Journal of Artificial Intelligence Practice (2024)
Clausius Scientific Press, Canada

DOI: 10.23977/jaip.2024.070204
ISSN 2371-8412 Vol. 7 Num. 2

The Application Research of Artificial Intelligence in Human Resource Management

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Keywords: Artificial intelligence; Human resource management; application

Abstract: Although artificial intelligence has been widely used in many fields, its application in human resource management is still relatively scarce. Based on this, in order to promote the application of artificial intelligence in human resource management, this paper starts from the development history of artificial intelligence, and gradually analyzes and studies the specific application of artificial intelligence in human resource management, and carries out empirical research. From the final results, the application of artificial intelligence in human resource management is feasible and can effectively promote the development of enterprises.

1. Introduction

Now, human beings have ended the previous cognitive revolution and stepped into the data revolution. If we still use the conventional mental analysis method to gain insight into human wisdom, it is already difficult to complete, and we need to use the modern computer to solve the problem. Therefore, artificial intelligence has become an important part of our life and work [1]. With the continuous improvement of the level of science and technology, artificial intelligence has been applied in many fields, but there are also some shortcomings, such as the application in human resource management [2-4]. In view of this problem, this paper will explore the application of artificial intelligence in human resource management, so as to break the unfavorable situation of artificial intelligence application in human resource management and promote the development of artificial intelligence.

2. Development history of artificial intelligence

The development process of artificial intelligence in foreign countries can be demonstrated in the way of time logic [5-7]. From 1943 to 1956, artificial intelligence entered its embryonic stage. In this stage, there are three representative events: first, physiology and neuron experiments were carried out; Second, the computer program for chess was developed. Thirdly, the concept of artificial intelligence is put forward. From 1956 to 1974, artificial intelligence entered its primary stage of development, involving events such as the integration of human cognitive science into computer programs, the emergence of programming languages for artificial intelligence, and the integration of logical thinking and geometry into programming. From 1974 to 1980, artificial intelligence entered the intermediate stage of development, involving the following events: First, the government began

to withdraw support for artificial intelligence projects; Second, the information type is single, which limits the analysis ability of the program. From 1980 to 2003, artificial intelligence entered the advanced stage of development, and the artificial intelligence industry began to form. Researchers began to study chip, human-machine interface, voice recognition system and other aspects, and made remarkable achievements in the contemporary manufacturing industry. The dual evolution of intelligence and machine is the core of the development of artificial intelligence. Take the banking business processing robot as an example. Although it can communicate with customers during business processing, this dialogue is based on data input in advance, and the robot communicates by capturing key words and sentences in customer communication. In addition to answering relevant business questions, other questions and solving individual business problems cannot be realized. In 2019, Chinese scholar Zhang Ba pointed out that in the field of artificial intelligence, "the evolution of robots" can be understood as the use of robots to imitate human perception, rational behavior and action and other intelligent behaviors. In terms of "the evolution of intelligence", it can be understood as the common sense of human life, which artificial intelligence has not yet mastered [8]. Therefore, the current wisdom of artificial intelligence is still limited, still need to go further.

3. Artificial intelligence application foundation and its resource management application framework

3.1 Fundamentals of Artificial Intelligence Application

The birth of artificial intelligence breaks the logic and practice of traditional management [9]. In the traditional management research, the theory will be analyzed first. Secondly, we need to put forward the corresponding hypothesis; At last, we need to conduct data analysis to obtain research results. On the contrary, management research in the background of artificial intelligence is completely different. First, it is to acquire data; Secondly, carry out logical deduction; Finally, the research conclusions are obtained. It can be seen that the two have great differences in management logic, and the different era background will change the logic formulation of decision-making in management practice.

3.2 Application framework of artificial intelligence human resource management

Artificial intelligence mainly classifies tasks through automation and informationization of human resource tasks [10]. For one, it aims to transfer part of the human task performance to the machine. On the other hand, it aims to enhance the effectiveness of managers' decisions. Therefore, the key technology of artificial intelligence can be applied to the human resource module. On the basis of artificial intelligence support level, can provide large key technology such as data, voice recognition, face recognition, and the application in the hr strategy, recruitment and employment as well as performance management module, through these modules can realize the match between pay and performance, between people and jobs matching as well as matching between innovation and knowledge and so on. At the same time, the artificial neuron technology in artificial intelligence is used to compare and analyze the historical data such as the age, salary, position and qualification of the employees to predict the employee turnover rate, which provides an effective reference for the decision making of human resources recruitment and planning. In addition, the application of artificial intelligence in performance management by means of information technology and machine learning method can obtain more comprehensive data. Then, through the analysis of complete data, the correct management strategy can be obtained to improve the performance level of employees. The specific application architecture of artificial intelligence key technologies in human resource management is shown in Table 1.

