

Research on Effective Driving Factors of Human Resource Management Decision-Making under the Background of Informatization

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Abstract: In the modern society with the rapid development of information technology, the amount of information in human resource management is increasing rapidly. To improve the decision-making ability of human resource management, the effective driving factors of human resource management decision-making under the background of informatization are analyzed. The management of human resources must establish an innovative management system which is in line with the reality and match the information management. Combining with the decision-making factors of the human resources management, the internal management system of the enterprise should be formulated to promote the promotion of the basic management work of each business of the enterprise. The effective driving model of human resource management decision-making based on principal component analysis is put forward. The parameter model of human resource management under the background of informatization is analyzed, and the fuzzy decision-making function of human resource management is established. In order to improve the efficiency of human resource management decision-making, the effective driving factor control method is adopted to optimize the design of human resource management control under the background of informatization. The result of empirical analysis shows that the effective driving factors of human resource management can be evaluated by using this model, and the risk control and decision-making ability of human resource management can be improved.

1. Information

The new information age is an era of rapid change and rapid economic development. How to keep up with the pace of its rapid development and occupy a leading position within the industry is the key issue that the managers of the enterprise have been thinking about. Information management of human resources is an effective way to improve work efficiency and reduce management cost for enterprises [1]. However, the process of its establishment is complex and difficult, and it also faces new challenges in the later management process. According to the actual situation of the enterprise, the managers of the enterprise are required to formulate practical, scientific and reasonable measures to make the information management of human resources give full play to the actual effect. Human resources management is a process of personnel management, because of the complex composition of enterprise personnel, including engineers and technicians, safety supervisors, on-site engineers, financial managers and sales personnel, and so on. How to make this part of human resources better deployment, become the difficult point of human resources management. Under the background of informatization, the composition of human resource management and decision-making is complex, there are many related factors and influence parameters, and the construction of mathematical model of human resource management is complex, so it is difficult to form effective measures of human resource management. The research on the effective driving model of human resource management decision-making and the establishment of a set of human resource scheduling system and prediction system suitable for the background of informatization have important practical significance in the field of human resource management of enterprises nowadays [2].

At present, there are mainly neural network-based human resource management scheduling model for enterprise human resource management and scheduling model. The enterprise employee resource management model based on multiple linear regression and the personnel management and scheduling model based on particle swarm optimization, among which the enterprise employee resource management model based on multiple linear regression is more commonly used [3]. As a typical and representative of the human resource management and scheduling model, the model carries on the data analysis and the prediction algorithm research to the key technology engine of risk prediction and assessment. Based on fuzzy assignment and rough set algorithm, an effective driving factor evaluation method for human resource management decision-making is proposed in this paper. Firstly, the parameter model of human resource management is analyzed, which is based on fuzzy assignment and rough set algorithm. The human resource management and turnover risk dispatching system is established, and the relationship between the service intention and the related influencing factors is linear. The risk probability evaluation and the matching of database information are realized, and the fuzzy assignment scheduling set of human resources is constructed. The rough set coupling mathematical model of human resource scheduling information under the information background is obtained, which reduces the cost of enterprise management, increases the economic growth index, and shows a good application value in human resource management.

2. The driving index parameters and overall construction of human resource management

2.1 Model overall construction

Under the background of informatization, the composition of human resources is complex, there are many related factors and influence parameters, and the construction of mathematical model of human resources management is complex, so it is difficult to form effective measures of human resources management. The traditional human resource management model under the information background adopts the multiple linear regression mathematical model, and the precision of the human resource characteristic fusion and benefit prediction under the information background is not high [4]. It is necessary to build the mathematical model of human resource management under the background of informatization. Firstly, the general model of human resource management under the background of informatization is constructed, and the traditional method adopts multiple linear regression mathematical model. More focused on the basic information of employees, such as age, place of origin, academic background, major, marital status, professional skills, performance appraisal, salary and compensation, and other aspects of statistical management and analysis, under the background of informatization, the precision of human resource feature fusion and benefit prediction is not high [5]. According to the requirements of construction environment and construction production, the ability of personnel, the work will of personnel and so on, this paper carries on the human resource. The establishment of the system model can effectively evaluate some soft information easily ignored by the human resources department to a certain extent, and improve the ability of risk prediction and risk aversion of the human resources department. In this paper, a risk warning and driving system for human resource management is established. The functional block diagram of the system is shown in figure 1.

