

# Optimization System Study of Human Resource Allocation in Digital Technology

Rui Guo

DAYE SPECIAL STEEL CO.,LTD, Huangshi, China

## Abstract

**The current traditional technology human resource management and allocation can no longer meet the requirements of high-quality development of technology and economy and society. This article integrates policy requirements, resource allocation theory, data science theory, incentive theory, and demand theory to construct an enterprise technology human resource allocation system. It proposes an optimized allocation path for technology human resources that combines digital technology, basic laws, and allocation systems, providing reference for high-quality allocation management of technology human resources.**

## Keywords

**Digital; Technology Human Resource; Allocation Management.**

## 1. Introduction

Digital transformation and digital operations have become the mainstream trend and a hot topic in today's economy and society. Relevant surveys show that 78% of companies consider digital transformation as one of the key strategic focuses for the future, and 99% of CEOs support digital transformation initiatives within their companies. As various positions (and even every position) within a company are empowered by digital technologies, the roles, performance, and capabilities of employees will undergo significant changes. Consequently, human resource management will enter a new era of digital management, giving rise to digital human resource management. The current allocation of technology human resources in enterprises still faces problems and challenges such as insufficient integration with digitalization and inadequate digital capabilities in technology human resource allocation. Therefore, research on optimizing the allocation of technological human resources in digital age enterprises is not only very important, but also helps to improve the level of technological innovation human resource development and promote high-quality development of enterprises.

Digital technology human resource allocation refers to the process of using advanced digital and information technologies to intelligently and accurately allocate technological human resources. It involves the digitization of various aspects from performance management to talent mobility, and further optimizes the matching of technological human resources and improves the efficiency of business processes through technologies such as data analysis and artificial intelligence. The allocation of digital technology human resources makes the management of technology human resources more flexible and efficient by establishing a unified talent database, management system, and monitoring and feedback mechanism. The focus of this process is to integrate traditional technological human resource management models with modern digital technology to meet the constantly changing demands of human resources.

## 2. Literature Review

At present, scholars have conducted relatively little research on the allocation and digitization of technology human resources, mainly focusing on two aspects: technology human resource allocation and the optimization of technology human resource allocation driven by digitization.

### 2.1. Allocation Study of Technological Human Resources

Scholars have been studying the content, allocation, and other management elements of technology human resources since 2003. The main focus of the research is on technology human resource evaluation, technology human resource allocation models, and technology human resource allocation efficiency. In terms of technology human resource evaluation, Zhang Linshan and others believe that although the management and evaluation framework of China's technology human resources has been basically established, the evaluation orientation and mechanism still need to be improved, and problems such as incomplete assessment and evaluation mechanisms, rigid incentive mechanisms, and lagging reform of human resource management systems still exist[1]. In terms of the allocation model of scientific and technological human resources, He Rongwang et al. analyzed and optimized the allocation of scientific and technological human resources in Henan Province through the grey optimization allocation model of scientific and technological human resources[2]. In terms of allocation efficiency of scientific and technological human resources, Fan Fei found that technology human resources are one of the direct reasons affecting the efficiency of regional resource allocation[3]. Wu Di and others also pointed out the problems of low overall allocation efficiency and unbalanced allocation efficiency of scientific and technological human resources in China[4]. The above research provides ideas for the evaluation mechanism and improvement of human resource allocation efficiency in the technology human resource allocation system of this article, and inspires the proposal of the technology human resource allocation system.

