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Retraction

Retracted: Study on Employee Performance Evaluation Based on Adaptive Feature Selection Fuzzy Algorithm

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Y. Qian and J. Yin, "Study on Employee Performance Evaluation Based on Adaptive Feature Selection Fuzzy Algorithm," *Mobile Information Systems*, vol. 2022, Article ID 6985508, 13 pages, 2022.

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Research Article

Study on Employee Performance Evaluation Based on Adaptive Feature Selection Fuzzy Algorithm

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In our study, in terms of performance evaluation methods, the performance evaluation algorithm based on genetic algorithm and fuzzy comprehensive performance evaluation algorithm is introduced, their advantages and disadvantages are compared and analyzed, and the design idea of fuzzy performance evaluation algorithm based on compound elements is proposed. It can be divided into seven steps: first, clarify the evaluation purpose and object; second, select the optimal evaluation mode and method; third, compile the evaluation index system; fourth, it is to collect information extensively; fifth, the evaluation adopts a variety of methods, multiple angles, and multiple sides to collect materials so that the conclusion of the evaluation has sufficient factual basis; the sixth is to process the information and make a comprehensive evaluation; the seventh is to analyze the results and write an evaluation report. Based on the existing algorithms, the fuzzy performance evaluation algorithm based on compound elements is studied, and the detailed design of the algorithm is presented. Through the comparison and analysis of the performance evaluation algorithm based on compound elements and the performance evaluation algorithm of specific elements, the superiority of the performance evaluation algorithm based on compound elements is experimentally verified by comparing the operation time and classification accuracy. The performance evaluation system based on the performance evaluation algorithm designed in this study, combined with the official business of the performance evaluation system, modularizes the administrative management activities of the enterprise, digitizes the electronic office information, and conducts in-depth exploration of the unstructured natural language. A real-time performance evaluation system based on the arrangement of corporate administrative activities has been established. By designing and implementing a performance-assisted analysis system based on text content analysis, which is suitable for performance evaluation systems, it solves the imperfect problem of performance evaluation based on electronic enterprise administrative management.

1. Introduction

In the transition period from demographic dividend to talent dividend, the performance management of Chinese enterprises at this stage is particularly important [1]. It is of great significance to the company's prospects and the ability development of employees, so improving performance management means improving the core competitiveness of the company and employees themselves [2]. In most Chinese enterprises, performance management has been using the most traditional performance management method. However, with the advent of the market economy, more and more state-owned enterprises have found that the traditional performance appraisal methods can no longer meet the needs of the survival and development of enterprises in the process of using them in recent years [3]. Therefore, some enterprises have begun to seek a more scientific and reasonable performance appraisal system that is more meaningful to the development of the enterprise, and the changes in state-owned enterprises are particularly obvious.

At present, the more popular methods are KPI (Key Performance Indicator), forced distribution method, pairwise comparison method, balanced scorecard, 360-degree evaluation method, and so on [4]. However, due to the

influence of China's national conditions, this method originated in the United Kingdom and will always encounter some small problems in the implementation process in China [5]. In the current application of KPIs, many enterprises do not follow the above points to determine indicators, and even some indicators are formulated very arbitrarily, which is one of the common drawbacks of KPI application in Chinese enterprises [6]. When the KPI indicators are not specified scientifically and perfectly, the role of the KPI will be greatly reduced, thus forming a certain negative effect on the strategic management of the enterprise [7]. There is no further decomposition of performance goals to the basic management and operating personnel of the enterprise. KPIs fail to provide a complete set of indicators framework systems with specific guiding significance for operations.

Schain et al. believed that in the process of modern social development, information technology has become one of the indispensable and important means, and is widely used in all aspects of production and life [2]. However, with the advancement of reform, many state-owned enterprises have also begun to change their performance management models [8]. Their performance management is abandoning the original assessment method and changing to a more scientific and reasonable assessment method. For example, goal-oriented KPIs have become analytical performance management [9]. The main means and basis of indicators. This not only makes the company's strategic goals and employees more closely linked but also can make the staff's behavioral standards to follow. However, there are still some difficulties in the progress of the new performance management module of many companies, for example, there are many problems in the implementation of KPI [10].

The public welfare nature of non-profit organizations has aroused the necessary attention of society to their business practices. The performance level of non-profit organizations has become the target of the government, enterprises, and the public. Many scholars have also begun to study the performance evaluation of non-profit organizations [11]. The performance evaluation of non-profit organizations is an emerging topic. Compared with the performance evaluation of enterprises, the performance evaluation of non-profit organizations has the characteristics of the particularity, complexity, diversity, openness, and public welfare of the evaluation objects [12]. The performance evaluation has brought problems such as subjective one-sidedness of evaluation indicators and difficult quantification of evaluation indicators. Since the fields and industries involved in non-profit organizations are very wide, and there are certain differences between them, in order to fully explain the performance evaluation of non-profit organizations, the author selects large public enterprises as the research object [13]. According to the current situation of large enterprises in my country, follow the principle of purpose, the principle of comprehensiveness and simplicity, the principle of scientificity, the principle of measurability, and the principle of representativeness [14].

Most of the existing fuzzy clustering algorithms are based on the fuzzy comprehensive evaluation algorithm of specific elements [15]. The main problems of such fuzzy performance evaluation algorithms are: employee performance evaluation is a multi-element, multi-level evaluation system, and the fuzzy comprehensive evaluation algorithm of specific elements lacks the responsibility for the overall study of performance evaluation, and the algorithm lacks hierarchy, so the above two types of algorithms are not suitable for data mining of complex employee performance evaluation systems [16]. Enterprise engineering project management is a complex nonlinear system operation process, and its performance evaluation has the characteristics of multi-objective, multi-index, and multi-stage, among which progress, cost, quality, and safety are the key indicators of evaluation [17]. The key to performance evaluation is to approximately restore the original system by establishing a nonlinear mapping, and the nonlinear mapping is the algorithm model to be constructed [18]. The neural network is a highly nonlinear dynamic system, and its strong nonlinear fitting ability can well find nonlinear functions to effectively approximate the mapping relationship of the attractor trajectory state in the embedded space, making it useful in performance evaluation [19].

