomplete, and the accounting statement data mainly reflects the historical cost of asset acquisition, but cannot reflect the current cost or realizable value, and has no significant reference value for the company's future decision-making. These are the limitations of corporate financial analysis indicators.

Enterprise financial analysis indicators play an important role in analyzing the operating conditions of enterprises.

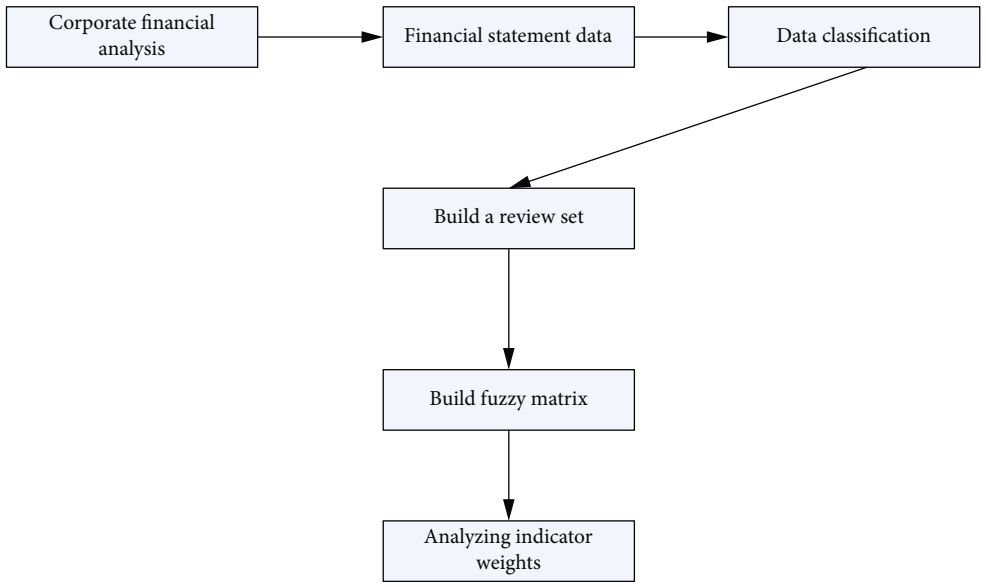

Figure 3: Flow chart of engineering science model based on fuzzy set.

Enterprise managers need to strengthen the use of enterprise financial analysis indicators in order to improve business performance [17].

2.2. Engineering Science Model Based on Fuzzy Sets. Fuzzy set is a collection used to express and analyze fuzzy concepts. The attributes of things are divided into two types. One is concrete and the other is vague [18, 19]. In corporate finance, many financial attributes are ambiguous, and no unilateral attributes can be expressed. For example, corporate operating risks include many aspects.

Engineering science models based on fuzzy sets can effectively analyze model problems and are widely used in financial analysis, scientific computing, and multivariate problems and can effectively and accurately analyze corporate financial analysis indicators [20].

Enterprise financial analysis is affected by many factors. Fuzzy set-based engineering science model realizes quantitative analysis of enterprise financial analysis indicators through fuzzy mathematics. The process of enterprise financial analysis based on the engineering science model of a fuzzy set is shown in Figure 3.

In Figure 3, the process of enterprise financial analysis based on the engineering science model of fuzzy sets is described, including the collection and classification of financial statement data, building a comment set, the construction of a fuzzy matrix, and the weight of analysis indicators. Among them, the data sources of enterprise financial analysis and various financial statements of enterprises are classified into assets, liabilities, cash flows, and other data, and a comment set is constructed to analyze the indicators that affect enterprise financial analysis.

The comment set is a set of judgments on the results of the financial analysis of the enterprise. If there are n comments in the comment set, it can be expressed as

$$A = \{a_1, a_2, \cdots, a_n\}. \tag{1}$$

In Formula (1), a_n represents the nth comment in the comment set.

