

Artificial Intelligence (AI) and Human Resource Development

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Abstract: With the continuous development of science and technology, human resource development is also keeping pace with the times. Artificial intelligence is more and more common and common in the field of human resource development. This paper mainly discusses the opportunities and challenges of AI in three stages: human resource planning, recruitment and allocation, training and development. At the end of this paper, the author gives some suggestions to human resource practitioners and enterprises to help them adapt to the changes that are about to happen or have already happened.

1. Introduction

With the development and progress of big data, cloud computing and various hardware and software, artificial intelligence technology is also constantly improving. More and more countries attach importance to the application and development of artificial intelligence. Many countries have issued a series of related strategies and plans to seize the opportunity of the development of artificial intelligence industry. The report of the 19th National Congress of the Communist Party of China emphasizes the effective integration of the Internet, big data artificial intelligence and the real economy. The universal attention to AI in the world indicates that AI will eventually lead to a new technological revolution. The emergence of AI technology is of milestone significance. What artificial intelligence brings us is not only huge economic benefits, but also inestimable social benefits. Artificial intelligence will bring great influence and change to economic society and human development.

Throughout the whole history of human beings, we can draw the conclusion that every technological revolution in history will produce different degrees of physical and mental liberation. In the new era, in the social process with artificial intelligence as the main technological breakthrough, artificial intelligence has changed every corner of modern society extensively and profoundly. The term "artificial intelligence" first appeared in the 1950s. After a long time, with the development of human-computer interaction, machine learning and other artificial intelligence technologies in the new era, artificial intelligence has made profound changes in the economic society and will gradually change all aspects of the present and future economic society.

An enterprise or organization group investigates, analyzes, plans and adjusts human resources on the basis of the existing human resources of the organization group, according to the strategic objectives of the enterprise and the changes of the organization structure, so as to improve the existing human resources management level of the organization or organization group, improve the efficiency of human resources management, and create greater value for the organization (Organization). This is the concept of human resource development

By combining artificial intelligence with human resource development and using artificial intelligence technology, we can better investigate, analyze and plan, so that human resource development can be better developed, and human resource development can have a more accurate and controllable future. At the same time, because of the high efficiency of AI, it can liberate human resources from the current tedious affairs, pay more attention to the strategic content which is crucial to the enterprise, which has a certain practical significance for the enterprise. At the same time, the combination with artificial intelligence will be the next stage of human resource development. It is

the future that human resource workers have to face. Only when they are ready in time, can they better accept and adapt to the future work. It is also of practical significance for human resource workers. The discussion of human resources and artificial intelligence in this paper is also a theoretical supplement to the field of human resources development, so it also has certain theoretical significance. In conclusion, the content of this paper is of practical significance and theoretical significance.

2. Current situation of human resource development

After 60 or 70 years of exploration and practice, some developed countries have been very familiar with the development of human resources, and the theoretical basis is relatively perfect. But for China, we are still in the stage of learning in this field. Before that, we always used the traditional family management, even the feudal management mode. Therefore, there are relatively few studies in this field in China, and the theory is not perfect, there is no theoretical guidance in line with China's national conditions, and China's experience in human resource development practice is even less. In the 21st century, with the acceleration of globalization, human resource has become an important competitive resource among enterprises. Enterprises have gradually realized the importance of human resource development, which has promoted the research of human resource development by Chinese scholars.

After more than ten years of development, compared with developed countries, our country still has many shortcomings, which are mainly reflected in the following aspects:

2.1 Human resource planning is not timely

At present, the human resource planning of enterprises still depends on the human resource staff, including measuring employee performance, adjusting the company's personnel flow, salary planning and so on. At this stage, if an enterprise wants to complete a qualified human resource planning work, the first step is to conduct a comprehensive inventory of the existing human resources of the company, and get the existing number of employees, the matching degree of employees and positions, and the current structure of the organization. After obtaining the existing data, combined with the enterprise development goals, we can predict what kind of talents the enterprise needs in the future, whether the future organizational structure will change, how it will change, what positions the company needs to set in advance, and what kind of talents it needs. By understanding the existing labor market and the public's attitude towards enterprises, how attractive enterprises are to talents, we can make a prediction of the future situation. Knowing these two prediction results, we can finish the work of human resource development relatively smoothly. There is no doubt that this kind of prediction is too difficult for people, and it will take a long time to make the prediction lose timeliness.

