Research Article

Optimization of Human Resource Administration System Based on DM Technology and Random Forest Algorithm

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As the first resource of an enterprise, human resources are the core competitiveness of the enterprise and are paid more and more attention by the enterprise, so that the administration means and technology of human resources are constantly improved, and the human resource administration information system is gradually emerging in the enterprise. As enterprise manpower administration, how to make enterprise administration scientific and rational with the help of data mining (DM) technology, and how to mine information beneficial to enterprise decision-making from a large amount of data, has become an important issue to be considered at present. Based on DM technology and random forest algorithm, this paper studies the human resource administration (HRM) system. There are many different algorithms to realize the unique tree in a random forest. When the number of features reaches 8, the index value of Gini is 0.116, and the index value of Entropy is 0.106. From this, it can be seen that in a random forest, the effect of using the Gini index to manage human resources is better. The random forest can avoid overfitting, and its flexible report generation and analysis functions make human resource managers free from tedious daily work and focus on more challenging and creative human resource analysis, planning, employee motivation, and strategy.

1. Introduction

At present, the competition among all walks of life is becoming more and more fierce, and the essence of the competition is the competition for talent. All companies understand that only by having and retaining talents and effectively encouraging talents can enterprises develop healthily. The strength of an enterprise’s competitiveness completely depends on whether the enterprise can effectively and reasonably develop and utilize human resources. The future competition is the competition of talents. Needless to say, whoever has first-class talents will have first-class enterprises and first-class benefits. The development of any enterprise is inseparable from excellent human resource administration, especially for small- and medium-sized enterprises [1]. As the first resource of the enterprise, human resources are the core competitiveness of the enterprise, which has been paid more and more attention by the enterprise, so that the administration means and technology of human resources have been continuously improved. The human resource administration information system has gradually emerged in the enterprise. The enterprise uses the human resource administration system to obtain, store, analyze, and transmit information about the status of employees [2, 3]. The HRM system can not only serve as a supporting tool for the daily work of line managers but also provide necessary information for enterprise human resource managers to participate in the formulation of enterprise development strategies. From the perspective of scientific HRM, the HRM system starts from the enterprise’s human resource planning and generally includes information related to employees such as recruitment, job description, training, skills, performance evaluation, personal information, salary and benefits, various holidays, and resignation [4]. With the expansion of the scale of small- and medium-sized enterprises and the gradual deepening of economic system reform, small- and medium-sized
enterprises are facing an increasingly complex situation, increasingly fierce competition, and complex social relations. The original HRM system can no longer adapt to the development of small- and medium-sized enterprises and even become a shackle restricting their development [5, 6]. Therefore, it is urgent to optimize the HRM system of small- and medium-sized enterprises.

As an enterprise HRM, how to use DM technology to realize scientific and reasonable enterprise administration and how to mine information from a large number of data that are conducive to enterprise decision-making have become important issues. DM is a process of extracting hidden, unknown but potentially useful information and knowledge from a large number of incomplete, noisy, fuzzy, and random practical application data. In this paper, the application of DM technology and random forest algorithm in HRM is analyzed in detail [7, 8]. In the process of the random forest algorithm, the construction process of a single decision tree is serial. After the construction of one decision tree is completed, the construction of the next decision tree can be carried out. Each decision tree is independent of the other. The construction of the next decision tree can only be carried out after the construction of one decision tree. The independence of decision trees makes it possible to parallelize random forests. The random method adopted by random forest is mainly applied to random sampling and random feature extraction [9]. However, this original random forest tree method still has some defects, the general error can still be reduced, and the accuracy can continue to be improved [10, 11].