The so-called fuzzy comprehensive evaluation algorithm refers to a systematic and comprehensive evaluation of the evaluation factors of all the intervention objects at the same level so that a complete process can be regarded as the end of an evaluation [20]. Specifically, a fuzzy comprehensive evaluation is based on fuzzy mathematics, applying the principle of fuzzy relationship synthesis, quantifying some factors with unclear boundaries and difficult to quantify, and comprehensively evaluating the membership level of the evaluated object from multiple factors [21]. First, determine the factor (indicator) set evaluation (level) set of the object to be evaluated; then determine the weights of each factor and their membership degree vectors respectively, and obtain the fuzzy evaluation matrix; finally, the fuzzy evaluation matrix and the weight vector of the factors are subjected to fuzzy operations and combined [22]. Perform normalization to get fuzzy comprehensive evaluation results. Its characteristic is that the evaluation is carried out on an object-by-object basis, and it has a unique evaluation value for the evaluated object and is not affected by the object set where the evaluated object is located [23]. The purpose of a comprehensive evaluation is to select the winning object from the object set, so it is also necessary to sort the comprehensive evaluation results of all objects. Fuzzy evaluation deals with the fuzzy evaluation objects by precise digital means and can make a scientific, reasonable and realistic quantitative evaluation for the data that contains ambiguity [24].

The types of performance evaluation include benefit index, cost index, intermediate index, and interval index. Benefit-type indicators require that the larger the index value, the better, such as output value and interest rate value [25]. Cost-based indicators require the smaller the value, the better, such as energy consumption and expenses [26]. The centered index requires the value to be in the center, the better, and the interval index requires the best value to fall within a certain interval. When calculating the performance evaluation of different types of indicators, it is necessary to

carry out type conversion [27]. In the performance evaluation, the cost-type indicators, intermediate-type indicators, and interval-type indicators are all converted into benefit-type indicators. The method of converting cost-type indicators into benefit-type indicators is $x^* = M\text{-}x$, where M is a maximum upper limit value of indicator x. The method of converting the middle-type index to the benefit-type index is

$$x^* = \begin{cases} 2(x-m), \le x \ge \dfrac{M+m}{2}, \\ \\ 2(M-m), \dfrac{M+m}{2} \le x \le M, \end{cases} \tag{1}$$

where m is a low limit value of x. The method of converting an interval-type indicator to a benefit-type indicator is:

$$x^* = \begin{cases} 1 - \dfrac{q_1 - x}{\max(q_1 - m, M - q_2)}, x < q_1, \\ \\ 1, q_1 \le x \le q_2, \\ \\ 1 - \dfrac{x - q_2}{\max(q_1 - m, M - q_2)}, x > q_2, \end{cases} \tag{2}$$

$q_1 \le x \le q_2$is the most reasonable range for x. To determine the weight of the evaluation index, first, determine the weight coefficient. The performance evaluation weight coefficient can be determined by the subjective weighting method according to the importance of the evaluation index, or it can be weighted according to the degree of change of the evaluation index value based on the objective weighting method, and the two can also be combined to form a combined weighting method [28]. Evaluation index aggregation is a comprehensive evaluation value that combines the values of multiple evaluation indicators into a whole through a mathematical model. There are many ways to assemble evaluation indicators, some are simple and some are more complex. Simple aggregation methods such as averaging the evaluation indicators, the weighted average of the evaluation indicators, max operator and min operator, etc.

This study develops an employee performance evaluation system based on the company's employee performance evaluation needs. The system mainly from the perspective of the evaluator's activities establishes the performance of six modules of employee information management, attendance management, salary management, performance management, system management, and report management. In terms of performance evaluation methods, the performance evaluation algorithm based on genetic algorithm and fuzzy comprehensive performance evaluation algorithm is introduced, their advantages and disadvantages are compared and analyzed, and the design idea of fuzzy performance evaluation algorithm based on compound elements is proposed. Specifically expounds on the process of employee performance evaluation, which can be divided into the following seven steps: one is to clarify the evaluation purpose and object; method; the third is to compile the evaluation index system; the fourth is to collect information extensively, and the evaluation uses a variety of methods, multiple angles, and multiple aspects to collect materials so that the conclusion of the evaluation has sufficient factual basis; the sixth is to process information and comprehensively evaluate; Analyze the results and write an evaluation report.

This study first analyzes the improved algorithm of performance evaluation and designs a fuzzy performance evaluation algorithm based on compound elements. After functional testing and performance testing, the expected research and development goals have been achieved, and finally, a performance evaluation system has been implemented.

2. Algorithm and Research Object

2.1. Algorithm Design. The existing fuzzy clustering algorithms are mostly fuzzy comprehensive evaluation algorithms based on specific elements, but the main problem of this type of fuzzy performance evaluation algorithm is that employee performance evaluation is a multi-element, multi-level evaluation system, and the specific element fuzzy comprehensive evaluation algorithm [29]. There is a lack of overall research on responsible performance evaluation, and the algorithm lacks hierarchy, so the above two types of algorithms are not suitable for data mining of complex employee performance evaluation systems [30].