### 2.2. Digitalization Promoting the Optimization and Allocation of Technological Human Resources Page Numbers

The rise of digital technology has promoted research in China on the optimization of technology human resource allocation through digitization. Existing studies have found that strengthening information transmission capabilities in the process of human resource management can stimulate innovative behavior in human resources[5]. Innovative behavior is the most important characteristic of technology human resources, and efficient information interaction ability is an important feature of digital human resource management[6]. Therefore, making good use of digital technology can promote the optimization of technology human resource allocation. The current research on digital technology human resources mainly focuses on digital transformation, data sharing, and elements of digital human resource management. In promoting digital transformation, Xie Xiaoyun et al. conducted a deep analysis of human resource management in the digital age from the perspective of human technology interaction, providing empirical evidence for the deep integration of digital technology and human resources[7]. In terms of human resource data sharing, Chen Tongyang et al. proposed using a digital technology enabled human resource management system to achieve open sharing of human resource data[8]. The shared database of technology human resources can make the management of technology human resources more convenient for various regions and departments, which is also the most effective path to promote the optimization and allocation of technology human resources. In terms of the elements of digital human resource management, a deep analysis of the management elements and modules of human resource allocation under the digital situation[9].

### 3. The Construction of a Digital Technology Human Resource Allocation System

The framework of the digital human resource allocation system includes elements such as tasks, objectives, allocation mechanisms, technical systems, and path selection. These elements are interrelated and form an organic human resource allocation system.

#### 3.1. The System Design of Digital Technology Human Resource Allocation

This paper designs a specific framework for digital technology human resource allocation system, which can be seen in Figure 1. According to strategic human resource management theory, the goal of digital technology human resource allocation in the figure is to achieve a unified and open market, and the task is to realize the scientific management of human resources. The goal drives the allocation mechanism of human resources. In this framework, the allocation mechanism includes mobility mechanisms, training mechanisms, evaluation mechanisms, and sharing mechanisms. These four mechanisms are interrelated and jointly promote the development of human resources and organizational innovation. The technical system is guided by the allocation mechanism and is a key step in digital transformation, also playing a decisive role in path selection. The technical system includes a decision system, evaluation system, and incentive system enhanced by digitalization. The allocation mechanism, technical system, task, and goal together shape the development direction of human resources. Finally, path selection is proposed to achieve the task of scientific management of human resources, with the expectation of optimizing the allocation of human resources.

