



Research on Countermeasures for the Digital Transformation Path of Human Resources in Local State-owned Enterprises

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Abstract. Currently, with the rapid iteration of technologies such as big data, cloud computing, and artificial intelligence, the speed of China's digital transformation is gradually accelerating. Human resources, as the source of data for enterprise information construction, have become the leading path for modern enterprises to carry out digital transformation. This article takes the digital transformation of a local state-owned enterprise as an example to analyze the difficulties faced by local state-owned enterprises in the process of digital transformation, and the urgency and necessity of carrying out digital transformation of human resources, explore the main measures of digital transformation of human resources, and take the achievements of digital transformation of human resources in a certain group as an example to analyze the benefits. This provides certain reference value for the development of digital practice work for enterprise managers, human resources practitioners, and others.

Keywords: Human resource management, Digital transformation, Efficiency improvement, Local state-owned enterprises.

1 Introduction

The digital economy is an inevitable trend in the future socio-economic development, and emerging technologies represented by big data, cloud computing, and the Internet of Things are rapidly penetrating into various industries^[1]. The transportation industry is no exception. In 2021, the Ministry of Transport of China officially released the 14th Five Year Plan for the Development of Digital Transportation, which proposes to promote the intelligence of urban public transportation, advance the comprehensive application of urban transportation big data, fully leverage the innovative role of enterprises, and gradually form a development pattern that is led by government, oriented towards enterprises, and facilitated by the coordination and cooperation between national and provincial departments. Encourage the establishment of collaborative innovation industry alliances, actively carry out industrial application demonstrations, and cultivate an efficient, adaptable, complementary, and internationally competitive digital transportation industry ecosystem. Establish a multi-disciplinary and

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multi-level talent training system to provide strong intellectual support for the development of digital transportation. In 2024, the Chinese Government Work Report clearly states the need to actively promote high-quality development of digital construction, deepen digital empowerment and transformation of enterprises, and carry out extensive and profound digital transformation. In the process of innovation and change in various industries, it is necessary to develop digitalization and strongly support technological innovation. Enterprises should apply advanced technology to human resource management, improve the efficiency and quality of human resource management. To cultivate a large number of advanced talents, enhance the value of human resources through digital transformation and development, and promote the long-term development of enterprises^{[2][3]}.

2 The Problems Faced by the Digital Transformation of Human Resources in Local State-Owned Enterprises

This study takes DL Group, a state-owned enterprise in a certain area, as an example for analysis and research. DL Group is a comprehensive business group with three main businesses: urban public transportation, operation, investment and construction of urban public transportation, and development and operation of urban public transportation related resources (including TOD models). It went through restructure and integration in 2022 and DL Group has comprehensively deepened its special projects on personnel, labor, and distribution reform in state-owned enterprises. After restructuring and integration, it has successively carried out various tasks such as streamlining and optimizing the organizational structure, implementing the salary distribution system, and selecting internal and external personnel. It can be said that the special project involves six modules in total: human resource planning, personnel recruitment, salary management, performance management, training and development, and employee relations. Human resource management is the foundation of various work in enterprises. In order to further improve management quality, it is necessary to introduce information and digital management methods to provide efficient, collaborative, and rapid human resource development support for enterprises. Based on this, it has also been found that there are problems in the digital transformation process of local state-owned enterprises^[4].

2.1 Insufficient Awareness of Informatization Among HR Management Personnel

In state-owned enterprises, some senior employees, after years of work accumulation, still habitually use traditional work methods and have low initiative in learning human resource information systems. The human resource information system needs to conform to the underlying logic of computers, reshaping and changing traditional human resource work. Learning and adapting to new modes require time and costs, and some personnels may consequently have a sense of resistance. The above factors will affect

the speed of digital transformation and have a negative impact on the overall digital development of the enterprise.

2.2 Limited Budgets for the Investments in Digital Technology

At present, insufficient or unsustainable funding is a common reason that affects the digital transformation of human resources in most enterprises. On the one hand, human resources is the foundation and part of digitalization in enterprise digital transformation. From a holistic perspective, it is necessary to combine multiple system software or functional modules such as official documents, finance, assets, and real-time interaction portals. Different software architectures need to establish interfaces to achieve data exchange, ensuring overall collaboration and efficiency. On the other hand, human resource management is in the process of continuous iterative development, and subsequent funding is also needed to ensure that information software can develop at the same frequency as management improvement.

