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Digitalization, organizational change, and human resource management at the Immigration Polytechnic

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Abstract

Purpose: This study aims to examine how digitalization influences and is influenced by organizational structures and human resource management in the Indonesian education industry.

Research Methodology: This study employs a qualitative approach using semi-structured interviews and focused group discussions to explore how digital technology is implemented in human resource management within the Indonesian education sector. Participants include education leaders, HR officials, policymakers, and edutech developers, selected through purposive and snowball sampling methods to ensure relevant and in-depth insights. Data were collected through individual interviews and thematic workshops, allowing researchers to capture both personal experiences and group dynamics related to digital transformation challenges and strategies.

Results: The results show that the success of digital transformation in HR management in Indonesia's education sector depends on the balance between human, technological and organizational aspects. Key challenges include a lack of training, uneven infrastructure, and an organizational culture that is not adaptive to change. Therefore, a holistic strategy is needed that includes digital competency development, visionary leadership, and policies that support technological innovation and transparency.

Conclusions: Digital transformation in HRM within Indonesia's education sector is hindered by gaps in human skills, technology access, and rigid organizational structures. Weak digital leadership and ethical concerns around AI further slow progress. A holistic approach developing digital competencies, promoting innovation, and ensuring transparent AI is essential for effective and sustainable transformation.

Limitations: The study's qualitative scope limits generalizability. It also reflects a specific time frame and may include selection bias from purposive sampling.

Contribution: This study offers insights into aligning HR and digital strategies using the HTO framework and promotes ethical, inclusive digital transformation in education.

Keywords: *Digitalization, Education Industry, HR Management, Industry 4.0, Organizational Change*

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1. Introduction

In recent years, Indonesia's education sector has faced increasing pressure to adopt digital technology. This is a response to the demands of globalization and the rapid advancement of information and communication technologies. These developments are not only changing the way individuals access information but also demanding that educational institutions adapt teaching methods to be more relevant and efficient. The COVID-19 pandemic that has hit the world since early 2020 has become a major catalyst for accelerating digital transformation in the world of education. The limitation of face-to-face interaction due to social restrictions has forced educational institutions, from elementary to university levels, to immediately implement online learning systems. In addition, the use of digital platforms and technology-based education management systems is necessary to ensure the continuity of the teaching and learning process. This transformation requires significant adjustments in terms of infrastructure, teacher readiness, and student readiness to face the ever-growing digital learning era. Mustikasari and Heggart (2022) highlighted that Indonesian educational institutions struggle to adopt digital technology effectively, primarily due to limited infrastructure and inadequate human resource readiness.

The government has launched the Independent Learning and Independent Campus programs to encourage the integration of digital technology into teaching and education administration. This program aims to create an educational ecosystem that is more flexible, innovative, and relevant to the needs of the digital era. However, this policy faces various challenges in its implementation. Some of them are resistance to change from some educators and lack of adequate training in the use of technology. Consequently, digital adoption is uneven, and the effectiveness of programs is limited. Therefore, systematic support and strengthening of educational capacity are crucial. According to Latifah, Budiyanto, and Saputro (2022), many institutions lack a clear strategy for incorporating digital technologies into their curricula and organizational management. The push for digitalization is also driven by the need to enhance educational quality and graduate competitiveness in the global labor market. While digital technology holds the potential to improve operational efficiency and learning outcomes, Burinskienė and Seržantė (2022) cautioned that without proper planning and support, digitalization may deepen existing disparities in educational access and quality.

The integration of digital systems in human resource management within the education sector continues to face significant challenges, especially because of the prevalence of conventional organizational structures (Djoundourian & Shahin, 2022). This rigid and hierarchical organizational structure often hinders flexibility and adaptation to technological changes, thereby reducing the effectiveness of the digital transformation expected in the overall educational governance process. Many educational institutions, particularly in remote areas, still rely on manual processes and physical documentation for HR functions, creating a gap between the demand for efficient digital systems and institutional readiness to implement them. According to Dluhopolska and Huk (2021), limited technological infrastructure and insufficient training for HR staff are major barriers to the successful digitalization of HR management across Indonesian schools.