Assuming that there are m financial analysis indicators of the enterprise, then the financial analysis indicators of the enterprise can be expressed as

$$B = \{b_1, b_2, \cdots, b_m\}. \tag{2}$$

The membership relationship between the enterprise financial analysis indicators and the comments is constructed, and the membership degree of the jth index to the ith comment is k_{ij}, and then the membership relationship of the ith index in the index set to all comments is expressed as

$$k_j = \left(k_{j1}, k_{j2}, \cdots, k_{\mathrm{jn}}\right). \tag{3}$$

Constructing a fuzzy matrix for all indicators, the result is

$$K = \begin{bmatrix} k_1 \\ k_2 \\ \cdots \\ k_m \end{bmatrix} = \begin{bmatrix} k_{11} & k_{12} & \cdots & k_{1n} \\ k_{21} & k_{22} & \cdots & k_{2n} \\ \cdots & \cdots & \cdots & \cdots \\ k_{m1} & k_{m2} & \cdots & k_{mn} \end{bmatrix}. \tag{4}$$

Assuming that the weight of the corporate financial analysis indicator is W, then the weight is expressed as

$$W = \{w_1, w_2, \cdots, w_m\}. \tag{5}$$

The weights of corporate financial analysis indicators should have the following relationships:

$$w_1 + w_2 + \cdots + w_m = 1. \tag{6}$$

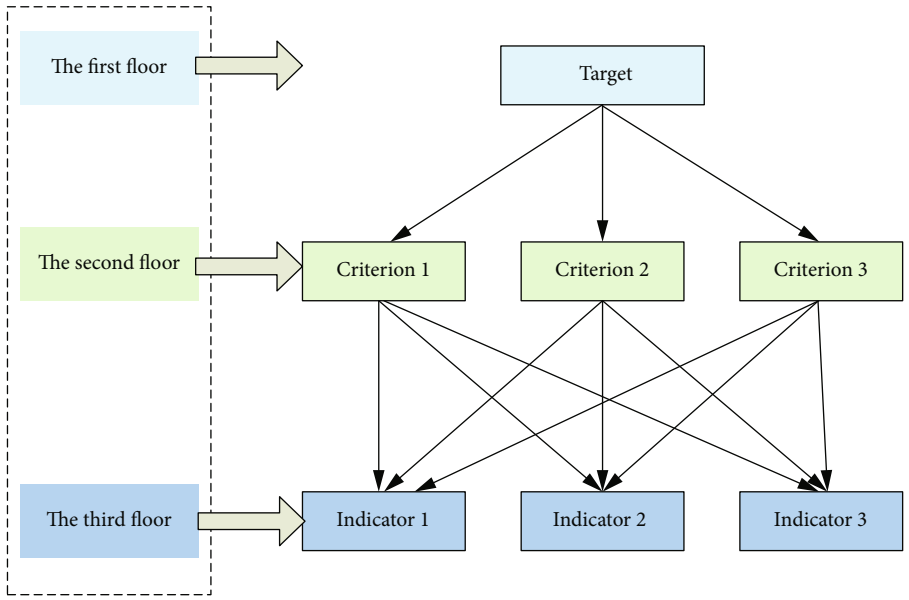

Figure 4: AHP structure diagram.

Using the weights and fuzzy matrix of corporate financial analysis indicators, the impact of each indicator on corporate finance can be analyzed.

$$Y = W \bullet K = (y_1, y_2, \cdots, y_m). \tag{7}$$

In Formula (6), y_m represents the enterprise financial analysis result of the mth index.

Therefore, as long as the weights of the corporate financial analysis indicators are analyzed, the corporate financial analysis results of each indicator can be calculated through the engineering scientific model based on fuzzy sets [21, 22]. In this paper, the analytic hierarchy process is used to analyze the weights of the enterprise financial analysis indicators.

2.3. Analytic Hierarchy Process. The analytic hierarchy process (AHP) is a combination of qualitative and quantitative analysis methods, which can effectively determine the weight of corporate financial analysis indicators. It divides the problem of enterprise financial analysis into three layers for analysis [23]. The structure of AHP is shown in Figure 4.

In Figure 4, the structure of the AHP is described. From top to bottom are the target layer, the criterion layer, and the indicator layer, focusing on the analysis of the weights between the financial analysis indicators of each enterprise.