The application of the random forest algorithm of DM technology in HRM involves all right sides of HRM in employee turnover. This paper studies the specific application process of DM technology in HRM. It is stored in a centralized database in a compatible, consistent, shared, accessible, and retrievable way so that the information of employees in the enterprise can be managed uniformly [12]. The accuracy of the random forest algorithm is higher than that of a single classifier, and it is more robust to errors and outliers. The more the number of decision trees in a random forest is, the generalization error of the forest will gradually converge [13]. Therefore, in addition, when the random forest algorithm is used to divide and manage human resource information, the accuracy of selecting a single or a few features is better than that of multiple features. Therefore, the random forest is also very effective on large data sets, and the random forest will select features according to the evaluation of their importance. The random forest can avoid overfitting, and its flexible report generation and analysis functions make human resource managers free from tedious daily work and focus on more challenging and creative human resource analysis, planning, employee motivation, and strategy [14]. It is the key phoneme to ensure the effectiveness of the random forest model to keep the accuracy of individual classifiers and ensure that the administration among individual classifiers of human resources is as independent as possible. The main innovations are as follows:

1. In this paper, the flow chart of the random forest algorithm is constructed, and the recruitment administration in the HRM system is mainly used to publish the application information and make statistics on the received application information. Position administration counts all positions, which is mainly used to release post-transfer information; make statistics on the transfer information of each post; employee training administration is mainly published to training contents and plans; and add training plans, a summary of the training plan, and statistics of training plans of various departments.

2. The experiment of HRM is carried out and the experimental results are analyzed. Compared with the CWC-SVM model, weighted random forest algorithm, and balanced random forest algorithm, this method has a higher prediction accuracy of HRM. The four methods are ranked one by one, and the highest prediction accuracy is this method, followed by a balanced random forest algorithm, then a weighted random forest algorithm, and finally the CWC-SVM model. It has obvious advantages in analyzing HRM of unbalanced large data sets.

The overall structure of this paper consists of five parts. The first chapter introduces the background and significance of HRM, and then introduces the main work of this paper. The second chapter mainly introduces the related work of HRM. The third chapter describes the overview of DM theory and the human resource analysis of the random forest algorithm. In Chapter 4, the HRM simulation experiment is carried out, and the experimental results are analyzed and discussed. The fifth chapter is a summary of the full text.

2. Journals Reviewed

Literature review Papineni et al. proposed that through the case study, it was found that after the introduction of the HRM system, the functions of the human resource department had changed. They believed that the information construction should be carried out in three stages, namely, information release, business process automation, and the transformation of a strategic role, which gradually promoted the HRM information from one-way flow to two-way flow, making the transactional administration function constantly change to strategic administration [15]. Sijo and Kavitha put forward that vigorously developing small- and medium-sized enterprises is an important direction of economic system reform, and it is the bounden responsibility of the government to create a good development environment for small- and medium-sized enterprises. Since the late 1990s, the government has introduced various reform measures to promote the development of small- and medium-sized enterprises, which reflects that the society and the country attach great importance to the development of small- and medium-sized enterprises [16]. Zhang et al. pointed out that there are many problems in the current HRM of China’s private enterprises, such as the lack of systematic and strategic HRM and the
imperfect recruitment, training, and use system; then it analyzes the reasons for these problems, that is, most senior managers of private enterprises have outdated administration concepts, human resource departments have their own defects, and employee loyalty needs to be improved. Finally, it puts forward good strategies to solve the human resource administration problems of private enterprises in China, that is, we should establish strategic human resource administration concepts, actively cultivate a good corporate culture, and strive to establish an objective and fair performance evaluation system [17]. Zhou et al. put forward that at present, talents have become the primary factor for small- and medium-sized private enterprises to avoid development risks and vigorously improve the development speed. However, there are many problems in the HRM of small- and medium-sized private enterprises in China, such as outdated concepts, lagging systems, mechanism construction, and inadequate measures. We must change and update administration, formulate scientific and effective recruitment policies, establish a reasonable salary and training system, and other incentive measures to achieve the purpose of retaining and making good use of talents [18]. Li et al. put forward that the application of information systems makes enterprise human resource managers not only focus on transactional work but also focus on cultivating new abilities. Whether human resource managers can refute the new information system will directly affect the effectiveness of the implementation of human resource informatization [19]. Li et al. put forward that through the implementation of scientific methodology in the construction of enterprise HRM information system, the theory, enterprise practice, and the built system are combined, and corresponding optimization methods are put forward for the problems existing in the original system, so as to make the system consistent with the actual work [20]. Zulfa et al. pointed out that with the rapid development of China’s economy, the role of HRM in enterprise administration is becoming more and more prominent. Therefore, it is urgent to vigorously improve HRM. Only by doing this well, can enterprises remain invincible in the fierce competition. At the same time, they pointed out that the operators, middle managers, grass-roots managers, and professional and technical personnel operators concentrate on the main human resource of the enterprise [21]. Zaharov et al. proposed that the informatization construction of HRM should be studied from the interactive administration between information technology and HRM. They cited many examples to demonstrate that the deep integration of information technology and HRM will promote the development of enterprises [22]. Ali puts forward that the HRM information systems developed by many software companies are popular products, which can meet the needs and use of different enterprises in the society in a large way. However, for some special or unique situations in enterprises, the finished HRM information systems will show obvious inconsistency, which will bring a lot of inconvenience to the use of enterprises [23]. Mozhava proposed that by studying the failure cases of implementing the information system, he proposed 10 key factors for the successful implementation of the information system, including strategic objectives, high-level support, project administration, organizational change, implementation ability, education and training, data accuracy, performance evaluation, error correction, and system operation [24].

