Big data and Artificial Intelligence Drive Human Resource Management Innovation Research

Shi Xuanbei
Hainan Technology and Business College
Haikou, Hainan, 570203, China
Email: tg667788@xzcstudio.com

Abstract: The arrival of the era of artificial intelligence and big data is subtly changing people's production and life. This article mainly studies and analyzes the results of previous surveys. The impact of big data and artificial intelligence on human resource management has led to more diversified employee training methods, more oriented performance management, and more diversified welfare management. Effective use of big data and artificial intelligence can better optimize business management and improve market core competitiveness.

1. Introduction
The development of big data and artificial intelligence has become an irreversible trend and trend. In this regard, the human resources department should make full use of format personnel information and other information resources. It should use big data sophisticated algorithms for employee information mutual matching with positions and judging whether employees are competent for their positions will bring many new possibilities for human resource management.

2. Big data and artificial intelligence in human resource management system prospects
Traditional personnel recruitment mainly uses human resource information system to collect personnel information, and establish the most basic skill information database and basic information database between personnel and enterprises. As artificial intelligence is widely used in various fields of life, the human resource system has become more diversified and multi-layered. The general framework is as follows.
3. Positive impacts of big data and artificial intelligence on human resources management

3.1. Improve the quality of human resources management
The most significant feature of applying big data and artificial intelligence to talent management is to improve the accuracy of recruitment. Recruiting the personnel needed by an enterprise is the first link in the process of human resource management, and it is also an indispensable and important part of human resource management. It is directly related to the future development trend and direction of the enterprise. However, recruitment under traditional circumstances faces the following difficulties[1]. Firstly, there are limited recruitment channels. Companies cannot obtain employees who meet corporate standards in a timely manner. This makes it impossible for employees to arrive within the stipulated time, prolonging recruitment time, increasing time costs, and reducing corporate profits. The second is that it is difficult to use manpower to screen resumes. With limited manpower, it is difficult to select the best-matched resume in a limited time. Thirdly, due to limited HR resources, it is difficult to carry out resume screening and interview work at the same time. In addition, the application of big data and artificial intelligence has also improved the effectiveness of training. Regular education and training of employees is the prerequisite and foundation for the sustainable development of each enterprise, and it is also the fundamental way to invest in human capital to realize the value-added of human capital. However, many companies lack professional training teachers and scientific training systems, resulting in low training effects. If it is contracted out, the quality of training will be reduced due to uneven quality of training institutions. Because the training institution is not familiar with the situation of the enterprise, it is unable to conduct targeted training[2]. The application of big data and artificial intelligence will greatly improve the effectiveness of training. Improving the standardization of performance management is also the advantage brought by the application of big data and artificial intelligence to human resource management. At present, most companies are carrying out performance management, but they lack the improvement of human performance, and even cause the burden of human resource management. Using big data and artificial intelligence can build its own database by acquiring user information, making performance appraisal indicators more data-based and more compatible with actual conditions[3].

3.2. Reduce the cost of human resource management
Firstly, it can reduce training costs. Many private enterprises cannot afford the cost of employee training, which increases their operational burden. The use of big data and artificial intelligence will
reduce costs and increase the enthusiasm of senior management for employee training. On the one hand, artificial intelligence can replace employees to complete a large number of mechanical tasks with a high repetition rate, reduce the demand for labor, and indirectly reduce the company’s expenditure on employee training. At the same time, the training of big data and artificial intelligence for employees is continuous and can be changed and modified at any time according to the needs of the enterprise, which can effectively mobilize the enthusiasm of employees for virtual seats[4].

Secondly, it can reduce brain drain. How to retain employees who will promote the sustainable development of the company is a work content that human resource managers attach great importance to. The resignation of employees will cause instability in the work of the enterprise, and the resignation of core employees will even directly weaken the core competitiveness of the enterprise and cause a devastating blow. However, the use of big data and artificial intelligence can fully mine employee information and accurately measure whether employees will choose to leave. Based on this analysis, the reasons for resignation should be analyzed in time, and corresponding measures should be formulated to rectify the existing problems of the enterprise, so as to achieve the purpose of retaining talents, thereby reducing the loss of talents.