A fuzzy comprehensive weighted evaluation algorithm for compound elements is dived into four steps [31]. (1) first, the factors that affect the evaluation are classified according to their attributes, and different levels of factors are correspondingly different. After classification, various factors will be reduced. The advantage is that the weight is easy to allocate reasonably, and the weight coefficient will not be too small, so there will be no situation where the fuzzy evaluation "data" of specific elements is submerged; (2) the fuzzy comprehensive evaluation of specific elements is carried out gradually from the bottom-level factors to the high-level factors. After the evaluation factors are divided into multiple levels, the factors at the lowest level are more specific, and the evaluation results tend to be more reasonable; (3) comprehensive evaluation is carried out layer by layer according to various factors, and the second, third, ..., n-level fuzzy comprehensive evaluation is obtained at one time; (4) in the performance evaluation system of company employees, the design idea of "weighting" is introduced because it needs to be designed according to different types of evaluators such as customers, company employees, inspection teams, etc. [32] These evaluators with different identities will evaluate the results have different weight effects, so these weights must be added first when calculating the membership degree, which can improve the accuracy of the evaluation. In the system design, a concept of weighting evaluation results is defined. The purpose is to avoid the same membership degree in the evaluation results so that the evaluation results can determine specific quantitative numbers, which is convenient for ranking the employees of the company under the same level.

Determine the evaluation factor set Assuming that the evaluation of things, there are evaluation sets composed of n evaluation factors $U = \{u_1, u_2, u_3, \ldots, u_n\}$, where

u_i, $i = 1, 2, \ldots, n$, is ith factors affecting evaluation. Assuming that there are m levels of evaluation results:

$$V = \{v_1, \ldots, v_n\}, \tag{3}$$

where v_j, $j = 1, 2, \ldots, n$ is the jth level.

Usually, the results are also consistent with the actual situation. The weight set of the first-level factor relative to the evaluation object is:

$$W = \{w_1, w_2, \ldots, w_n\}, \tag{4}$$

where $0 \le w_i \le 1$, $\sum_{i=1}^{n} w_i = 1$.

The weight set of the second-level factor relative to the first-level factor is:

$$\begin{cases} W_1 = \left\{w_1^1, w_1^2, \ldots, w_1^n\right\}, \sum_{i=1}^{n} w_1^i = 1, \\ W_n = \left\{w_n^1, w_n^2, \ldots, w_n^n\right\}, \sum_{i=1}^{n} w_n^i = 1. \end{cases} \tag{5}$$

The algorithm flow chart is shown in Figure 1.

From Figure 1, in the fuzzy evaluation system, the weight is very important, it reflects the role of different evaluation factors in the comprehensive decision-making process, and will directly affect the result of the comprehensive decision-making. To a certain extent, the weight can reflect the actual situation and can be given by experience.

Establish a weighted specific element evaluation matrix: first determine the degree of membership of a single factor to each evaluation level, the result of factor u_i is a fuzzy subset r_i, if there are k members forming an evaluation group, each member will evaluate each factor with a level, if the evaluation factor u_i level is:

$$R_i = \left(\frac{k_{i1}}{k}, \frac{k_{i2}}{k}, \ldots, \frac{k_{\mathfrak{Z}}}{k}\right) = r_{i1}, \ldots, r_{\mathfrak{Z}}. \tag{6}$$

When the members of the evaluation group are different (for example, the system includes customers, employees of the same level company, and inspection team evaluation), if the evaluation consists of k people, they are divided into P categories, and the number of people in the t category is k, then:

$$k = k_1 + k_2 + \ldots + k_n. \tag{7}$$

The weight is:

$$\beta = \beta_1 + \ldots + \beta_n. \tag{8}$$

If the evaluation factor is u_i, the various types of people at the level v_i are:

$$k_{ij1}, \ldots, k_{ijp}. \tag{9}$$

Thus, we can obtain:

$$R_i = \left(\frac{\sum_{t=1}^{P} \beta_t k_{ijt}}{\sum_{t=1}^{P} \beta_t k_t}, \ldots, \frac{\sum_{t=1}^{P} \beta_t k_{imt}}{\sum_{t=1}^{P} \beta_t k_t}\right) = (r_{i1}, r_{i2}, \ldots, r_{\mathfrak{Z}}). \tag{10}$$

If each factor can be represented by a fuzzy quantity R_i, a fuzzy matrix can be used to represent the evaluation results of n factors:

$$R = (R_1, R_2, \ldots, R_n) = \begin{vmatrix} r_{11} & r_{12} & \cdots & r_{1m} \\ r_{21} & r_{22} & \cdots & r_{2m} \\ \vdots & \vdots & \vdots & \vdots \\ r_{n1} & r_{n2} & \cdots & r_{n3} \end{vmatrix}, \tag{11}$$

where $i = 1,2, \ldots, m$.

The comprehensive performance evaluation formula is based on composite elements:

$$\begin{aligned} B = W \cdot R &= (w_1, w_2, .., w_n) \cdot \begin{vmatrix} r_{11} & r_{12} & \cdots & r_{1m} \\ r_{21} & r_{22} & \cdots & r_{2m} \\ \vdots & \vdots & \vdots & \vdots \\ r_{n1} & r_{n2} & \cdots & r_{n3} \end{vmatrix} \\ &= (b_1, b_2, \ldots, b_m), \end{aligned} \tag{12}$$

where $\cdot$ is composition operation, in our study, $M(\wedge, \vee)$ model is used.

$$b_j = \bigvee_{n}^{i=1} \left(w_i \wedge r_{ij}\right), j = 1, 2, \ldots, m, \tag{13}$$

where B is the comprehensive evaluation result and b_j represents the membership degree of the evaluation object to the jth level in the evaluation set. At the same time, it can also be seen that the difference weighted average method in the same grade is designed as follows:

$B = (b_1, b_2, \ldots, b_m)$, the evaluation result set can be normalized as:

$$B = (j_1, j_2, \ldots, j_3), j_i = \frac{b_i}{\sum_{j=1}^{m} b_j}, i = 1, 2, \ldots, m. \tag{14}$$

The evaluation results is:

$$V = \sum_{i=1}^{m} j_i v_i. \tag{15}$$

2.2. Performance Evaluation Algorithm Mining Objects. According to the needs of the system, the company's employee performance evaluation database is designed as Tables 1–4.

