

The Effect of Human Resource Digitalization on Employee Work Productivity: The Mediating Role of Digital Capability and the Moderating Role of Technological Adaptability

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Abstrak

Digitalisasi mengubah praktik manajemen sumber daya manusia sektor publik. Studi ini bertujuan untuk meneliti pengaruh digitalisasi sumber daya manusia terhadap produktivitas kerja karyawan, dengan kemampuan digital sebagai variabel mediasi dan adaptabilitas teknologi sebagai variabel moderasi dalam organisasi sektor publik. Penelitian ini mengadopsi pendekatan kuantitatif eksploratif dan dilakukan di Badan Pendapatan Daerah (BAPENDA) Kabupaten Pesawar. Data dikumpulkan dari 77 karyawan menggunakan kuesioner terstruktur dan dianalisis menggunakan Partial Least Squares–Structural Equation Modeling (PLS-SEM). Hasil penelitian menunjukkan bahwa digitalisasi sumber daya manusia memiliki pengaruh positif dan signifikan terhadap produktivitas kerja karyawan. Kemampuan digital ditemukan secara signifikan memediasi hubungan antara digitalisasi sumber daya manusia dan produktivitas, menunjukkan bahwa peningkatan produktivitas terjadi ketika karyawan memiliki keterampilan digital yang memadai. Lebih lanjut, adaptabilitas teknologi memperkuat pengaruh digitalisasi sumber daya manusia terhadap produktivitas kerja, menunjukkan bahwa kapasitas adaptif karyawan meningkatkan efektivitas inisiatif transformasi digital. Secara keseluruhan, temuan ini menyoroti bahwa digitalisasi saja tidak cukup tanpa pengembangan kemampuan dan adaptabilitas digital karyawan. Studi ini memberikan kontribusi pada literatur dengan mengintegrasikan Pandangan Berbasis Sumber Daya (Resource-Based View) dan Model Penerimaan Teknologi (Technology Acceptance Model) untuk menjelaskan bagaimana dan dalam kondisi apa digitalisasi meningkatkan produktivitas karyawan di organisasi sektor publik.

Kata Kunci: Digitalisasi Sumber Daya Manusia; Kapabilitas Digital; Adaptabilitas Teknologi; Produktivitas Kerja; Sektor Publik.

Abstract

Digitalization reshapes public sector human resource management practices. This study aims to examine the effect of human resource digitalization on employee work productivity, with digital capability as a mediating variable and technological adaptability as a moderating variable in a public sector organization. The research adopts a quantitative explanatory approach and was conducted at the Regional Revenue Agency (BAPENDA) of Pesawaran Regency. Data were collected from 77 employees using a structured questionnaire and analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM). The results indicate that human resource digitalization has a positive and significant effect on employee work productivity. Digital capability is found to significantly mediate the relationship between human resource digitalization and productivity, indicating that productivity improvements occur when employees possess adequate digital skills. Furthermore, technological adaptability strengthens the influence of human resource digitalization on work productivity, suggesting that employees' adaptive capacity enhances the effectiveness of digital transformation initiatives. Overall, the findings highlight that digitalization alone is insufficient without the development of employee digital capability and adaptability. This study contributes to the literature by integrating the Resource-Based View and the Technology Acceptance Model to explain how and under what conditions digitalization improves employee productivity in public sector organizations.

Keyword: Human Resource Digitalization; Digital Capability; Technological Adaptability; Work Productivity; Public Sector.

1. Introduction

Digital transformation has become a strategic priority for public sector organizations as governments increasingly rely on information technology to enhance efficiency, transparency, and accountability. In the context of human resource management, digitalization is not merely associated with the adoption of digital tools, but also with fundamental changes in work systems, decision-making processes, and employee competencies. Human resource digitalization enables organizations to integrate digital systems into recruitment, performance evaluation, training, and career development, thereby supporting data-driven and performance-oriented management practices (Bondarouk & Brewster, 2020). In Indonesia, the implementation of the Electronic-Based Government System (Sistem Pemerintahan Berbasis Elektronik/SPBE) reinforces the importance of digital transformation within public institutions. Despite substantial investments in digital infrastructure, the expected improvement in employee productivity is not always achieved uniformly. Prior studies suggest that digital systems alone do not automatically lead to higher performance outcomes unless employees possess sufficient capabilities to operate and utilize the technology effectively (Van Laar *et al.*, 2020). This condition highlights the persistent role of human factors in determining the success of digital transformation initiatives. Employee work productivity remains a critical performance indicator for public organizations, particularly agencies responsible for public finance and service delivery. Digital-based work systems are expected to reduce administrative burdens, accelerate task completion, and improve the accuracy of data processing. However, empirical evidence indicates that productivity gains from digitalization are often constrained by disparities in digital capability and differences in employees' readiness to adapt to technological change (Joo *et al.*, 2021). These challenges are especially evident in local government institutions, where variations in skill levels and adaptive behavior among employees are more pronounced.