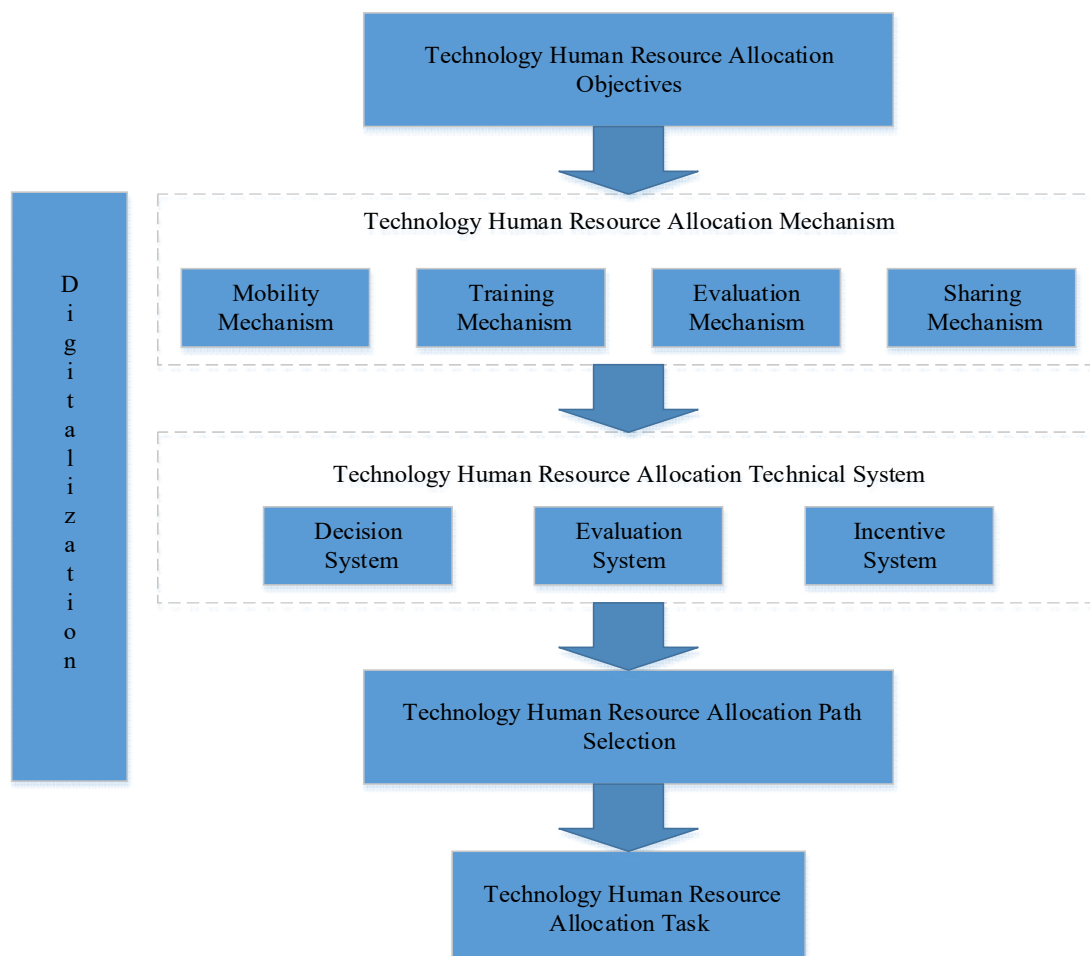


Figure 1. digital human resource allocation

References are cited in the text just by square brackets [1]. (If square brackets are not available, slashes may be used instead, e.g. /2/.)

## **3.2. The Mechanism of Digitalization Promoting the Allocation of Technological Human Resources**

### **3.2.1. Digital Human Resource Mobility Mechanism**

The digital mobility mechanism uses digital technology and information tools to achieve flexible mobility and optimized allocation of human resources within the organization. The key to this mechanism is the use of digital tools, such as human resource management systems and online collaboration platforms, to promote the mobility of human resources. This includes internal mobility between different departments, projects, or functions, as well as external regional mobility between the organization and the external environment. The digital mobility mechanism helps to stimulate the innovation capabilities of human resources, enabling them to gain experience in different fields in a timely manner. It also provides greater flexibility and adaptability for human resources in research institutions, universities, and other organizations.

### **3.2.2. Digital Human Resource Training Mechanism**

By introducing digital technology and innovative tools, human resource managers can design and implement training plans more precisely. First, digital tools provide comprehensive human resource data analysis capabilities, enabling managers to gain in-depth understanding of each human resource's skills, education, work experience, and interests. This provides strong support for formulating personalized training plans. Second, the mechanism uses online learning platforms and virtual training tools to offer more flexible and convenient training pathways for human resources, aiming to cultivate, develop, and retain professional talents in the technology field through more easily accessible resources. Education and training are the core of the training mechanism. Universities and research institutions need to design online professional courses that meet the demands of the technology field, making the acquisition of theoretical knowledge more convenient. In addition, the digital training mechanism also uses artificial intelligence technology to provide personalized training recommendations for individuals based on data analysis of their learning history and capability assessments, making training more precise and efficient. In summary, the digital human resource training mechanism not only provides more convenient and intelligent training means but also creates a more optimized environment for the comprehensive development of human resources and their adaptation to technological changes.

### **3.2.3. Digital Human Resource Evaluation Mechanism**

With the introduction of big data analysis, artificial intelligence, and real-time monitoring tools, human resource managers can gain a more comprehensive understanding of the work performance and performance of human resources. In addition, digital tools can track the progress of human resource work in real-time and provide immediate feedback, making assessments more accurate and timely. Through data analysis, the digital human resource evaluation mechanism can identify high-performing individuals and provide them with more development opportunities. The digital human resource evaluation mechanism improves the scientific and accuracy of assessments and provides stronger support for the individual development of human resources and the overall operation of the organization.

