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# Analyzing the impact of digital technologies on the evolution of human resource management practices in the digital age

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## Abstract

This study was conducted to investigate the impact of digital technologies on the evolution of human resource management practices at the head office of Tehran Telecommunications Company. The research method is applicable in terms of its purpose, quantitative in terms of its implementation method, and descriptive-correlational in terms of its nature and method. The statistical population of the study included all managers, experts, and human resource employees of the company who interacted with digital human resource management systems. A mixed sampling method was used, included a stratified random sampling of 200 people in three organizational layers (employees, human resource experts, and managers). A standard questionnaire based on a 5-point Likert scale was used to collect research data. The content validity of the tool was confirmed by specialists and experts, and Cronbach's alpha and composite reliability were used to measure the reliability of the tool. By distributing the questionnaire, the validity of the tool was measured with three methods: construct validity (external model), convergent validity (AVE), and divergent validity. The AVE value for all variables should be greater than 0.5. SPSS and PLS software were used to analyze the data. The research findings show that all research hypotheses have been confirmed. The main limitation of the study was the focus on a specific organization, which limits the generalizability of the results. It is suggested that future studies be conducted with a wider sample and in different industries to provide more comprehensive patterns of the impact of digital technologies on the transformation of human resource management practices.

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## Extended Abstract

### Introduction

The integration of digital technologies into human resource management practices has emerged as a transformative paradigm in the contemporary organizational landscape (Dyakiv et al., 2024). In the face of the increasing complexities of the digital age, the application of advanced technologies such as artificial intelligence, big data processing and cloud computing has transformed the traditional foundations of human resource management and has led to qualitative improvements in efficiency and effectiveness in various dimensions of this field (Wahyudi et al., 2023). Digital transformation in human resource management faces profound challenges that require special attention. Organizational resistance at various levels, from employees to senior managers, is considered the first and biggest obstacle. Employees are afraid of being replaced by intelligent systems, while senior managers are dependent on traditional management methods (Gupta, 2024). This resistance is intensified when the organization cannot clearly explain the real benefits of digital transformation. The next challenge is data security, which has become a red line in this process due to the sensitivity of personal and organizational information in human resource management systems. Any security flaw can have irreparable consequences for the organization (Chen et al., 2024). High implementation costs are the third major obstacle that has faced many organizations, especially small and medium-sized enterprises, with difficulties. These costs include not only the purchase of hardware and software, but also the hidden costs of training, updating and maintaining systems (Zisis & Polydoros, 2024). The skills gap among human resource management professionals is another challenge that poses a problem for the digital transformation process.

The digital transformation of human resource management in Iran faces deep structural challenges rooted in the country's special economic, cultural and technological conditions. Operational solutions are proposed to overcome the challenges. Accordingly, the question arises: what impact do digital technologies have on the transformation of human resource management practices in the digital age?

### Theoretical Framework

Digital transformation in human resource management faces profound challenges that require special attention. Organizational resistance at various levels, from employees to senior managers, is the first and biggest obstacle. Employees fear being replaced by intelligent systems, while senior managers are dependent on traditional management methods.

#### Digital technologies and the mediating role of skills development

Digital technologies, as new tools in human resource management, have been able to change traditional management frameworks and provide new ways to train, evaluate, and develop employees. According to the study by Zaborovskaia et al. (2020), digital transformation not only improves operational processes, but also has a direct impact on the transformation of human resource management practices by improving employee skills as a mediating factor. In other words, digital technologies increase the ability of organizations to adapt to environmental changes and innovations by providing tools for online training, knowledge management, and professional development of employees (Barykin et al., 2020). The use of digital technologies in human resource management equips employees with the necessary skills to work with modern tools and analytical data. These skills include the ability to work with human resource information systems, use data analysis for decision-making, and use artificial intelligence in recruitment and performance evaluation processes (Trochi et al., 2021). Employees with higher digital skills adapt more easily to organizational changes and

play a more active role in achieving human resource transformation goals (Zhang et al., 2024).

### **The moderating role of employee resistance**

Employee resistance to digital change is one of the main challenges in implementing HR transformation processes. This resistance can be due to fear of unemployment, lack of trust in new technologies, or lack of necessary skills. According to the findings of Barykin et al. (2020), employee resistance can reduce the impact of implementing digital technologies on HR transformation, and the moderating role of this resistance determines the extent to which an organization is successful in implementing digital changes. In addition, effective management of employee resistance includes providing appropriate training, involving employees in the change process, and creating a supportive organizational culture. These measures reduce concerns and increase acceptance of digital changes, and ultimately enable the effective implementation of new technologies in the organization. Studies show that employee resistance is not only a barrier but can also act as a moderating factor; that is, the level of resistance affects the intensity and direction of the impact of digital technologies on HR performance.

