Optimization of Person-Post Matching Model for Improving Economic Management Ability

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Abstract—With the application of digital scenes of human resources, in order to improve the economic management ability of talents, it is necessary to establish scene rules according to the tag library and portraits of economic management talents, posts and tasks, and establish a matching model of people and posts. In order to improve the economic management ability, an optimized design method of a matching model of people and posts based on big data fusion is proposed. The application rules for the screened tags is designed based on the scenario requirements, we assign values and design weights for the tags in the calculation and scoring model in combination with economic management promotion and model optimization, the relevant business scenario tags is selected based on the economic management talent tags according to the business scenario requirements of cadre optimization and job matching, the application rules is designed, the tag weights is set by adopting the methods of big data fusion and sample tag identification, and the fuzzy feature rule detection and correlation analysis are taken. According to the business application suggestions, three types of quick screening rules are provided for employers to choose or customize other quick screening rules, so as to realize the optimal design of the economic manager's job matching model. Empirical analysis shows that using this model to design the matching model of economic managers' posts can improve the identification ability of human resources labels, and the allocation performance of different labels and user-defined weights is better, the level of economic management is improved, and the integration depth is higher.

Keywords- big data fusion; Economically beautiful; Person-post matching; Label identification; Apply rules

1 INTRODUCTION

In the application of human resources digital scene, it is necessary to establish scene rules according to the tag library, talent portrait, job portrait and task portrait, etc., to support the realization of business needs. Digital research on human resources can be applied to many scenarios of human resources management in the company, supporting intelligent decision-making of full-cycle management, and realizing three-dimensional and all-round human resources management objectives. The design of application scenario rules is mainly to select relevant business scenario tags based on talent tags according to the business scenario requirements of cadre optimization and job matching, and design application rules and set tag weights. In the system interface, based on the tag application rules, the personal matching results of the candidates can be automatically calculated, the matching degree of the candidates and the subdivision dimensions can be displayed, and the candidates can be intelligently recommended accordingly [1].

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At present, the selection of company cadres conforms to the process links specified in, including analysis, judgment and motion, democratic recommendation, inspection, discussion and decision and appointment. In addition, based on the requirements of democracy and openness, the company added democratic evaluation, individual talks and cadre publicity, pre-appointment collective talks and other links to the selection work to ensure the rigor and transparency of the cadre selection system [2]. The headquarters and its affiliated units strictly abide by the system regulations on the selection and appointment of cadres in the Management Regulations of Company Leaders formulated by the company, which embodies the principles of party management of cadres, performance, rigorous procedures and democracy and openness [3]. At present, in the cadre selection process, the selection of candidate list is mainly carried out offline, build a matching model of people and posts, establish a scoring model based on matching people and posts, combine the method of type tag identification, and make a comparative analysis of the design of matching model of people and posts and the dimension of people subdivision. In the digital scene of human resources, establish matching model of people and posts and scene rules according to tag library, talent portrait, post portrait, task portrait, etc., in order to support the business needs in the process of matching people and posts, and study the matching model of people and posts is of great significance in promoting the digital management and construction of human resources. In this paper, an optimal design method of the matching model of people and posts based on big data fusion is proposed. Design the application rules for the screened tags based on the scenario requirements, such as sorting out the usage of tags, assigning values and weight design for tags in the calculation and scoring model, etc. According to the business scenario requirements of cadre optimization and matching people and posts, select relevant business scenario tags based on talent tags, design application rules, set tag weights by adopting the methods of big data fusion and sample tag identification, and provide three types of fast screening rule suggestions according to business application suggestions to realize the big data fusion. Finally, the simulation test shows the superior performance of this method in improving the ability of person-post matching and talent tag identification [4].