From the engineering science model based on fuzzy sets, it is concluded that the enterprise financial analysis index is $B = \{b_1, b_2, \cdots, b_m\}$, and the impact of the enterprise financial analysis index on the enterprise financial analysis is $C = \{c_1, c_2, \cdots, c_m\}$. Assuming that the influence of any two indicators is c_r, c_t, of which $r, t \in \{1, 2, \cdots, m\}$, the ratio of the impact of any two indicators on the financial analysis of the enterprise can be expressed as

$$C_{\mathrm{rt}} = \frac{C_r}{C_t}. \tag{8}$$

In Formula (8), C_{rt} represents the ratio of the influence of the rth index to the tth index on the financial analysis of the enterprise.

Conversely, the ratio of the tth index to the rth index's impact on the financial analysis of the enterprise can be expressed as

$$C_{\mathrm{tr}} = \frac{C_t}{C_r}. \tag{9}$$

All the indicators in $B = \{b_1, b_2, \cdots, b_m\}$ are compared to the impact of enterprise financial analysis, and the results of the comparison are formed into a judgment matrix.

$$C = \begin{bmatrix} 1 & c_{12} & \cdots & c_{1m} \\ c_{21} & 1 & \cdots & c_{2m} \\ \vdots & \vdots & \ddots & \vdots \\ c_{m1} & c_{\mathrm{m2}} & \cdots & 1 \end{bmatrix}. \tag{10}$$

In Formula (10), each column of the judgment matrix represents the relative influence of each indicator.

The column vector of the judgment matrix is normalized to obtain

$$\bar{c}_{\mathrm{rt}} = \frac{c_{\mathrm{rt}}}{\sum_{k=1}^{m} c_{\mathrm{kt}}}. \tag{11}$$

The normalized results of the column vectors are added to obtain

$$\bar{E}_r = \sum_{t=1}^{m} \bar{c}_{\mathrm{rt}}. \tag{12}$$

$\bar{E} = [\bar{e}_1, \bar{e}_2, \bar{e}_3, \cdots, \bar{e}_m]^T$ is normalized to get

$$E_r = \frac{\bar{E}}{\sum_{t=1}^{m} \bar{E}_t} \tag{13}$$

By normalizing the judgment matrix, the maximum eigenvalue of the judgment matrix is calculated.

$$s_{\max} = \sum_{r=1}^{m} \frac{(CE)_r}{mE_r}. \tag{14}$$

In Formula (14), $s_{\max}$ represents the largest eigenvalue of the judgment matrix C.

The consistency index of the judgment matrix is obtained.

$$Q = \frac{S_{\max} - m}{m - 1}. \tag{15}$$

Then, the consistency ratio is expressed as

$$U = \frac{Q}{G}. \tag{16}$$

In Formula (16), U is the consistency ratio, and G represents the high-order average consistency index.

When $U < 0.1$, it indicates that the judgment matrix can be used to analyze the index weight, and when $U > 0.1$, it indicates that the judgment matrix is not standard and needs to be modified [24].

Using the judgment matrix, the weight of each indicator is calculated, which is expressed as

$$w_r = \frac{C_{1r} + C_{2r} + \cdots + C_{\mathrm{mr}}}{m}. \tag{17}$$

In Formula (17), M represents the number of financial analysis indicators of the enterprise.

3. Experiments in Corporate Financial Evaluation

3.1. Enterprise Financial Evaluation Indicator Data. The enterprise financial analysis index reflects the operation status of the enterprise. In order to effectively analyze the comprehensive enterprise financial analysis index, this paper would conduct a questionnaire survey on 200 enterprise managers and 300 enterprise financial personnel. It mainly investigates the corporate financial analysis indicators considered by those who are in close contact with corporate financial analysis. The results of the questionnaire survey on corporate financial analysis indicators are shown in Table 1.

