Research on Strategic Decision Model of Human Resource Management based on Biological Neural Network

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***Abstract*—Human resource management system is an indispensable part of information strategy construction. Based on the theory of biological neural network, this paper constructs the strategic decision model of human resources management, then uses the micro-integration method to predict the demand for human resources, and solves the quantification problem of human resources supply prediction. In the simulation process, the model analyzes the current situation of the personnel management system and the necessity of research and plans and designs a computer-aided personnel management information system based on the Client/Server biological neural network structure. Personnel quality evaluation through the evaluation and analysis of the quality of the evaluated, to provide effective reference information for the enterprise personnel decision and index selection, the enterprise human resources allocation, use, training and development is of great significance. Neural networks rely on the powerful data storage, processing and computing capabilities of computers to help enterprises respond quickly to changes in external market conditions, improve the efficiency of decision-making, and create greater value for enterprises. Through experimental testing, it is found that when the iteration is 5, the network verification results have the best consistency. When the iterations reach 7, the standard of training target error set in this paper is reached. When the samples reached 60, the screening accuracy of the network reached 92.18%; when the samples increased to 80, the screening accuracy was further improved to 92.84%, indicating that the screening accuracy of the network increased with the training samples, which could be used to detect and classify samples quickly, objectively and accurately.**

***Keywords*—Biological neural network; human resources management; strategic decision making; index selection**

I. INTRODUCTION

With the gradual improvement of biological neural networks, the use of biological neural networks to establish a comprehensive evaluation system can often achieve unexpected results [1]. Especially for the comprehensive evaluation of those systems with many evaluation objectives and complex relationships between the objectives, the biological neural network model can often achieve better results [2]. There are many mature methods for a systematic, comprehensive evaluation, such as the fuzzy evaluation method, grey system evaluation method, AHP (Analytic Hierarchy Process) and so on [3-5]. Using the analytic hierarchy process to determine the weight can weaken the human factor [6]. Still, AHP requires that the elements in the hierarchical structure system of indicators are independent of each other [7]. Otherwise, this method cannot be applied. Still, there is often a dependency relationship between these indicators [8].

The key and difficult point of the human resource planning scheme design is the choice of the human resource forecasting method. The development and management of human resources is the essence of labour and personnel management and the core work of enterprise management [9-11]. Human resource planning is the business foundation of human resource development and management. Without reasonable and supporting human resource planning, any plan can only be a piece of paper [12]. Many enterprises lack systematic operation of their human resources, which will inevitably affect the development of human resources and the improvement of labour productivity [13]. Therefore, companies should raise awareness of the importance of human resource planning. By using this system, the personnel department can promote the standardized management of the personnel department and improve the management efficiency and level; it can conveniently and quickly organize and manage the personnel information originally scattered in various departments and provide reliable data for the scientific decision-making of the unit [14].

Based on the biological neural network theory, this paper constructs a strategic decision-making model for human resource management. First, on the basis of analyzing the characteristics of the enterprise and the basic types of human resource strategy, the basic classification of the human resource strategy of the enterprise is determined. Secondly, it extracts four dimensions for the index, uses the method of biological neural network analysis to take indicators of human resources, and then builds the enterprise's human resources strategic decision-making index system. Finally, it takes S company as an example to carry out empirical research. Through comparison, grey forecasting technology and neural network forecasting technology are used to forecast the human resources demand of enterprises. Enterprises can choose one according to their actual situation and then use the micro-integration method to analyze the results and amendments. On this basis, the article applies the current situation verification method and the biological neural network prediction to the enterprise human resources supply forecast, analyzes and demonstrates the applicability. It provides a relatively novel and effective forecasting method for enterprises to carry out human resource planning.

II. Related Work

The focus and difficulty of human resource planning for enterprises is human resource forecasting, and the forecasting method should be selected according to the characteristics of the enterprise [15]. Due to the lack of a relatively mature set of personnel scheduling procedures, it is impossible for enterprises to predict personnel needs reasonably. Therefore, an important part of their human resource planning is establishing a forecast model of enterprise human resource supply and demand [16].

The management system is not combined with the actual needs of human resource management. Still, it is only professional research and development and does not systematically and comprehensively cover human resource management content. Kouhalvandi [17] proposed a dual-objective binary integer programming (BOBIP) model in a fuzzy environment to obtain the best results of person-post matching, calculate the fuzzy utility similarity function to measure the satisfaction of employment outcomes and adopt a mixed integer programming model which realizes two-way matching between enterprises and students. Chen [18] also constructed an evaluation index system with scientific and technological personnel as the research object and proposed a fuzzy comprehensive evaluation model based on ANP (Analytical Hierarchy Process) to realize the matching grade evaluation of scientific and technological talents. Comparatively speaking, this paper summarizes the factors affecting employee dimission from the three levels of individual, organization and environment, defines the sources of employee dimission risk, and then combines the characteristics of employees at the beginning of their career with the advantages of sensitivity, relative independence, extensive, measurable, comparable and operable.