2 SCENE CONSTRUCTION AND DATA PROCESSING

2.1 Scene model building

We build a person-post matching model, identify the features of the screened labels according to the requirements of the scene, refer to the company's post management system and the post matching degree analysis standard in the internal talent market of the pilot unit, and establish the employee person-post matching score model label to support the selection of the best [5], with eight labels: education background, work history, professional qualifications, performance results, awards, training, knowledge and skills, ability and quality. By selecting different labels and user-defined weights for dynamic score calculation and candidate ranking, and analyzing the connection weighted feature quantity of the first distribution node in the layer, it is obtained that the time series of the label data of the people-posts matching rules is n data inputs of the first block chain fusion node in the layer, which respectively represent the energy threshold of the first sampling node in the heterogeneous system of the label data of the people-posts matching rules, and a complete and effective knowledge base is constructed to express the data flow model of the people-posts matching rules labels as follows:

$$x_n = x(t_0 + n\Delta t) = h[z(t_0 + n\Delta t)] + \omega_n \quad (1)$$

Wherein, $h(.)$ is the detection statistical distribution sequence of job matching rule tag data, ω_n is the distribution characteristic quantity of job matching rule tag data, and at the input layer of the cloud information processing platform, the distribution function of job matching rule tag data in the L layer $(k = 1, ..., L)$ is obtained as follows:

$$x_j^{(k)}(n) = y_j^{(k-1)}(n) \quad (2)$$

According to the above analysis, the cloud environment integrated information processing model of the tag data of people-posts matching rules is constructed, and the storage structure model of the tag data of people-posts matching rules is constructed by using the joint feature analysis method of knowledge base and model base, so as to improve the detection and identification ability of the tag data of people-posts matching rules [6].

2.2 Data Feature Detection of Job Matching Rule Label

In the design of the scoring model of people-posts matching, the extra bonus results of feature tags are calculated, and all the candidates of the target positions are ranked overall. By using the joint feature analysis and data filtering detection method, the distribution knowledge base of people-posts matching rule tag data facing different database structure models is quickly formed. The distribution structure model function of people-posts matching rule tag data is described as follows:

$$X_p(u) = \begin{cases} p\sqrt{\dfrac{1 - j\cot\alpha}{2\pi}} e^{j\frac{u^2}{2}\cot\alpha} \int x(t) e^{j\frac{t^2}{2}\cot\alpha - jtu\csc\alpha} dt, & \alpha = n\pi \\ x(u), & \alpha = 2n\pi \\ x(-u), & \alpha = (2n+1)\pi \end{cases} \quad (3)$$

Where, p is the order of the data storage structure of distributed person-post matching rule labels, and α is the joint feature distribution set of post matching rule labels.

The distribution set of association rules of the tag data sampling of people-posts matching rules is constructed, and the fuzzy weighted value of the tag data fusion recognition of people-posts matching rules is obtained as follows:

$$W(n+1) = W(n) + \mu y^*(n)\varepsilon(n) \quad (4)$$

In which $\varepsilon(n)$ is the error, the information fusion model of the time series of people's post matching rule tag data under unknown disturbance is represented by feature mapping, and the joint feature distribution discrete series of people's post matching rule tag data is obtained, and its post matching rule tag feature reconstruction model is as follows:

$$X = [s_1, s_2, ..., s_K]_n = (x_n, x_{n-\tau}, ..., x_{n-(m-1)\tau}) \quad (5)$$

In which, $K = N-(m-1)\tau$ represents the feature vector of the tag data of the people-posts matching rules, τ is the sampling time delay of the tag data of the people-posts matching rules, and (s_k, a_k) and (s_l, a_l) are set as the fuzzy closeness function between the sharing nodes of the tag data of the people-posts matching rules, so as to obtain the intra-cluster distribution function of the tag data of the people-posts matching rules:

$$W_i^{(k)}(n) = W_i^{(k)}(n-1) + g_i^{(k)}(n)\varepsilon_i^{(k)}(n) \tag{6}$$

The phase space reconstruction method is used, the grid feature quantity of the data fusion of people-posts matching rule labels is constructed, and the maximum independent set of the distribution of posts matching rule labels is obtained, and the fuzzy membership function of the data fusion of people-posts matching rule labels is:

$$P_D = \sum_{j=k}^{N} \sum_{\sum u_i = j} \prod_{i=1}^{N} (P_{di})^{u_i} (1 - P_{di})^{1-u_i} \tag{7}$$