Based on this, this paper studies the optimization of the HRM system of small- and medium-sized enterprises in China based on DM technology and random forest algorithm in order to provide policy support for managers of small- and medium-sized enterprises to better manage enterprises, formulate policies to promote the development of small- and medium-sized enterprises, and then realize the sound and rapid development of small- and medium-sized enterprises in China. Through in-depth research on the ideas of building HRM information systems in large enterprises in China, combined with the exploration of HRM information systems, aiming at the imperfections of this HRM information system, this paper puts forward the corresponding optimization design and solutions from the perspective of enterprise administration. DM technology and random forest algorithm develop HRM subsystem. Through DM technology, a random forest algorithm is used in this system to input relevant data and set parameters. A computer is used to save employee files, calculate salary payments, and record the details of employees’ training and job change. Instead of the original manual processing, the random forest algorithm queries human resources and salary resources, which greatly improves work efficiency and administration level. Under the DM technology, each link in the training process is managed, and then training plans and courses are made for the system through a random forest algorithm, so as to improve the working ability of employees. At the same time, the training effect and the number and time of employees participating in the training are also recorded, and various training results are queried. The main process of the stochastic forest algorithm includes the following: making a training plan, making training content, determining trainers, and participating in training.

3. Method

4. A Survey of DM Theory

In reality, human social and economic activities can always be described and recorded with data, numbers, or symbols. Through the analysis of these data, information will be generated. Using this information to guide practice, we can make corresponding decisions. These decisions have triggered a new round of social and economic activities [25]. In a broad sense, data and information are also the manifestations of knowledge, but people regard concepts, rules, patterns, laws, and constraints as knowledge. People regard data as a source of knowledge, just like mining or panning for gold from ore. Raw data can be structured. From the commercial point of view, DM is a new information processing technology. Its main feature is to extract, transform, analyze, and model a large number of business data in the commercial database and extract the key data to assist the commercial decision [26]. The mathematical model in the construction of a database and data warehouse is the result of the abstract processing of objective objects in the real world. The objects analyzed by the database
and data warehouse are all objective things in the real world. These things can be properly described in the database and data warehouse only after gradual abstract processing. The essential difference between DM and traditional data analysis such as query, report, and online application analysis is that DM is to mine information and discover knowledge without explicit assumptions. The information obtained by DM should have three characteristics: first unknown, effective, and practical. The construction of a data warehouse and DM modeling are the two key technical points in the DM value chain [27]. In a narrow sense, DM only focuses on the period from data to knowledge. As a DM personnel, the minimum requirement is to fully grasp the performance, limitations, and application conditions of various mining tools. DM is a process of cooperation among multiple experts, as well as a process of high investment in capital and technology. This process needs to be repeated. In the process of repetition, things constantly approach the essence of things and constantly give priority to solutions to problems. The process of DM is shown in Figure 1.