3 The Problems Faced by the Digital Transformation of Human Resources in Local State-Owned Enterprises

It is imperative to carry out digital human resource transformation to meet government and industry regulations. Since the issue of the Guiding Opinions of the State Council on Prioritizing the Development of Public Transport in Cities in 2012, various provinces, cities, and industries have taken advantage of the opportunity of prioritizing the development of public transportation to introduce relevant development policies. The Overall Plan for the Construction of Urban Intelligence in Dalian City (2014-2020) also points out that urban intelligence is a strategic choice for the development of Dalian. It is a strategic support, implementation path, and important embodiment of comprehensive urbanization, new industrialization, and agricultural modernization. Establishing a comprehensive smart transportation system is an important project for building Dalian into a smart city. It is not difficult to see from the above that from the country to the local, from the industry to the enterprise, it is essential to advance human resource management and digital transformation of urban transportation enterprises for the development in the new stage.

4 The Main Measures for the Digital Transformation of Human Resources in the Urban Public Transportation Industry

4.1 The Construction and Implementation of Digital Transformation of HR

Reviewing Business - Defining the Core Requirements for Digital Transformation.

The primary task is to comprehensively evaluate the current status of one's own human resources, learn from advanced digital human resource management, and build one's own digital transformation team. In the early stage, four core requirements were clearly defined, namely, for managers, solving the problem of not being able to select personnel when needed and having difficulty in clearly understanding the management functions of the complex organization of the enterprise ; for the business, solving the problems of time-consuming and laborious offline labor, as well as difficulties in communicating and tracking progress; for employees, solving the problem of constantly running errands when handling affairs due to the misunderstanding of personnel processes; assist other business sectors in solving the problem of complex personnel data and error prone rule maintenance^[5].

System Building - Implementation and Deployment of System Functions.

During the implementation process, DL Group has established three key elements based on its own characteristics and the experience of other companies in the industry. The first element is to push forward the use of the system step by step according to the overall planning. Which is carried out in three steps. The first step is to carry out organizational and position management, employee management, and leave management; The second step is to carry out salary management, employee self-service, and manager analysis. The third step is to carry out report management, performance management, and approval process management. The second element is to focus on the source of data and attach importance to data quality. HR departments at all levels are responsible for collecting basic information of employees within their managements, including cadre management and qualifications, family member information, and other personal information materials of employees. They should use relevant official information networks to clean and verify the data filled out by employee. While maintaining data accuracy, HR professionals have to make dynamic updates, regularly verify the linkage logic relationships between various data sources in the system, and form a database of employee records throughout the entire lifecycle. The third element is to establish a scientific coding system. Before deployment, it is necessary to establish a standardized and scientific coding system for label data such as organization and position, and leave room for potential organizational changes in the future.

Consolidating and Strengthening - Deep Learning for Key Users.

In the previous stage, our original manual processing of business processes and online processing were used at the same time, and many business personnels were still familiar with the original model and developed resistance towards the new system. To this end, the Human Resources Department of the group has promoted in-depth information technology training, allowing business personnel to step out of the inherent mode and experience the advantages of the new mode of handling business.

Integration Enhancement - Systematic Enhancement to Solve Strategic Goals.

The digitization of human resources is a part of enterprise digitization. The original information exists simultaneously in collaborative office systems, financial systems, personnel systems, and asset systems. Each system only maintains the information it needs. However, errors may be reported since the information, including the source, update time, format, filling requirements, name, etc. in different systems are inconsistent. The HR system needs to play the role of the main system, serving as a data hub to introduce the latest and most comprehensive information into financial systems, collaborative office systems, and asset systems. In order to make the digital ecosystem more user-friendly, some system functions are combined, such as leave management. The data of leave quotas is calculated by the personnel system, and the approval process is implemented in the collaborative office system. This allows users to operate without any influence, avoiding the complexity of switching back and forth between the two systems (as shown in Figure 1).

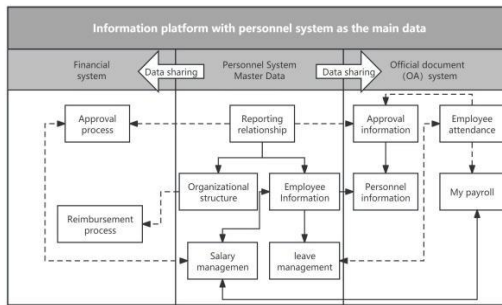


Fig. 1. Building an information platform with personnel system as the main data system

4.2 The Summary of the Achievements of Digital Transformation Implementation

Serving the Employees - Handheld Shared Employee Self-Service.

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Risk Warning - Internal Control Assistant for Human Resources.