The table field design of the rater is shown in Table 1.

The field design of the company employee information table is shown in Table 2.

The fields of the company's employee performance evaluation information statistics table are shown in Table 3.

The fields of the company's employee performance evaluation information table are shown in Table 4.

The fuzzy comprehensive evaluation method for specific elements is very simple, and a fair and reasonable evaluation can be obtained under the condition of a few factors. However, when the evaluation is more complex and considers many complex factors, this method will lead to the

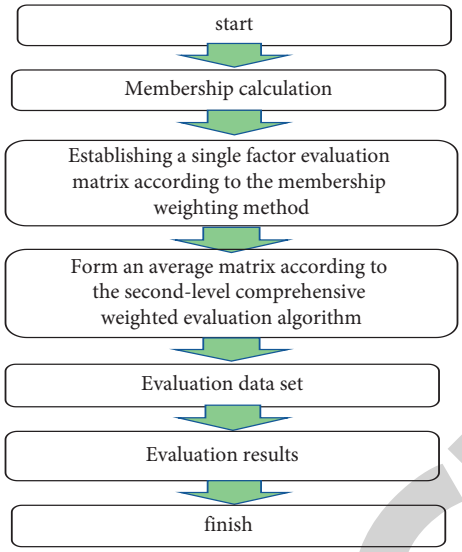

Figure 1: The algorithm flow chart.

Table 1: Rater table fields.

Names	Data types	Null or not
User name	Varchar ()	Not null
Password	Varchar ()	Not null
Permission	Varchar ()	Not null

Table 2: Division employee information form fields.

Names	Data types	Null or not
Employee code	Varchar ()	Not null
Employee name	Varchar ()	Not null
Employee information	Demo	Not null
Employee property	Varchar ()	Not null
Results	Int (30)	Not null

Table 3: Company employee performance evaluation information statistics table fields.

Names	Data types	Null or not	Illustration
Sn	Varchar ()	Not null	Employee code
Nam	Varchar ()	Not null	Employee names
Stu	Int (30)	Not null	Employee numbers
Tea	Int (30)	Not null	Evaluated employee numbers
Dep	Int (30)	Not null	Evaluated the number of department inspectors
Uni	Int (30)	Not null	Number of school inspectors evaluated
Ping	Varchar ()	Not null	Whether the evaluation conditions are met

Table 4: Company employee performance evaluation information table fields.

Names	Data types	Null or not	Illustration
Teacher	Varchar ()	Not null	Employee code
Superior	Int (30)	Not null	Number of times rated as superior
Good	Int (30)	Not null	Number of times rated as good
Median	Int (30)	Not null	Number of times rated as median
Bad	Int (30)	Not null	Number of times rated as bad

limitation of evaluation and assessment. Subjectively, people cannot determine the degree of the impression of various factors on the evaluation object, resulting in the inability to reasonably distribute the weights of various factors.

The weight satisfies the condition $\sum_{i=1}^{n} w_i = 1$. It can be seen that the fuzzy comprehensive evaluation algorithm of the specific element is used. Because the evaluation result is obtained according to the multiplication of the fuzzy matrix, the weight assigned to each factor is very small. Therefore, with smaller weights, a lot of information will be "overwhelmed" after the operation, and it is basically difficult to come up with any reasonable results. For example, when there are n kinds of employee evaluation factors, it will appear: $B = W \cdot R(\vee w_1, \vee w_2, \ldots, \vee w_n)$.

That is, if all the elements in the B set are the same and the largest element in W, then the information in the evaluation set of a specific element in R will be "submerged", and the evaluation result will be meaningless. When the evaluation system is quite complex, there are many types of evaluation object factors involved, and each factor has different levels. In the fuzzy comprehensive evaluation of specific elements, the level of the factors cannot be reflected.

3. Results and Discussion

3.1. Comparison and Analysis of Performance Evaluation Algorithm Based on Compound Elements and Performance Evaluation Algorithms of Specific Elements. The time consumption of this method is mainly divided into three parts, the time for calculating the attribute kernel C_O, the time for calculating the reduced classification and the time for selecting the non-kernel attribute, the complexity is: $t_c = O(|C||U|^2), t_{\text{non-core}} = O(|C||U|^2)$, $t_{c\_m} = O(|C||C-1||U|^2)$. The fuzzy performance evaluation algorithm based on specific elements and the performance evaluation algorithm based on genetic algorithm in most literature have the same complexity, and they are both attribute reduction algorithms based on information entropy, which are compared here. Its time consumption consists of two parts, including $t_c = O(|C||U|^2)$ and $t_{\text{non-core}} = O(|U|^3)$. Obviously, due to the need to additionally calculate the complementarity between attributes, the method in this paper has no advantage in time consumption. The same problem exists in space consumption.

The weighted specific element evaluation matrix constructed in the improved algorithm must have the same evaluation factors for evaluators with different identities before they can evaluate. Because of this system, the evaluation factors of each company employee can be the same for different evaluators, so the algorithm is more accurate for the performance evaluation of the company's employees. However, when this algorithm encounters a particularly complex evaluation system, the demand for data will be very large, and multiple matrix operations will be required, and the efficiency of the program will be significantly reduced. However, with the continuous development of computer hardware, the efficiency of software execution will also improve.

