# Research on E-Commerce Human Resource Innovation Management in the Era of Big Data

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Keywords: Big Data Technology, E-Commerce Human Resource Management, Innovation.

Abstract: Through the use of big data mining technology, big data analysis technology, cloud computing technology and Web technology, combined with the problems of e-commerce human resources management to build e-commerce human resources innovation management system. The system has the function modules of updating traditional concepts, improving human management and deepening data management. It not only comprehensively optimizes the human resource management system, but also reflects the performance of big data related technologies incisively and vividly. In addition, it also solves the problems existing in the traditional e-commerce human resource management, realizes the intelligent management of e-commerce human resource, and provides a strong support for the further development of e-commerce human resource management.

## 1 INTRODUCTION

In the era of big data, e-commerce related industries are expanding on a large scale, showing the following phenomena: The total number of employees of enterprises keeps increasing, while the number of human resource management departments does not increase, which is easy to form the contradiction between the increase of workload and the control cost of human resources; At present, most of the employees in the enterprise belong to the post-90s age group. There is a huge gap between the career outlook and values of the post-90s employees and the concept of the previous employees, and the high turnover of employees, which increases the workload of human resource management and also brings challenges to human resource management. At present, enterprises generally require college degree or above, and the comprehensive quality of employees should also be listed in the recruitment requirements. For example, employees should not only know the relevant knowledge of the company's business, but also have the professional technology of the post. The author thinks that by using big data technology to construct the electronic commerce application data platform, to solve the traditional electronic commerce above problems existing in human resource management, staff in a timely manner to change ideas, into the new management mode, and then predict the employee situation and make decisions in time, in addition, both reach the purpose of saving resources, and realize the effective implementation of management.

## 2 OVERVIEW OF E-COMMERCE HUMAN RESOURCE MANAGEMENT

### 2.1 Contents of E-Commerce Human Resource Management

Human resources refers to doing work by communicating with people. It requires managers to have the ability of coordination, integration, judgment and imagination. Human resource management refers to the management of internal and external human resources of an enterprise through recruitment, screening, training and other forms, so as to meet the current and future development needs and maximize the function of human resource management while ensuring the completion of the target. It can be divided into six parts, human resource planning, recruitment and allocation, training and development, performance management,



Yuan, X. and Chen, Y.
Research on E-Commerce Human Resource Innovation Management in the Era of Big Data.
DOI: 10.5220/0011357700003440
In *Proceedings of the International Conference on Big Data Economy and Digital Management (BDEDM 2022)*, pages 906-911
ISBN: 978-989-758-593-7

compensation and welfare management and labor relations management. However, there are some problems in traditional manpower management, such as old concept, old model and poor forecast.

## 2.2 Problems in E-Commerce Human Resource Management

### 2.2.1 Outdated Concepts and High Costs

According to the survey, 22 percent of e-commerce executives have some knowledge of big data and e-commerce, 20 percent say they have heard of it, and the rest are in a state of never heard of it. It can be seen that the concept of human resource management in e-commerce is still at the beginning, and the emergence of new technologies is not understood. Electronic commerce cost of human resource management involves the acquisition, development and utilization of human resources, departure and safeguard the basic rights and interests of investment, because with the development of the enterprise, number of employees are on the increase, causing the rise in the cost of human resource management, such as the human resources department in obtaining a large number of personnel information, to produce recruitment costs, investigation cost. In a word, in the era of big data, the concept of human resource management has not been updated with the changing times, and the cost is high.

### 2.2.2 Obsolete Mode and Difficult Management

Electronic commerce human resource management model obsolete, resulting in the implementation of management work more difficult. For example, the technical system of an e-commerce website is an internal software system. In terms of human resource management, the website has internal training and recruitment, but there is no efficient information management system. The outdated human resource management mode makes it difficult for the human resources department to evaluate the quality and performance of employees and manage them effectively from a comprehensive perspective. (Wang, 2016)

### 2.2.3 Lack of Prediction and Recruitment Difficulties

According to the survey, although an e-commerce website has a set of its own platforms, such as recruitment and training, the platform can only carry out general statistical analysis, and there are still deficiencies in intelligent recommendatory, forecasting the trend of enterprise talent, predicting the development curve of employees in the enterprise, and the turnover tendency of potential employees. This makes it difficult for enterprises to forecast comprehensively and recruit people. (Wang, 2017)

To sum up, e-commerce human resource management has the above three problems, which need to be solved by big data technology, so as to exert the functions of e-commerce human resource management to the utmost.