In Table 1, a total of 6 types of corporate financial analysis indicators are counted, of which the corporate management capability index accounts for the highest proportion, accounting for 19%, and the company's core competitiveness index accounts for the least proportion of 14%. Since the proportion of the number of people occupied by the abovementioned six indicators is not much different, it is necessary to further analyze the weight of the impact of each indicator on the financial analysis of enterprises.

Table 1: Questionnaire survey result table.

Index	Number of people (person)	Proportion
Corporate solvency	80	16%
Corporate profitability	90	18%
Enterprise management ability	95	19%
Financial information analysis accuracy	80	16%
Enterprise development ability	85	17%
Enterprise's core competitiveness	70	14%

The hierarchical structure is constructed by the analytic hierarchy process, and the weights of the indicators of the second layer are analyzed. The hierarchical structure constructed by the enterprise financial analysis is shown in Table 2.

In Table 2, the hierarchical structure that affects the effect of enterprise financial analysis is analyzed, and the criterion layer is divided into three categories, namely, enterprise operation, enterprise competition, and financial information analysis. Among them, the maximum weight of the standard layer occupied by enterprise operation is 75%, while the weight of the standard layer occupied by enterprise competition is at least 3%.

The judgment matrix is used to analyze the weights of the index layers in Table 2, and the weight analysis results of each index are shown in Table 3.

In Table 3, using the judgment matrix to count the weight results of the six indicators, the weight of the enterprise management ability index is the highest at 26%, followed by the enterprise profitability index, the accuracy index of financial analysis accounts for 22%. Because the weights of the enterprise development capability index and the enterprise's core competitiveness index are too small compared with other indicators, and they are 6% and 3%, respectively, the experiment would not analyze the enterprise development capability index and the enterprise's core competitiveness index.

3.2. Experiment Design of Corporate Financial Evaluation Indicators. In order to analyze the application of the engineering science model based on fuzzy sets in the corporate financial analysis indicators, this paper compares the enterprise financial analysis index based on the engineering science model of fuzzy sets with the traditional enterprise financial analysis index and observes the impact of the two methods of enterprise financial analysis on the operation effect of the enterprise.

Among them, the traditional enterprise financial analysis indicators are still obtained by analyzing various report data, while the enterprise financial analysis index based on the engineering science model of fuzzy set conducts fuzzy

Table 2: Hierarchical structure table of enterprise financial analysis.

Target layer	Criterion layer	Criterion layer weights	Indicator layer
Corporate financial analysis	Business operation	75%	Corporate solvency
			Corporate profitability
			Enterprise management ability
			Enterprise development ability
	Business competition	3%	Enterprise's core competitiveness
	Financial information analysis	22%	Financial information analysis accuracy

Table 3: Weight analysis results of each indicator.

Serial number	Indicator layer	Weights
1	Corporate solvency	20%
2	Corporate profitability	23%
3	Enterprise management ability	26%
4	Enterprise development ability	6%
5	Enterprise's core competitiveness	3%
6	Financial information analysis accuracy	22%

analysis on different types of report data through fuzzy mathematics and other methods and obtains a comprehensive enterprise financial analysis index. In order to make the comparison of the financial analysis indicators of the two companies more obvious, the experiment would be set for 5 months, and the data of the financial analysis indicators of the two companies would be counted once every month. Due to differences in financial analysis indicator data for companies of different sizes, small and large companies would be analyzed separately.

4. Results of Business Financial Evaluation

4.1. Corporate Solvency. Enterprise debt repayment is the periodical repayment of debt. To analyze the influence of two types of enterprise financial indicators on enterprise debt repayment ability, the experiment selected 20 large enterprises and 20 small enterprises as the research objects. Among them, half use traditional enterprise financial analysis indicators to analyze enterprises, and the other half use enterprise financial analysis indicators based on fuzzy sets of engineering science models to analyze enterprises. Figure 5 shows the impact of two corporate financial indicators on corporate solvency.

