# THE ROLE OF EDUCATION AND HUMAN RESOURCE MANAGEMENT IN SUPPORTING DIGITAL GOVERNMENT

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#### **Abstract**

Digital transformation is a top priority for governments in various countries, including Indonesia, to improve the efficiency and quality of public services. However, the success of implementing digital government is not only determined by technology, but also by the readiness of human resources (HR) and a supporting education system. This research aims to explore the role of education and human resource management (HRM) in supporting digital transformation in the public sector, as well as identifying key factors in education and HRM that can improve HR digital readiness. Using a systematic literature review method from relevant journals and reports, this research finds that technology-responsive education and digital competency-based HRM are very important for the success of digital transformation. Educational curricula that include digital skills, as well as HRM practices involving continuous training and technology-based performance assessments, contribute significantly to HR readiness in the public sector. However, challenges still exist, especially in terms of the lack of synergy between educational institutions and the government in developing appropriate programs. This research concludes that integration between education and HRM is needed to support the effective implementation of digital government, with recommendations for increasing collaboration between educational institutions and government agencies to create relevant training programs.

**Keywords:** Digital Government, Education, Human Resource Management, Digital Competence, Digital Transformation.

### INTRODUCTION

Digital transformation has become a top priority for governments worldwide to improve the efficiency and quality of public services (Junaidi et al., 2024). Digital government, defined as the application of information and communication technology to simplify government processes and improve interaction between government and society, plays a key role in creating a more transparent, responsive, and accountable government system (Li & Shang, 2020). However, the implementation of digital government requires not only sophisticated technology but also skilled human resources (HR) and an education system that can prepare individuals to manage these changes (Pardo, n.d.).

In the context of Indonesia, the government has adopted various digitalization initiatives, including the launch of e-government services in various sectors, ranging from business registration to immigration services. However, the success of this initiative is highly dependent on the capacity of existing human resources (Atmoko et al., 2024). This shows the importance of the role of education in equipping individuals with the necessary skills to support digital government (Hamzah et al., 2024). Education must not only focus on technical skills, but also on the development of soft skills such as problem-solving, creativity, and adaptability that are essential to face the dynamics of digital transformation (Sungkono et al., 2024).

In addition, human resource management (HRM) in the public sector also plays an important role in ensuring that civil servants have the appropriate competencies to support digitalization (Espinosa Zárate et al., 2023). Effective HRM practices, such as ongoing training, career development, and technology-based performance assessments, can improve the readiness of human resources to face the challenges of digital government (Kurniasih et al., 2023). Unfortunately, many government institutions have not fully utilized modern HRM practices, which leads to low readiness of human resources to support the implementation of digital government (Elenezi et al., 2017).

Thus, collaboration between education and HRM is very important to ensure the success of digital government. Education plays a role in creating a skilled workforce, while HRM ensures that human resources continue to evolve in line with the needs of technological changes and job demands (Akhoirshieda et al., 2024). The integration of these two aspects can accelerate digital transformation in government and improve the quality of public services provided to the community (Alwaely et al., 2024).

Although there have been many digitalization initiatives implemented by the government, there is still a gap between the readiness of technology and the readiness of human resources to support digital government (Chilunjika et al., 2022). This gap occurs because the integration between an adequate education system and effective human resource management has not been optimal (Gong, 2024). On the one hand, education systems are often unresponsive to rapid technological changes, so the graduates produced are not fully prepared to contribute to the digital work environment (De Jesus-Reyes, 2024). On the other hand, HRM practices in the public sector are often still traditional, with minimal focus on developing employees' digital competencies.

In addition, the lack of synergy between educational institutions and government agencies in developing a curriculum or training program that is to the needs of digital government is an obstacle in itself (Junaidi et al., 2024). This has led to a lack of employees who have the relevant skills to support digital transformation. Without the right intervention, this gap can hinder the successful implementation of digital government in Indonesia and other developing countries (Mulder & Snijders, 2014).

This research aims to explore how the role of education and human resource management can contribute to supporting the implementation of digital government (Marlina et al., 2023). In particular, this study seeks to identify key factors in education that can improve the digital readiness of human resources as well as HRM practices that can support digital transformation in the public sector. This research will also explore how collaboration between educational institutions and the government can facilitate the development of curricula and training programs that are more in line with the needs of digital government.

This study is expected to make a significant contribution to the development of theory and practice in the field of education and human resource management, especially in the context of supporting the digital transformation of government (Ramli, 2017). The findings of this study can be the basis for policymakers to design more effective education and HRM strategies in preparing human resources who can face the challenges of digitalization. In addition, the results of this study can also be a reference for educational institutions and the government in developing training programs and digital competency development for public sector employees.