# 3 BIG DATA TECHNOLOGY

According to the latest authoritative statistics, by 2021, the global big data market has reached 80 billion US dollars, with an average annual growth rate of 15.37%. In the last two years, the development trend of China's big data industry has been on the rise, and with the strong support of national policies and continuous capital investment, the scale of big data will continue to grow in the next few years, but its growth trend will gradually slow down.

Big data refers to massive amounts of data. Specifically, big data refers to the use of conventional tools to capture, manage and process data sets, requiring efficient modes to process data sets. There are many kinds of big data technologies, which are mainly divided into five parts: data acquisition and preprocessing, data storage, data cleaning, data analysis and query, and data visualization. (3) The framework diagram of basic big data processing technology is shown in Figure 1.

The significance of big data lies in data mining valuable data information and predictions. First, data mines valuable data information. Big data is not only the storage and processing of massive data, but also the data mining. For many enterprises, using big data technology to mine the potential value in data is the key to the core competitiveness of enterprises. Second, prediction. Data itself is a summary and summary of past and present data, which does not provide directional guidance. However, a new thinking model that can predict the future development of an enterprise can be established by understanding the way of thinking in the past. [4]

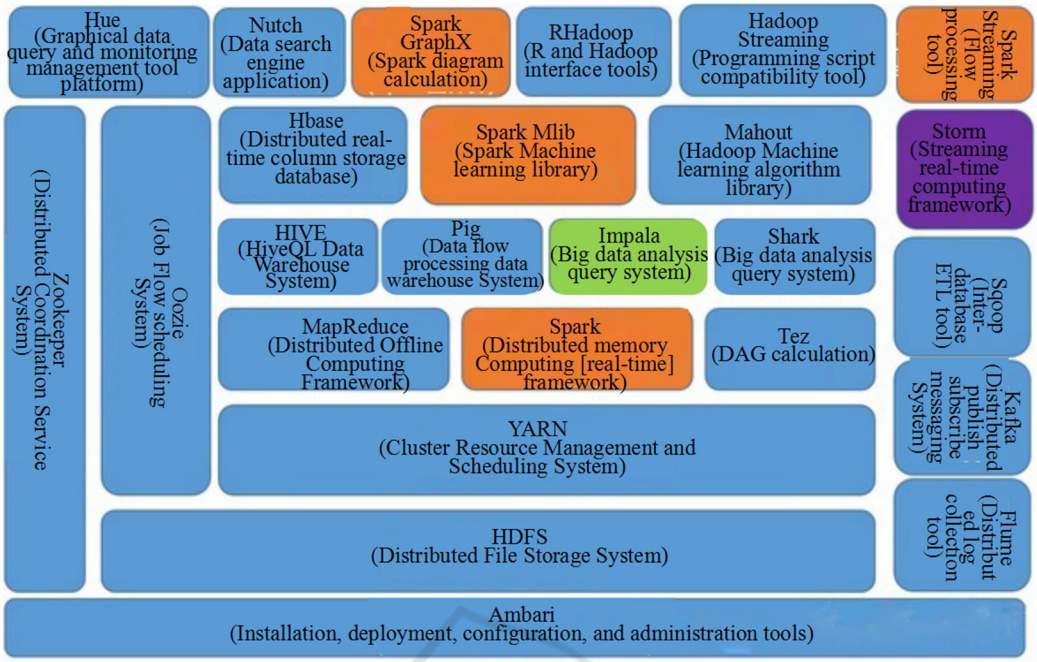


Figure 1: Basic technical framework of big data processing.

This paper focuses on data mining and analysis in big data technology. The function of data mining technology is to mine the development and potential problems of employees in the enterprise. Data analysis technology is to analyze the data, managers make corresponding decisions. Big data technology will be very thorough analysis of employee data information, so as to realize the recruitment of intelligent recommendation talents, online self-service learning system, and then e-commerce human resource management can achieve efficient allocation of human resources, human cost control, intelligent recruitment management and other goals.

# 4 DESIGN AND IMPLEMENTATION

## 4.1 Overall Architecture Design

The specific management processes involved in e-commerce human resource management include recruitment management, training management, performance management, compensation and welfare management, guidance management and promotion management. The author will take recruitment management, training management and guidance management as examples to build an e-commerce application big data platform, as shown in Figure 2. The platform is built by using Web technology, big data technology and cloud computing. Users through the site and use the network to the platform, through the transition before the old ideas, set up new concept, with the time development by deepening data management, improve human resources management to achieve effective decisions, in the process need to be applied to the big data base technology to realize data management and decision-making, using cloud computing technology to realize the custom design of platform function module, through the use of barrage technology to achieve specific functions. The platform consists of e-commerce application of big data processes and human resource management involved in the content. The setting of the platform is not only conducive to the efficient management of employees by the human resources department, but also conducive to the overall development of the enterprise planning.