In the study of the matching between people and organizations, Falah [19] pointed out that when the ability of the individual is what the organization needs, the matching between the two can be achieved; if the organization can meet all the needs of the individual, it can also promote the matching between the two parties. The situation's impact includes employees' job selection, career planning, etc. Chen [20] believes recruiters are most concerned with selecting candidates with the required knowledge, skills, and attitudes. In contrast, this paper attempts to use the artificial neural network itself has the characteristics of parallel data processing, good fault tolerance, self-adaptation and self-learning, and better nonlinear function, so as to systematically analyze the enterprise personnel quality structure, which is more generic and concise. Based on the general competency model, some scholars combine AHP and fuzzy proximity to calculate the efficiency matrix of each employee and use the assignment model to achieve the best match between all employees and positions in the enterprise [21]. Workflow mainly realizes the transfer of work between the business process participants. Comparatively speaking, this paper selects several early warning indicators of turnover risk to form an early warning index system of turnover risk. Then, on the basis of the status data of early career risk warning indicators, the principal component analysis method is used to propose the early warning index of turnover risk for employees at the beginning of their career, and the index system is more perfect and streamlined [22-24].

III. Construction of a Strategic Decision-Making Model for Human Resource Management based on a Biological Neural Network

A. Biological Neural Network Hierarchy

For the enterprise performance evaluation system based on the biological neural network, here is the performance evaluation of the customer representative index of the enterprise customer centre as an example. To evaluate the performance of the customer representative, as long as the performance indicators and relevant data of the customer representative are input into the trained network, the corresponding output, that is, the performance score s (i, j) of the customer representative, can be obtained.

$$\sum p(i,j)/p(i) = 1 \quad (1)$$

$$s(i,j) = \sum a(i)x(i) + w(i)w(j) \quad (2)$$

After the network w(i)w(j) is trained, that is, after the weights of the nervous system are determined and the structure is stable, new data can be processed. The corresponding comprehensive evaluation results can be given. With reference 1-y(t) to the set judging standard, the performance z(x, y) of the customer representative can be automatically determined according to the score.

$$z(x,y) \in z(y(t) - x) + z(1 - y(t) + x) \quad (3)$$

$$\sum x(i,m)/x(i) = x(i)/x(m) \quad (4)$$

The neuron transfer function x(i) in the middle layer of the network x(m) adopts the sigmoid tangent function tansig. This is because the output of the function lies in the interval [0, 1], which just meets the requirements of the network output. The training function uses the trainnlm function d(m, mt).

$$d(m,mt) = (y(t) - c(t)) * c(mt - 1) - c(1 - m) \quad (5)$$

The network modelling principle y(t)-c(t) is that when the input vector is farther away from the weight vector, the output of the radial base layer is closer to 0, and the output of the linear layer is less affected; and when the difference between the vectors is 0, the output of the radial base layer is 0. For the specific design and implementation of the network, the modelling function in Fig. 1 can be used to output the function.

15 enterprises were randomly selected to form the sample population. The model evaluates the natural distribution of the status of 15 samples under 20 primary selection indicators and, according to the evaluation results, divides them into five levels: very poor, poor, fair, good and very good. The influencing factor of the department is the state of human resources itself, which can be divided into two second-level indicators. The remaining 8 indicators of environmental conditions constitute the primary selection indicator set for enterprise human resources strategic decision-making.

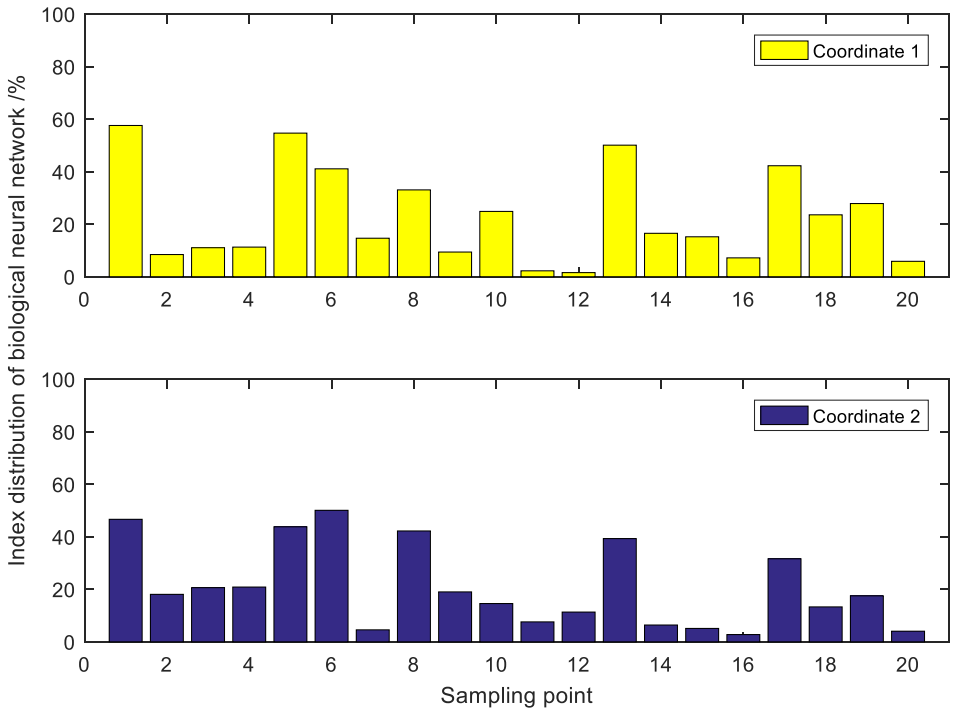

Fig. 1. Distribution of biological neural network indicators.