Among them, P_{fi} represents the clustering center of the integration of the tag data of the people-posts matching rules, and P_{di} is the prior probability density of the tag data of the people-posts matching rules. Therefore, the feature distribution model of the tag data of the people-posts matching rules is constructed. Combining with big data mining technology, the tag scheduling and integration of the posts matching rules are carried out. With the help of the application of tags and job portraits, this process is optimized, which can reduce the workload of business personnel and provide more accurate and scientific matching [7].

3 DATA FUSION OF JOB MATCHING RULE LABEL

3.1 Knowledge Map Extraction of Label Data of Person-post Matching Rules

On the basis of information feature extraction of the tag data of people-posts matching rules, the association rule feature extraction method is used to effectively mine the tag data of people-posts matching rules [8]. By autocorrelation feature matching, the feature mapping of the tag data of people-posts matching rules is obtained, according to the multi-source data distribution of the information processing platform of people-posts matching rules tags, the feature spatial distribution of the tag data sequence of people-posts matching rules is obtained as:

$$J = \frac{1}{2} E\left[|\tilde{x}(n)|^2 - R \right] \tag{8}$$

Wherein

$$R = \frac{E\left(|x(n)|^4 \right)}{E\left(|x(n)|^2 \right)} \tag{9}$$

The mapping relationship of the tag data of the people-post matching rules is established through the information flow model of the tag data of the people-post matching rules, and the knowledge map expression of the tag data of the people-post matching rules is obtained as follows:

$$J_m(U,V) = \sum_{k=1}^{n}\sum_{i=1}^{c} \mu_{ik}{}^{m}(d_{ik})^2 \tag{10}$$

In the M-dimensional phase space, information fusion is carried out on the tag data of people-posts matching rules, and the joint feature quantity is $s_i = (x_i, x_{i+\tau}, ..., x_{i+(m-1)\tau})^T$, and the knowledge map of the tag data of people-posts matching rules is a set of scalar sampling sequences. The autocorrelation function of the tag data of the job matching rule is defined as:

$$C(\tau) = \lim_{t\to\infty} \frac{1}{T} \int_{-\frac{T}{2}}^{\frac{T}{2}} x(t)x(t+\tau)d\tau \tag{11}$$

Wherein, τ is the output delay of the tag data of people-posts matching rules, the characteristic quantity that characterizes the evolution of the tag data of people-posts matching rules at all times. Combining with semantic ontology mapping method, the text information, location information, pictures, audio, video and other data in the urban cloud information management platform are obtained. Combining with the information fusion processing of big data, the adaptive scheduling ability of the tag data of people-posts matching rules is improved.

3.2 Integrated information fusion of label data of person-post matching rules

The knowledge map structure of the people-post matching rule label data is constructed, and the sample data set $\{x_i, y_i\}$, $i = 1,2,\cdots,k$) of the people-post matching rule label data is constructed according to the rule structure distribution of the knowledge map, it indicates the sampling number of the people-post matching rule label data time series, the collected data is normalized, and the people-post matching rule label data test sequence is input into the linear combination sequence to obtain the connected graph structure model:

$$f(x) = \omega^T(j)_X + b \tag{12}$$

In the formula, ω represents the autocorrelation distribution moment of the information fusion of the label data of the job matching rule, and represents the deviation vector of the information fusion scheduling of the label data of the job matching rule. Select the historical data of the tag data of the people-posts matching rules as the initial feature quantity of the information fusion scheduling model, adaptively correct the error items of the information fusion of the people-posts matching rules tag data, and construct an ontology model reflecting the correlation characteristics of the people-posts matching rules tag data. The ambiguity function of the people-posts matching rules tag data is as follows:

$$K(x_i, x_j) = exp(\left\| x_i - x_j \right\|^2 / 2\sigma^2) \tag{13}$$

The knowledge map structure of the label data of the matching rules of people and posts is constructed, and a linear combination model according to the rules of the knowledge map is obtained as follows:

$$x_k = \sum_{n=0}^{N/2-1} 2(a_n \cos\frac{2\pi kn}{N} - b_n \sin\frac{2\pi kn}{N}) \quad k = 0,1,...N-1 \tag{14}$$

Wherein, a_n represents the amplitude of the linear programming model of the label data of the people-posts matching rules, and there are m nodes of the label data of the people-posts matching rules, $A_2 \ldots A_n$, and the mathematical expression of the linear programming problem for constructing the data fusion scheduling of the people-posts matching rules is expresses as follows:

$$min(f) = \sum_{i=1}^{m}\sum_{j=1}^{n} C_{ij} X_{ij} \tag{15}$$

$$\text{s.t}\begin{cases} \sum_{j=1}^{m} X_{ij} = a_i, i = 1,2...m \\ \sum_{i=1}^{m} X_{ij} = b_i, j = 1,2...n \\ X_{ij} ?0, i = 1,2Lm, j = 1,2....n \end{cases} \tag{16}$$

Assuming that the number of distribution nodes of the current people-post matching rule label data is n, $N_1, \cdots, N_n$, the time series phase space of people-post matching rule label data is reconstructed, and the association rule distribution model of people-post matching rule label data is obtained as follows:

$$x_i(n) = \sum_{j=1}^{M} h_{ij}(n)^T s_j(n) + v_i(n) \tag{17}$$

Combining with the information fusion theory and considering the data base of the company's talent label, in the pilot application stage, 12 categories of cadres' preferred matching labels including health status, working years, age and length of service, political outlook, educational background, work experience, professional qualifications, ability and quality, training situation, performance results, awards, punishment and so on are selected.

4 EMPIRICAL ANALYSIS

In order to test the application performance of this model, a simulation experiment is carried out. The software platform of the experiment is designed by Matlab 7. The sampling time of the tag data of people's posts matching rules is 24 days, the length of the tag data sequence of people's posts matching rules is 1024, the training sample size is 30, the number of simulation iterations

is 100, and the reliability factor of the tag data fusion of people's posts matching rules is 0.63. According to the above simulation environment and parameter settings, the data fusion simulation of people-post matching rule tags is taken, and the scores and rank candidates is calculated dynamically by selecting different tags and user-defined weights, and get the weight distribution of different categories of tags as shown in Table 1.

Table 1 Label weight distribution of people-post matching

Test times	Judging label dimension	Optional label dimension	Calculate label dimension	Person-post matching parameter	Person-post matching parameter
Educational background	1248.8130	4451.750	8.8214	83.28	4.61
Track record	1216.1619	4862.807	8.6959	81.82	8.14
Professional qualification	1226.8591	4529.996	8.7068	89.18	8.81
Results	1289.9952	4182.472	9.0118	83.87	1.25
prize record	1205.2166	4797.244	8.8633	88.23	2.06
Training situation	1241.4858	4351.854	9.2709	81.95	1.57
Knowledge skill	1246.7217	4881.549	8.7563	86.15	6.47
Ability and quality	1241.4761	4806.635	9.1825	80.58	0.43