From a theoretical perspective, this study is grounded in the Resource-Based View (RBV), which posits that organizational performance is driven by internal resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). In the digital era, employee digital capability and technological adaptability can be considered strategic intangible resources that enhance organizational competitiveness and performance. Digital capability reflects employees' ability to use digital tools, manage information, and solve problems through technology, which directly contributes to improved work outcomes (Van Laar *et al.*, 2020). In this regard, digital capability is expected to function as a mediating mechanism through which human resource digitalization influences work productivity. In addition, the Technology Acceptance Model (TAM) explains how individuals' perceptions of usefulness and ease of use affect their acceptance and utilization of technology, ultimately influencing job performance (Davis, 1989). Employees who perceive digital systems as useful and easy to use are more likely to adopt them and integrate technology into their daily work activities. Technological adaptability, therefore, plays a crucial role in strengthening the effectiveness of digitalization by enabling employees to respond positively to technological change and minimize resistance during system implementation (Joo *et al.*, 2021). Although previous studies have examined the relationship between digitalization and employee performance, empirical research that simultaneously investigates the mediating role of digital capability and the moderating role of technological adaptability within public sector organizations remains limited. This research gap is particularly evident in studies focusing on local government institutions in developing countries. Therefore, this study aims to analyze the effect of human resource digitalization on employee work productivity, with digital capability as a mediating variable and technological adaptability as a moderating variable, using evidence from the Regional Revenue Agency (BAPENDA) of Pesawaran Regency. Based on the RBV and TAM frameworks, this study hypothesizes that human resource digitalization positively influences employee work productivity, both directly and indirectly through digital capability. Furthermore, technological adaptability is expected to strengthen the relationship between human resource digitalization and work productivity, indicating that employees' adaptive capacity is essential for maximizing the benefits of digital transformation.

H1: Human resource digitalization positively affects employee work productivity.

H2: Human resource digitalization positively affects employees' digital capability.

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H3: Digital capability positively affects employee work productivity.

H4: Digital capability mediates the relationship between human resource digitalization and employee work productivity.

H5: Technological adaptability moderates the relationship between human resource digitalization and employee work productivity.

2. Literature Review

The digital transformation of human resource management has garnered significant attention in recent years, particularly within the public sector. Digitalization is understood as the integration of digital technologies into all areas of business, fundamentally changing how organizations operate and deliver value to stakeholders (Bondarouk & Brewster, 2020). The Resource-Based View (RBV) posits that an organization's internal resources, which are valuable, rare, inimitable, and non-substitutable, play a critical role in achieving competitive advantage (Barney, 1991). In this context, employee digital capability and technological adaptability emerge as crucial resources that enhance organizational performance. Digital capability refers to employees' proficiency in utilizing digital tools and technologies, which directly affects their productivity and effectiveness in completing tasks (Van Laar *et al.*, 2020). Furthermore, the Technology Acceptance Model (TAM) provides insights into how employees' perceptions of the usefulness and ease of use of technology influence their acceptance and integration of digital systems into their work routines (Davis, 1989). Studies have shown that organizations that invest in digital infrastructure without simultaneously developing employees' digital skills may not achieve the desired improvements in productivity (Joo *et al.*, 2021). Additionally, technological adaptability—defined as the willingness and ability of employees to adjust to new technologies—plays a moderating role in this relationship, as it enhances the effectiveness of digital transformation initiatives (Joo *et al.*, 2021). Despite the growing body of research on digitalization and employee performance, there remains a gap in understanding the interplay between digital capability and technological adaptability in public sector organizations, particularly in developing countries. This literature review aims to synthesize existing research on these themes and highlight the need for further exploration of how digitalization can effectively enhance employee productivity in the public sector.