B. Composition of Human Resource Factors

Through investigation or asking experts to tick the factors of each level of human resource evaluation indicators (important, relatively important, less important, and unimportant), the comprehensive judgment matrix and single-factor evaluation matrix are determined according to the corresponding percentage. Then it can find out their closeness to the fuzzy comprehensive evaluation matrix. According to the principle of choosing the closest, finding the weight vector closest to the comprehensive evaluation matrix is a more realistic weight distribution scheme. When encountering the situation that the solution b(i)x(i) of the fuzzy equation is not unique, there is no better method to select which set of solutions to use as the weight vector exp(1-x).

$$\sum b(i)x(i) - a(i)x(1-i) = exp(1-x) \tag{6}$$

$$d(x,x') < v(x)t(1-bx) - v(x')t(1-ax) \tag{7}$$

In terms of hardware, it means a network computing environment consisting of desktop computers, networks and servers. The meaning of software d(x, x') mainly refers to that a software or application system t(1-ax) is designed as a complex system containing many components, these software components can even be distributed on different machine nodes in the network rest(s, t), and according to the relative roles of the software components are divided into "Client" and "Server", the client software can request the services of the server software.

$$\text{rest(s,t)} = \{s(i), s(i-1), \ldots, s(2), s(1), s/k(s, t^{i-1})\} \tag{8}$$

$$\sum n(i,j)t(i)/t(i-1) = 1 - p(i)/p(j) \tag{9}$$

In the C/S (Client/Server) system, the client n(i, j) always makes a service request to the server first, and the server responds to the client's request 1-p(i)/p(j) before sending the service result back to the client. The server never initiates a relationship with the client. The client can also make requests to multiple servers concurrently. In this sense c(s, t), the client is always active, and the server is always passive, so it is asymmetric.

$$c(s,t) \in [\frac{s-1}{s}, \frac{i-t+1}{s-1}, i] \tag{10}$$

The number of input/output neuron nodes of the network is determined by the external description of the problem. The number of nodes in the input layer corresponds to the number of indicators of the customer representative index of the enterprise customer centre. The text contains the number of customers per customer representative (CSR), the proportion of time that customer representatives work directly for customers, the number of spy orders completed per customer per day, the average time to access customer representatives, and the increase in air talk time per customer. The output result is the evaluation score of the customer representative's performance.

Fig. 2 specially designs the standard unit comparison assignment method to calculate the importance of the alternative indicators. The method is to assign the importance degree of the least important alternative index to 1, use the multiple a of the importance degree obtained by comparing the other indicators with it as the assignment of the importance degree of each index, and the normalized value is used as a method for the alternative index importance shape. It can be

observed that the error meets the requirements. Therefore, the established biological neural network is safe and meets the requirements. This network can be used to infer and predict the total evaluation value of the performance representative according to the existing customer representative performance indicators. In this way, it can be judged whether the performance of the customer representative has reached the expected target. This method avoids the unreasonable aspects of setting up the weights of various indicators. At the same time, it is scientific and convenient to use and avoids the influence of human factors on the overall performance evaluation.

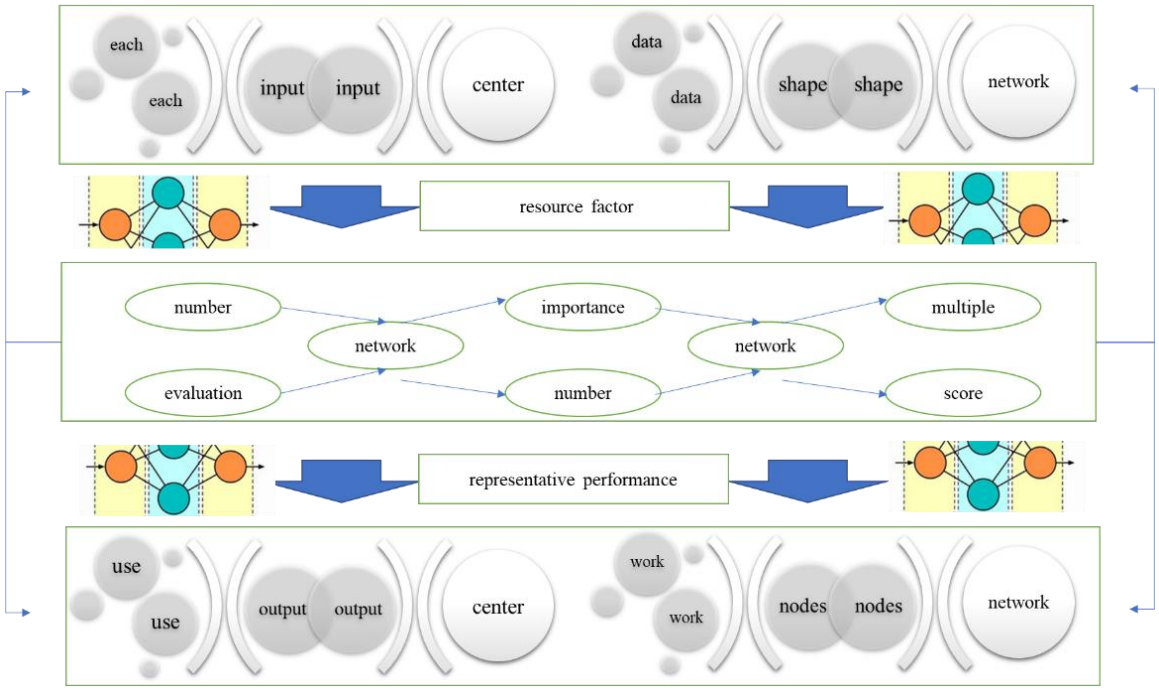

Fig. 2. Human resource factor structure topology.