1. Data sampling:
   When DM is carried out, it is first necessary to extract a subset of sample data related to the problem to be explored from a large amount of enterprise data, instead of using all enterprise data. Through data sampling, the quality of data must be controlled, and the representativeness, authenticity, integrity, and effectiveness of sampling must be ensured. Only in this way can the results reflecting the essential regularity be obtained through the subsequent analysis and research.

2. Data exploration:
   The purpose of data exploration is to identify the data set to be analyzed, narrow the processing range, and improve the quality of DM. When we get a sample data set, does it meet the requirements we originally thought? Are there any obvious laws and trends, and are there any data states that you never imagined?

3. Data sorting:
   After two steps of data sorting and technology selection, the original problem to be solved may be further clarified. At this time, the requirements for problem-solving should be further quantified as much as possible.

4. Mode:
   Mathematical statistics is the most commonly used mainstream technical means in DM. The software package covers all practical mathematical statistics methods and provides more than a dozen data regression analyses for various types of models and characteristics.

5. Evaluation:
   According to the needs of the problem, you may need to add or delete data, or you may combine or generate some new variables according to your new understanding of the whole DM process to reflect the effective description of the state and make an evaluation.

Knowledge discovery in DM is not a requirement to discover new natural science theorems and pure mathematical formulas, nor is it a proof of machine theorems. In fact, all the discovered knowledge is relative, with specific preconditions and constraints, oriented to specific fields, and easy to be understood by users. DM is to find information or knowledge that cannot be found by intuition, even information or knowledge that goes against intuition. The more unexpected the mined information is, the more valuable it may be. Rough set theory in DM is a mathematical tool to study imprecise and uncertain knowledge. The rough set method has several advantages: it does not need to give extra information to simplify the expression space of input information. The algorithm is simple and easy to operate. The object of rough set processing is an information table similar to a two-dimensional relational table. At present, the mature relational database administration system and the newly developed data warehouse administration system have laid a solid foundation for rough set DM. Data preparation is to be converted into data recognizable by the system according to requirements. Modeling is the process of system development. When it comes to the evaluation stage, the customer conducts the user acceptance test. The final stage of release, that is, the product system goes online.

4.1. Human Resource Analysis Based on Random Forest Algorithm. The random forest algorithm has officially become an important part of the DM classification algorithm. In the recent ten years, through the continuous optimization of random forest, the performance has been greatly improved. This algorithm has been widely used in practice and has been unanimously recognized by researchers in DM, knowledge administration, model recognition, and other aspects. The random forest algorithm is an integrated learning method based on a decision tree, which is an improved algorithm for bagging. Unlike bagging, each tree in a random forest does not select a feature from the entire feature set for node splitting, but randomly extracts part of the feature set according to a certain proportion and selects a feature from it to complete node splitting. The random forest algorithm is simple and efficient, supports parallel training, and has strong generalization ability. It has achieved success in many fields, such as computer vision, bioinformatics, and so on. The research on the random forest algorithm is getting deeper and deeper, and the performance and classification accuracy are also greatly improved. However, sending does not mean that the random forest is perfect. Through the research on the algorithm, it is found that there is still some room for improvement. It is believed that through the continuous optimization of the random forest, the algorithm will be applied in more fields. The random forest is composed of many decision trees. It is thought that the formation of these decision trees adopts the random method, so it is also called the random decision tree. There is no correlation
between the trees in the random forest. When the test data enter the random forest, it is actually to classify each decision tree. The category with the most classification results among all the decision trees is the final result. By constructing a large number of single decision trees, a random forest is formed. According to the classification results of N decision trees, the classification results with the most votes are selected by voting as the final output of the algorithm. The flow chart of the random forest algorithm is shown in Figure 2.