According to the above-mentioned function analysis, the data analysis and prediction algorithm of the key technology engine of risk prediction and assessment are studied. Through the access of information service agent system and the sharing of resources, the scheduling of human resources management to the enterprise is realized. It is necessary to establish a mathematical model in which the relationship between the service orientation of the analyst and the related influencing factors is linear so as to realize the evaluation of the risk probability and the matching of the access to the database information [6].

The final goal of assigning the human resources of the enterprise to the corresponding projects is to maximize the use of the resources of the transferable personnel, and to establish the mathematical model of human resources management under the background of information technology as follows:

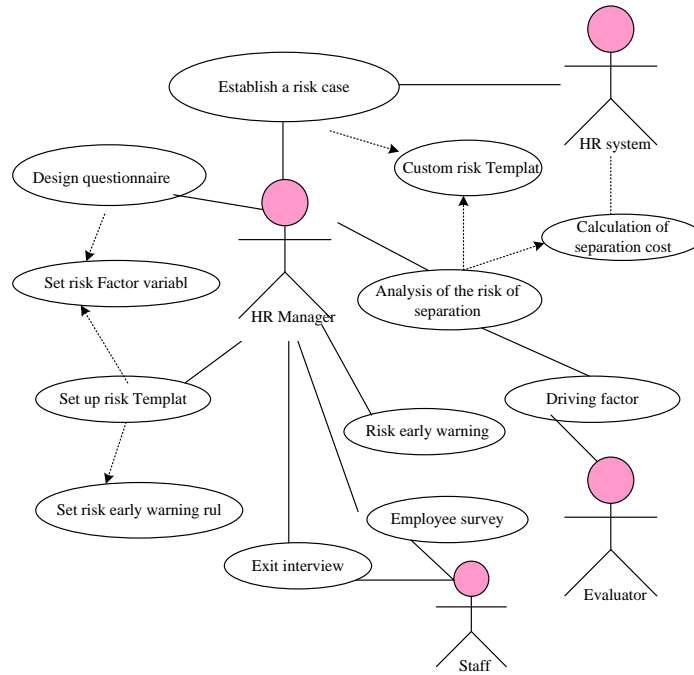


Figure 1. Decision-driven model of Human Resource Management under the background of informatization

$$\max Z = \sum_{i=1}^m \sum_{j=1}^m x_{ij} c_{ij} \quad (1)$$

$$st = \sum_{j=1}^m x_{ij} \quad (2)$$

$$st = \sum_{i=1}^m x_{ij} \quad (3)$$

$$x_{ij} = 1 \quad (4)$$

$$st = 0, \text{ or } 1 \quad (5)$$

Where, $x_{ij} = 1$ indicates that human resources are reasonably utilized and designed as green early warning, $x_{ij} = 0$ indicates that human resources are barely reasonably utilized, and orange warning is set, and $x_{ij} = -1$ indicates that human resources have not been reasonably utilized under the background of information technology. Set to red warning, thus realizing the overall construction of the model.