C. Model Factor Recursion

It can input the model sample matrix data into the MATLAB work window, where the input vector of the training sample is P, the output vector (target value vector) is T, and the input vector of the test sample is PL. After the retraction, a file named P will appear in the workspace window; double-click to open it, and then copy the training sample input value to this file. The MATLAB input matrix takes the employee as the column vector and the factor as the row vector, so in the process of copying, the data s(t, t-1) needs to be transposed before it can be imported into MATLAB so that the matrix e(k)+t of the input vector P is established in MATLAB.

$$s(t,t-1)=\frac{1}{1-n}\sum(e(k)+t)^2 + \sum(1-t)^2 \quad (11)$$

$$\sum_{i=1}^{t}\left(\frac{Y}{1-r_i}+r-t\right)^2-\sum\frac{r}{1-r}=1 \quad (12)$$

The percentage factor 1-r(i) is a method of multiplying the score of each element by the percentage factor that the factor occupies in the total score. Usually, the total score of the four levels of personnel function is expressed by the percentage system, and each element is also evaluated by the percentage system. When measuring, the preliminary score of each factor measured is first multiplied by the percentage coefficient of the factor in the structure. The element score is obtained, and the scores of each element in the same structure are added to obtain the preliminary score of the structure and then multiplied by the percentage coefficient 1-t of the structure in the total score p(t|1<t) to give the structure score. The accumulation of the four structure scores is the overall score.

$$|(1-t)p(t|1<t)+(1+t)p(t-1)|<N(t)$$

$$miu(x,y)=miu(x)miu(y) \quad (13)$$

$$/\sum max(x-t+y-t)^2 \quad (14)$$

This paper determines the 5-12-1 network structure miu(x, y) through multiple expert experience judgment tests and derivation max(x-t) of empirical formulas, using tansig as the activation function of the network, the number of training samples is 57, and the test data is 16. Then, the training samples are input into the neural network system for training. After 1205 times of learning, a weighted network with a learning accuracy of 0.000001 is obtained. Then the network is called to simulate the test data set, and the neural network simulation results of the test data are obtained. The design work of the system's front end includes interface development and scripting. The development tool adopts powerbuilder6.0. Interface design is the main work of front-end application design, including input and output design. A total of 90 windows and 83 data windows are established in the implementation process.

TABLE I. FACTOR ANALYSIS OF BIOLOGICAL NEURAL NETWORK SAMPLES

Biological neural network codes	Factor analysis text
Public void deletemajorchange();	Each indicator is evaluated
Return salarydao.getbycondition;	The difficulty of obtaining $x-t$
Long majorchangeid;	Independent of each other $\lvert\Delta x-\Delta xt\rvert$
Return majorchangedao;	By means of expert scoring
Getbycondition(hql, o);	In the indicator system $rand(m,n)$
Deletemajorchange;	The representativeness $y-t$
Salarydao.deletesalary(salaryid);	The indicators do not intersect
Get.majorchangedao.(majorchangeid);	If the indicators $p(t\lvert 1<t)$
Changegetadd();	The indicator system can only be $N(t)$
Public list {};	Obtaining alternative indicators
This.changegetadd();	At the same level are $k(s,t^{i-1})$
Return majorchangedao;	And simplicity of $1-p(i)$

Table I divides the difficulty of obtaining alternative indicators into five levels, namely (easy, relatively easy, general, relatively difficult, and difficult), and the corresponding quantitative values are (5%, 25%, 50%, 75%, 95%). The difficulty of obtaining each indicator is evaluated by means of expert scoring. The indicator system's representativeness and simplicity can only be guaranteed if the indicators at the same level are independent of each other and the indicators do not intersect. After the input of the sample, the system learns according to the minimization rule of the mean square error between the expected output and the actual output, and adjusts the weight matrix and threshold vector. When the error is reduced to the required accuracy, the system will stop learning, and the weight matrix and threshold vector will be fixed and become the internal knowledge of the system, which can be called for decision-making or prediction when it is used next time.

D. Optimization of Strategic Decisions

This paper uses neural network modelling to identify strategic decision candidates for specific positions. The sample data adopts the data provided by a talent evaluation research institution. After a four-year investigation, the evaluation and research institution obtained a total of 1,080 sample data, of which 30 were randomly selected for follow-up investigation. The sample data in this paper is based on the actual needs of neural network modelling. After several discussions and consultations with the institution, 25 sample data were selected. One part is used for modelling, and the other part is used for generalization testing. The error ratios of the three test samples are 4.62%, 8.24%, and 6.86%, respectively, and the errors are all below 10%, which does not affect the final strategic type selection.

Since Fig. 3 aims to explore the specific application of neural networks in talent evaluation, a conventional neural network algorithm is used, and the neural network toolbox (Neural Network) can greatly facilitate the network design process, so this paper uses MATLAB neural network toolbox. The degree of fitness for a job can be described by a single output network. Therefore, the number of output layer units is set to l. The number of input neural units is determined according to the number of influencing factors; 6 units are taken. The algorithm operation platform adopts MATLAB. Among the 25 sets of data, 18 sets are selected as training samples, and 7 sets are used as generalizations.

Similarly, the data matrix of the output vector T can be established: enter T=zeros (5, 20) in the MATLAB command workspace; after the retraction, find the T file in the workspace window and double-click to open it. Unlike the input of P, the T vector matrix must be manually input. Since the MATLAB input matrix uses employees as a column vector, it is necessary to input according to each column, and each employee has a different output value (level). There are different input forms for each level.