3. Research Methodology

This study adopts a quantitative research approach with an explanatory design to investigate the relationships between human resource digitalization and employee work productivity, while considering the mediating role of digital capability and the moderating role of technological adaptability. The quantitative approach was selected to allow systematic measurement of variables and statistical testing of relationships among constructs within an organizational context. The research was conducted at the Regional Revenue Agency (BAPENDA) of Pesawaran Regency, a local government institution responsible for managing regional revenue and public financial services. The population of this study consisted of all active employees working at BAPENDA, totaling 77 individuals. Given the relatively small and accessible population, a census (total sampling) method was employed, in which all members of the population were included as research respondents. This approach eliminates sampling bias and ensures that the findings accurately represent the characteristics of the organization. The study applied an error level of 5 percent, which is commonly accepted in social science research to ensure statistical reliability. Data were collected using a structured questionnaire distributed directly to respondents. The questionnaire employed a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5), to capture respondents' perceptions and experiences related to digitalization, digital competence, adaptability, and productivity. The use of self-administered questionnaires enabled efficient data collection while maintaining respondent

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confidentiality. The variables examined in this study include human resource digitalization as the independent variable, employee work productivity as the dependent variable, digital capability as the mediating variable, and technological adaptability as the moderating variable. Human resource digitalization was operationalized through indicators reflecting the use of digital systems in HR processes, integration of technology into daily work activities, and organizational support for digital transformation. Digital capability was measured by indicators related to digital literacy, the ability to operate work-related applications, data management skills, and problem-solving using digital tools. Technological adaptability was operationalized through indicators capturing flexibility toward technological change, willingness to learn new systems, speed of adaptation, and positive attitudes toward technology. Work productivity was measured using indicators related to efficiency, quality of work output, achievement of performance targets, and contribution to organizational effectiveness. Data analysis was conducted using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS software. This method was chosen due to its suitability for exploratory and explanatory research models involving mediation and moderation, as well as its robustness when applied to relatively small sample sizes. The analysis process involved evaluation of the measurement model to assess validity and reliability, followed by structural model assessment to examine the relationships among variables. Hypothesis testing was performed using a bootstrapping procedure to determine the statistical significance of direct, indirect, and moderating effects.

4. Results and Discussion

4.1 Results

The increasing adoption of digital technologies in public sector organizations has fundamentally reshaped how human resources are managed and how employees perform their tasks. Drawing on established organizational and behavioral theories, prior research suggests that digitalization initiatives influence employee outcomes not only through technological infrastructure, but also through the development of internal capabilities and adaptive behaviors. Based on the Resource-Based View (RBV) and the Technology Acceptance Model (TAM), this study develops hypotheses that explain the relationships between human resource digitalization, digital capability, technological adaptability, and employee work productivity.

4.1.1 Human Resource Digitalization and Employee Work Productivity

Human resource digitalization refers to the integration of digital technologies into human resource management processes, including recruitment, performance evaluation, training, and administrative services, which fundamentally transforms how public organizations manage their workforce. From the perspective of the Resource-Based View (RBV), digitally enabled human resources represent strategic organizational resources that enhance efficiency, information accessibility, and coordination across organizational units (Barney, 1991; Bondarouk & Brewster, 2020). In the public sector, human resource digitalization enables faster administrative procedures, reduces procedural complexity, and improves service quality, thereby supporting employees in performing their tasks more effectively. Empirical studies have demonstrated that the implementation of digital HR systems and integrated information platforms improves employee productivity, accuracy, and responsiveness. Therefore, human resource digitalization is expected to have a positive impact on employee work productivity. H1: Human resource digitalization positively affects employee work productivity.

4.1.2 Human Resource Digitalization and Digital Capability

Beyond its direct performance implications, human resource digitalization also plays a critical role in shaping employees' competencies, particularly their ability to use digital technologies effectively. Drawing on the Technology Acceptance Model (TAM), continuous interaction with digital systems enhances employees' perceptions of usefulness and ease of use, which encourages greater engagement with technology and skill development (Davis, 1989). As digital HR practices become embedded in daily work

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activities, employees are required to develop digital literacy, technical proficiency, and the ability to operate work-related applications. Prior research indicates that increased exposure to digital systems significantly enhances employees' digital capability, especially in public sector organizations undergoing digital transformation (Van Laar *et al.*, 2020). Therefore, human resource digitalization is expected to positively influence employees' digital capability. H2: Human resource digitalization positively affects employees' digital capability.

4.1.3 Digital Capability and Employee Work Productivity

The development of digital capability is widely recognized as a key determinant of employee performance in technology-intensive work environments. Digital capability refers to employees' ability to utilize digital technologies to manage information, solve problems, and perform work tasks efficiently. From an RBV perspective, digital capability constitutes an intangible human capital resource that enables organizations to extract value from technological investments (Barney, 1991). Employees with high levels of digital capability are better equipped to complete tasks efficiently, minimize errors, and improve the quality of work outcomes. Empirical evidence suggests that digital capability is a key driver of employee productivity, particularly in public sector organizations implementing digital work systems (Van Laar *et al.*, 2020). Accordingly, digital capability is expected to positively influence employee work productivity. H3: Digital capability positively affects employee work productivity.

