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Abstract

In Industrial Big Data 4.0, different forms of big data technologies are the key technologies for industrial production, medical care, logistics and transportation, military and national defense, hotels and restaurants and other fields to evolve to a higher level. This paper introduces the application background of big data technology in different fields around the world, and discusses the necessity of intelligent transformation of human resources of Chinese enterprises under the current development situation. At the same time, it introduces the application of big data in enterprise human resource management mode. Today's enterprise human resource management model is facing a series of problems, such as rising human resource costs, high employee turnover rate, and difficulty in meeting the standards of the incentive system. It is a new idea to apply big data technology such as big data intelligent decision support system (IDSS) to each module of enterprise human resource management mode, and to improve the big data system combining enterprise management mode system intelligence and operation service intelligence, so as to solve the existing problems of enterprise human resource management mode and improve the efficiency of management mode.

Keywords

Big Data; Intelligentization; Human Resource Management Mode.

1. Introduction

The concept of "big data" was first formally put forward by scientists such as John McCarthy, the father of intelligence, at a scientific seminar held in Dartmouth, USA in 1956. Nowadays, big data is changing the face of our lives in an unprecedented way. Although most people still have the impression of big data on the alphago developed by Google, it won the man-machine game against lishishi, the world's top chess player. At the beginning of January this year, it hid its true identity and used the user name "Master" to compete with the top players from all over the world on the Internet to win 60 consecutive victories in Kuaiqi. Major media have summed up the historic significance of this online competition with "the future has arrived". But in military and industrial production, big data technology is no longer a futuristic topic in science fiction.

2. The connotation of enterprise human resource management mode

2.1. Overview of human resource management mode

In fact, the human resource management model is a complete system, which is composed of subsystems in the human resource management model. In the enterprise's human resource management mode, the plan and strategy of the enterprise's human resource management mode should be formulated at first. Guided by the plan of human resource management mode,
and then analyzed according to the work done, the corresponding job description and description were made. According to job analysis, enterprises should also allocate employees after recruiting employees. In the process of arranging employees, it is necessary to plan the career development path for the employees according to their personal actual conditions. In the process of employees integrating into the company, they must communicate with each other during this period to reduce the occurrence of problems and conflicts and enable the two to develop together. When the human resources work progresses to a certain level, it is necessary to evaluate and assess the work level and performance of employees through multiple levels. After the evaluation results are obtained, encourage them. This encouragement can be in terms of salary, welfare or spirit. For the evaluation results of excellent performance of the staff, it is necessary to vigorously praise. However, in the evaluation results, the employees with defects in some aspects of work, but who are helpful to the subsequent development of the enterprise, should strengthen the training. It may be that these employees improve their work level and professional knowledge, so that they can meet the needs of business activities and human resources work in the future. Finally, according to the whole operation of the human resource system, the enterprise should re formulate or change the human resource development strategy and plan, so as to provide a solid foundation for the human resource management mode in the subsequent stage.

2.2. Characteristics of human resource management mode in Chinese enterprises

From the perspective of business operations, the profits of companies that provide goods or services to the market rely heavily on the services provided by workers. Enterprise human resource management model The business development status of an enterprise is closely related.

From the perspective of management model theory, the new era of human resource management model pays more attention to people-oriented thinking, pay attention to the needs of staff and the salary, welfare, humanistic care they can get.

From the point of view of work content, the work of each department of the enterprise needs strong interpersonal and communication skills. Compared with other industries, the enterprise human resource management mode pays more attention to the quality and emotional intelligence of employees.

An excellent and efficient human resource management model can allow employees to participate more actively in other operations and competitions, and meet the business objectives and related requirements of the company. Nowadays, more and more enterprises have realized that if they want to survive in the fierce competition, they must closely combine the human resource management mode with the strategic plan. In the strategic plan or plan, every element must include the human resource element, because the realization of the strategic goal depends on the support of strong human resources. Therefore, if an enterprise wants to obtain huge economic benefits, a scientific and good human resource management model is the foundation, which has important significance and influence on the future development of the enterprise.