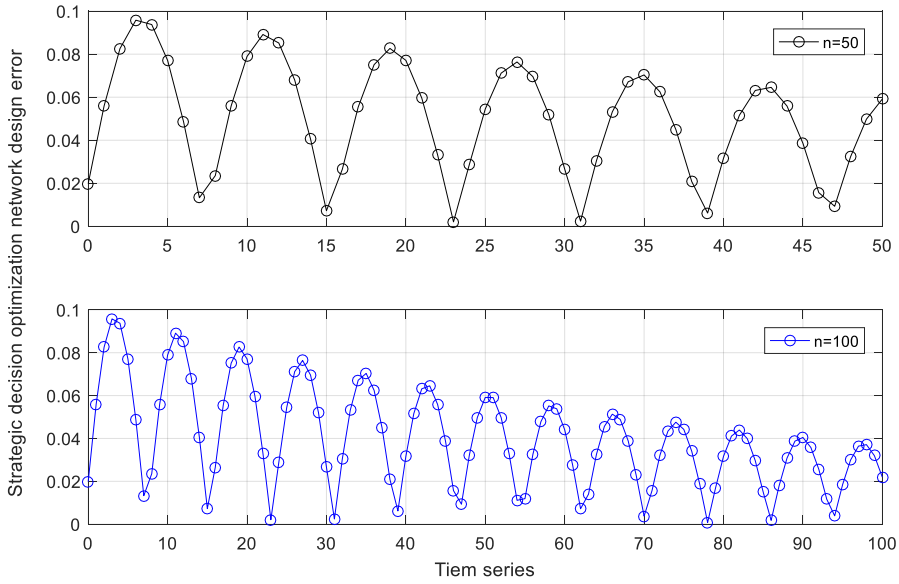

Fig. 3. Strategy decision optimization network design results.

IV. Application and Analysis of Human Resource Management Strategic Decision Model based on Biological Neural Network

A. Preprocessing of Biological Neural Network Data

According to the requirements and characteristics of the biological neural network, after the test, feedback adjustments were made according to the test results, and necessary modifications and additions were made to the indicator system. Various quality content is tested separately to obtain closer to the real evaluation results. 120 samples collected in this paper were distributed to A1, simulating the situation in which enterprises were subjected to many CVs (curriculum vitae). After all, samples are marked and numbered in Fig. 4, the top 20 (screening rate P=20%) best talent resumes are screened out using the traditional resume screening method with reference to the weights of each indicator determined by the business owner in the step.

The goal of the early-career employee dimission risk early warning system is to realize the evaluation of employee dimission risk status on the basis of the collection of employee dimission risk information, output the dimission risk early warning signal, clarify the source of risk, propose risk treatment countermeasures, and achieve the elimination of risk status or take countermeasures to reduce the loss caused by employee dimission. At the same time, it can be clearly seen that although samples 1 and 2 are in the same matching level, sample 2 has a higher degree of membership than sample 1 for the evaluation level of person-post matching, so it can be judged that sample 2 has a higher degree of membership. The matching degree is better than the No. 1 sample. According to the evaluation results of the matching degree of people and positions of the samples, it can be known that samples No. 1-2 show a good degree of matching. In contrast, the matching degree of sample No. 2 and the position of the project director is not good. The human resources management department can consider implementing it when necessary. The input process should be as simple and clear as possible to reduce the occurrence of errors, and the input system should have fault tolerance and data verification functions.–For example, in the input interface, the basic information of employees is concentrated in one interface, which can not only avoid repeated input of information, reduce the input work scene, but also maintain the consistency of data; use the selection method to standardize the content to make it simple and convenient to fill in, use the Tab control to achieve file cabinet entry, the Tab control can organize a large amount of information or controls in a small space. Using the Tab control and DataWindow filtering function, a large amount of information is concentrated in one window, which is convenient for user management and more efficient than the general method.

From the experimental results in Fig. 5, it can see that the screening method based on a biological neural network is superior to the traditional screening method from the time dimension. After completing all the above steps, MATLAB is used to build a biological neural network, randomly select 2/3 (80) samples from the qualified samples and unqualified samples for training, and the remaining 1/3 (40) samples are used for training. Screening 24 resumes from 120 resumes, the traditional screening method takes nearly 50 minutes. Under the same experimental conditions, the resume screening method using the biological neural network only takes 1 to 2 minutes. In the actual medium and large enterprises or talent market, talents are often screened from thousands or even more resumes. Therefore, with the increase in the number of resumes, the method in this paper can save double the time cost. To sum up, when predicting, it is necessary to determine a smooth factor of an appropriate size so that the dependent variables of all training samples can be fully learned and the distance between different training sample points and prediction samples is considered. The smaller the distance between the samples, the larger the corresponding weight of the dependent variable, which in turn helps the network to make better generalization predictions for new samples.

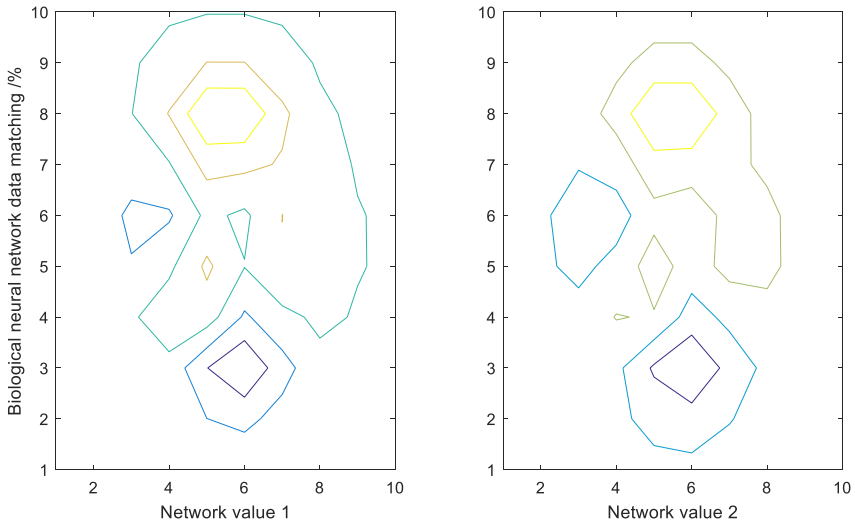

Fig. 4. Biological neural network data matching.