Table 1: Application of artificial intelligence key technologies in human resource management

Application level	Key technology	Human Resources Module
Basic Support Level	Big data, voice recognition, face recognition, computing power, touch recognition, new computing model, etc	Human resource strategy, recruitment and employment, performance management, compensation and incentive management, training and development, etc
Platform Architecture Level	University laboratories, high-tech network construction, deep learning platform, etc	Process management, training and development, performance management, career management, etc
Technology level	Pupil recognition, intelligent search, theory verification, robotics, etc	Recruitment and employment, human resource strategy, performance management, training and development, etc

4. The conceptual model of human resource management based on artificial intelligence is proposed

The core idea of artificial intelligence research is to study how human beings produce intelligence first, and then to simulate human thinking mode and behavior. For the study of human intelligence, it mainly involves three aspects: first, reasoning, decision-making, planning and other rational behavior; Secondly, human perception comes from the organization, recognition and interpretation of sensory information, which will be transmitted to our nervous system to stimulate the brain and help us interpret and present information. Third, behavior, can be understood as the operation of the hand and foot walking. At present, the application of artificial intelligence in human resource management can be studied from two levels of individual and composition, so as to promote the application and development of artificial intelligence in human resource management. Among them, the research at the individual level refers to the discussion on the mechanism of human resource system based on the individual's willingness to use artificial intelligence. As for the research on the composition level, it is to explore the implementation mechanism of human resources through the matching degree of task technology. The specific conceptual model is shown in Figure 1.

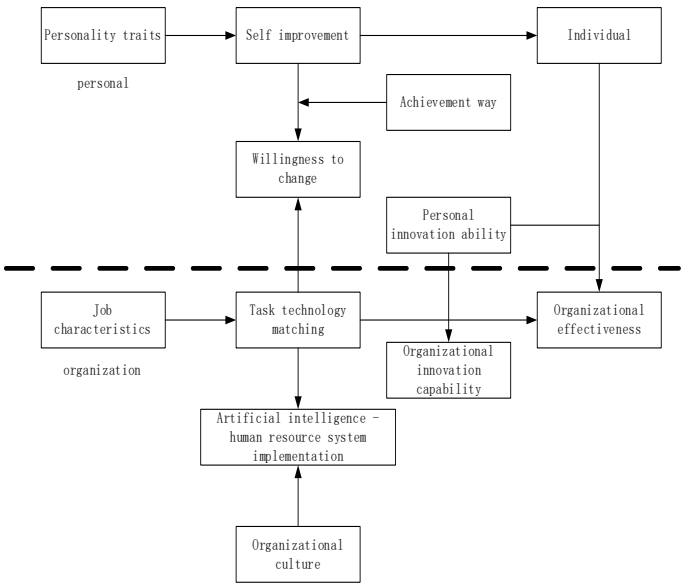

Figure 1: Concrete conceptual model

It can be seen that the function logic of artificial intelligence at the individual level is as follows: First, in the artificial intelligence environment, when individuals with different personalities face the opportunities and challenges brought by technological progress, there will be certain differences in self-improvement and expression. Secondly, it interferes with the willingness to accept and change artificial intelligence technology. Finally, the matching degree of task technology is improved through individual change.

