Research on Human Resource Management System Model Based on Big Data Management

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Abstract. Human resource management system (HRMs) is an important part of enterprise information management system. With the development of modern personnel management informatization and the increasing demand of leaders for statistical analysis of information data, the optimization of data quality and process has become the development trend of HRMs design and development. In this paper, the idea of cloud computing is introduced. Based on the analysis of the existing problems of human resource management information system, we constructed the cloud computing for the HRMs model is constructed, and the system implementation and system security are discussed.

Keyword: Human resource management · Cloud computing · Management information system

1 Introduction

Human resource management (HRMs), the upgrading of personnel management, refers to the effective use of relevant human resources inside and outside the organization through recruitment, selection, training, remuneration and other management forms under the guidance of economics and humanism, so as to meet the needs of the organization's current and future development, The general term of a series of activities to ensure the realization of organizational goals and the maximization of member development. It is the whole process of forecasting the demand of human resource and making the plan of human resource demand, recruiting and selecting personnel and organizing effectively, assessing performance, paying compensation and motivating effectively, and developing effectively according to the needs of organization and individual so as to realize the optimal organizational performance. It is also an important position in the company.

The academic circles generally divide human resource management into eight modules or six modules: 1. Human resource planning; 2. Recruitment and allocation; 3. Training and development; 4. Performance management; 5. Salary and welfare management; 6. Labor relations management. Explain the core idea of the six modules of human resource management to help business owners grasp the essence of employee management and human resource management.

Cloud computing is the latest application technology in the development of computer science, which has been widely concerned. In a narrow sense, cloud computing refers to

that manufacturers build data centers or supercomputers through distributed computing and virtualization technology, and provide data storage, analysis and scientific computing services to technology developers or enterprise customers in a free or on-demand rental way. Generalized cloud computing includes three service forms: SAS, PAS and IAS. It means that manufacturers provide different types of services such as online software services, hardware leasing, data storage, calculation and analysis to different types of customers through the establishment of network server cluster [1]. In the practical application of cloud computing, in addition to the application characteristics of network technology, it also has the following characteristics:

1. Users can apply for computing services from designated service providers according to their personal needs. 2. It supports multiple operating platforms and multiple terminal access. 3. Computing resources are centralized to provide services for multiple customers through a multi customer sharing model. 4. The ability to quickly respond to service applications and provide services in a scalable way. 5. Provide measurable computing services.

2   Current Situation of Human Resource Management System

Human resource theory has always been a hot pot problem in enterprise management. Managers of various industries are more and more aware of the key role of human resource in enterprise development and competitive advantage, and put forward higher requirements for human resource management. At the same time, with the development of information technology, human resource management extends from "transaction processing" and "data management" to "process management" and "decision support". Therefore, from the perspective of human resource management, high performance database system is used to manage human resource related data, and provide friendly interface, process management, information management, statistical analysis, decision support and other functions, so as to improve the work efficiency of human resource management transaction processing [2]. However, many enterprises and institutions in our country still have to stop.

Let G_1 be a bilinear group with prime P as its order, and let G be its generator, bilinear mapping

$$e : G_1 \times G_1 \rightarrow G_2 \tag{1}$$

Threshold D, decryption user attribute set u, system extraction attribute set ω, so Lagrange coefficient can be defined.

$$\Delta_{i,s}(x) = \prod_{j \in s}(x - j)(i - j) \tag{2}$$

(1) The idea of management information system is not popular. At present, most of the so-called informatization just stays at the stage of using computer to process documents, data tables, presentation documents, and searching for information on the Internet, without the idea of using information technology to manage resources and optimize processes. (2) The function coverage of human resource management system is narrow. From the function of management information system, the functions most

used by enterprises are "personnel information management" (71%), "salary" (682%), "report" (62.2%), "attendance" (595%), "Recruitment" (56%), "welfare" (538%), etc. According to this analysis, the human resource management information system of most enterprises in our country is still in the "transaction processing level" and "business process level", and the realization of "comprehensive human resource management" is less.

3   Cloud Computing for Construction of HRMs Model

3.1   System Structure Model

The model is a cloud computing model management system based on SAS, which usually relies on SOA architecture and web service technology. SOA is a service-oriented structure, which can extend many web services related to human resource management applications on the basis of SOA. We based on such as database processing, network transmission, interface platform with the system application of software and hardware, and constitute the "HRM cloud" [3]. Its structure is shown in Fig. 1.
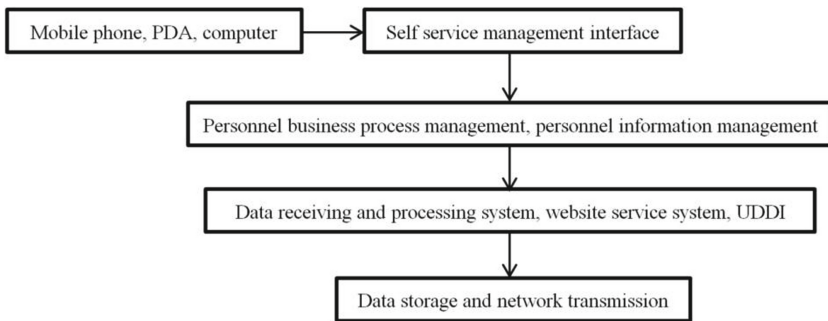

Fig. 1. Cloud Computing for HRMs

From the Fig. 1, we know there are four layers in the system. From the top to the bottom, each layer has the related function in order to ensure the data transmission.