### **3.2.4. Digital Human Resource Sharing Mechanism**

The digital human resource sharing mechanism introduces online collaboration platforms, social tools, and real-time communication systems to establish a comprehensive human resource database, including real-time updated information on human resources in different fields, skills, and experience levels. This enables managers to more conveniently share resources, project progress, and best practices. However, to protect legitimate rights and

interests, the human resource sharing mechanism must ensure that contracts and regulations are complete, ensuring that the interests of human resources are reasonably protected during participation in projects and tasks. In addition, the sharing mechanism also includes knowledge bases, online forums, and virtual collaboration spaces, providing an open platform for human resources to accelerate knowledge sharing and team collaboration. The digital human resource sharing mechanism provides advanced tools and platforms for promoting information flow, collaboration, and innovation, promoting the development of human resources and human resource sharing.

### **3.3. Technical Systems of Digital Human Resource Allocation**

#### **3.3.1. Data-driven Decision System**

The data-driven decision system assists in decision-making by collecting, analyzing, and utilizing a large amount of data. In the allocation of human resources, first, it is necessary to collect a wide range of data through digital systems, including information on human resources' educational background, professional skills, work experience, project achievements, and so on. This covers multi-dimensional data for each human resource, establishing a comprehensive talent database. Second, through data integration technology, data from different sources is integrated into a unified data platform to ensure the consistency and integrity of data for sharing among various organizations. Third, data analysis tools are used to conduct in-depth analysis of human resource data. This includes analysis of human resource structure, identification of potential outstanding human resources, and prediction of future human resource demand trends, providing objective and real-time basis for decision-making. Finally, based on the results of data analysis, decision support is generated to help the government make scientifically sound and rational decisions on human resource allocation. The data-driven decision system promotes the scientific and intelligent allocation of technological human resources through scientific data analysis.

#### **3.3.2. Evaluation System based on Digital Management System**

The evaluation system based on a digital management system will establish a digital management system that digitizes the performance management process, recording the work achievements of human resources in detail and comprehensively. This management system can also provide performance feedback to human resources, helping them better understand their progress towards personal goals and work status. Additionally, the digital management system will visualize performance data. This visualization allows human resource managers to more intuitively understand the overall performance situation, more effectively identify, monitor, and adjust issues, and provide more objective basis for the incentives and promotion decisions of human resources. The evaluation system based on a digital management system helps to improve management efficiency, reduce error rates, and make performance assessments more objective and quantifiable. It also facilitates communication between human resources and managers.

#### **3.3.3. Incentive System based on Data Analysis**

The incentive system based on data analysis is realized on the basis of the evaluation system. The incentive system is an extension of the evaluation system. The incentive system can achieve transparent reward implementation through the visualization of performance. This incentive system can identify high-performing human resources through data analysis and provide them with personalized incentive plans. It can better motivate their enthusiasm and creativity at work. Moreover, the incentive system based on data analysis is also used to assess the effectiveness of incentive plans. By monitoring the changes in performance data after the implementation of incentives, managers can promptly understand the effectiveness of incentive measures and make necessary adjustments to ensure the effectiveness and

sustainability of the incentive system. Data analysis also makes the incentive system more forward-looking, helping to attract and retain key human resources for the future.

## 4. Conclusion

Based on the mechanism and technological system of digital technology human resource allocation, propose the optimization path selection for technology human resource allocation. Accelerate digital transformation and establish a technological pathway for high-quality talent allocation. Firstly, it is necessary to build intelligent digital infrastructure and provide digital services, make good use of evaluation systems based on digital management systems and incentive systems based on data analysis, attract technology human resources to participate in innovation projects, and provide them with a good working environment and development space, thereby retaining human resources. Secondly, to ensure the smooth progress of digital transformation, it is necessary to provide digital skills training to enhance the digital level of existing talents. Finally, we should attach importance to the data analysis capabilities of the government, universities, and research institutions, utilize big data technology to deepen our insights into the field of science and technology, and promote technological innovation and development in a more accurate and scientific way, in order to achieve the goal of opening up the technological path for high-quality talent allocation.

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