In Figure 5(a), the impact of two corporate financial indicators on the solvency of small enterprises is described. Among them, the solvency of enterprises under the traditional corporate financial indicators is gradually improving, from 62% in the first month to 68% in the third month. The solvency of the enterprise under the enterprise financial analysis index based on the engineering science model of fuzzy sets is also constantly improving, and the overall solvency of the enterprise is better than that under the traditional enterprise financial index. In Figure 5(b), the impact of two corporate financial indicators on the solvency of large companies is described. The corporate solvency under traditional corporate financial indicators reaches a minimum of 66% in the first month and reaches a maximum of 72% in the third month. The solvency of the enterprise under the enterprise financial analysis index based on the engineering science model of fuzzy sets reaches a minimum of 76% in the first month and a maximum of 84% in the fifth month. Therefore, applying the engineering science model based on fuzzy sets to the financial analysis indicators of enterprises can effectively improve the solvency of enterprises.

4.2. Enterprise Profitability. The profitability of an enterprise is also an important criterion for measuring the operating effect of an enterprise. All the behaviors of an enterprise are aimed at making profits. Comparing the enterprise financial analysis indicators based on the engineering science model of fuzzy sets and traditional enterprise financial analysis indicators, the comparison results of enterprise profitability under the two enterprise financial analysis indicators are shown in Figure 6.

In Figure 6(a), the impact of two corporate financial analysis indicators on the profitability of small enterprises is described, in which the corporate profitability under the traditional corporate financial indicators first decreased and then increased, reaching a minimum of 48% in the fourth month. However, the profitability of the enterprise under the enterprise financial analysis index based on the engineering science model of fuzzy sets is constantly improving, reaching a maximum of 72% in the fifth month. In Figure 6(b), it describes the impact of two corporate financial analysis indicators on the profitability of large enterprises. Among them, the corporate profitability under the traditional corporate financial indicators reached a minimum of 62% in the fourth month and an average of 65.6%. The profitability of the enterprise under the enterprise financial analysis index based on the engineering science model of fuzzy sets is constantly improving, from 70% in the first month to 78% in the fifth month. Therefore, the analysis of enterprise finance through the engineering science model based on fuzzy sets can effectively improve the profitability of the enterprise.

4.3. Enterprise Management Ability. The management capability of an enterprise reflects the relationship between the investment of the enterprise and the production of economic benefits. Through the enterprise financial analysis index based on the engineering science model of fuzzy sets and

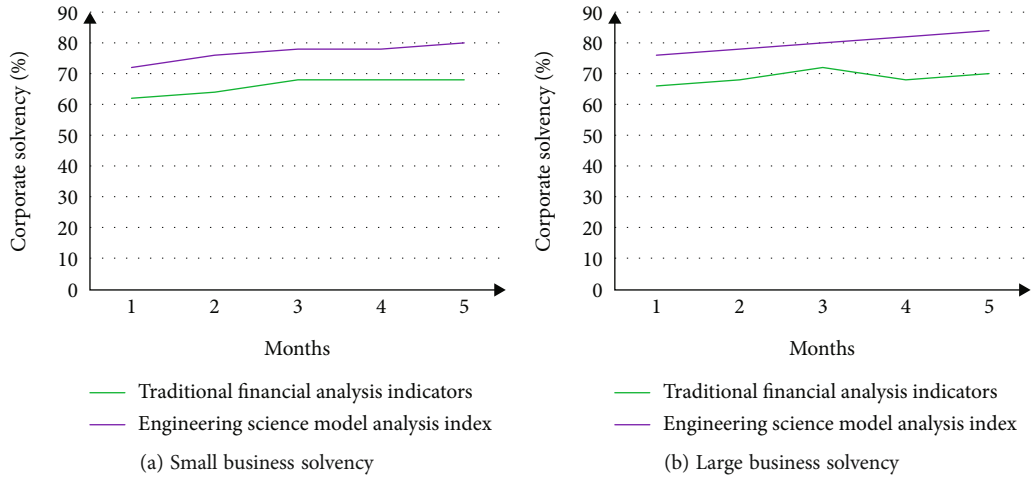

Figure 5: Comparison results of corporate solvency.