3. The Status Quo of Human Resources Management Models in Chinese Enterprises

3.1. High turnover

According to the survey data released by Aon Hewitt, a world-famous human resources company, on November 14, 2019, the turnover rate of employees nationwide in 2019 was 20.8%. The turnover rate reflects the flow of human resources in enterprises, and the normal
turnover rate should be about 2% (or 3%)~10%. It can be seen from the figure that the turnover rate of different industries also has a large gap. The turnover rate of the industries represented by hotel, internet, and real estate retail exceeds 20%. According to the different tendency of turnover, the turnover rate of employees can be divided into active turnover and passive turnover. These are all closely related to the enterprise human resource management mode.

3.2. High cost of staff recruitment and training
There are internal costs and external costs in the recruitment of employees. That is, the salary and benefits of recruiters, the opportunity cost of recruitment, the cost of publishing recruitment advertisements in newspapers, publishing recruitment information on websites, and attending job fairs. Enterprise staff training is divided into induction training, job skills training and corporate culture training. The whole process roughly includes preparing the office supplies needed by employees, appointing mentors, improving employees’ professional and service skills, improving their quality, and cultivating employees’ sense of belonging. These processes require material costs and a lot of labor costs, including training expenses. Material and office supplies costs and substantial opportunity costs.

3.3. It is difficult for human resource planning and employee motivation to reach the standard
Many theoretical works of management model emphasize the importance of human resource planning and employee motivation for the long-term development of enterprises. However, few enterprises can really make good human resource planning and employee motivation, and lack long-term consideration for the future growth and development of employees. In the enterprise staff incentive, many enterprises still stay in the single staff incentive mode such as bonus incentive and tourism activities. These incentive models have little effect on stimulating the enthusiasm of employees and improving their work efficiency.

With the development of enterprises, for some employees, compensation is not only a means of making a living, but also a need for self-affirmation or self-satisfaction and self-esteem. Most small and medium-sized enterprises adopt the salary system, which can only meet the needs of some ordinary employees, but far from meeting their diverse needs for some employees who are engaged in business. Most enterprises lack the consciousness of applying the latest human resource management model theory to the actual management model. Although they know how to make human resource planning and optimize the employee incentive model, they are limited by the existing management model and methods, and are difficult to develop and innovate.

Company leaders’ understanding of motivation is very simple. They think of "reward and punishment" unilaterally, lack of perfect performance appraisal standards and operating procedures, and often use promotion, salary increase and bonus as the means to motivate employees, which is easy to bring employees’ enthusiasm and creativity into full play. At the same time, when companies are motivated, they rely more on the personal judgment of the leaders, which can easily lead to unreasonable allocation of lack of basis, make employees lack enthusiasm, and make incentive behavior often fail to achieve the expected results.

4. Advantages and potential of human resource management mode in Chinese Enterprises

4.1. Acting on international convention
The business development of domestic and foreign enterprises has increased the dialogue and exchanges between domestic and foreign companies. Many foreign companies have introduced brands into the Chinese market through a variety of business models, and Chinese companies
have also entered the world market. The human resource management model department can often draw on foreign advanced human resource management model concepts, or mature management models and methods, and apply them to the actual management model of the enterprise.

4.2. Improving the quality of labor market

With the improvement of China’s education system and the popularization of higher education, the education level of the whole population has increased year by year. According to the statistics of the sixth national census, there are about 120 million people with university education in China. However, more and more attention has been paid to the management mode specialty offered by universities in China, and the human resources department of enterprises can recruit more high-quality talents from fresh graduates.

4.3. The development of new media

With the rapid development of new media, there are more ways and channels for staff recruitment and communication. Human resource managers can publish recruitment requirements and accept job applications through various talent websites on the Internet. The extensive use of wechat and microblog greatly improves the convenience of mutual understanding between enterprises and employees, and makes it easier to build a dynamic corporate culture.

5. Application of Big Data in Enterprise Human Resource Management Mode

5.1. Human resource planning module

Human resource planning needs to take into account both inside the enterprise and employees, including the formulation of staff allocation, post work, plans and objectives of human resource management mode, and personal career planning of employees, etc. Human resource managers need to consider many factors at the same time when making a series of decisions and planning, which requires a lot of energy and cost. The Intelligent Decision Support System (IDSS) in big data technology uses the functions of expert system and problem solving, which is suitable for human resource planning and analysis of complex problems.