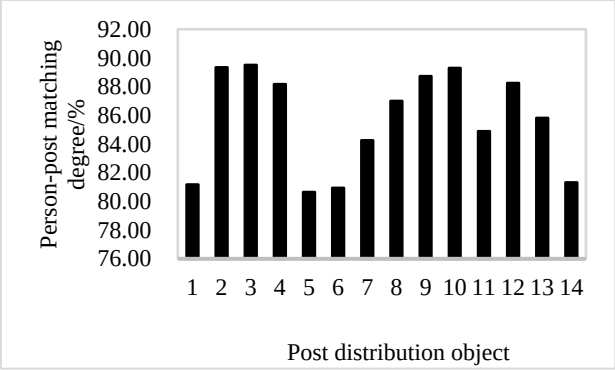

Figure 1 Time series of label data of job matching rules

According to the data collection results, the original time series of the label data of the person-post matching rule is obtained as shown in Figure 1.

Take the above-mentioned sampled label data of people-posts matching rules as the research object, build the knowledge map of the data and realize data fusion, and the data fusion result of people-posts matching rules labels is get as shown in Figure 2.

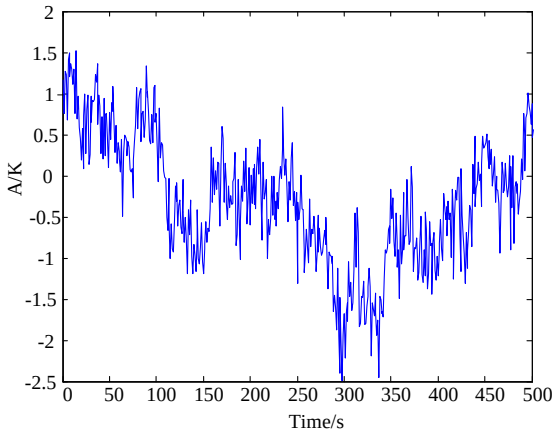

Figure 2 Results of data fusion of job matching rule label

Analysis of Figure 2 shows that this method can effectively realize the data fusion of blockchain cities and improve the three-dimensional identification ability of data. The identification degree of the tag data fusion of people-posts matching rules is tested by different methods, and the comparison result is get as shown in Figure 3. By analyzing Figure 3, it knows that the identification degree of the tag data output of people-posts matching rules by this method is higher.

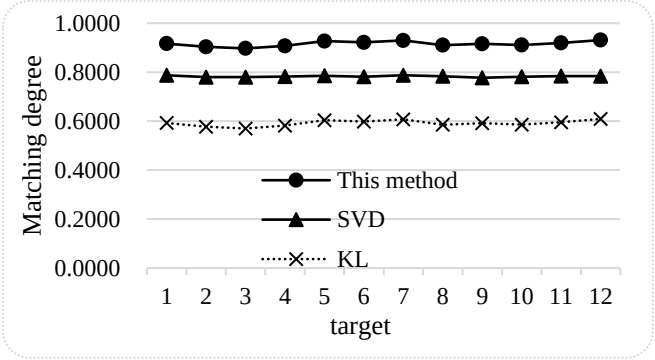

Figure 3 Comparison of discrimination level of data fusion

5 CONCLUSIONS

In this paper, according to the tag library, talent portrait, job portrait, task portrait and so on, the scene rules are established, and the matching model of people and posts is established, and the optimization design method of matching model of people and posts based on big data fusion is proposed. Design the application rules for the screened tags based on the scenario requirements, such as sorting out the usage of tags, assigning values and designing weights for the tags in the calculation and scoring model, etc. According to the business scenario requirements of cadre

optimization and job matching, select the relevant business scenario tags based on talent tags, and design the application rules. By adopting the methods of big data fusion and sample tag identification, set the tag weights, and according to the business application suggestions, provide three types of quick screening rule suggestions for employers to choose or customize. Empirical analysis shows that using this model to design the matching model of people and posts improves the identification ability of human resources tags, and different tags and custom weights have better distribution performance and higher integration depth. At the same time, the system supports the display of comparative analysis of each candidate's subdivision dimensions, including score overview comparison, score comparison of each dimension, information of each label and score detail comparison.

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