Recruitment administration in the HR administration system is mainly used to publish application information and make statistics on the received application information. Like other administration systems, the HR administration system is only an auxiliary tool, which can only help HR managers process complex information and analyze some report figures. In the practice of HRM, many businesses cannot be carried out systematically, such as the adjustment of organizational structure, the construction of job system, the employment of professional and technical qualifications, and professional qualifications, which still need to be handled by people. Position administration is used to make statistics for each position, mainly for publishing position transfer information; make statistics on the transfer information of each position; employee training administration is mainly used to publish training contents and plans; and add training plan, a training plan summary, and statistics of training plans of each department. The construction of an HRM system is very complex and systematic work, which involves all aspects of personnel work and a wide range of business matters. The personnel work of companies at the provincial, municipal, and county levels is highly consistent in terms of major policies and guidelines, but there are such and such personality situations when combined with the actual situation of each unit. Correctly handle the relationship between security assurance and flexible application; establish and improve rules and regulations; standardize authority allocation; implement preventive measures; strengthen daily administration, supervision, and inspection; establish a security and confidentiality system for hierarchical protection of information systems; and ensure the security of network information. In view of the problem of information gain in classification nodes, a node classification rule is introduced into the random forest algorithm. The information gain rate is used to replace the information gain. The evaluation formula is as follows:

\[
SplitInfo_A(D) = \sum_{j=1}^{v} \frac{v_j}{v}
\]

where \( v \) is the number of values of attribute \( A \).

Train the representative of the uniformity of \( S \) and compare this index with the information benefit index, so that the selected attributes can be more uniform, and there will be no bias problem. In this way, the calculation formula of information yield is as follows:

\[
GainRatio(A) = \frac{Gain(A)}{SplitInfo_A(D)}
\]

Calculate the Gini coefficient of the sample:

\[
Gini(S) = 1 - \sum_{j=1}^{m} P_j^2
\]

where \( P_j \) represents the probability of category \( C_j \) appearing in the sample set \( S \).

If \( S \) is divided into two subsets S1 and S2, the Gini coefficient of this division is as follows:
Calculate the Gini coefficient of each attribute, select the attribute with the smallest Gini coefficient as the attribute of node splitting, and generate a decision tree by recursion.

For each input vector \( X \), the classification result is determined by simple majority voting.

\[
B^f = \text{majority vote}[b(X)]^B.
\]  

The forest randomly uses the Gini index to select the best split attribute. After the training set is given, the Gini index is calculated according to the following algorithm:

\[
Gini_{\text{split}}(S) = \frac{|S_i|}{|S|} Gini(S_i).
\]  

\[
GINI = \sum \sum (f(C_i, T)),
\]  

where \( f(C_i, T) \) is the probability that the selected class belongs to \( C_i \).

With this algorithm, the standardized voting of class \( \text{class}j \) at \( X_i \) point is as follows:

\[
\frac{\sum_k I(h(X_i))}{\sum_k \omega_k}.
\]  

Error is
The lower the threshold is, the higher the purity of subset division will be.

\[ I(S_1, S_2, ..., S_m) = -\sum_{i=1}^{n} S_{1i} \log_2 S \]  

(11)

where \( p_{ij} = \frac{s_{ij}}{|S_i|} \) is the probability that the sample in \( S_j \) belongs to \( C_r \)-like.