In addition, resistance to change is one of the main obstacles to integrating digital systems into organizations. People who have been involved as human resources (HR) staff for too long will be accustomed to conventional working methods and tend to be skeptical about the presence of new technologies. This distrust generally arises due to concerns about losing control over the work processes that they have always mastered, as well as a sense of notability about the possibility of their position in the organizational structure being replaced by automation and digitalization of processes. This causes the technology adoption process to be slower and unevenly distributed among institutions. Trushkina, Abazov, Rynkevych, and Bakhautdinova (2020) found that a lack of understanding of the benefits of digital systems, combined with limited involvement in the technology planning process, contributes to low adoption rates across various organizations, an issue that is also evident within educational institutions.

Moreover, education policies that do not fully support digital transformation hinder the integration of digital systems in human resource management. The absence of national standards for human resource management information systems in the education sector, especially in official education, has caused

inconsistencies in the implementation and evaluation processes. This has affected the low effectiveness of digital transformation, which should increase efficiency and accuracy in human resource management in the educational environment. A clear framework and strong policy support are essential to ensure that the integration of digital technology in HR management is effective and sustainable across educational institutions, including in the Indonesian context.

Although digitalization has become a key issue in the transformation of the education sector, empirical studies that specifically highlight its impact on human resource practices and organizational models are limited. Most available research focuses on the use of technology in the learning process, such as online teaching and digital education platforms. Meanwhile, other important aspects, such as changes in human resource management, organizational structure, and governance of educational institutions, tend to receive insufficient academic attention. This creates a gap in understanding the implications of digitalization in the administrative and institutional realms. According to Al-Haddad and Kotnour (2015), effective organizational change requires a deep understanding of how technology influences work structures and processes, including HR. The lack of empirical research has widened the knowledge gap in understanding the impact of digitalization on the role and function of human resources in educational institutions, especially in the context of managerial change, technological adaptation, and task restructuring, which should support the overall organizational transformation. Bond, Marín, Dolch, Bedenlier, and Zawacki-Richter (2018) indicate that digital transformation can alter work dynamics and necessitate adjustments in HR policies and practices. However, without sufficient empirical data, policymakers and practitioners find it challenging to develop effective strategies for managing these changes.

In addition, the organizational model commonly applied in the education sector tends to be hierarchical and less flexible, which is often an obstacle in the process of adopting new technologies. This rigid structure limits the space for innovation, slows down decision-making, and reduces the ability of institutions in the process of rapid and dynamic digital change in the current era of technological transformation, similar to what is experienced by the official education of the Immigration Polytechnic under the Ministry of Law and Human Rights. According to Selwyn (2016), educational institutions must develop more adaptive organizational structures capable of supporting digital innovation. However, without empirical studies examining the relationship between digitalization and changes in organizational structures, reform efforts may lack a clear direction.

Based on previous research that focused more on the implementation of technology in the learning process, this study examines how digitalization has a direct impact on organizational structures, HR work patterns, and policies, and how factors such as leadership, organizational culture, and infrastructure readiness affect the digital transformation process. Involving a wide range of stakeholders, from educational institution leaders to technology developers, this research offers a holistic and contextual perspective and fills knowledge gaps regarding the readiness of educational organizations to face digital change comprehensively and sustainably. This research was conducted in a formal school as a sample similar to other educational institutions that are not much different in dealing with the same problem. The researcher conducted his research at the official school at the Immigration Polytechnic under the Ministry of Law and Human Rights, where the school was faced with the situation of having to use various applications, both internal and external. The internal applications of the Ministry of Law and Human Rights are the personnel management information system application (SIMPEG), the MyASN application from the State Civil Service Agency, the SISTER and SIAKAD applications from the Ministry of Higher Education, Science, and Technology, and other applications.

Therefore, it is important to conduct a study that can explore in depth the mutual relationship between digitalization and organizational elements, especially in the realm of human resource management. The research question that is the focus of this study is: "How does the implementation of digital technology affect and be influenced by organizational factors and human resource management in the Indonesian education industry?". The question aims to understand not only the extent to which technology has been adopted by educational institutions but also how the organizational structure, work culture, human

resource competencies, and organizational leadership facilitate or hinder the digitization process. By answering this question, this study hopes to make a theoretical and practical contribution to formulating a contextual, inclusive, and sustainable digital transformation strategy for the Indonesian education sector.