How to reasonably determine the compensation, so that the compensation system can effectively motivate employees rather than make employees lose confidence in the enterprise, has always been a headache for the human resources department, because this is a difficult task, but also has to do the task. On the one hand, we should offer employees a reasonable level of salary to ensure their job performance and job satisfaction, on the other hand, we should consider that the salary level is directly related to the enterprise cost. Human resource workers are often lack of understanding of the market average level when making the post salary, and there is deviation in the measurement of the post value, which leads to the results can not achieve the internal fairness and external consistency of the salary management. The complex salary setting mode of enterprises always makes human resource workers in a hurry before the salary.

People's behavior is subjective, so it is inevitable that there will be subjective deviation in the investigation of employees, especially when it comes to the interests. According to the theory of fairness, employees' satisfaction depends not only on the ratio of their own income to their own pay, but also on the ratio of their own ratio to other employees. The existence of subjectivity will lead to employees' feeling of unfairness. Even in some extreme cases, even if the decisions made by human

resource workers are fair, due to the distrust of enterprises, employees still feel unfair. This kind of unfairness will have an impact on employees' emotions, make them tired and dissatisfied, and even deliberately destroy their work to vent. It will also affect their views on the company, and the existence of this deviation will inevitably lead to the final result can not fully meet the interests of the company, or even damage the interests of the company.

At present, many trivial resume screening and other activities in the company need human resource workers to complete. These trivial events occupy a lot of time of human resource workers. If the staff can not distinguish the primary and secondary, it will lead to the important work can not be completed or some urgent work is put on hold. Once the company's work planning or salary planning and other important work are not completed in time, it will affect the company to make some important personnel change decisions and affect the company's performance. It will also lead to the decline of employees' job satisfaction, and even lead to the final resignation of employees, resulting in job vacancies in the company.

The flow of personnel is hard to predict. An employee may submit his resignation without warning, leaving a vacancy. If the employee's dissatisfaction can't be found in time, the company's potential vacancy can't be predicted in time, which will reduce the efficiency of the company's work, or even cause the company's loss if no one completes key tasks, this kind of loss is not only economic. It can be said that it is a false proposition to complete this prediction by manpower alone.

2.2 Recruitment configuration result cannot be guaranteed

In the recruitment process, interviewers need to quickly judge whether a person meets the company's recruitment requirements with just a few minutes of interview process and a thin resume. Without any external force and auxiliary information to reference, many interviewers make the best choice directly according to the interviewers' education background, internship experience, etc. Of course, in some large companies, the interview needs to be divided into several rounds, even through the online or offline answer process, but the amount of information obtained is still very limited. Therefore, sometimes, managers will find that the recruited employees are not as smart and smart as they look when they are interviewing, and they are totally unfit for the current position. Therefore, before the internship period, they need to dismiss the employees. For this reason, they need to interview again and go through the process again. This time, there is still the possibility that excellent talents will be wiped out and unsuitable people will be recruited. In this way, a lot of energy, money and time are wasted.

In the recruitment and allocation stage, another task of human resource management workers is to place employees in the most suitable positions according to their expertise and characteristics. In the current enterprise personnel allocation, the phenomenon of overqualified personnel is widespread. The mismatch between ability and position makes some potential talents unable to play the maximum role in the organization, resulting in the waste of human resources. At the same time, the ability can not be brought into full play, which will also have a great impact on the enthusiasm of employees. In some cases, some employees get promoted because of their outstanding performance, which will easily lead to Peter's phenomenon, that is, the labor union tends to reach a position beyond its grasp. Therefore, how to allocate human resources reasonably is a great challenge for human resource workers.

2.3 Training and development challenges

The original enterprise never paid attention to the training of employees. It believed that the quality of employees had been determined from the time of recruitment, only the best ones were recruited, and then everything would be fine, waiting for them to produce benefits for the company. At present, more and more enterprise tasks are necessary to train employees. The first step to enter the enterprise is to receive training first. Nowadays, the "new generation" employees pay more attention to their ability improvement. Compared with the older generation, they pay more attention to how they can improve and develop in the enterprise than salary. However, when carrying out training activities, there are often many situations that lead to unsatisfactory results. The quality of

each employee is different, but the cost of teaching according to their aptitude is too high to realize the traditional human resources.