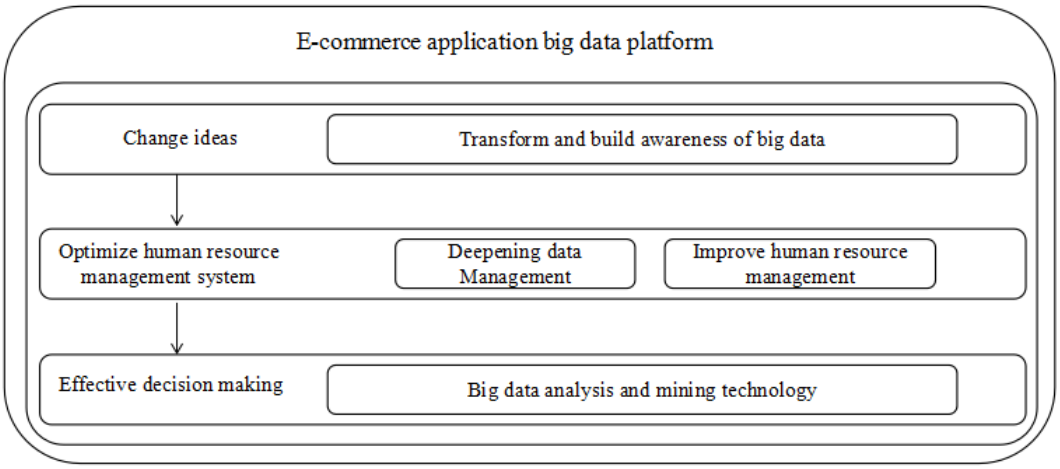


Figure 2: E-commerce application big data platform.

## 4.2 Detailed Functional Design

This part focuses on the introduction of methods and technologies applied to recruitment management, training management and guidance management in e-commerce application big data platform. The specific functional modules are shown in Figure 3.

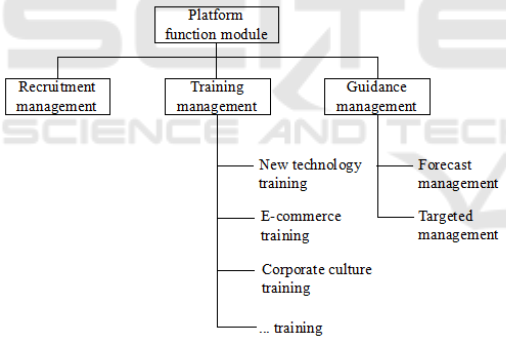


Figure 3: Platform functional modules.

### 4.2.1 Recruitment Management

Hiring is more three-dimensional. The big data tool Flume is used to collect the data of candidates in the network, and Sqoop and HDFS are used to transmit and store the data. Mapreduce and Spark are used to calculate and clean the data. Hive tools are used to analyze and query the analyzed data, and then use specific formulas to calculate the job expectation and the quality of candidates. Finally got the job expectations and post match Numbers, again through the matching degree of the intelligent screening, you just need to make an appointment with the matching degree is high talent, it saves in the recruitment resume filtering, online first try, so as to improve the recruitment efficiency, reduce the cost of hiring, further enhance the efficiency and effectiveness of the decision.

### 4.2.2 Training Management

Training management involves new technology training, e-commerce knowledge training, enterprise culture training and so on. After entering the training management module of the platform, users can learn various trainings in the module. After learning, employees have a certain understanding of e-commerce business, new technology big data, enterprise culture and so on.

The specific training in the module is divided into zero basic knowledge introduction course, learning and subdivision course, easy learning of question bank and knowledge application course content. In the first three parts of the course, the information to be used is uploaded to the platform through network technology, and the platform identifies the difficulty of the content and divides the types according to the subsequent procedures. This function not only provides learning materials for employees, but also deepens their understanding of corporate culture. After learning the first three parts of the course, the user enters the fourth part of the course, knowledge application. This part is divided into three parts, which are application case base, case explanation and technical discussion. The information involved in this part is also obtained through uploading, and the technical discussion part uses the bullet screen technology. The feature of this part is that even if there is no application case and case explanation study, the study of the technical discussion part will

also make users receive a lot of goods, such as special knowledge point explanation. Through this part of learning, users will have a more thorough understanding of their knowledge in new technology and e-commerce, and gradually understand the unknown areas in the process of learning knowledge, so that users can not only realize learning, but also timely reflection.