2. Literature review

2.1. Theoretical Model of Digital Transformation and HR management

Digital transformation in educational organizations is not just about adopting new technologies; it also includes fundamental changes in organizational structures and human resource management (HR) practices (Almahdali, 2024). This process requires adjustments to work systems, leadership patterns, and human resource competency development to be in line with the demands of the digital era and to realize efficiency and innovation in education management. According to Munawir and Suseno (2024), digital transformation requires the development of an adaptive HR model that can respond swiftly and effectively to technological shifts. The success of digital transformation is largely influenced by an organization's readiness to manage change, including leadership, internal communication, and employee training. A holistic approach that integrates technology, people, and business processes is essential for achieving sustainable digital transformation.

2.2. Techno-Organizational Alignment and Socio-Technical Systems Theory

The concept of techno-organizational alignment highlights the importance of integrating information technology systems with organizational process strategies to ensure that the application of technology supports overall institutional goals and creates synergy between technical and managerial aspects of organizational operations. Luftman, Lewis, and Oldach (1993), argue that proper alignment improves organizational performance by ensuring technology investments support the strategic goals of educational institutions. Similarly, the socio-technical systems theory introduced by Trist and Bamforth (1951) introduces the principle of "joint optimization," where optimal organizational performance is achieved through the simultaneous development of both social systems (people, culture, structures) and technical systems (tools, technologies, processes). Mumford (2006) highlighted that the design of information systems must consider user needs and social context to enhance effectiveness and acceptance. In education, this means involving educators, administrative staff, and management in digital planning and implementation to ensure long-term adoption and reduced resistance.

2.3. Sensework Theory and Black-Boxing in Digital Education

Sensework theory is important for understanding how individuals and groups in the educational environment shape and build meaning to the changes that arise due to the application of digital technology. Through this theory, the process of social interpretation can be traced, including how educational actors respond, adapt, and give meaning to digital transformation in organizational practices and culture. Haavik (2017) defines sensework as the process through which workers interpret, understand, and adapt to technological systems within their work environment. In a digital educational setting, both educators and administrative staff engage in sense work to comprehend the role of technology and adjust their work practices accordingly. Meanwhile, the concept of black-boxing from actor-network theory Casper (2000) explains how complex technologies are often simplified into tools that appear user-friendly and unquestionable. For example, digital learning platforms and LMS are frequently black-boxed, where users rely on outputs without understanding the underlying algorithm. Thus, integrating sensework and black-boxing concepts is critical for designing effective training and implementation strategies in educational settings.

2.4. Resistance to Change in Public Sector Institutions

Organizations in the public sector, including educational institutions, especially the Immigration Polytechnic, often show resistance to change due to their deep-rooted conservative structures and dominant bureaucratic culture. This pattern causes innovation to run slowly, as decisions tend to follow rigid hierarchies and layered procedures, thus hindering the adoption of change, including digital transformation and managerial reform. Lines (2005) argues that such resistance can be either active or passive, stemming from uncertainty, lack of communication, or fear of losing control or job security. Oreg, Vakola, and Armenakis (2011) note that individual traits such as personality, values, and prior

experiences significantly influence resistance levels. Fernandez and Rainey (2017) emphasize that successful change in public organizations depends heavily on strong leadership, transparent communication, and active employee engagement. In the digital era, resistance may also arise from low digital literacy, mistrust of technology, and concerns over increased performance monitoring. Van der Voet et al. (2016), suggest that effective change management in the public sector must address these concerns by offering adequate training, fostering trust, and creating a supportive environment for technological adaptation.

3. Methodology

3.1. Qualitative Approach with Semi-Structured Interviews and Focused Group Discussions

This study uses a qualitative approach to explore the experiences, perceptions, and organizational dynamics related to the application of digital technology in human resource (HR) management in the Indonesian education sector. Data were collected through semi-structured interviews and focus group discussions (FGDs). Semi-structured interviews allow researchers to ask open-ended questions and gain rich insights into individual experiences, including the cultural and social factors influencing the adoption of digital technologies. FGDs provide valuable insights into group perceptions and social interactions, which are essential for analyzing organizational change processes (Morgan, 1997).