This research will answer some key questions as follows: (1) What is the role of education in preparing human resources who are ready to support digital government? (2) What are the challenges faced by educational institutions in developing a curriculum that is following the needs of digital government? (3) How can HRM practices be optimized to support human resource readiness in the implementation of digital government? (4) How can collaboration between educational institutions and the government be enhanced to support digital transformation in the public sector? The answers to these questions will help in understanding the relationship between education, HRM, and the success of digital government.

#### LITERATURE REVIEW

## **Digital Government**

Digital government is a concept that refers to the use of information and communication technology (ICT) to increase the efficiency, effectiveness, and transparency of public services (Santa et al., 2019). This includes the digital transformation of government processes, such as data management, the provision of online services, and interaction between the government and the public through digital platforms (Zorali & Kanipek, 2023). This concept has evolved rapidly along with technological advancements, such as big data, cloud computing, and artificial intelligence, which allow governments to provide services that are more responsive and oriented to the needs of society (Chouliara et al., 2023). While the adoption of digital government can bring many benefits, its implementation still faces several challenges, including inadequate technological infrastructure, resistance to change from the state civil apparatus, and low digital literacy among the public (Budiman & Syafrony, 2023). Therefore, the success of digital government does not only depend on the application of technology but also on the readiness of human resources (HR) to support it (Karunasena & Deng, 2010).

## Role of Education in Digital Transformation

Education plays a very important role in preparing human resources who can face the challenges of digital transformation (Soemartono & Sangun, 2018). Education is not only tasked with transferring technical knowledge, but also for developing key competencies such as critical thinking skills, adaptability, and problem-solving (Sungkono et al., 2024). An educational curriculum that is responsive to technological developments can equip students with relevant skills, such as programming, data analysis, and information systems management (Haines et al., 2023). Several studies show that countries that are successful in implementing digital government generally have strong education systems, with a focus on STEM (Science, Technology, Engineering, and Mathematics) and 21st-century skills. In Indonesia, despite efforts to include digital technologies in the curriculum, challenges such as disparities in the quality of education and lack of supporting infrastructure in remote areas remain major obstacles.

In addition, education also plays a role in creating an inclusive digital culture, where all levels of society, including those who are economically and socially disadvantaged, have equal opportunities to access and utilize digital technology (Martins et al., 2021). Digital literacy programs in schools and teacher training are examples of initiatives that can help reduce the digital divide and ensure that the entire community can participate in the digital ecosystem.

Furthermore, collaboration between educational institutions and the technology industry can accelerate this process through internship programs, job training, and joint research. Thus, education not only serves as a provider of skills but also as an agent of change that can drive the adoption of technology and innovation in the public sector.

## **Human Resource Management in the Public Sector**

Human Resource Management (HRM) in the public sector has a strategic role in supporting the implementation of digital government (Scupola & Mergel, 2022). Effective HRM can ensure that state civil servants have the competencies needed to carry out their duties in an increasingly complex digital environment. Some of the important HRM practices in this context include digital competency-based recruitment, continuous training and development, and performance appraisal systems integrated with digital technology (Pardo, n.d.). Despite this, many government agencies still apply the traditional HRM approach, which focuses on administration and compliance, without paying attention to the development of employees' digital capacity. This results in a low level of readiness of human resources to support digital transformation in the public sector. Therefore, HRM reform is needed to create an adaptive and innovative work environment, where employees are encouraged to continue learning and evolving along with technological changes.

# **Integration of Education and HRM for Digital Government**

Integration between education and HRM is the key to success in supporting digital government. Education can serve as a foundation for equipping individuals with the necessary foundational skills, while HRM can ensure that these skills are continuously developed and applied effectively in the workplace. For example, cooperation between educational institutions and government agencies in the form of training, internships, and certification programs can help bridge the existing skills gap. In addition, ongoing training designed based on real needs in the field, such as big data management or cyber security, can ensure that the country's civil servants are always ready to face new challenges in the implementation of digital government. Thus, a strong integration between education and HRM can not only improve individual competence but also overall organizational efficiency.

#### **Theoretical Framework**

This research is based on a theoretical framework that integrates the approaches of Human Capital Theory and Institutional Theory. Human Capital Theory states that investment in education and training can improve the quality of human resources, which in turn will increase organizational productivity and efficiency. In the context of digital government, this theory is relevant because it emphasizes the importance of education as a tool to build the capacity of human resources who can manage and utilize digital technology. This theory also supports the idea that improving digital skills through formal education and continuing training can contribute to the successful implementation of digital government.