As can be seen from Table 5, for most data sets, the results of the algorithm in this paper are consistent with the results of the CEBARKCC algorithm, except for the third data set "SPECT" and the first data set "Australian Credit", but they finally get the reduced set, also have the same number of attributes. The time consumption of the algorithm is not given in the table, and only two of the datasets are time tested in this experiment. The algorithm is implemented under VC++6.0, and the test computer is configured as: a 2.4 GHz processor and 384M memory. For the third dataset "SPECT", the time consumption of the algorithm CEBARKCC is 803 ms, and the time consumption of the algorithm in this paper is 2967 ms. This is because the dataset has 22 conditional attributes, so calculating the complementarity between two attributes takes a lot of time, about 2215 ms. For the second dataset "IRIS", the time consumption of both algorithms is the same, 15 ms. The experimental results are the same as the previous analysis, and the algorithm has no time advantage.

For the data sets "Australian Credit" and "SPECT", the reduction results obtained by the two methods are different. Using the CART and J48 classifiers in the data mining software WEKA to perform 10-fold cross-validation experiments on the reduction results, two methods based on the classification accuracy of the performance evaluation attribute reduction set of the fuzzy algorithm are shown in Table 6. The experimental results show that the reduced attribute set obtained by this method has high classification accuracy.

This experiment selects nine datasets from the UCI database for testing. For the continuous variables in the data set, discretization preprocessing using the method provided by the ROSETTA software was used in the experiment, and the incomplete cases and inconsistent data of the data set were also removed to ensure the completeness and consistency of the data set. The algorithm CEBARKCC is an attribute reduction algorithm based on conditional information entropy proposed by Wang Guoyin et al. The reduction results are also given in Table 6.

3.2. Realization of the Function of Performance Evaluation System. The system first modifies the operation stage of the company's employee statistics table; second, extracts the first record data currently submitted as needed, and modifies it on the view formed by the retrieval; and third, after the process is over, the first factor data is stored directly. In addition, other factor data can be modified according to the simple IF statement for the retrieval attempt; finally, after evaluating the employees of the company, you can return to continue to evaluate other employees of company, but the evaluator cannot evaluate the employees already Evaluated employees of the company.

When making statistics on the stag table, the system first operates in the process of submitting data, and stores the data of the first factor directly in the database in time for reuse in this process; second, simply modify the second one, to achieve the purpose of colleges and universities using the

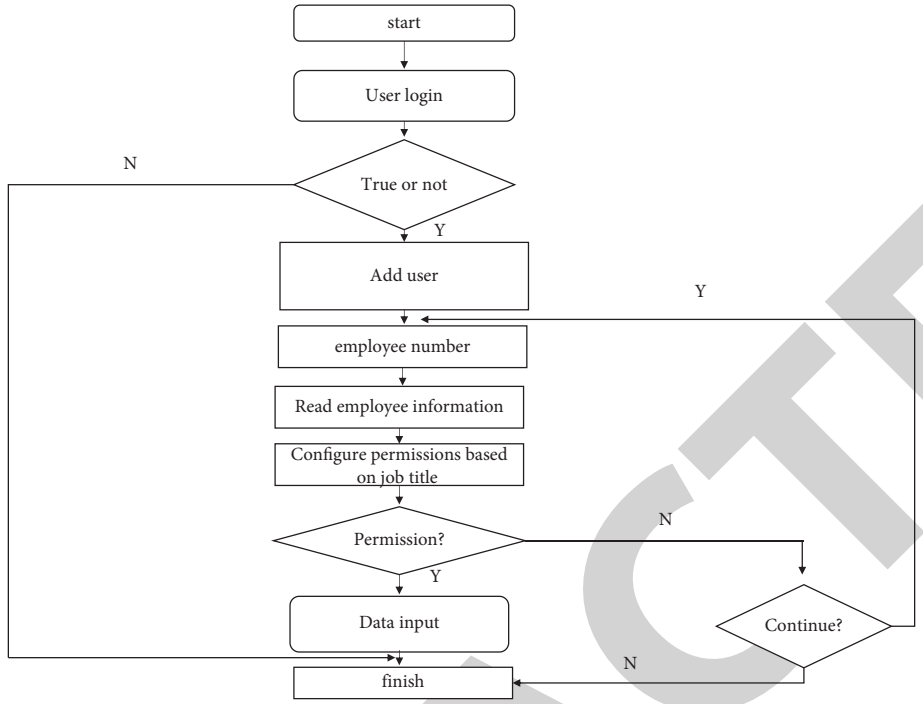

Figure 2: Add user information flowchart.

Table 5: Operation time comparison (milliseconds).

	Performance evaluation algorithm based on genetic algorithm (ms)	Fuzzy performance evaluation algorithm based on specific elements (ms)	Method in this study
Australian credit	240.6	1366.2	152.5
SPECT	366.1	1684.2	194.2

Table 6: Classification accuracy comparison.

		Fuzzy performance evaluation algorithm based on specific elements (%)	Algorithm in our study (%)
Australian Credit	J48	85.4	87.2
	CART	84.4	86.23
SPECT	J48	72.2	74.6
	CART	70.1	72.2

views that have been retrieved. The evaluation factor set includes professional level, work discipline, work style and collaboration, work content, professional title level, academic research, work attitude, work method, work effect, etc. This study assumes that the weights of various evaluation factors are the same (Figure 2).

After the evaluation, the data is directly stored in the employee information table of the company, and when viewing the evaluation results, you can see the results of all the employees of the evaluated company. In this functional module, the design of the multi-level fuzzy comprehensive weighted evaluation algorithm and the realization of the program about the company's employees (Figure 3).

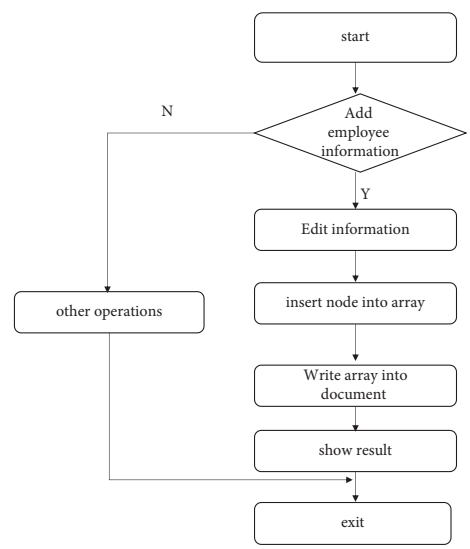

Figure 3: Add employee information flow chart.