5. Artificial intelligence human resource management application practice

Nowadays, the application focus of artificial intelligence technology in human resource management is mainly embodied in man-post matching, which is realized by setting algorithm. For example, when enterprises allocate positions to employees, they will make the optimal allocation according to the personal ability of employees, so as to achieve effective matching between employees and posts. In this way, employee information and position information need to be stored in their respective feature space. At this point, if employee information is represented by A, position information is represented by B, and the matching degree of employee positions is represented by N, then $N = F(S(A), S(B))$.Where, F represents a functional relationship. In this case, AI can solve the "match" problem through supervised or unsupervised learning. For supervised learning, the robot can learn with the help of relevant algorithms to continuously improve the learning accuracy. The function relation related to the training data is given. When new data is input, the corresponding output results can be obtained through the function. This kind of learning model is mainly used in regression prediction task or classification. Specifically, based on employee information and position information, the final matching degree is obtained by artificial means, and then regarded as the training sample. At this time, the computer can use the training data to fit and conclude the function distribution F of the feature space of the employee positions, so as to shorten the error between the predicted results and the manual calibration results. In the classification task, if there are n predicted categories, then the maximized posterior probability value$p(m_i|y, g)$ can be expressed by the formula 1 through Bayes' theorem.

$$p(m_i|y, g) = \frac{p(m_i)p(y, g|m_i)}{\sum_{j=1}^{n} p(m_i)p(y, g|m_i)} \quad (1)$$

In Equation 1, Y is employee data, G is post data, and the actual matching category between employee and post is represented by mi. At this point, the robot can predict the exact matching degree by fitting the data and optimizing the probability target. This paper carries out unsupervised learning for targets without rights, refers to training data and needs to build the feature space of employees and posts, and builds a model matching algorithm to convert the original data of employees' posts into a spatial vector. Then, the spatial vector of the distance between employees and posts can be judged as an indicator of matching level. It is possible to determine how well the employee matches the position. For further inspection of the effectiveness of the artificial intelligence applied in the human resources management, the author in 2020, A study on the practice in A company, and in 2019 A company worker ShangGangLv, the application of artificial intelligence of training personnel coverage, talent turnover rate, per capita wage growth has carried on the comparison research, the results are shown in figure 2.

As can be seen from Figure 2, after the application of artificial intelligence in company A's human resource management, its employee employment rate, training personnel coverage rate and per capita wage growth rate are all improved, and the talent turnover rate shows an obvious downward trend. It can be seen that the application of artificial intelligence in human resource management has a high feasibility, which can retain talents for the company and achieve a

reasonable match between personnel and positions.

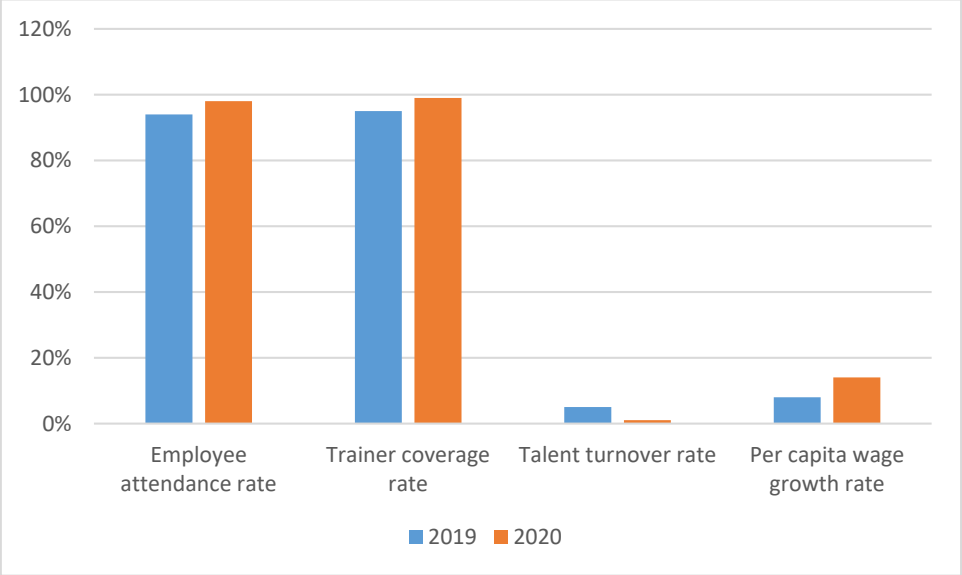

Figure 2: Comparison of effects before and after artificial intelligence application

6. Summary

In general, the application of artificial intelligence in human resource management is feasible and also required by the development of The Times. Therefore, in the future development process, artificial intelligence and other new technologies should be reasonably applied to human resource management, so as to reduce the daily work of human resource managers, liberate them from daily trifles, and use more time and energy to pay attention to the development of enterprises and human resource development strategy.

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