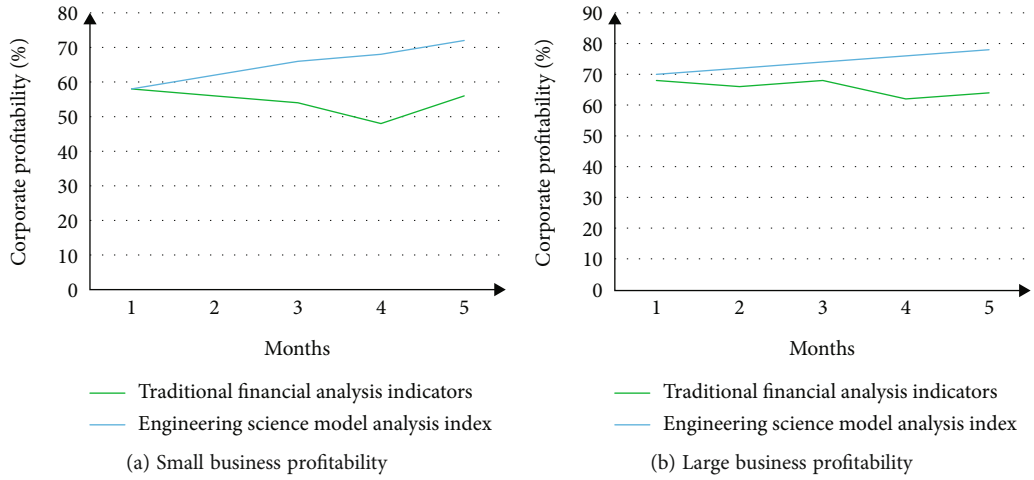

Figure 6: Comparison results of corporate profitability.

the traditional enterprise financial index, the enterprise management ability is compared. Because the enterprise's management ability cannot be reflected in a short time, the comparison period of the two kinds of enterprise financial indicators is set to 5 months. The enterprise management ability under the two enterprise financial analysis indicators is shown in Figure 7.

In Figure 7(a), the impact of the two corporate financial analysis indicators on the management capabilities of small enterprises is described. The corporate management capabilities under the traditional corporate financial analysis indicators reached a maximum of 72% in the fourth month, and the average enterprise management capabilities were 67.6%. The enterprise management ability under the enterprise financial analysis index based on the engineering science model of fuzzy sets was constantly improving, reaching 78% in the fifth month, and the average enterprise management ability was 75.6%. In Figure 7(b), the impact of two corporate financial analysis indicators on the management capacity of large enterprises was described, in which the average enterprise management capacity of traditional enterprise financial analysis indicators was 71.2%, while the average enterprise management capability under the enterprise financial analysis index based on the engineering science model of fuzzy sets was 81.8%. Therefore, the application of the engineering science model based on fuzzy sets in the enterprise financial analysis index can improve the management ability of the enterprise.

4.4. Accuracy of Financial Information Evaluation. Enterprise financial analysis index is to analyze the data of various financial statements of the enterprise and to judge the operation status of the enterprise by analyzing the financial information. Then, the accuracy of the financial information analysis of the enterprise is very important. The accuracy of financial information analysis is compared between the enterprise financial analysis index based on the engineering science model of fuzzy sets and the traditional enterprise financial analysis index. The comparison results of the accuracy of financial information analysis under the two corporate financial analysis indicators are shown in Figure 8.

In Figure 8, the comparison of the accuracy of financial information analysis by two corporate financial analysis indicators is described. The accuracy of financial