When designing a multi-level fuzzy comprehensive weighted evaluation algorithm in this paper, it is required that the number of customers who must be evaluated must be more than 10 employees, more than 5 employees of the same level company, and more than 5 experts from the

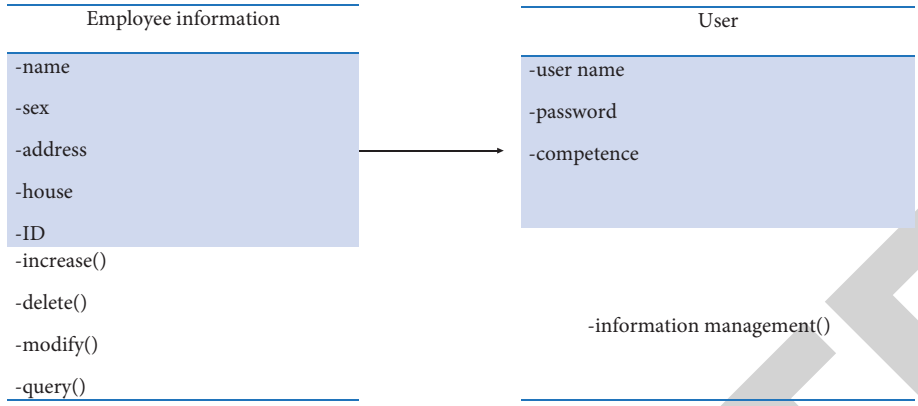

Figure 4: User management module class diagram.

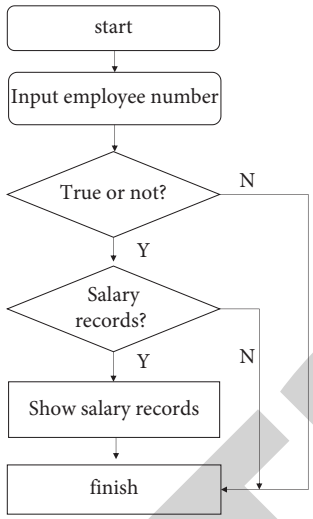

Figure 5: Query employee salary flow chart.

inspection team. Only in this way can the objective evaluation be ensured (Figure 4).

The evaluation result set including the evaluation result set of professional level, work discipline, work style, and cooperation is divided into very good, good, average, and poor; the evaluation result set of work content, academic research, work attitude, work method, work effect is divided into excellent, good, medium, and poor.

The process of querying employee salary includes the following contents. First, enter the employee number, determine whether the number is correct through CA certification, and determine whether the employee number exists in the company's performance evaluation system through a database keyword query. If only one of the two judgments has problems, then directly end the task of the salary management module; otherwise, display the salary record of the employee (Figure 5). From a practical point of view, the company's employee performance evaluation activities have an operational process, which is also the evaluation procedure mentioned in this article. This evaluation procedure is mainly discussed from the point of view of the activities of the evaluator. Specifically, look at a company's employee performance evaluation process.

The performance-assisted analysis system based on text analysis studied in this article is oriented to the existing e-government system. It builds a performance evaluation system by tracking the business office realization process and data flow analysis and realizes the quantitative and qualitative analysis of the total performance of government personnel. From a practical point of view, the company's employee performance evaluation activities have an operational process, which is also the evaluation procedure mentioned in this article. This evaluation procedure is mainly discussed from the point of view of the activities of the evaluator. Specifically, look at a company's employee performance evaluation process.

3.3. Performance Evaluation System and Framework Needs Analysis. The performance evaluation system based on text analysis proposed in this project is oriented to the existing company performance evaluation system, comprehensively compares the current relatively complete performance evaluation methods and systems, combines the data characteristics in the research field, and is based on the original company performance evaluation system, implementing a performance-assisted analysis function subsystem [33]. By analyzing the structured and unstructured related data of related modules such as enterprise administrative management activities, employee performance management file information processing, employee performance management file information flow records, etc., analyze the roles, tasks, and task completion of enterprise administrators in related matters On this basis, a quantitative model of the workload of enterprise administrators is established, so as to establish a performance evaluation system to count the quantitative workload of individuals and departments within a given time range.

The data storage involved in the company performance evaluation system contains both structured data of database table fields and unstructured natural language that does not depend on table structure. There is a clear hierarchical structure between structured information data and data, and there are certain operating specifications, which are easy to analyze but have limitations in content; unstructured information realizes human-computer interaction to a certain extent, which is convenient for users to use, but the

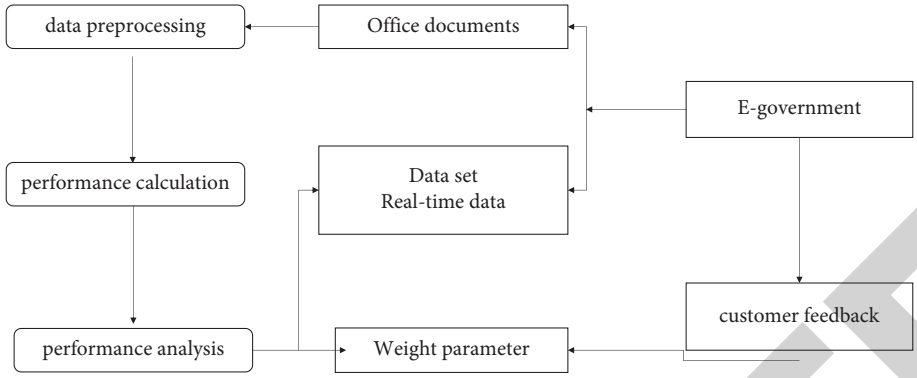

Figure 6: System design framework diagram.

disadvantage is that its scalability is low and the analysis cost is high. The performance-assisted analysis system based on enterprise administrative management content combines structured and unstructured language processing. Based on the analysis of the modules and functions of the existing company performance evaluation system, a comprehensive, fair, and efficient performance evaluation system is formulated to objectively evaluate the contribution of employees to the performance of the enterprise, and also provides a basis for the salary level of employees [34].