Before the training activities, the first step is to carry out demand analysis. The main content of this stage is to analyze the demand of the job, and then make a training plan according to the actual ability of the recruited employees, and decide how to use and what to train in this training. The reason why the training needs analysis needs to be paid attention to is that the conclusion drawn from the needs analysis directly determines what kind of training employees receive in the company, and also directly affects their views on the company. The difficulty lies in the inability to determine the true ability level of employees. At the same time, because the company generally organizes unified training for employees, the training content cannot be set separately according to the employees, resulting in different feelings of each employee on the training content. Some may feel simple, some may feel difficult, or feel that the training content is not suitable for themselves, and they do not the method has been improved in this training.

After the human resources staff have analyzed the needs in detail, they need to design the actual content of the training stage in detail. The main purpose of the design stage is to select the relatively optimal training form for staff training, such as meeting form, game form, etc.; what method should be used for training, and more importantly, what content should be included in the training. Despite the existence of the design phase, some companies still fail in the training of their employees. First of all, the form of training is too single, most of which are based on the teaching of primary school students. The method of training can not escape case study and quality development. These single methods can not achieve satisfactory results.

In traditional enterprises, although managers gradually began to understand the importance of human resource management, but human resource development, still did not get the corresponding attention, until recent years, the enterprise slowly focused on human resource development. Enterprises gradually realize that only to improve the efficiency of employees for the purpose of no characteristic staff training can not stimulate the interest of employees, it is difficult to obtain employee recognition, and ultimately can not achieve the purpose of improving work efficiency. Now, enterprises learn to improve the training and integrate their own ideas, so that employees can better improve themselves from the training, and put their personality preferences into the selection of training methods, so that the training program is easier for employees to accept, learn more seriously, and play a better role. However, even if the selection of training program is optimized, it does not mean that the final result can be satisfactory. Due to the limitation of enterprise resources, many equipment needed for training cannot be met, and the time and place of training have great limitations. It is not surprising that the training program can not be developed with the expected effect.

Because the training didn't bring the expected effect, the enterprise spent human and material resources, wasted the training time, but didn't get the due return, which prompted some enterprise executives to gradually sprout a "training useless theory", they think that the staff training will only cause the waste of resources and no return, then they will continue to reduce the training time and investment, and the shrinking training effect is even less, this creates a vicious circle.

3. Opportunities and challenges brought by artificial intelligence

For routine repetitive work, artificial intelligence has more obvious absolute advantages than human beings. Due to heavy business, limited energy and other reasons, in the face of miscellaneous and stereotyped work, people tend to be absent-minded and lead to work errors, but artificial intelligence will not have such problems at all. The system that has set up the program will do things according to people's instructions. As long as there is no error in the program, the result of the work must be of small error and high quality. It is precisely because of its ability of calculation and analysis beyond human beings that artificial intelligence can better assist human resource workers to carry out routine businesses such as the establishment of entry files, the management of department accounts, the analysis and evaluation of positions, and even completely replace the daily repetitive

work such as resume screening, interview and liaison. The efficiency and accuracy of computers are undoubtedly higher than that of human beings. Human resource workers will have more time to invest in human resource strategic planning, organizational system reform, corporate strategic transformation and other in-depth work, and more time also means more accurate decision-making.

At the same time, we discussed some unavoidable defects and drawbacks in the process of human resource development. Next, we will give corresponding solutions combining with some unique functions of artificial intelligence.

3.1 Human resource planning stage

As mentioned above, salary management is a problem that is difficult to solve and has to be solved. However, the artificial intelligence based on big data can make intelligent planning for employees' salary according to post responsibilities, urban average salary data, industry average salary data and the salary increase in recent years. At the same time, because the machine is not subjective, everything is based on data, the results are more convincing.

Intelligently assess employee performance, avoid filling in lengthy questionnaires, and take less time. The subjective bias of the examiners is avoided, and the machine assessment is more objective. The assessment time is more fixed and accurate, and will not be delayed or even cancelled because the human resources personnel have no time. Regular feedback, continuous feedback, and multi period data can be collected for comparative analysis. However, it should be noted that output is not equal to performance, and the pursuit of high output cannot lead to high workload.

At the same time, due to the high efficiency of the machine and the characteristics of multi-threaded work, it will not be unable to start the next task because one task has not been completed, it can complete all tasks assigned in time, there is no delay due to lack of time, and it can ensure that all tasks can be completed quickly and efficiently. Therefore, it can also ensure that employees' questions are answered in a timely manner, and their opinions and suggestions are fed back in a timely manner, so as to increase employees' satisfaction and trust in the enterprise. The virtual service agent Taitai is a good example of automation. It can answer simple questions raised by employees, such as "when is the next vacation" and "how about my attendance this month".