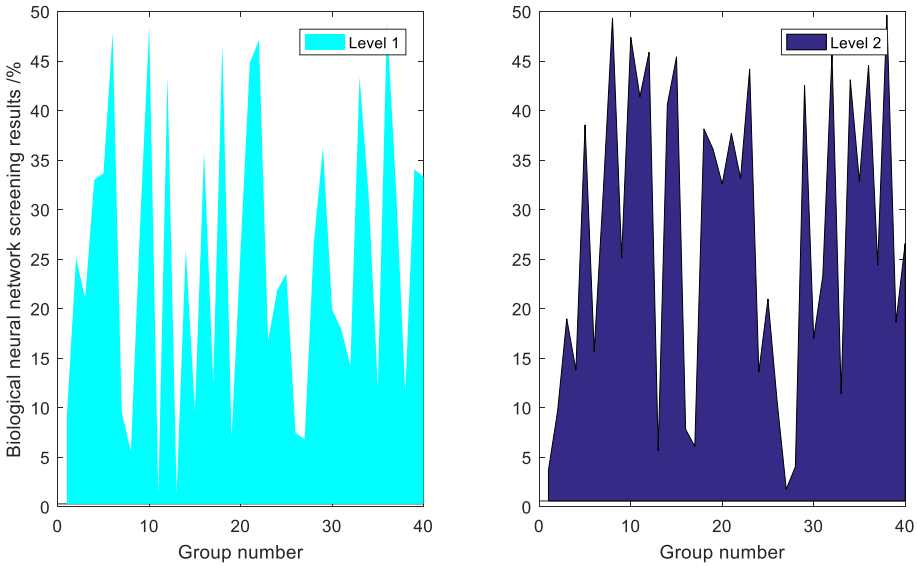

Fig. 5. Screening results of biological neural network.

B. Human Resource Preparation

There are many factors that affect the value of human resources establishment, and which indicators are used to evaluate human resources have a great impact on the accuracy of the results. In this example, seven-factor indicators are used to evaluate the value of human resources, some of which also include secondary indicators, and the seven categories of indicators are selected by the method of clustering, which is scientific to a certain extent. But there are also some defects, such as salary income and other factors that affect the value of human resources are still not included. Therefore, the establishment of a complete set of indicators and factors that can fully reflect the value of human resources is crucial for scientifically and rationally evaluating the value of human resources. By designing and distributing questionnaires (resumes), this paper finally obtained a total of 123 sample data. After preliminary sorting and screening of the data, 3 samples that did not meet the requirements were eliminated.

All data are placed in the whole network. Fig. 6 performs linear regression on the actual output of the network and the corresponding expected output. It is found that the overall output value tracks the expected value better, and the corresponding R=0.97822, which is very close to 1. Spring realizes the specific business logic processing work and the scheduling and distribution of the processing results. The presentation layer is responsible for the encapsulation and transmission of the request object and the display of the feedback results, and the specific interaction with the database is processed through the persistence layer objects. Although the templates in Spring implement the encapsulation of some database operations, the specific processing is still implemented by Hibernate. After Hibernate processes the data, the results are handed over to Spring Business processing for processing. The interaction between the framework and the database is done through Hibernate, which is the persistence layer. For the operation request from the presentation layer, first, submit the request to the business logic layer where Spring is located for processing.

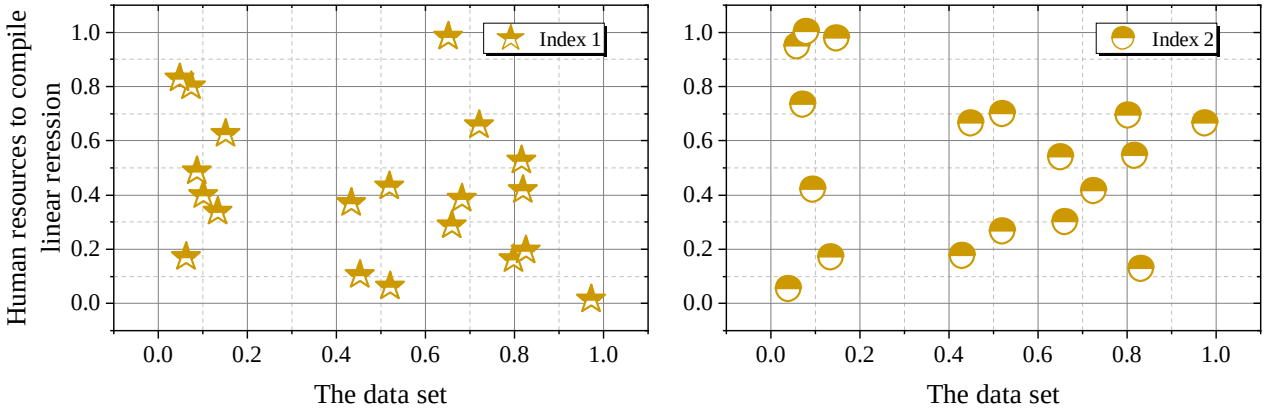

Fig. 6. Linear regression of human resource staffing.