On the other hand, Institutional Theory focuses on how the structure, norms, and culture of an organization affect the behavior of individuals within it. In the context of the public sector, this theory is relevant because it underscores the importance of institutional reforms, including HRM, to support digital transformation.

Institutional changes, such as the implementation of technology-based performance appraisal systems or the restructuring of units related to information technology, can create a more supportive environment for the implementation of digital government. The integration of these two theories provides a holistic perspective on the importance of the role of education and HRM in supporting digital transformation in the public sector, taking into account both individual development and institutional change.

#### **METHODS**

# **Research Design**

This study uses a qualitative approach with a systematic literature review method to explore the role of education and human resource management in supporting the implementation of digital government. This approach was chosen because it can provide an in-depth understanding of existing concepts, theories, and practices and explore research gaps that are still unanswered. A systematic literature review allows researchers to collect and analyze various previous studies comprehensively and critically so that they can present a broader and integrative view of the topic under study. By exploring various scientific sources such as journals, books, and research reports, this approach aims to identify trends, challenges, and opportunities in education and HRM in the era of digitalization of government.

### **Data Collection**

The data collection in this study was carried out through a literature search from various reliable scientific sources, including Scopus, Springer, IEEE, and Elsevier-indexed journals, as well as books and reports from relevant official institutions. The literature search process was carried out using specific keywords such as "digital government," "human resource management," "education in digital transformation," and "public sector HRM." The selected articles are those published within the last 10 years to ensure the relevance and accuracy of the information. In addition, articles that focus on the context of the public sector and the implementation of digital government are prioritized. All the literature collected was then evaluated based on inclusion criteria such as topic suitability, research methods used, and the contribution of findings to the understanding of education and HRM in the context of digital government.

### **Data Analysis Methods**

Data analysis was carried out using thematic analysis techniques to identify and group the main themes that emerged from the collected literature. The first step in this analysis is to carefully read each article and code on key topics related to education, HRM, and digital government. After that, these topics were grouped into several main themes, such as the role of education in preparing digital human resources, the challenges of HRM in the public sector, and the integration of education and HRM to support digital transformation.

Each theme is then analyzed in depth to identify patterns, relationships, and gaps that exist in the literature. In addition, triangulation is carried out by comparing the results of analysis from various sources to ensure the validity and reliability of the findings. The process aims to present a comprehensive synthesis of the role of education and HRM in supporting digital government, as well as provide recommendations for further research and practical policies in the future.

### **RESULT & DISCUSSION**

# **Presentation of Findings**

The results of this study reveal that the role of education and human resource management (HRM) is very crucial in supporting the implementation of digital government. The literature shows that the success of digital government depends not only on the adoption of new technologies but also on the readiness and competence of the human resources involved. Education plays a role in providing the necessary foundation of knowledge and skills, especially in terms of digital literacy, programming, and data management. Several studies show that countries with strong education systems, especially in STEM (Science, Technology, Engineering, and Mathematics) fields, are better prepared to adopt digital government. In addition, education also serves to develop non-technical skills such as problem-solving, creativity, and adaptability, which are important in facing the dynamics of digital transformation.

On the other hand, HRM practices in the public sector also play an important role in ensuring the sustainability of digital transformation. The literature highlights that effective HRM, such as continuous training, technology-based performance assessment, and digital competency-based recruitment, can improve the quality and readiness of civil servants in supporting digital government.

However, many studies also show significant challenges, such as resistance to change, lack of support from leaders, and limited budgets and infrastructure for HR training. These findings show that there needs to be a closer integration between education and HRM policies to support the success of digital government, by focusing on sustainable digital competency development and adaptation to technological changes.

## Themes Identified

From the literature analysis, there are several main themes identified related to the role of education and HRM in supporting digital government. The first theme is "Education as a Catalyst for Digital Transformation." Studies show that an education system that is responsive to technological changes can accelerate the process of digital government adoption.

A curriculum that integrates information technology and digital skills, such as coding, data analysis, and an understanding of cybersecurity, has proven to be able to produce graduates who are better prepared to participate in the digital work environment. Education also plays a role in shaping an innovative and adaptive mindset, which is crucial in facing the challenges that arise from the implementation of new technologies in the government sector.