3.2. Participants: Leaders of Educational Institutions, HR Officials, Policy Makers, Edutech Developers

This research consists of four main groups of participants: leaders of educational institutions, namely the Director of the Immigration Polytechnic; officials at the Human Resources Bureau (HR) at the Secretary General of the Ministry of Law and Human Rights; policymakers at the Legal and Human Rights Human Resources Development Agency (BPSDM); and educational technology developers at the Data and Information Center (Pusdatin). The selection process was based on the direct involvement of the participants in digital transformation in the education sector. The goal of the program is to provide a comprehensive view of various aspects of technology implementation. Officials from the Director or principal as the strategist for the implementation of digital technology, and the HR Bureau as the person who provides an overview of the changes that have occurred in the way employees are managed due to the shift towards digital technology. Policymakers, such as the Ministry of Law and Human Rights, where the school is located, and the Ministry of Culture and Education as the guiding agency, also provide insight into the regulations and policies that affect the digitalization process. Meanwhile, edutech developers offer technical and operational understanding of the design and implementation of digital solutions in educational settings. This approach is in line with the recommendations of Creswell and Poth (2016), who emphasize the importance of selecting participants who can provide rich and relevant information according to the focus of the research.

The number of participants in this study was adjusted according to the principle of data saturation, which is when the information obtained begins to repeat itself and no longer provides new insights. Semi-structured interviews were conducted with the Director of the Immigration Polytechnic and officials of the HR Bureau of the Secretary General of the Ministry of Law and Human Rights, while focused group discussions (FGDs) involved policymakers and edutech developers to understand group dynamics and interactions between stakeholders. This method allows researchers to explore the perceptions, experiences, and challenges faced by each group during the digitization process. As stated by Noviyanti and Tricahyono (2024), the diversity of participants in qualitative research is essential to gain a comprehensive understanding of the phenomenon being studied.

3.3. Recruitment: Purposive and Snowball Sampling

In this study, participant recruitment techniques were carried out through *purposive sampling* and *snowball sampling approaches* to ensure the involvement of individuals who have deep relevance to educator policies represented by the Director of the Immigration Polytechnic and the Human Resources Bureau related to the procurement and admission policies of students, and human resource development by officials at BPSDM and digital transformation in the Training Education sector by PUSDATIN. *Purposive sampling* allows researchers to select participants based on specific criteria (Lenaini, 2021),

in accordance with Sugiyono (2018), who states that in qualitative research, sampling techniques are carried out *purposefully* and *snowball*, with data collection techniques using triangulation (combined).

After the initial participants were identified through *purposive sampling*, *the snowball sampling technique* was applied to expand the network of participants by asking for recommendations from the initial participants regarding other individuals who met the research criteria, in this case, officials at the Directorate General of Immigration as graduate users from the Immigration Polytechnic (Lenaini, 2021). This approach is effective in accessing informants who may be difficult to reach through conventional recruitment methods and allows researchers to obtain more in-depth and diverse data than conventional methods. This is in line with the explanation Sugiyono (2018), that *snowball sampling* is a sampling technique for data sources that are initially small in number, then become larger, because the small number of data sources is not able to provide complete data, so they have to find other people who can be used as data sources.

3.4. Data Collection Techniques: Individual Interviews and Thematic Workshops

In this study, the main data collection techniques used were individual interviews and thematic workshops, designed to explore an in-depth understanding of the application of digital technology in human resource (HR) management in the Indonesian education sector in general, and Education in the Immigration Polytechnic in particular. Through individual interviews, researchers can gather information about various perspectives regarding the role of their institution. This method can help identify things that may not have been brought up in a group discussion. It also allows participants to share their thoughts more freely, so that the measurements in this qualitative research become precise by analyzing the text of the interview results (van Have, 2004). As explained by Doody and Noonan (2013), semi-structured interviews allow researchers to explore relevant topics with flexibility in asking follow-up questions according to participants' responses.