4. The application of big data and artificial intelligence in human resource management

In terms of the current development situation, big data and artificial intelligence are the most widely used in personnel recruitment, and the types of products derived from them are also the most. The common function of these products is to cover big data and build the talent pool needed by enterprises through sophisticated algorithms, as shown in the figure below[5].

| Artificial intelligence products | Ideal function | TIC function | Chinese talent map function |
|--------------------------------|----------------|--------------|-----------------------------|
| 1 Automatic screening of resumes | 1 Track the target company candidate dynamics in real time | 1 Covers internal employee data and external disclosure data | 1 Comprehensive skills map |
| 2 Smart talent search | 2 Quickly grasp the target talent distribution | 2 Based on business scenarios | 2 Mining position data |
| 3 Candidate excavation | 3 Batch recruiting of competitor company talent | 3 Immediate recommendation for a suitable resume | 3 Building talent relationship map |
| 4 Robot communication | 4 Batch recruiting of competitor company talent | 4 Streamlining recruitment | 4 Multi-dimensional display of talent distribution |

Companies use big data to conduct in-depth information mining, find talents that suit their needs, and avoid a lot of duplication of work. For example, HR conducts repeated comparisons of talent resumes to find characteristics suitable for the enterprise. Big data and artificial intelligence have the function of deep learning, which can accurately analyze the resumes sent by talents, find the information needed by the enterprise, and establish templates for automatically screening resumes. Even in the process of later talent selection and interview, preliminary screening can be carried out. According to the performance of the candidate, it can predict the probability of resignation in the later period and future career plan.

4.1. Precision recruitment driven by big data and artificial intelligence

Recruitment driven by big data and artificial intelligence can quickly and accurately search for matching employees, surpassing traditional recruitment methods. The application of big data and artificial intelligence to human resource management is the main trend and trend of future enterprise development. On the one hand, the use of big data and artificial intelligence can effectively avoid
prejudice and discrimination caused by the interviewer’s subjective factors in the recruitment process. In the past, many companies used the interviewer’s subjective feelings and experience to decide whether to retain the applicant during the recruitment process. The current big data and artificial intelligence technologies have been able to make up for the shortcomings brought about by this aspect, help recruiters fill up the guesswork in recruitment, provide more objective data and materials, in order to make objective decisions that are more beneficial to the enterprise. In addition, finding employees through big data and artificial intelligence technology is more suitable for the company. It can create greater contributions to the company at work with a lower turnover rate. On the other hand, the application of big data and artificial intelligence can help companies accurately analyze and predict the possible performance of future employees. This is inferred based on big data, Blockchain technology, and employee resumes and interview performance. In addition, the calculated and actual work performance and work ability of employees are recorded in the file, so that artificial intelligence can screen out specific talents from millions of employee resumes[6].

For example, Google makes full use of big data and artificial intelligence. Based on big data, it can predict whether the candidate will have the best production capacity after being hired, and create the greatest value for the company. Through precise recruitment, it can shorten the recruitment cycle and improve recruitment efficiency. As shown in the figure.

| Attribute          | Enterprise                        | Google                                           |
|--------------------|-----------------------------------|--------------------------------------------------|
| Base               | A complex employee data tracking program. |                                                |
| HR big data team   | Member with doctorate background in statistics, finance, organizational psychology, etc. |                                                |
| Implementation method | Top ten HR management model.       |                                                |
| Purpose            | Make personnel management decisions data-based decisions or fact-based and proven decisions in enterprises. |                                                |
| Presentation of results | Talent retention, building multi-talent team, intelligent recruitment, working environment optimization design, management managers, etc. |                                                |

Figure 2. Recruitment cycle and improve recruitment

There are also foreign recruitment platforms Teamable. It can use AI algorithms to quickly and accurately match the applicant’s network, personal experience and specialty with the needs of the enterprise. Thus, artificial intelligence and big data can optimize the data analysis of recruitment matching, screening and evaluation, and improve the efficiency of recruitment.