The performance-assisted analysis system based on text analysis is based on the company's performance evaluation system (automated office system), with the help of support platform technology, combined with the business management and data flow in the original performance evaluation system, to develop a new performance evaluation function module and add it to the original performance evaluation system. In the evaluation system platform. Comprehensive analysis of the official process of the performance evaluation system, enterprise administrative management activities, and employee performance management file information processing are connected to the activities of various departments and are closely related to the office of each department. The electronic enterprise administrative management office mainly involves corporate administrative management activities [35]. Employee performance management file information management, and enterprise administrative management are the main tasks of the three modules. The statistics of these work contents are directly related to the calculation of individual and departmental work performance.

In the integration with the original performance evaluation system, the overall structure of the system is defined in the structure diagram of the interface between the performance evaluation system and the original performance evaluation system, data flow, source data reading method, result data storage method, and parameter adjustment method (Figure 6).

The performance analysis tasks of the performance evaluation system mainly include. First, run the system at a fixed time every day to calculate the real-time data of the performance statistics of the day; in the database and each table of the database, the performance evaluation system based on text analysis can read the relevant database field information in the original performance evaluation system from the database, so as to analyze the relevant data of the original performance evaluation system; third, for a large number of documents in the original performance evaluation system, the performance evaluation system first reads the document storage path from the relevant fields of the database, and then searches for the required documents in the document storage space according to this path, avoiding the tediousness of obtaining a large number of document sets at one time [36].

System data is structured record data stored in an SQL database. The offline processing stage requires the use of all records of the relevant field in the relevant table. In the online processing stage, the data is transmitted to the system by querying the database in real-time, and the system obtains the corresponding individual and partial performance values by reading the corresponding fields of the database [37]. The input data mainly includes the enterprise administrative management activity module in the automated office system, the relevant records involved in the enterprise administrative management module, the relevant records of the employee performance management file information statistics (to-do, in-progress, and processed) and employee performance management. Office documents involved in the file information management module.

For the input of the enterprise administrative management activity module, the input contents include the enterprise administrative management number (ID) in the enterprise administrative management activity table, the enterprise administrative management initiator (ITEM_ REGISTER), and the enterprise administrative management participation (ITEM_ COMMISSIONLEADER), etc. The main input data of the management module is the related fields involved in the process of employee performance management file information processing and circulation, such as current processing personnel (ACTORID), processing time (PROCESSTIME), circulation status (FLOSTATE_ ID), processing opinions (ATTITUDE) Wait. For the acquisition of Office documents, we first obtain the absolute path (SUB_ DOC_ CONTENT) stored in each document from the database field, find the two documents to be calculated according to the personal modification record and calculate the edit distance; the employee performance management file information statistics module input. The

data are valid fields related to the processing of pending documents, documents in progress, documents to be executed, and identification [38].

The output of the system is the quantified value of the workload of each person and each department in a given time period and its specific components. For the offline processing stage, the output data is saved in a structured text file (recommended CSV file structure). In the online processing stage, the system sets up scheduled tasks, runs the system regularly every day without affecting the operating efficiency of the original system, and returns the results to the automated office system in real-time.

The system output data is stored in eight tables in the database pasboc, each table stores the field information corresponding to different implementation functions, such as employee ID (USER_ID), department (CDEFAULTDEPARTMENT), role type (DOCACT_CREATOR), role weights (DOCACT_CREATO_R), delay time (OP_RE_INTERVAL), processing time (CPR_OP_INTERVAL), employee performance management file information execution process map parameters (MAP_OPTION).

3.4. Algorithm Function Module Analysis. In the performance evaluation system, the processing process of employee performance management file information includes the circulation process of drafting, issuing, receiving, forwarding, etc., and in different stages of circulation and between different nodes in the same stage, the processing content and content of employee performance management file information by different handlers. The processing methods are different. How to effectively identify the work content and work performance of different enterprise administrators in the information flow of employee performance management files is a key link in the construction of the performance evaluation system. Different from the traditional performance evaluation model, the performance evaluation model proposed in this paper combines the unstructured natural language in the performance evaluation system, that is, the "opinion" short text information in the management of employee performance management file information, combined with the flow of employee performance management file information before and after. It uses machine learning, natural language processing, and other related technologies to mine effective information in the text and analyze the association rules between different information, and identify the work of different personnel in the process of employee performance management file information flow [39]. Types handle "roles". At the same time, an execution state diagram model of employee performance management file information flow is established, each key node in the employee performance management file information flow is tracked in real-time, and the relationship between each node is identified. Based on the business relationship and data flow analysis of the electronic enterprise administrative management office system, the employee performance management file information handling roles designed in the system are divided into five categories: creator, approver, reviewer, executor, and forwarder.

The enterprise administrative management arrangement module of the company's performance evaluation system involves multiple participants in the activity, and in different enterprise administrative management activities and different stages of the same enterprise administrative management activity, each participant is responsible for different activity tasks, ranging from complex ones. Effectively identifying the division of duties in the process of enterprise administrative management arrangement can be used as an important reference for performance evaluation. The data involved in the enterprise administrative management arrangement is semi-structured text data. By comprehensively analyzing the workflow and data storage characteristics of the enterprise administrative management arrangement, different job roles and the mutual working relationship between different roles can be extracted [40]. The role types in the management arrangement are divided into the following two categories: the initiator of the enterprise administrative management arrangement and the participant of the enterprise administrative management arrangement.