Table 1. Participants

Types of Participants	Sum	Data Collection Methods
Officials at the Immigration Polytechnic (1 Director, 2 Deputy Directors, and 2 Heads of Fields)	5	Individual & group interviews
HR managers and administrators (1 Head of HR Bureau, 2 Head of HR Sub-Division, 1 Head of Information Data Center, 2 Head of Data and Information Sub-Division, 6 expert staff)	12	Individual interviews
National policy stakeholders (BPSDM Legal and Human Rights Officer & Directorate General of Immigration Officer)	6	Workshops & group interviews

4. Results and discussions

4.1. Digitalization

Digital transformation in the Indonesian education sector, and the Immigration Polytechnic in particular, has brought significant changes, especially in the aspects of administrative work that were previously carried out manually. The process of filling out forms, managing personnel data, and reporting has now shifted to digital systems, reducing the reliance on physical documents and speeding up workflows. These changes not only improve operational efficiency but also require increased digital competence from administrative staff. As explained by Sych, Kryvtsova, Kaduk, Nesprava, and Panchenko (2021), digitalization is driving major changes in administrative work practices, so workers need to adapt to new technologies in order to carry out their duties optimally.

Digital change also impacts the organizational structure and individual roles within educational institutions. Many positions that previously focused on manual tasks have now shifted to strategic and analytical roles, as these roles have been largely replaced by technology. This condition creates a need for retraining and the development of new skills for the affected staff. The organization must support the adaptation of these roles through training and changes in work culture that encourage innovation

and continuous learning. However, the readiness of each educational institution to face this change varies greatly, especially in remote areas that are still constrained by infrastructure and limited human resources (Chwiłkowska-Kubala, Cyfert, Malewska, Mierzejewska, & Szumowski, 2023).

In addition to infrastructure challenges, which are not evenly distributed, the lack of digital competencies is the main obstacle in the digitalization process in the education sector. Many educators and education administration personnel do not have the basic skills in digital technology that are necessary to operate various learning software and data management systems efficiently. This condition has led to the inhibition of the implementation of digital programs due to the lack of readiness of human resources to adapt to evolving technological changes in the field. Therefore, capacity building and digital training are urgently needed to ensure the success of digital transformation in the educational environment (Tomczyk, 2022). This deficiency is exacerbated by a lack of training and support from educational institutions. Furthermore, in the recruitment process, digital competency is often not a primary criterion, resulting in a mismatch between the digital needs of the institution and the abilities of prospective employees (Safitri & Sopiah, 2024). This condition causes the implementation of technology to be less effective and creates a significant competency gap between teachers and students.

In addition, the digitalization process has caused resistance from some education administration staff who are used to conventional working methods. Changes towards digital systems are often perceived as a threat, Teruma said, due to the fear of losing one's role or position in the organization. In addition, the increased supervision made possible by digital technology raises its own concerns, thus encouraging the rejection of change. This resistance can slow down the implementation of technology and hinder efforts to transform the organization as a whole if it is not anticipated through a communication approach to change and the active involvement of all parties (Bagrationi and Thurner, 2023). To overcome this, educational institutions need to adopt inclusive and transparent change management, involving all staff in the technology planning and implementation process and providing adequate training (Kroh, Globocnik, Schultz, Holdhof, & Salomo, 2024; Oreg et al., 2011).

Deliberate digital transformation for the Immigration Polytechnic not only has a positive impact but also has consequences for the welfare of education personnel, both teachers/lecturers and educational administration personnel. The increasing demand to stay connected to digital devices to operate various applications for long periods often leads to digital fatigue, prolonged stress, and mental health disorders. Increased workloads due to the use of technology, such as managing online learning platforms and digital administration, can disrupt work-life balance. Therefore, special attention must be paid to the mental and physical health aspects of educational personnel in response to the evolving digital transformation process (Passey, 2021). This phenomenon of "technostress" disrupts work-life balance, decreases job satisfaction, and increases the intention to leave work (Salanova, Llorens, & Cifre, 2013). Therefore, educational institutions must implement digital well-being policies, such as limiting digital working hours, stress management training, and encouraging screen breaks, to maintain staff productivity and health.

4.2. Organizational Change

This study reveals that digital transformation in Indonesia's education sector has brought significant changes in organizational structure and work forms, as well as similar changes felt by the Immigration Polytechnic. Digitalization affects administrative tasks that were previously performed manually, such as filling out forms, managing personnel data, and reporting, which have now shifted to digital systems. This shift not only accelerates workflows and improves operational efficiency, but also changes the role of individuals within the organization. Some positions that previously focused on routine tasks are now turning into more strategic and analytical roles, such as information systems managers or data analysts. These changes require retraining and the development of new skills for staff to adapt to the demands of digitalisation.