4.2. Diversified training methods driven by big data and artificial intelligence
The core of human resource management is to train employees regularly, improve their professional knowledge and comprehensive literacy, and create more value for enterprises, as shown in the following figure.
This function is being changed by the application of big data and artificial intelligence. First of all, big data and artificial intelligence help human resources managers accurately judge the learning ability and professional level of different employees, and make different learning plans according to the actual situation, shrink the learning gap between small employees, effectively improve the overall ability of the enterprise team. The realization of this function is mainly through the analysis of the data in this paper, sensor data analysis and employee performance. It can identify the gap analysis of staff training needs and formulate targeted vocational training plan[7].

Secondly, big data and artificial intelligence can provide employees with a variety of learning and training methods, such as adaptive online learning, Micro-class and MOOC learning. Adaptive online learning can adapt to the learner’s situation, interest preferences, etc. to recommend the most suitable learning courses for the learner, and adapt to the learner’s learning speed. Micro-class is to use simple learning videos to allow learners to use fragmented time to master more knowledge and skills. These fast and convenient training methods can promote employees to absorb knowledge happily and improve their own work skills.

Finally, big data and artificial intelligence can also be used to implement virtual reality skills simulation to enhance the employee experience. Through simple telephone communication, employees can easily obtain relevant videos, and have conversations with their virtual selves for two-way discussions. In short, big data and labor can only be an unstoppable trend in future human resource management for employee training and development. Not only can it tailor personalized and targeted learning content and plans for employees, but it can also improve employees’ personal work capabilities quickly and easily.

4.3. Big data and artificial intelligence-driven "process-oriented" performance management

Big data and artificial intelligence have enabled corporate HR to transition from focusing on results in the past to now devoting more energy to the process to track and guide employees’ performance and behavior. Big data and artificial intelligence can give employees timely feedback and guidance based on their actual behavior, and they are really working to improve performance, not for evaluation. Big data and artificial intelligence analyze the information collected from employees through a large number of calculations, data analysis, and in-depth learning, so as to reduce the subjective judgment and cognition of HR and help them make correct evaluations.

For example, Catena retail chain stores use big data and artificial intelligence for performance management assessment. By collecting employee activity data, it can understand where employees spend their working hours, and accurately discover the performance of employees’ work behaviors, and use this as a basis for evaluation. It can encourage employees with good performance in a timely manner, warn employees with poor performance, give play to the two-way communication between the company and employees, and improve the company’s motivation and guidance role. In addition, in
the post-assessment, big data and artificial intelligence can also record the main points of work determined by both parties, provide information feedback channels, and optimize follow-up work[8].

4.4. Big data and AI-driven personalized compensation benefits
In the context of the era of big data and artificial intelligence, companies can effectively meet the individualized requirements of employees for compensation. Through the analysis of data, emotion data or audio, managers can understand the attitudes and emotions of employees at work, and in-depth understanding of employees’ salary expectations and value demands, so as to improve the internal and external salary system of the enterprise and realize the personalization of salary and benefits.

For example, Facebook in 2017 announced the use of big data and artificial intelligence. Through its sophisticated calculations and in-depth research, users who are at risk of suicide or self-harm can be found. Through the identification and analysis of user emotions, it can determine whether employees have behavioral risks.

5. Conclusion
The era of big data and artificial intelligence has arrived, and all fields of work in the economy and society are integrated with advanced emerging technologies such as big data and cloud computing. Effective use of the innovative role of big data and artificial intelligence in human resource management can adapt to the needs of the development of the current era. At the same time, it can also improve the overall ability of the enterprise team and improve the management efficiency and core competitiveness of the enterprise.

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