### **Research Methodology**

The research method is applicable in terms of its purpose, quantitative in terms of its implementation method, and descriptive-correlational in terms of its nature and method. The statistical population of the research includes 420 employees, human resources experts, and managers of the Tehran Telecommunications Company's head office, 200 of whom were selected as a sample using a stratified random method using the Cochran formula. A researcher-made questionnaire based on a 5-point Likert scale was used to collect research data. The content validity of the tool was confirmed by specialists and experts, and Cronbach's alpha and composite reliability were used to measure the reliability of the tool. By distributing the questionnaire, the validity of the tool was measured with three methods: construct validity (external model), convergent validity (AVE), and divergent validity. The AVE value for all variables must be greater than 0.5.

### **Research findings**

The findings showed that digital technologies, by empowering employees and improving technical and managerial skills, drive human resource processes towards efficiency, flexibility, and innovation. This finding emphasizes that technology alone is not enough to create transformation and that human empowerment is essential as an intermediary link between technological investment and managerial achievements. Therefore, organizations should simultaneously focus on implementing new technologies and developing employee skills to achieve sustainable human resource transformation. The research results show that the impact of digital technologies on human resource management practices largely depends on the level of employee acceptance or resistance. Positive employee acceptance increases the impact of technologies on innovation and improvement of human resource processes, while employee resistance is one of the main obstacles to digital transformation. This finding highlights the importance of change management, employee participation, and creating a culture of technology acceptance, and shows that the success of human resource transformation will not be achieved without considering employee attitudes and behavior.

## Conclusion

The findings of the present study show that digital technologies, by mediating the role of skill enhancement, have an impact on the transformation of human resource management practices of experts at the head office of Tehran Telecommunications Company. Various studies indicate that digital technologies, by enhancing employees' skills, increase their ability to use modern management tools and facilitate the transformation of human resource practices. For example, Blanka et al. (2022) state that digital technologies, by providing e-learning platforms, process automation systems, and data analysis software, pave the way for employee empowerment and cause human resource management to change from the traditional experience-based and rigid rules-based approach to data-driven, flexible, and advanced approaches. From a theoretical perspective, this finding is consistent with the theory of "capability-based resources." This theory emphasizes that an organization's sustainable competitive advantage does not come solely from tools and technologies, but from their combination with human capabilities. Accordingly, digital technologies lead to value creation when they are combined with employee skills and competencies. This finding is also consistent with previous research. For example, Bresciani et al. (2022) showed that training employees in digital skills has a positive and direct relationship with the success of human resource transformation projects. Similarly, Trochi et al. (2021) state that the role of new technologies in organizations is strengthened by the development of employee knowledge and skills. These results indicate that upskilling acts as a "mediating link" between technological investment and managerial achievements.

The findings of the present study show that digital technologies have an impact on the transformation of human resource management practices by moderating employee resistance of experts at the Tehran Telecommunications Company headquarters. Previous research, including Barykin et al. (2022), states that the effect of digital technologies on human resource management practices largely depends on the level of acceptance or resistance of employees. In situations where employees have a positive attitude towards technological changes and see changes as an opportunity for their professional growth and advancement, technologies can have a significant impact on improving human resource processes and innovating in management practices. From a theoretical perspective, this finding is consistent with the "Cutter Theory of Change" by Blanka et al. (2022). This theory emphasizes that motivating, communicating clearly, and engaging employees are essential to reducing resistance. Based on this framework, it can be concluded that digital technologies can become a tool for human resource transformation when organizations first deal with employee resistance and strengthen a culture of accepting change. Previous studies have also confirmed this. For example, Sousa et al. (2019) stated in their research that employee resistance to new technologies has a direct impact on the failure or success of digital transformation projects. Also, Legner (2017) showed that organizations that reduce employee resistance through change management are more successful in implementing digital human resource management systems. These results are in line with the present findings and highlight the importance of the moderating role of employee resistance.

To make the most of digital technologies, it is suggested that organizations should implement continuous training and digital skills development programs so that employees have the ability to effectively utilize new technologies.