During the training, you need to create a shared database, upload resources to the platform using the cloud computing technology, and form a collection of different types of storage devices using functions such as the distributed file system to implement cloud storage. Including enterprise internal information sharing and external information sharing. Information sharing is responsible for cataloging, publishing, storing and retrieving data. For example, enterprise internal information sharing, the first display is the data catalog, the specific content includes department planning, technology sharing, department training. After the information is published, it is stored and users can query the content they want to know through retrieval. Through network data sharing, employees can have a better understanding of the internal development of the enterprise, and their own positioning is also very clear, and the goal of common progress of employees. (Zong, 2012)

After training, employees will enhance their understanding of new technology and e-commerce, and improve their knowledge application ability.

### 4.2.3 Guidance and Management

Guided management is the e-commerce human resource managers after forecasting the employees, and then combined with all aspects of the employees to carry out targeted guidance, so as to achieve accurate prediction, efficient decision-making goals, and then to achieve efficient management. This part is divided into two parts, one is the prediction part, the other is the targeted guidance part.

Predictions. The forecast is divided into four parts. First, database data analysis. Database data analysis is to preprocess the original data. Flume is used to collect original data, Sqoop is used to transmit data, and the data is stored in HDFS. Mapreduce and Spark are used to calculate and clean data, and the analyzed data is performed by Hive. Second, state data analysis. Status data analysis is to re-analyze the analyzed data, but this analysis needs specific algorithms to realize the analysis of the future development direction, such as the entry rate, turnover rate, internal turnover rate. Third, operation trend forecast. Operation trend prediction is to monitor the data information existing in the operation process. Fourth, predictive warnings. After monitoring and analysis, the data of abnormal state predicted by trend will be sent to the platform manager, who will inform relevant personnel or deal with it directly. This part enables the enterprise to predict the development trend, development trend and potential turnover tendency of employees, so as to prepare for the targeted guidance in the next step.

Targeted guidance. Targeted guidance is designed according to the age, position, demand, performance, salary, welfare and other aspects of employees. This part makes use of the basic technology of big data, that is, by using Flume tool to collect employee data information, and then through Sqoop transmission and HDFS storage, the data is calculated and cleaned. In this process, you need to use the Mapreduce tool, which uses Map to preprocess data, screen out the data to be used, and group the data. Then, use the Reduce tool to calculate the data using custom calculation methods and summarize the data. After collecting the data, use Hive to analyze the cleaned data, and use Echarts to display the data results. Managers give targeted guidance to employees according to the results of previous prediction and present data display. For example, different ways are adopted to motivate employees of different ages to work efficiently according to their different work requirements.

## 4.3 Technical Support

### 4.3.1 Big Data Technology

The big data technologies used in this document are basic technologies, such as Flume, Sqoop, HDFS, Mapreduce, Spark, Hive, and Echarts. These basic technologies are used in each part of the process of collecting, storing, calculating and cleaning raw data, analyzing and querying, and applying results. And these technologies all have the characteristics of simple operation, fast operation, large scale, high security, and the tools used in the data visualization link display diversification. Through the use of this technology, the data management is intelligent, and the data obtained is the expected data, in addition, the data results displayed have diversity, both can be represented by dynamic graph, and can be displayed in other static ways.

### 4.3.2 The Cloud

Cloud computing is the product of deep integration of traditional computer and network technologies, such as distributed computing, parallel computing, network storage, virtualization. The advantages of cloud computing are large scale, virtualization, scalability, strong computing and storage capabilities, and high security. The use of this technology will greatly reduce costs and improve efficiency. Cloud computing services include IaaS, PaaS, SaaS. IaaS is infrastructure service, PaaS is platform as a service, and SaaS is software as a service. In this paper, SaaS is used. SaaS is to enter the application platform through the browser, but the platform needs to be designed under the software based on the Web. The advantage of SaaS is that the manager can customize the design of software modules in the application platform.

### 4.3.3 Barrage Technology

Bullet screen technology is realized by superimposing three View interfaces, which are video interface, bullet screen viewing interface and bullet screen operation interface. Query methods such as Toggle, animate. Toggle is a function used to design the effects of bullets and animate to create custom animations.

## 5 CONCLUSIONS

E-commerce human resource management application platform is designed for the problems existing in traditional e-commerce human resource management. The design of the platform not only solves the corresponding problems, but also realizes the intelligent and efficient management of staff and recruitment. It not only meets the needs of employee development, but also encourages employees to constantly improve themselves and work efficiently. It has become the development direction of e-commerce human resource management to acquire and analyze data with the help of advanced technology platforms, and the research data in this direction will be more refined and visualized. In addition, the analysis tools used will be more simplified and diversified.

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