According to the random forest algorithm, when dealing with continuous variables, there is also the problem of discretization of continuous variables. When people meet a certain demand, they will inevitably choose a higher level of demand. Establishing a graded reward system refers to providing different reward methods according to different achievements, so as to reasonably meet the needs of employees at all levels. An important task of enterprise HRM in the future is to establish an effective graded reward and incentive mechanism to stimulate the enthusiasm of every employee. The fundamental purpose of the establishment of an HRM information system is to help the company improve its administration level, core competitiveness, and rapid development. Its networked, streamlined, and standardized administration mode enables the HRM department to calmly face various challenges in the new situation. However, how to make the HRM information system more in line with the actual situation of enterprises and enhance the competitiveness of enterprises is still something that enterprises need to attach great importance to and study deeply.

5. Result Analysis and Discussion

6. Factor Analysis

The results of factor analysis show that the HRM system of high-tech enterprises can be divided into four dimensions, which are named human resource flow, work system, salary system, and employee influence. The factor analysis results of the HRM system are shown in Table 1.

The factor analysis of innovation capability shows that the innovation capability of high-tech enterprises can be divided into two dimensions, which are named technological innovation and administration innovation, respectively. The coefficients of the above two dimensions are above 0.8, with a considerable level of reliability, as shown in Table 2.

This experiment optimizes the parameters of the model to predict whether the session has buying behavior. The features used include session features and date features, and the number of features is 18. First, adjust the number of the most important parameter trees, as shown in Figure 3.

For this problem, when the number of trees is controlled at about 60-70% of the feature number, that is, when there are 10 trees in the figure, the best results can be obtained.

There are many different algorithms for implementing the decision tree in a random forest, such as ID3, C4.5, which uses information gain to select features, and CART, which uses the Gini index to complete the generation of the decision tree. In random forest, you can also choose the better decision tree to test the HRM and complete the model training by comparison, as shown in Figure 4.

There are many different algorithms to realize the Quetzal tree in the random forest. When the number of features reaches 8, the index value of Gini is 0.116, and the index value of Entropy is 0.106. From this, it can be seen that in the random forest, it is better to choose the Gini index to manage human resources.

6.1. Experimental Analysis of HRM. In a tree, when looking for the best split point, it is necessary to select the appropriate features by calculating the related indicators of features to HRM. At this time, the quantification of the selected features will affect the final result. Commonly used selection methods include the square root of the total number of features, logarithmic value, and all features, as shown in Figure 5.

Using the relevant indicators of the calculated features to select the appropriate features, at this time, the quantification of the features selected by HRM will affect the final results. When the number of features in the graph reaches 5, the average effect of using the square root method is better. At the same time, it also shows that the square root method is the most effective in the administration of the HRM system.

Add up the scores of the four factors of the HRM system as the score of the overall HRM system. According to the total score, find out the highest score of 26% and the lowest score of 25% as the dividing line between the high and low groups. There are 152 valid samples in this study, excluding 15 questionnaires with default items. The results are divided into 66 points as the lower bound, 36 samples belonging to the high group and 55 points as the upper bound, 33 samples belonging to the low group, as shown in Table 3.

After finishing the data collation, 230 samples were randomly selected from more than 500 data sets as the experimental data of this study. Each sample contains 10 attributes and one tag. The training after random grouping included 175 positive samples and 50 negative samples. The test set included 183 positive samples and 44 negative samples. The CWC-SVM model, the weight following forest algorithm, the balanced random forest algorithm, and the method in this paper are used to carry out experiments, and
the change diagram of HRM prediction accuracy under the four algorithms is shown in Figure 6.

Compared with the CWC-SVM model, the weighted random forest algorithm and the balanced random forest algorithm have higher prediction accuracy for HRM. The four methods are sorted separately. The method in this paper has the highest prediction accuracy, followed by the balanced random forest algorithm, the weighted random forest algorithm, and finally the CWC-SVM model. It has obvious advantages in HRM analysis of unbalanced big data sets. The efficiency and generalization ability of the algorithm are deeply studied. The method in this paper is to use interval variables to determine the distribution of samples.