After the digital implementation, DL Group has realized the online business approval and circulation of the whole process from entry to resignation. At the same time, with the goal of preventing personnel management risks, business warnings have been designed to provide advance reminders on contract expiration, employee regularization etc. Automation is used to address standardized and refined management requirements and minimize employment risks. In the context of onboarding and resignation, functions such as onboarding task list, automated notification, and resignation process verification have been configured, and information technology has been used to establish and stabilize processes. The original paper-based approval required business personnel to handle the process between different approval units and departments, which required time-consuming and laborious back and forth delivery.

Assisted Decision-Making - Talent Panoramic View at Any Time.

With the establishment of a database of employee records throughout the entire lifecycle and the iterative improvement of data quality management, data that could not be directly observed and interpreted has been converted into charts and displayed instantly. Aggregation filtering, custom export, and the ability to freely combine filtering across different organizational ranges and times, greatly improving data analysis capabilities and enabling real-time penetration analysis of personnel data. Managers can access them at any time based on the assigned organizational permissions. The management analysis interface serves as the cockpit for managers, reflecting key human resource indicator data such as talent total trends, employee turnover trends, and organizational health radar charts, which provides accurate decision-making support for managers to discover and retain talent anytime and anywhere(As shown in Figure 2).

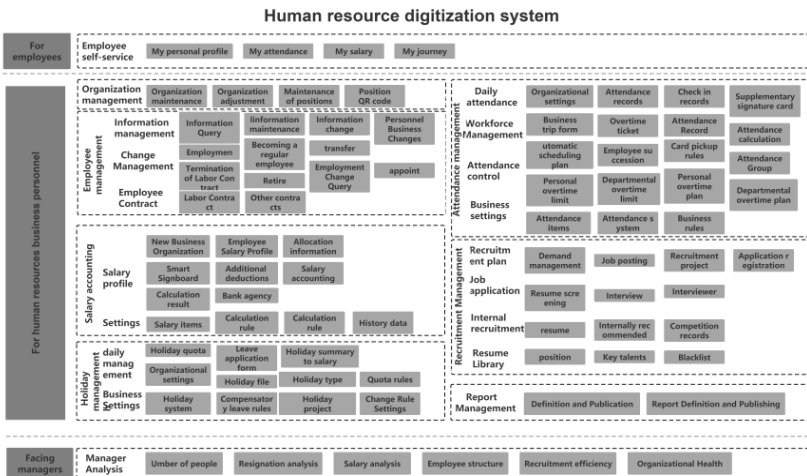


Fig. 2. Functional distribution map of human resources digital system

5 Benefit Analysis of Digital Transformation of Human Resources in Urban Public Transport Industry

5.1 Digital Management Helps Improve Management Efficiency

The digital transformation enables the human resources department to obtain and manage employee information more quickly and accurately, and conveniently complete daily tasks such as personnel turnover, leave management, salary accounting, performance evaluation, etc., reducing tedious manual operations and reducing error rates. While saving personnel time, digital platforms also provide powerful data analysis functions, helping managers better understand employee needs, optimize talent allocation, and enhance the scientific and accurate decision-making.

5.2 Digital Management Helps Optimize Resource Allocation

In The digital transformation of human resources enables DL Group to better grasp the education, technology, skills, experience, performance and other information of its employees, thereby achieving optimized allocation of human resources. Enterprises can accurately select and allocate talents based on business needs and development strategies, ensuring that suitable candidates are selected for key positions. In addition, digital transformation also helps enterprises discover potential talent resources, improve the comprehensive quality of employees through training and development, provide career development planning and guidance for talents in a refined, intelligent, and personalized manner, and reserve more outstanding talents for the long-term development of enterprises.

5.3 Digital Management Helps Improve Employee Satisfaction

Through digital transformation, DL Group can provide employees with more convenient and efficient services, such as self-service queries, mobile office, etc., and holiday rules and quota control systems have been set up with explanations, allowing employees to understand various personnel management systems. Other colleagues can also see the schedules of colleagues who are on leave in real time, thus improving the convenience of work interaction and enhancing the work experience and satisfaction of employees. At the same time, digital platforms can also provide real-time feedbacks on employee work performance and performance data, allowing employees to have a clearer understanding of their career development paths and promotion opportunities, thereby enhancing their sense of belonging and loyalty, reducing employee turnover, and ensuring talent stability in the enterprise.

6 Conclusion

This article analyzes the problems discovered by local state-owned enterprises in the digitalization processes of human resources and proposes countermeasures for making

improvements and tackling the problems. On this basis, by summarizing the practical experience of digital transformation of human resources in enterprises, a path to carry out digital transformation of human resources in enterprises and the management methods of human resources under the digital background are summarized. Finally, the benefits and impacts of digital transformation of human resources on enterprise management are analyzed. This study provides valuable experiences and useful reference values for other enterprises to carry out digital transformation work.

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