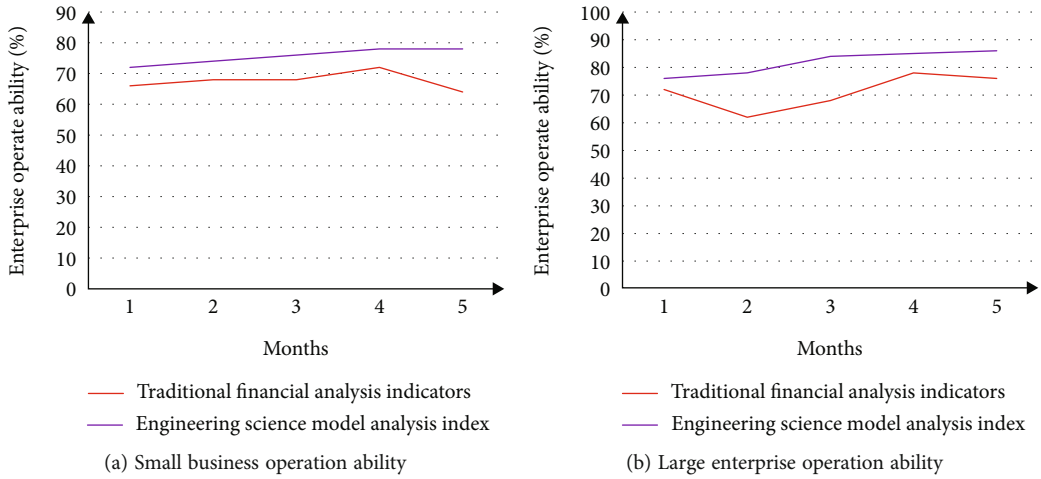

Figure 7: Comparison results of enterprise management capabilities.

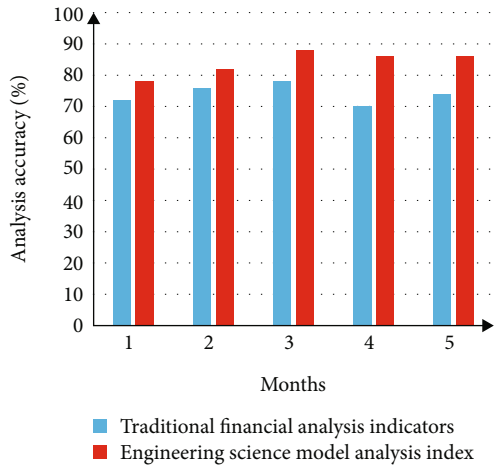

Figure 8: The comparison result of the accuracy of financial information analysis.

information analysis under the traditional corporate financial analysis indicators reached a minimum of 72% in the first month and reached a maximum of 78% in the 3rd month, and the average financial information analysis accuracy was 74%. The accuracy of financial information analysis under the enterprise financial analysis index based on the engineering science model of fuzzy sets reached a maximum of 88% in the third month, and the average financial information analysis accuracy was 84%. Therefore, the enterprise financial analysis index based on the engineering science model of fuzzy sets can more accurately analyze the financial information.

5. Conclusions

The living environment of enterprises is getting worse and worse, and enterprises must develop according to the correct strategy so as not to be eliminated. However, financial analysis is to provide enterprises with data-based guidance programs to reflect the operation and development capabilities of enterprises. This paper used the AHP to analyze the main influencing factors that affect the financial analysis effect of enterprises, which are the solvency of the enterprise, the profitability of the enterprise, the management ability of the enterprise, and the accuracy of financial information analysis. The engineering science model based on fuzzy sets was used to effectively analyze various financial data and apply it to the enterprise financial analysis index and compare it with the traditional enterprise financial analysis index. The results showed that the application of the engineering scientific model with fuzzy nature to the financial analysis index of the enterprise can effectively improve the debt repayment, profitability, and management ability of the enterprise. Analyzing the financial status of an enterprise is very important to the development of the enterprise. The operation status of the enterprise was evaluated through the financial analysis indicators of the enterprise, and a strategic policy was provided for the development of the enterprise. However, when comparing the enterprise financial analysis index based on the engineering science model based on fuzzy sets and the traditional enterprise financial analysis index, this paper only analyzed the two types of objects: small enterprises and large enterprises, and did not compare and analyze medium-sized enterprises. The proportion of medium-sized enterprises is very large, and small and medium-sized enterprises occupy a large economic market, so it is very important to analyze the financial analysis indicators of medium-sized enterprises. Therefore, it would be the direction of future research to expand the comparison of two kinds of enterprise financial analysis indicators in medium-sized enterprises.

Data Availability

The data can be obtained by contacting the author within reasonable requirements.

Conflicts of Interest

This paper has no potential competing interests.

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