C. Strategic Decision Simulation

This strategic decision evaluation project has adopted various means such as knowledge examination, psychological quality test, interview, simulated performance technology and other means to conduct a comprehensive quality inspection of the assessees. After selecting suitable personnel for the test, feedback adjustment was made according to the test results, and necessary modifications and supplements were made to the index system. Fig. 7 is to organize the data of this evaluation according to the requirements of the aforementioned neural network model and divides it into two parts, the neural network quality evaluation model learning sample set and test sample set, and conduct empirical analysis. It is hoped that the network model can pass the learning to absorb the judgment experience of experts.

The size of the network is the most critical. Usually, the number of samples is at least more than the number of network connection weights and generally requires more than 5 to 10 times. Especially for a three-layer biological neural network, the number of samples must be greater. Otherwise, the network must have redundant nodes, and the systematic error is independent of the characteristics of the training samples and tends to be 0; the network has no generalization ability at all. The value of the smoothing factor is very important and has a great impact on the approximation accuracy and prediction effect of the generalized regression network. If x is very large, y is close to the mean of all training sample dependent variables; conversely, if x is close to 0, y is close to the value of all training sample dependent variables. Therefore, when the sample to be predicted happens to be within the learning range of the training sample, the calculated predicted value will be very close to the expected output. Still, once a new predicted sample is not included in the learning range of the training sample. Then the prediction effect will be significantly reduced, and the network's generalization ability will be significantly reduced.

D. Example Application and Analysis

This paper uses the biological neural network optimization algorithm, the hyperbolic tangent Sigmoid function tansig is used as the transfer function between the input layer and the hidden layer, the purelin linear function is used as the function between the hidden layer and the output layer, and the trainlm function is used as the training function, set the error to 0.0001. After three iterations, the network error reaches an acceptable range, and the established network tends to be stable. Finally, the evaluation indicators of the group personnel quality evaluation project were generally determined as major items, and each item was divided into various quality contents for testing respectively, in order to obtain the evaluation results closest to the truth. In the Network/Data Manage window, click it to train the network, select the input vector p from the "Inputs" drop-down list, select the target vector from the "Targets" drop-down list, and train in the training parameter settings in Fig. 8. The number of steps "epochs" is 50, the training goal "goal" is 0.01, and the rest are default items.

The integration between the WebWork presentation layer and the control layer S.pring is mainly carried out through two steps: the first step is to initialize Spring when WebWork is used; the second step is to configure Spring while configuring WebWork. All business processing or action processing is unified by Spring. The core of the Spring framework is dependency injection. The implementation of dependency injection in this system includes aspects: injecting data source management and transaction management and injecting interface implementation classes. Through the injection of various interfaces, the unified database operation management of all action processing by transaction management can be realized. The implementation of specific dependency injection is achieved by configuring actions in xml. After obtaining the sample data, the "factor scoring method" is used to evaluate and score each sample. The evaluation results have only two cases, namely 1 or 0. 1 means that the sample is qualified, it means that it has entered the interview process through the audition stage, and 0 means that the sample is eliminated. Compared with the reference [25-27], the artificial neural network used in this paper has a better nonlinear function. This quality evaluation project adopts various means such as knowledge examination, psychological quality test, interview and simulation performance technology to conduct a comprehensive quality investigation of the interviewees. In the process of assessment, the data are sorted according to the requirements of the aforementioned neural network model and divided into two parts as the learning sample set and the test sample set of the neural network quality assessment model for empirical analysis.

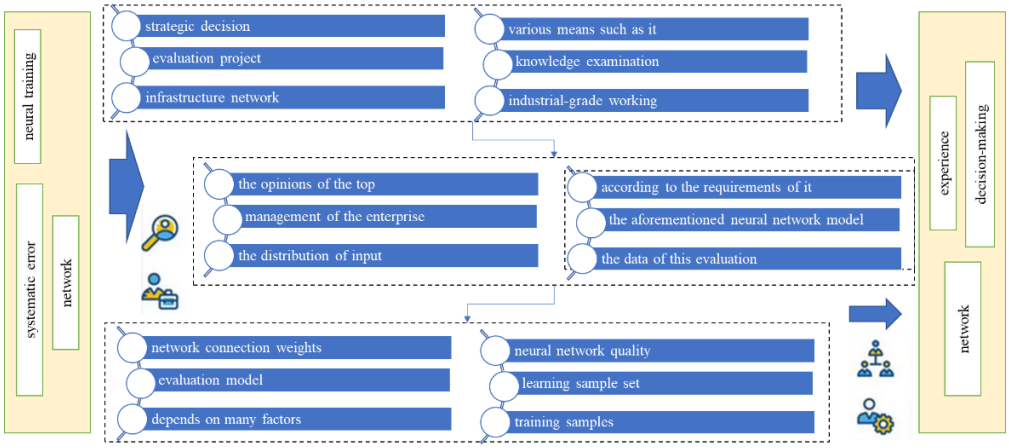

Fig. 7. Strategic decision-making neural network training.