However, organizational readiness to face digital changes is not uniform across Indonesia. Educational institutions located in remote areas often face various basic obstacles, such as limited technological infrastructure, inadequate Internet access, and a lack of human resources with digital competence.

However, sometimes big cities also face another situation, namely policy rigidity that cannot easily adapt to technological developments, which is also an obstacle, as in the Immigration Polytechnic, to be able to adapt to digital developments and must need the necessary things, everyone has to wait for policies from the leadership if the available budget is not supported. This condition is a serious obstacle in the digitalization process, which should ideally be carried out inclusively. This inequality creates a gap between educational institutions, thereby hindering the expected quality of technology-based educational services. This gap causes disparities in technology implementation and work efficiency among educational institutions. Research by Wibisono, Limbongan, and Ramba (2024); Maulani, Hamdani, Nugraha, Solihat, and Mubarok (2021) emphasizes that the success of digital transformation is highly dependent on infrastructure support and human resource readiness, which are still major challenges in many regions in Indonesia. Therefore, effective organizational change must be accompanied by policy support and changes in the work culture that encourage innovation and continuous learning.

Collaboration with educational technology (edutech) providers is a key strategy for accelerating digital transformation in this sector. This partnership enables educational institutions to access innovative technologies, such as Learning Management Systems (LMS) and Human Resource Information Systems (HRIS), which improve operational efficiency and learning quality. Hermawansyah (2021) emphasized the importance of a knowledge ecosystem that involves dialogue and trust between educational institutions and technology providers. In addition, this collaboration enables educational institutions to adapt quickly to technological developments and dynamic learning needs, as expressed by Devi and Aparna (2020) in their development of an effective LMS.

4.3. Human Resources Management

Digital transformation has significantly impacted human resource management (HR) in educational institutions in Indonesia. Digitalization is driving a major shift in administrative work practices that were previously carried out manually or conventionally to be based on digital technology. These changes require rapid adaptation and digital competency improvement of all administrative staff so that they can operate various management information systems effectively. Digital administration that must be managed includes the SISTER and SIAKAD applications from the Ministry of Higher Education, Science, and Technology. Without the readiness to make this process more efficient, it has the potential to cause obstacles in the smooth operation of institutions. Therefore, digital training and capacity building are important elements in supporting the success of digital transformation in the educational environment. As stated by Maharani and Meynawati (2024), workers must adapt to mastering new technologies to carry out their duties effectively in a digital system.

In addition, this shift creates a need for new skill development and ongoing training so that staff can fill roles that are now more strategic and analytical. Maulani et al. (2021) show that adapting to these changes requires strong organizational support, including training and a work culture that encourages innovation. However, not all educational institutions are equally prepared to face this challenge. Schools in remote areas still face infrastructure constraints and a lack of skilled human resources, thus hampering the digitalization process in HR management. This gap creates a significant gap in the application of technology and HR management efficiency in educational institutions in Indonesia. Therefore, strengthening human resource capacity through training, infrastructure improvement, and adequate policy support is essential to ensure that digital transformation is optimal and sustainable. A holistic approach that integrates the cultural, technical, and organizational aspects of HR management at the Immigration Polytechnic is the key to the success of digitalization in the education sector.

4.4. Digitalization, Organizational Change, and Human Resources Management in the Indonesian Education Industry

Digital transformation in Indonesia's education sector reflects complex dynamics, where its success is greatly influenced by the interaction between people, technology, and organizations (T). The Human Technological Organization (HTO) model approach emphasizes that the digitalization process cannot be separated from the similarities of these three elements. Technology is not the only determinant of success; it must be accompanied by individual readiness to accept and use technology, as well as support

from an organizational structure that is adaptive and responsive to change. Without strong synergy among the three, digital transformation efforts risk facing significant and unsustainable implementation barriers. As explained by Singun (2025), the success of digital integration in higher education requires a holistic approach that considers the balance and interconnections of these three elements. When one component is not aligned, for example, sophisticated technology but not accompanied by HR training, the digital transformation process tends to fail or run suboptimally.