2.2 Index system of Human Resource efficient management function parameter

Through the above design, the enterprise's human resources management is divided into three levels, from high to low: red warning, orange warning, and green warning [7]. The function index parameter system is established, and the mathematical model expression of multiple linear regression is expressed as follows:

$$TTD = a_1 x_1 + a_2 x_2 + \dots + a_k x_k + \delta \quad (6)$$

The influencing factors of TTD are respectively a_1, a_2, \dots, a_k in the formula, δ is disturbance random noise variables, such as the financial storm in the construction industry, the influence of the factors of accidental casualties of employees in the enterprise, through the prediction algorithm, And the threshold setting and statistical test and analysis under the decision-making effective driving rule. Under the background of informatization, the human resource set is (U, A, R) , in which $RL(U, A, R)$ is

the classical concept lattice and (M, N, Y) is the rough concept on RL . An interval $[\alpha, \beta](0 \leq \alpha \leq \beta \leq 1)$, lattice structure is constructed on the basis of all the attributes in the denotation complete possession connotation, then the β lower bound extension M^β :

$$M^\beta = \{x | x \in M, |f(x) \cap Y|/|Y| \geq \beta, 0 \leq \alpha \leq \beta \leq 1\} \quad (7)$$

The fuzzy assignment scheduling set of human resources is constructed, and the mathematical model of coupling characteristics of human resource scheduling information under the information background is obtained [8]. Based on the fuzzy assignment and rough set algorithm, the construction and improvement of the management mathematical model is realized. The working state of human resources can be expressed as a state parameter vector, which can be described as follows:

$$M_v = w_1 \sum_{i=1}^{m \times n} (H_i - S_i) + M_h w_2 \sum_{i=1}^{m \times n} (S_i - V_i) + w_3 \sum_{i=1}^{m \times n} (V_i - H_i) \quad (8)$$

The management of employees by enterprises is more focused on the statistical management and analysis of the basic information of employees, such as age, place of origin, academic background, major, marital status, professional skills, performance appraisal, salary and compensation, and so on. It is necessary to calculate the optimal value of resource load balancing and to make the SCM_h reach the minimum $SCM_{h\min}$. Based on the maximum economic benefit and personnel income, a vector model of human resource information flow is established to describe the human resource information flow as follows:

$$x = \sum_{i=1}^N s_i \Psi_i = \Psi_s, \Psi = [\Psi_1, \Psi_2, \dots, \Psi_N] \quad (9)$$

Where, Ψ_s is the initial probability distribution of human resources, $\Psi_s = \{\pi_i, i = 1, 2, \dots, N\}$ represents the reuse of human resources, and for the collection of human resources information S, the relationship between the qualification bar and the information attributes is expressed as:

$$P \subseteq A \quad (10)$$

According to the above-mentioned functional analysis, the data base of questionnaire investigation and risk case analysis, the research of data analysis and prediction algorithm for the key technology engine of risk prediction and assessment, and the analysis of human resource parameter trajectory under different initial conditions under different information background, are carried out on the basis of the above-mentioned functional analysis [9]. In the process of movement development, there is an exponential separation with the process of time, and the characteristics of the distribution information of the human resources of the enterprise are described as follows:

$$s_m(t) = \cos\{2\pi f_0 [t + \tau_m(\theta)]\} \quad (11)$$

Through the above analysis, the index system of the human resource efficient management function parameter is obtained. Through the decision-making to drive the setting of the management system, the cost and benefit of the staff can be evaluated and the management benefit can be improved.

3. Improvement model design of Enterprise Human Resource Management

On the basis of the index parameters of human resource management function and the overall construction of the system model, the improvement model of human resource management is designed, and the dispatch system of human resource management is established. The relationship between the service orientation of the analyst and the related influencing factors is linear. The risk probability is evaluated and the database information is accessed and matched, and the fuzzy assignment and scheduling set of human resources is constructed. Based on fuzzy assignment and

rough set algorithm, the mathematical model of management is constructed and improved, and the fuzzy assignment scheduling set of human resources is constructed as:

$$S = (U, A, V, f) \tag{12}$$

Where, U is the domain of information, and A is the non-empty collection of information attributes, which allocates and calculates reasonably the recruitment and related training of enterprises, in order to improve their own quality and overall competitiveness. The fuzzy assignment theory is applied to the realization of enterprise strategic objectives. The maximum solution and minimum solution of the human resource management algorithm are obtained and the boundary is expressed as follows:

$$R_\beta X = U \{E \in U / R | c(E, X) \leq \beta\} \tag{13}$$

The relationship model between human resource management cost and enterprise economic benefit attenuation is constructed. The mathematical model of rough set algorithm with precision limiting factor is added, and the task efficiency function $E(i, j)$ is:

$$E(i, j) = \begin{cases} \frac{e_{ij} - e(i, j)}{e_{\max} - e(i, j)} & e(i, j) < e_{ij} \\ \frac{e_{ij} - e(i, j)}{e(i, j) - e_{\min}} & e(i, j) \geq e_{ij} \end{cases} \tag{14}$$

As a result, an index of deployable personnel can be established. In addition to the evaluation criteria, the algorithm must have controllability, that is to say, it must converge and have robustness in the calculation. Establish a human resource quality evaluation system for construction enterprises, as shown in figure 2.

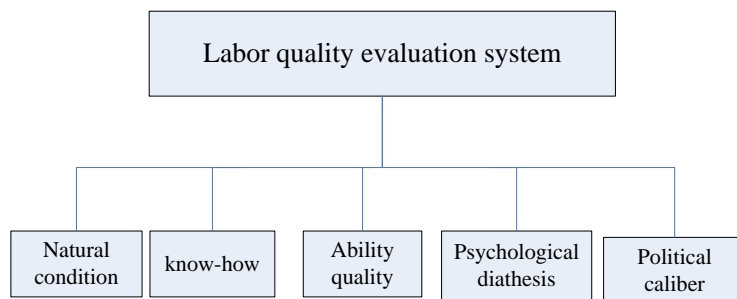


Figure 2. Frame diagram of human resource quality evaluation system

According to the classification system of human resources established in figure 2, the allocation information of human resources is evaluated reasonably, and the second-level classification of quality evaluation system of enterprises is obtained as shown in figure 3.

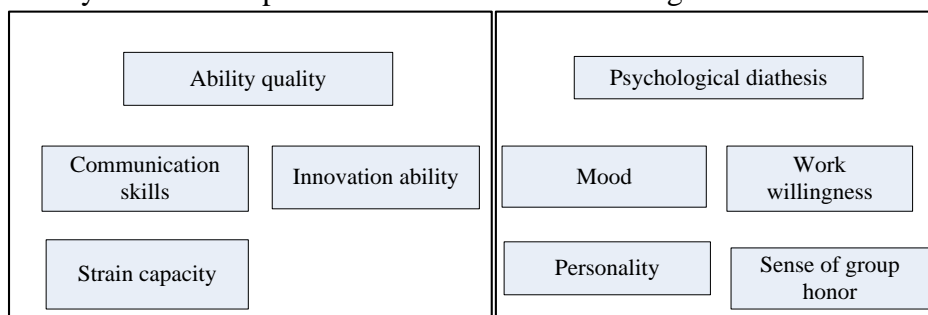


Figure 3. Second-level classification of human resources management decision-driving factors system

According to the set evaluation system, the data is simplified, and the precision factor is set according to the simplified data, according to the human resources data, according to the setting of each evaluation index, the optimal management of the human resources is finally completed [10].

4. Simulation experiment and result analysis

To test the performance of the human resource management and scheduling model designed in this paper, the simulation experiment is carried out, the human resource scheduler in the GridSim simulation platform is extended by EFRB, and the resource scheduling set is constructed from 100 tasks. Suppose there are 3 information-based human resources providers and 15 human resources management service areas. First of all, the Cronbacha coefficient method is used to analyze the overall performance of the survey. The results show that the Cronbacha coefficient is more than 0.8, the questionnaire is credible, and the 22 questions of the questionnaire are compressed. This paper analyzes the satisfaction degree of human resource management under the background of informatization, and takes the cumulative contribution rate as the test index. The simulation results are shown in figure 4, and can be seen from figure 4. Using this model, the cumulative contribution rate of satisfaction test is 74.321%, which shows that the cumulative contribution rate is relatively high, which shows that the model has good human resource management benefits.