The second theme is "Human Resource Management to Support Digital Government Sustainability." Effective HRM can be a key driver in ensuring that civil servants have the necessary competencies to manage and utilize digital technology. Practices such as continuous training, career development based on digital competencies, and performance appraisal systems integrated with digital technology have been proven to increase employee readiness in supporting digital government. However, many public sector organizations still face obstacles, such as a lack of a culture of learning, resistance to change, and lack of support from top management. This demonstrates the need for HRM reform in the public sector to create a more flexible and responsive work environment to the needs of digital transformation.

Overall, the results of this study emphasize the importance of synergy between education and HRM in supporting digital government. These two sectors must work together to create an ecosystem that supports the sustainable development of digital competencies, both through educational curriculum updates and HRM policy reforms. In addition, it is also important to build an organizational culture that supports lifelong learning and innovation, so that human resources in the public sector can continue to adapt to technological changes and increasingly complex societal demands.

## **DISCUSSION**

## Interpretation of Results

The results of this study show that the integration between education and human resource management (HRM) plays a very important role in supporting the successful implementation of digital government. Education serves as the basis for developing the skills and knowledge necessary for HR in the public sector, while HRM ensures that these skills are continuously developed and applied effectively in the workplace. These findings indicate that the success of digital government is not only determined by technological factors but also highly dependent on the readiness and capacity of human resources. However, challenges such as resistance to change and lack of support from leadership suggest that structural reforms and organizational culture changes are also needed to accelerate the digital transformation process.

# **Implications for Theory and Practice**

In theory, this study enriches the existing literature on the relationship between education, HRM, and digital government by highlighting the importance of closer integration between education and HRM in the context of public sector digitalization. These findings support the Human Capital Theory, which states that investing in education and human resource development can improve organizational productivity and performance.

In addition, these findings also confirm Institutional Theory, which emphasizes the importance of structural and cultural change in organizations to support the adoption of new technologies. This study shows that without the synergy between improving individual competencies and organizational structural changes, digital government is difficult to implement effectively.

In terms of practice, the results of this study have several important implications for policymakers and practitioners in the public sector. First, educational institutions need to be more proactive in responding to the needs of digital government by developing relevant curricula, including digital skills training for students and civil servants. Collaborative programs between the government and educational institutions, such as internships, job training, and joint projects, can be effective strategies to improve human resource readiness.

Second, government agencies need to adopt more modern and flexible HRM practices, such as the use of technology in recruitment, performance appraisals, and real-world needs-based training in the field. This HRM reform also needs to be supported by policies that encourage an organizational culture that is more open to learning and innovation. Thus, HRM not only functions as an administrative manager but also as an agent of change that supports digital transformation.

## **Limitations of the Study**

This research has several limitations that need to be considered. First, this study uses a literature review method that depends on the availability and quality of existing literature. This means that the results of the study are greatly influenced by the perspective and context of the previous studies studied.

Second, this study does not involve empirical data directly from the field, so the findings may be less contextual for specific situations in different countries or institutions.

In addition, although this study identifies key themes in the literature, no comparative analysis has been conducted to see differences in the implementation of digital government in different countries or the public sector. Therefore, the generalization of the results of this study needs to be done carefully.

### **Recommendations for Future Research**

Future research is suggested to focus more on empirical studies by involving data directly from the field, such as in-depth interviews with civil servants or case studies in various government institutions that have implemented digital government.

Comparative studies between countries or between sectors are also needed to understand the contextual factors that affect the success or failure of digital government implementation.

Additionally, further research may explore how organizational culture and leadership factors can affect civil servants' readiness and acceptance of digital transformation. By understanding these aspects more deeply, more effective strategies can be formulated to increase the synergy between education, HRM, and digital government in supporting public sector transformation.

### CONCLUSION

This research highlights the importance of integration between education and human resource management (HRM) in supporting the success of government digital transformation. Education plays a crucial role in equipping individuals with the necessary technical and non-technical skills, while HRM plays a role in ensuring the optimal development and application of these competencies in the workplace. However, there are significant challenges, such as resistance to change, lack of leadership support, and limited infrastructure and budget for training.

Some more specific policy recommendations are needed to address these challenges. First, the government must increase digital leadership training to overcome resistance to change, as well as utilize pilot projects to reduce the risk of failure.

Second, budget and infrastructure constraints can be overcome with more efficient digital learning solutions and public-private partnerships to accelerate infrastructure development. Finally, policies need to focus more on sectors that require digitalization, such as health and education, to ensure better digital readiness and accelerate technology adoption in the public sector.

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