5.2. Employee recruitment and training module

If the enterprise has made its intelligent operation service more perfect, it can reduce the number of staff positions, and thus reduce the number of staff turnover, which can save a lot of cost of recruitment, training and staff incentive for human resource management mode. The most effective way to improve the professional skills and comprehensive quality of enterprise employees is to pay enough attention to the training of employees, establish scientific and reasonable vocational training institutions, and improve the training mechanism. The establishment of a talent training system means constantly increasing training efforts, and regularly or irregularly hiring senior technical lecturers and other experts to conduct on-the-spot training for employees in enterprises. Attention should be paid to personnel training, which should teach students in accordance with their aptitude, and carry out different training work for different employees. In addition, small and medium-sized enterprises should also consider reflecting employees' training results to employees' future promotion, salary and other aspects, so as to stimulate the enthusiasm of students' training. In addition, IDSS and databases can also be used to simplify the recruitment process. For example, first set the content of the items required for a standard job application resume, and then set the requirements for each position in the company. Let the IDSS system classify and process various data and keywords according to the applicant’s academic qualifications, work experience,
expertise, skill level, etc., and select a certain number of suitable people for interviews, saving a lot of time in selecting employees.

5.3. **Section performance appraisal module**

Performance appraisal is mainly to evaluate employees' work in a period of time, and the evaluation contents mostly include work performance, attendance status, evaluation of leading colleagues and self-evaluation, etc. Currently accounting for most of the corporate performance appraisal are indicators that are very easy to quantify, such as work performance and attendance. However, it is also necessary to consider how to conduct data mining and quantitative operations on various descriptive evaluations.

The intellectualization of enterprise performance appraisal can make the current more scientific performance appraisal methods, such as Coles average score method, 360° Performance appraisal method and so on. Or according to their own needs to develop performance evaluation methods, the required evaluation criteria to generate a fixed calculation model (such as attendance rate of 30%, work performance percentage of 50%) into IDSS system. Then input all the performance appraisal data into IDSS for analysis and calculation, and finally get the performance appraisal results of each employee, which can save a lot of extra statistical time.

5.4. **Salary management mode module**

In terms of employee salary management mode, it basically includes the basic salary, allowance, commission, etc. of each position of the employee. It is the most convenient module for quantitative calculation among the six modules. The IDSS system can plan the most scientific salary management model based on the company's operating conditions, the proportion of human resource input costs and recovery profits, the market data of the entire industry, etc., the relationship between employee salaries and attrition rates, etc. Then set the fixed calculation formula for the standard of employee salary management mode, according to the performance appraisal of employees in IDSS system, each item can be automatically accumulated or deducted in daily work, and the final salary of each employee can be directly displayed on the salary payment date.

5.5. **Employee incentive module**

Companies can first use the IDSS system to establish an employee motivation model based on applicable employee motivation theories (such as two-factor theory, Maslow's hierarchy of needs theory, etc.). For example: According to Maslow’s hierarchy of needs theory, link social needs with networking activities or group travel. Connect respecting needs with the title of outstanding employees or position promotion... Then import the employee data recorded in the DW into the DM system for detailed analysis. The data mining system will be based on the characteristics of the employees, such as hobbies, age levels etc. will be roughly divided into several categories, corresponding to different incentive schemes. Finally, for a specific employee, you can check the categories to which he belongs, and work out an effective individual incentive plan.

5.6. **Employee relationship management model module**

In the employee relationship management mode module, the processing of interpersonal relationship and labor relationship can only be carried out by manpower. However, the big data system can be used to plan a long-term feasible employee assistance plan, which becomes a part of corporate humanistic care.

In the employee relationship management model module, it is also necessary to use database and DM technology to find the commonalities of employee needs (the data can also be obtained from the standard entry application or questionnaire survey in the recruitment module), and
to distinguish the levels of these needs. Through a reasonable employee relationship management model, a reasonable working atmosphere can be established among employees.

6. Conclusions

At the turning point of the development of science and technology revolution, the change of people’s lifestyle, thinking mode and behavior habits will easily lead to the instability of the market, which will be the period when enterprises are facing multiple challenges and difficulties. Human resource managers assist other managers in many important aspects, so human resource management plays a unique and irreplaceable role. Although many enterprises have realized the economic benefits that big data technology can bring, most enterprises are still in the exploratory stage, and hope that in the near future, big data technology can be better developed, so that all kinds of intelligent systems discussed in this paper can be practically applied in enterprise management mode, and realize real intelligent transformation and development.

References