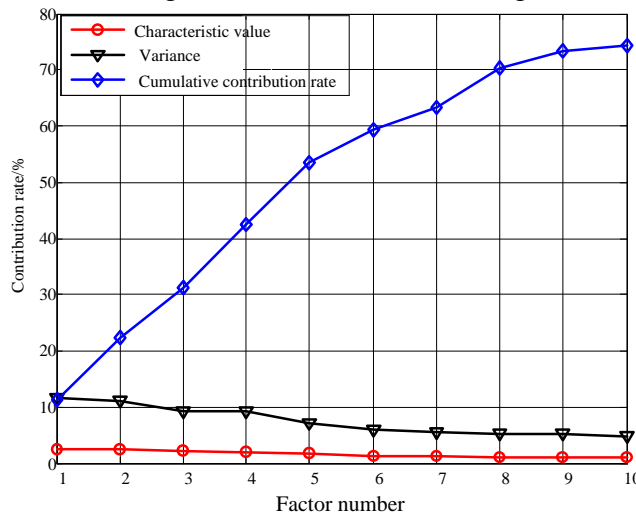


Figure 4. Labor satisfaction test for enterprise

The next step of the simulation experiment is to analyze the economic growth benefit index of the human resource scheduling under the background of informatization, and get the histogram of the economic growth index of the enterprise under the model of this paper, as shown in figure 5. As can be seen from figure 5, using this model can effectively improve the economic growth benefits of enterprises. Through the efficient management of human resources, the economic growth index has been increased by 5.6%, which shows the superior application performance of the model in this paper.

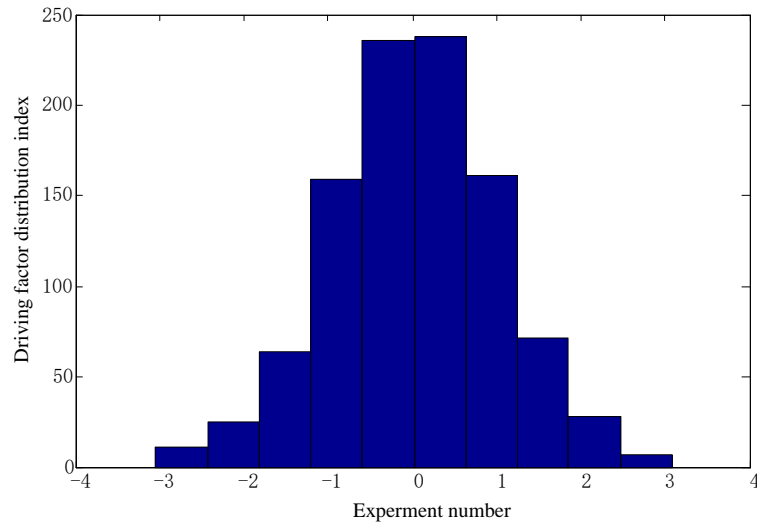


Figure 5. Distribution Index of effective drivers of Human Resources Management decision-making

5. Conclusion

The coming of the information age has brought challenges and opportunities for the development of human resources work, changed the traditional management of human resources, and has a far-reaching impact on the reform and development of enterprises. In this paper, a mathematical modeling method of efficient human resource management model based on fuzzy assignment and rough set algorithm is proposed. Firstly, the parameter model which affects the human resource management under the informatization background is analyzed. The human resource management and turnover risk scheduling system is established. Based on fuzzy assignment and rough set algorithm, the mathematical model of human resource management is constructed and improved. Finally, the mathematical simulation experiment of human resource management model under the background of informatization is carried out, and the results are obtained. Adopting the mathematical model of human resource management under the background of informatization designed in this paper, it has better benefit of human resource management. Adopting the model of this paper can effectively improve the economic growth benefit of enterprises, and through the efficient management of human resources, Economic growth index rose 5.6%, to achieve the human resources management of enterprises, improve the level of management.

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