Through big data crawling employees' social media information, such as micro blog, e-mail, etc., employees' psychological state can be obtained in time, their satisfaction to the company and work can be judged, and employees' abnormal situation can be obtained in time. Human resource workers can conduct psychological counseling to employees and adjust their psychological state according to the results. At the same time, due to the existence of big data, enterprises can also get the information of the talent market in time, and do a good job of talent reserve for the company.

3.2 Recruitment and configuration stage

In the information age, data sharing makes the company have more information for each interviewer than before, so the decision can be more accurate. According to data statistics of somen Mondal company, the company uses artificial intelligence software to recruit, the recruitment cost is reduced by 71%, and the recruitment efficiency is increased by three times. Through artificial intelligence, you can intelligently compare the company's needs with your resume, reducing the screening time of a large number of human resource workers. At the same time, because of the use of artificial intelligence tools, you can increase the screening conditions, and the screening results are more in line with the company's requirements. At the same time, through big data, we can get the information of interviewers in social media and other platforms or browsing history, so as to understand interviewers more comprehensively. For example, if an enterprise wants to recruit self driven employees with strong initiative, by analyzing different data sets, we find that those who do not use computer pre installed browsers (such as chrome) are often more suitable for the specific work. In the process of interview, artificial intelligence can also assist human resource workers to conduct preliminary screening, predict the matching value between interviewers and positions and even their turnover intention through algorithm intelligence, so as to help interviewers make decisions.

In terms of personnel allocation, the career evaluation system provided by artificial intelligence can more accurately grasp the expertise of employees, convert each employee's ability value into intuitive data, place employees in a position that can better play their expertise and ability according to scientific algorithm, and assign them the work objectives and tasks that can best play their advantages.

3.3 Training and development stage

Artificial intelligence can also effectively improve the efficiency of employee training. As mentioned before, artificial intelligence can more easily obtain data such as the ability level and hobbies of employees, and can more easily customize exclusive training content and methods for employees. At the same time, artificial intelligence also provides another way of learning - online learning, which reduces the constraints of time and space, and makes it easier for trainers to access all kinds of excellent resources at home and abroad, improves the training effect, and saves training funds and human resources for enterprises. At the same time, according to the intelligent tracking feedback of after-school learning tasks, learning arrangements can be intelligently adjusted according to the different learning progress and learning ability of employees, which greatly improves the learning effect of employees.

VR technology is used to train employees in a situation simulation way, so that employees can get a sense of immersive experience, enhance the effectiveness and practicability of training. At the same time, because of the novelty of VR, it also brings fun to employees, so that they don't feel the training boring, so they are more willing to devote themselves to the training and get better training results.

4. Conclusion

The survey found that 15% of human resource leaders have been affected by artificial intelligence and automation, while 40% think it will affect them in the next two to five years. Looking forward to the future, a recent study from Oxford University calculated that 720 jobs will be affected by automation in the next 20 years. The conclusion is that by 2035, the probability of automation of human resource management is 90%. Intelligent human resources is an inevitable development trend, what we can do is to accept and adapt to it.

4.1 Suggestions for human resources practitioners

At present, a lot of routine work has been accepted and processed by artificial intelligence. Therefore, you need to be fully prepared for the future of your work, analyze whether the work you want to be engaged in will be replaced, and make a good knowledge reserve of relevant software skills. Understand what programs or algorithms have been or will be applied in the current industry. Note that this understanding does not require you to have a comprehensive grasp. At least you need to know how these software are applied and how to analyze and process the data collected by artificial intelligence, so that you can be handy when dealing with problems in the future.

As artificial intelligence has liberated human resource workers from daily complicated affairs, the future human resource workers should focus on more critical and strategic events. Therefore, from now on, our focus of learning also needs to be shifted accordingly. Now, as well as the future society is the era of big data, the collection and application of data has become the focus of human resources staff authors, how to collect data, how to use the collected data, etc. All in all, future human resource workers also need to be data proficient.

Artificial intelligence should not be regarded as an enemy or a tool, but as a friend. The two are growing together. The algorithm and function of artificial intelligence also need to be improved in practice. Which direction should be improved is also a question that the author of human resources staff should put forward.