3.2   Data Storage and Data Management Technology

Cloud computing usually uses distributed storage to store data, and uses redundant storage to ensure the reliability of stored data. Cloud computing system also needs to meet the needs of a large number of users at the same time and provide concurrent services, so it also needs to have the characteristics of high throughput and high transmission rate. At present, the mainstream cloud computing data storage technology has Google's GFS and Hadoop development team.

4 Security Measures of Cloud Computing Human Resource System Model

Nowadays, many enterprises are considering adopting cloud computing human resources (HR) software systems with many advantages, but it departments and human resources (HR) must also consider their technical challenges.

The human resource system based on cloud computing has brought a lot of progress to the human resource department. The services they provide help simplify human resources tasks, realize employee experience, improve and reduce costs. However, the human resource system based on cloud computing also brings a lot of technical burden. Everyone in the software procurement team, especially the staff in the IT department, should consider the selection, deployment and promotion of each tool.

The following are nine challenges faced by cloud computing based human resources systems:

1. New security burden

   The newly implemented GDPR regulations are increasing compliance requirements to track these data, which adds an additional burden on employees.

   "Because of these problems, it is important to study and select suppliers that meet all the regulatory needs of the enterprise and protect its sensitive data. Before entering the implementation phase, ensure their professional qualifications in network security. Then, work closely with the enterprise's chief technology officer (CTO), as well as Devops and it functions to ensure the security and maintenance of the system. Don't take anything for granted." Bazar cautioned.

2. Balance security and ease of use

   We are concern the security for the consumerism of human resources.

   We can understand the use must be easy, as once the technology is for nomal HRM, the HR just want to use the technology and the HR doesn't know what is the security, technology and so on. If the system is so complexity, it will cause some problems. So as a HR, we will integrate all workflow, let it be easy.

3. Significantly change the use mode

   Expansion can be a major challenge. There are great differences in the computing load that human resources systems based on cloud computing must support. Menon said that, for example, the average system load of a company with 2000 employees may be 100 page views per hour. But at the end of the month, the peak may be as high as 8000 pages per minute.

   A good strategy is to adopt the human resource system based on cloud computing, which can be dynamically expanded and reduced the workloads. As HRM need to consider expanding services and rights.

4. Keep pace with integration

   Cloud computing can easily add various human resources services. Anup yanamandra, chief product officer of betterworks systems, which focuses on employee engagement and development services, said that the number of individual human resources systems to be maintained can be between 10 and 100, and it can be very difficult to manage all integration and permissions consistently in all these systems.

5. Custom cloud service
   Chris Schaaf, general manager of Human Resources Department of Accenture, said, "there is no general cloud computing human resources solution." Some IT organizations is developing some demands for differents client that focus on user needs, experience and participation, as well as integration and seamless capabilities, enabling users to better complete their work anytime, anywhere on any device they use.
6. Scalability and flexibility testing
   It and human resources departments should work with suppliers to test the scalability and flexibility of human resources cloud computing services in their own organizations, rather than measuring suppliers' statements by surface value. There are many other factors that affect scalability. In addition, it is important to ensure that specific services can adapt to different human resources processes. Chris Schaaf, Accenture human resources portfolio director, said that a key best practice is to outline the organization's operation mode to suppliers, identify potential risk points, and then jointly prevent and repair. For example, Accenture uses servicenow to provide guided vacation services for its employees.
7. Prepare for data flooding
   Cloud computing can more easily access raw data by following the natural path advocated by specific cloud computing services. However, more needs to be done to obtain, understand and share these data, so as to help human resources managers meet unique challenges. Enterprises look for tools that can be set up to calculate meaningful return on investment and indicator information about personal business. Human resources professionals need to make full use of such tools.

5   Conclusions

As a cutting-edge network application technology, cloud computing has carried out application research in many fields. With the development of scientific management, human resource management system, as an important part of management information system of enterprises and institutions, is also facing design ideas and technological innovation. The application of cloud computing technology to human resource management system will inject new vitality, Have a positive and far-reaching impact on it.

References

1. Jia, Y.: Research on human resource management system model based on cloud computing. Human Res. Develop. **2**, 1–2 (2015)
2. Bo, W.: Research on human resource management system model based on cloud computing. Netizen World **Z3**, 3 (2013)
3. Wu, Z.: Research on human resource management system model based on cloud computing. Inf. Comput. (Theor. Ed.) **16**, 142–143 (2012)
4. Feng, D., Zhang, M., Zhang, Y., Xu, Z.: Research on cloud computing security. Acta Softw. Sin. **22**, 71–83 (2011)