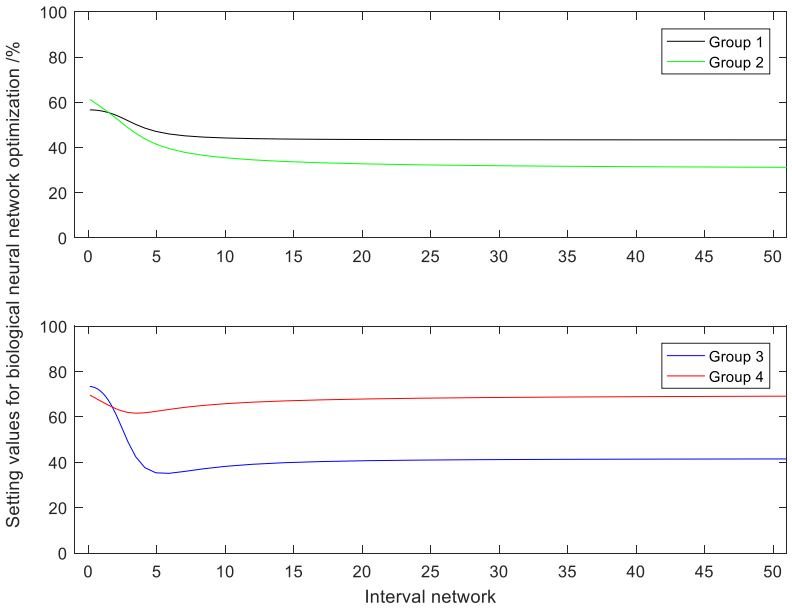

Fig. 8. Biological neural network optimization settings.

The errors of the network simulation results in Fig. 9 are controlled below 5%, and a good evaluation effect has been achieved. The sample evaluation is carried out by the method of "expert evaluation". The model finds 2 entrepreneurs in the field, comprehensively considers the pros and cons of each sample according to the weight distribution, and evaluates all samples as "qualified" or "eliminated". In order to further simulate the real scene of enterprise recruitment, it assumes that the screening rate is P=0.2 (Enterprises can set the parameters of P by themselves). Companies need to select the best top 20% of resumes from the 120-point resumes. In the end, the top 24 best samples and 96 less excellent samples were selected. After testing, it is found that the trained biological neural network can detect and classify samples quickly, objectively and accurately. This shows that the neural network method can fully absorb the judgment experience of experts and make more accurate judgments on the test data, which confirms the availability and accuracy of the biological neural network method.

E. Discussions

According to the analysis of neural network, it can be clearly seen that in the application of BP neural network model in the company, although the output value of BP network is relatively low, on the whole, it fluctuates slightly between the satisfactory value, and the stability is relatively high [28-30]. This paper believes that the decision requirements are met. From the perspective of the prediction effect of the test set, the training effect and accuracy of the improved generalized regression neural network proposed in this paper are higher than that of the generalized regression neural network model, which proves the feasibility of the neural network model proposed in this paper for man-post matching evaluation.

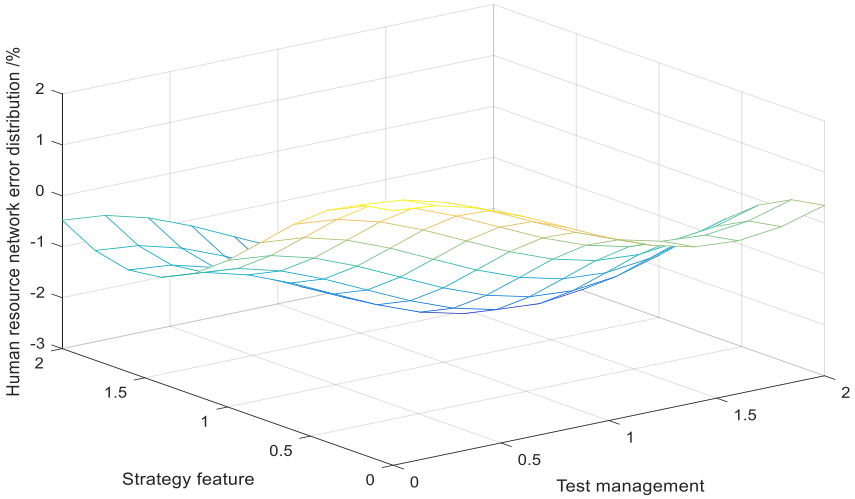

Fig. 9. Error distribution of human resource management strategy network.

V. CONCLUSION

In this paper, a strategic decision-making model of human resource management based on a biological neural network is constructed. On the basis of planning the organizational structure of the enterprise, an enterprise human resource planning scheme is designed. First of all, the model starts from the function of the personnel management system, studies various talent evaluation methods, and tests the learning ability, adaptive ability and function approximation ability of biological neural networks. Secondly, a competency-based enterprise project director personnel-post matching evaluation index system was established, including 5 first-level indicators and 8 second-level indicators of knowledge skills, goal planning, plan promotion, social roles, attitudes and values. In the process of resource management, the process is not standardized, and the degree of information sharing is low. Through the analysis, design, development and implementation of the needs of the target unit, the human resource management system suitable for the company is completed. Finally, an example uses the generalized regression neural network model to conduct a comprehensive evaluation and empirical research on the matching of enterprise project directors and positions. It uses the MATLAB toolkit to complete the specific application of biological neural network modelling in talent evaluation and achieves good results. The training (learning) of biological neural network depends on the original data, which means that the accuracy of neural mocking network simulation is also limited by the accuracy of the original training data, resulting in a significant decrease in the training efficiency of neural network and the accuracy of simulation results. To solve this problem, the method of anonymous participation is adopted, the cost-benefit principle is considered, and some weights are assigned respectively, so as to obtain the final weighted average score of each employee. To a certain extent, the scheme avoids the influence of internal personnel's personal bias on the accuracy of the original training data, and is more conducive to the training of neural networks.

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