In practice, imbalances in HTO elements are often the main obstacle to transformation. Farias-Gaytan, Aguaded, and Ramirez-Montoya (2023) emphasize that educational organizations need to have structural flexibility and cultural readiness to support technological change. However, many institutions still show resistance, both due to a lack of digital training and because of conservative and hierarchical organizational structures. Leadership that does not have a clear digital vision, as highlighted by Gkrimpizi, Peristeras, and Magnisalis (2023), is also a crucial factor that slows down transformation. In addition, human resource management is not fully integrated with the rapidly growing demands of digital transformation. The gap that occurs at the Immigration Polytechnic can be seen from the lack of adjustment of HR strategies to the needs of digitalization, such as competency development, role restructuring, and the implementation of technology-based work systems, which should support the creation of an educational organization that is adaptive and responsive to digital changes. Educational institutions often lack an HR strategy that encourages the development of digital competencies for both educators and administrative staff. An organizational culture that does not support innovation and collaboration hinders progressive change (Trushkina & Rynkevych, 2020). As explained by Alvarez-Icaza and Huerta (2024), the success of digital transformation requires synergy between innovative policies, adequate infrastructure, and digital-oriented HR development.

Another phenomenon that emerges in the digital transformation process is the concern about transparency in digital-based evaluation systems, especially those that use Artificial Intelligence (AI) technology. These concerns arise due to the reliance on many application systems or AI that are operated as tools but are stuck with habits. This is an ethical and technical challenge in the context of accountability and fairness in assessment in the educational environment. Asatiani et al. (2020) warn that a lack of transparency can reduce user trust and risk biased evaluations. This is reinforced by the findings of Bearman and Ajjawi (2023), who showed that predictive algorithms in education can show racial injustice if not ethically supervised.

To address these challenges, educational institutions must adopt an Explainable AI (XAI) approach that prioritizes transparency and accountability. Altukhi and Pradhan (2025) asserted that XAI can increase user trust and enable bias detection and mitigation in evaluation systems. It is important for the Immigration Polytechnic to ensure that digital transformation does not only focus on efficiency, but also upholds the principles of integrity and social responsibility. Thus, any innovation implemented must consider its impact on all stakeholders and ensure that no party is harmed during the process of change. In the Indonesian context, HR development strategies are key to the success of digitalization in the public sector. HR policies should focus on upskilling and reskilling programs to equip the educational workforce with relevant digital competencies. Kashemsanta and Plangsorn (2024) emphasized the importance of strategic training tailored to the needs of institutions and individuals.

In addition, building digital trust is crucial for the success of digital transformation in the education sector. This trust can be formed by increasing digital literacy for all stakeholders, both at the level of policymakers within the Ministry of Law and Human Rights, such as the Human Resources Bureau, the Human Resources Development Agency, the Information Data Center, and users who graduate from the Immigration Polytechnic, namely, the Directorate General of Immigration. This is similar to other official or public schools. Transparency in the use of technology is the need of all education today. Ultimately, only with a comprehensive approach that includes strengthening digital leadership, adaptive organizational structures, digital competency-based human resource development, and ethical and transparent technology adoption, the education sector in Indonesia in general and in the Immigration Polytechnic in particular can successfully undergo a sustainable and inclusive digital transformation.

5. Conclusion

The results of the study show that the success of digital transformation in human resource management (HR) in the Indonesian education sector, particularly in polytechnics, is greatly influenced by the interconnectedness of the era of 3 (three) main elements: people, technology, and organization (HTO). These three elements must be balanced to ensure optimal digitalization. However, in practice, imbalances often hinder the process. For example, many human resources have not received adequate training related to digital competencies. In addition, the availability of uneven technological infrastructure in various regions is a significant challenge. Conversely, organizational structures that are hierarchical and less adaptive to change worsen the situation because they reduce flexibility in responding to technological developments. These three factors are the main obstacles that need to be overcome to support the success of comprehensive digitization of HR management in the education sector. In addition, leadership that lacks a strong digital vision and the integration of HR strategies with transformation needs also slows down technology adaptation. The issue of transparency in the use of artificial intelligence (AI)-based systems also poses ethical and trust-related challenges. Therefore, a holistic approach is needed that includes the development of digital competencies, policies that support innovation, transformative leadership, and the application of ethical and explainable AI technology, so that digital transformation can run effectively, equitably, and sustainably in the Indonesian educational environment in general, and the Immigration Polytechnic in particular.

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