4.2 Suggestions for enterprises

Learn to apply data. Enterprises need to invest more in data and less in hardware. In addition to internal data, it also needs to make rational use of external data, and sometimes even need to obtain more external data. Enterprises need to be prepared for the transformation and not be submerged in the data flood of the times.

Companies can show employees the benefits of data, so that employees feel willing to accept the company's transformation.

Enterprises also need to pay attention to safety and ethics when using data, especially when obtaining external information and employee information. Crawling external information needs to comply with the rules of the website, not illegal crawling information. Pay attention to privacy issues when obtaining employee information, do not violate the bottom line of the law, do not disclose employee information at will, and it is better to obtain employee consent.

4.3 Summary

The new era has come, no enterprise can escape the tide of the era. In this new era of artificial intelligence, the human resource development process of enterprises will be more closely combined with artificial intelligence, becoming intelligent and efficient. The application of AI technology is the inevitable result of enterprises complying with the trend. The application degree and application ability of AI technology will gradually become the main competitive factor between enterprises in the future. But as the saying goes, coins are two-sided. Everything in the world has two sides. When AI is widely used, some people who don't keep up with the times, who don't understand learning in time will be left behind, and the employment threshold of human resource work will be greatly improved. While relying on the development of technology, we still can't forget the importance of "human". Human resources is the management of human beings, and it also needs human beings to manage. Emotion can't be replaced by machines. In the application of new technology, we should not be frightened by high and new technology, nor be a prisoner of technology. We should give full play to our own strength, let technology become our sharpest tool, and create greater value for the society.

References

- [1] Linxue Li. 2019. Challenges and opportunities of human resource development and management in the context of artificial intelligence [J]. Cooperative economy and technology, Vol.3 (98-99).
- [2] Jinzhi Li, Tianzi Wang, Baolong Yuan. 2019. Research on new model of enterprise training and development based on artificial intelligence technology [J]. Mall modernization, Vol.8 (75-76).
- [3] Shenghai Tian.2018. Digital revolution of human resources [J]. Internet economy, Vol.6 (84-89).
- [4] Xin Fang, Xin Liu. 2019. On the opportunities and challenges of human resource management in the era of artificial intelligence [J]. Journal of Shandong University of administration, Vol.4 (104-109).
- [5] Min Li.2018.artificial intelligence: technology, capital and human development [D]. Zhongnan University of economics and law.
- [6] Dorje.2018. Analysis of the current situation of China's human resources development [J]. New business weekly, Vol.14 (164-165).
- [7] Lili Jin.2019. Current situation and Prospect of human resource development in China [J]. Chinese information, Vol.8 (77).

- [8] Allan Bongard.2019. Automating Talent Acquisition: Smart Recruitment, Predictive Hiring Algorithms, and the Data-driven Nature of Artificial Intelligence [J]. *Psychosociological Issues in Human Resource Management* Vol.7 (36-41).
- [9] Pauline T. Kim. 2018. Big Data and Artificial Intelligence: New Challenges for Workplace Equality [J]. *University of Louisville Law Review*, Vol. 57 (313-328).
- [10] Kazuo Yano. 2017. How Artificial Intelligence Will Change HR [J]. *People + Strategy*, Vol. 40, No.3 (42-46).
- [11] David Bernstein, AllyO. 2019. Has AI Killed the Recruiting Star? Or will it transform talent acquisition into something else entirely? [J] *Workforce Solutions Review*.
- [12] Murad Salman Mirza. 2018. New Frontier for Talent Acquisition in the Digital Age [J]. *HR Future*, Vol.12 (20-22).
- [13] Gregory Bekken. 2019. The Algorithmic Governance of Data driven-Processing Employment: Evidence-based Management Practices, Artificial Intelligence Recruiting Software, and Automated Hiring Decisions [J]. *Psychosociological Issues in Human Resource Management*, Vol.7, No.2.
- [14] Bertalan Meskó, Gergely Hetényi and Zsuzsanna Gyórfy. 2018. Will Artificial Intelligence Solve the Human Resource Crisis in Healthcare? [J]. Meskó et al. *BMC Health Services Research*, Vol.18 (545).
- [15] Carl Benedikt Frey, Thor Berger. 2016. Did the Computer Revolution Shift the Fortunes of U.S. Cities? Technology Shocks and the Geography of New Jobs [J]. *Regional Science and Urban Economics*, Vol. 57(53-55).
- [16] Ling Huang.2018.discussion on the change of enterprise human resource management in the era of big data [J] *human resource management*, Vol.2 (15-20).