The processing of employee performance management file information in enterprise administration revolves around the creation of employee performance management file information, the processing and forwarding of employee performance management file information, and the processing of employee performance management file information including the addition and deletion of employee performance management file information documents., modification, in each node of employee performance management file information flow, it may involve the processing of employee performance management file information by enterprise administrators. The workload in employee performance management file information processing.

Taking the amount of editing of the employee performance management file information document by each person in the process of employee performance management file information processing as a rigid indicator, it is calculated that each office employee receives the employee performance management file information from the employee performance management file information in the process of employee performance management file information flow [41, 42]. The amount of editing between two employee performance management file information versions (that is, the number of modified characters in the document) for information forwarding the statistics of the editing volume of performance management file information is used as a quantitative reference index in the quantitative calculation of performance evaluation [43, 44].

The performance-assisted analysis system based on the electronic office system combines the business flow, office process, structured and unstructured enterprise administrative management data flow process, and interrelationship in the performance evaluation system, and modularizes the business office. Analyzing and processing structured and unstructured data, mining key information related to the work content and work type of enterprise administrative personnel in text data, and establishing a role type based on enterprise administrative management arrangement work

relationship identification, employee performance management file information management. The comprehensive performance real-time evaluation model of statistics, document editing and processing statistics, the realization of each model.

4. Conclusions

The performance evaluation system based on the composite element performance evaluation algorithm proposed in this study is oriented to the existing company performance evaluation system, comprehensively compares the current relatively perfect performance evaluation methods and systems, and combines the data characteristics of the research field. Based on the system, a performance auxiliary analysis function subsystem is realized. By analyzing the structured and unstructured related data of related modules such as enterprise administrative management activities, employee performance management file information processing, employee performance management file information flow records, etc., analyze the roles, tasks, and task completion of enterprise administrators in related matters. On this basis, a quantitative model of the workload of enterprise administrators is established, so as to establish a performance evaluation system to count the quantitative workload of individuals and departments within a given time range.

Facing the existing company performance evaluation system, it builds a performance evaluation system by tracking the business office implementation process and data flow analysis and realizes the quantitative and qualitative analysis of the performance of the corporate administrative personnel. Taking the performance evaluation system as a reference, different from the traditional performance evaluation method, we track and analyze the structured and unstructured data in the performance evaluation system, and use machine learning, natural language processing, and other technologies to analyze the text information. At the same time, a performance evaluation model based on each work module is established to quantitatively calculate and count employee work performance. To sum up, this study mainly studies the following aspects of the system design.

First, the performance evaluation algorithm based on a genetic algorithm and fuzzy comprehensive performance evaluation algorithm is introduced, and then the advantages and disadvantages of the performance evaluation algorithm are compared. Through the company's employee performance evaluation and assessment database to study the performance evaluation algorithm mining objects, make a performance evaluation system and framework demand analysis, including: performance evaluation system demand analysis, system performance evaluation algorithm overall demand analysis, system input and output data format. The algorithm is applied to performance evaluation, and the algorithm requirements of employee management module, system management module, and performance management module are analyzed respectively.

Based on the existing algorithms, the fuzzy performance evaluation algorithm based on compound elements is studied, and the detailed design of the algorithm is given. Through the comparison and analysis of the performance evaluation algorithm based on compound elements and the performance evaluation algorithm of specific elements, the superiority of the performance evaluation algorithm based on compound elements is experimentally verified by comparing the operation time and classification accuracy.

The performance evaluation algorithm performance evaluation system based on composite elements designed in this paper, combined with the office business, office process, structure, and unstructured enterprise administrative management data transfer process and interrelationship of the performance evaluation system, modularized the enterprise administrative management activities. Digitize the electronic office information, dig deep into the unstructured natural language, and establish a real-time performance evaluation system based on the arrangement of enterprise administrative management activities, employee performance management file information processing, document content processing, and employee performance management file information statistics. By designing and implementing a performance-assisted analysis system based on text content analysis, which is suitable for performance evaluation system, it solves the imperfect problem of performance evaluation based on electronic enterprise administrative management.

The data storage involved in the company performance evaluation system includes both structured data in the form of database table fields and unstructured natural language that does not depend on the table structure. There is a clear hierarchical structure between structured information data and data, and there are certain operating specifications. It is easy to analyze but has limitations in content. Unstructured information achieves human-computer interaction to a certain extent and is convenient for users to use, but the disadvantage is that It has low scalability and high analysis cost.

The performance-assisted analysis system based on the performance evaluation algorithm of composite elements is based on the electronic office cloud platform of the Science and Technology Innovation Committee—performance evaluation system (automated office system), with the help of the support platform technology, combined with the business management in the original performance evaluation system And data flow, develop new performance evaluation function modules to add to the original performance evaluation system platform. Comprehensive analysis of the office process of the performance evaluation system, enterprise administrative management activities, and employee performance management file information processing are connected to the activities of various departments and are closely related to the office of each department. The electronic enterprise administrative management office mainly involves corporate administrative management activities. Employee performance management file information management and enterprise administrative management are the main tasks of the three modules. The statistics of these work contents are directly related to the calculation of individual and departmental work performance.

On the basis of focusing on the analysis of business process and data flow in enterprise administrative management activities and employee performance management file information processing, this study analyzes the unstructured natural language and relevant information mining, and establishes a performance evaluation model based on various evaluation indicators, through the assignment of weights to different job roles and real-time data analysis, to establish a performance evaluation system that can quantitatively and qualitatively analyze the work of employees, and evaluate the results objectively and efficiently, to achieve a comprehensive evaluation of individual and departmental performance in the enterprise.

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 to report regarding the present study.

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