The CWC-SVM model is still used. The weight follows the forest algorithm, the balanced random forest algorithm, and the method in this paper are used for experiments. The change diagram of the HRM error rate under the four algorithms is shown in Figure 7.

| Dimension                        | Item                                                                 | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Cronbach alpha |
|----------------------------------|----------------------------------------------------------------------|----------|----------|----------|----------|----------------|
| Technological innovation         | The company market will improve production technology to improve efficiency | 0.76     | 0.31     |          |          | 0.92           |
| administration innovation        | The company will provide solutions to customers’ problems            | 0.62     | 0.47     |          |          |                |
| Dimension                        | The company will improve customer value with innovative services     | 0.12     | 0.87     |          |          | 0.81           |
|                                 | The company will cooperate after analysis when putting forward reasonable requirements to customers | 0.15     | 0.57     |          |          |                |

Table 1: Factor analysis results of the HRM system.

| Item                          | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Cronbach alpha |
|-------------------------------|----------|----------|----------|----------|----------------|
| Human resource flow           | 0.72     | 0.34     | 0.17     | 0.34     | 0.86           |
| Compensation system           | 0.67     | 0.14     | 0.22     | 0.25     |                |
| Employee impact               | 0.24     | 0.77     | 0.131    | 0.24     | 0.73           |
| Human resource flow           | 0.44     | 0.72     | 0.142    | 0.23     |                |
| Compensation system           | 0.22     | 0.32     | 0.35     | 0.71     | 0.72           |
| Human resource flow           | 0.15     | 0.31     | 0.32     | 0.67     |                |
| Compensation system           |          |          |          |          |                |

Table 2: Factor analysis results of innovation capability.
Table 3: Differences between high- and low-level human resource practice groups.

|                          | High grouping |                        | Low grouping |                        | T-test |
|--------------------------|---------------|------------------------|--------------|------------------------|--------|
|                          | Average value | Standard deviation     | Average value | Standard deviation     |        |
| Working system           | 11.55         | 1.51                   | 7.58         | 1.91                   | 10.31  |
| Human resource system    | 29.61         | 3.86                   | 45.87        | 6.62                   | 21.32  |
| Organizational operational performance | 11.96         | 2.11                   | 9.23         | 2.23                   | 8.55   |
| Innovation performance   | 13.37         | 2.65                   | 9.31         | 2.46                   | 11.22  |
After the experiment on the error rate of HRM, the method in this paper still has a lower error rate than the CWC-SVM model. The weight follows forest algorithm and the balanced random forest algorithm have a lower error rate. The four methods are sorted. The method in this paper has the lowest error rate, followed by the weight follows the forest algorithm, then the balanced random forest algorithm, and finally the CWC-SVM model.

7. Conclusions

Networking and informatization can be seen everywhere in all walks of life in the current society. No matter the size of the company, both private enterprises and state-owned enterprises have one or more sets of administration systems. Administration systems have become a common administration tool and are widely used. Based on DM technology and the random forest algorithm, this paper studies the HRM system. There are many different algorithms to realize the unique tree in a random forest. When the number of features reaches 8, the index value of Gini is 0.116, and the index value of Entropy is 0.106. From this, it can be seen that in a random forest, the effect of using the Gini index to manage human resources is better. It is necessary to strengthen the attention of leaders at all levels to the HRM information system and strive for support from all aspects of manpower, material resources, and financial resources so that the realization of its informatization can ensure the quality and quantity. The purpose of building an HRM information system through DM technology is to make the system standardize the business work, rather than make the system adapt to the existing nonstandard business work. Under the random forest algorithm, the daily work of enterprises must be standardized and unified, so that the HRM information system can help to avoid some irregular operations in actual business work and continuously promote the HRM.
Data Availability

The labeled dataset used to support the findings of this study is available from the corresponding author upon request.

Conflicts of Interest

The author declares no conflicts of interest.

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