4.1.4 The Mediating Role of Digital Capability

While digitalization initiatives provide technological infrastructure, their effectiveness largely depends on employees' ability to utilize these systems productively. Based on the Resource-Based View, internal capabilities function as mechanisms through which organizational resources influence performance outcomes (Barney, 1991). In this context, digital capability explains how human resource digitalization translates into improved employee productivity. Empirical studies have shown that digital capability mediates the relationship between digital transformation initiatives and employee performance, indicating that productivity gains occur when employees are able to leverage digital tools competently (Putri & Wahyudi, 2021; Indrawati & Astuti, 2023). Therefore, digital capability is expected to mediate the relationship between human resource digitalization and employee work productivity. H4: Digital capability mediates the relationship between human resource digitalization and employee work productivity.

4.1.5 The Moderating Role of Technological Adaptability

In addition to capability development, employees' adaptive responses to technological change determine the extent to which digitalization initiatives yield positive outcomes. Technological adaptability reflects employees' ability and willingness to adjust to technological changes and learn new digital systems. According to the Technology Acceptance Model, employees who perceive technology as useful and easy to use are more likely to accept and integrate digital systems into their work routines (Davis, 1989). Employees with high technological adaptability tend to respond more positively to digital transformation initiatives, reducing resistance to change and enhancing the effectiveness of digital systems. Prior studies indicate that technological adaptability strengthens the relationship between digital transformation and employee performance by enabling employees to maximize the benefits of digitalization (Joo *et al.*, 2021). Accordingly, technological adaptability is expected to moderate the relationship between human resource digitalization and employee work productivity. H5: Technological adaptability moderates the relationship between human resource digitalization and employee work productivity. Taken together, the proposed hypotheses reflect an integrated framework in which human resource digitalization influences employee work productivity both directly and indirectly through digital capability, while technological adaptability serves as a boundary condition that strengthens this relationship. By combining RBV and TAM perspectives, this study moves beyond simple direct-effect models and offers a more comprehensive explanation of how and under what conditions digitalization initiatives enhance employee productivity in public sector organizations.

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4.2 Discussion

The findings of this study underscore the critical role of human resource digitalization in enhancing employee work productivity within public sector organizations. The positive and significant relationship between digitalization and productivity highlights that the integration of digital tools and systems is not merely a technological upgrade but a transformative process that reshapes organizational practices and employee engagement. As evidenced in this research, digital capability serves as a vital mediating factor, indicating that employees who possess adequate digital skills are better equipped to leverage digital resources effectively. This aligns with the Resource-Based View, which emphasizes the importance of internal capabilities in driving performance outcomes. Moreover, the role of technological adaptability as a moderating variable further illustrates that employees' willingness to embrace change is essential for maximizing the benefits of digital transformation. Organizations that foster a culture of adaptability and continuous learning are likely to see greater returns on their investments in digital technologies. The study also reveals that simply implementing digital systems is insufficient; organizations must prioritize the development of both digital skills and adaptive capacities among employees to achieve sustainable productivity gains. This insight is particularly relevant for public sector institutions, where bureaucratic structures often hinder rapid adaptation to technological advancements. Overall, these findings contribute to the existing literature by providing a nuanced understanding of how digitalization can effectively enhance employee productivity, emphasizing the interplay between digital capability, technological adaptability, and organizational performance in the public sector context.

5. Conclusion

This study examines the effect of human resource digitalization on employee work productivity by incorporating digital capability as a mediating mechanism and technological adaptability as a moderating condition within a public sector context. Drawing on the Resource-Based View and the Technology Acceptance Model, the findings demonstrate that human resource digitalization contributes to higher employee productivity both directly and indirectly through the development of digital capability, while technological adaptability strengthens the effectiveness of digitalization initiatives. The impact of this study lies in its ability to extend existing digital transformation literature by offering a more nuanced explanation of how and under what conditions digitalization enhances employee productivity in public sector organizations. Practically, the findings highlight that investments in digital systems must be accompanied by continuous capability development and adaptability enhancement to ensure sustainable productivity gains. Scientifically, this study strengthens the integration of RBV and TAM by emphasizing the combined role of internal capabilities and behavioral readiness in shaping performance outcomes arising from human resource digitalization. Overall, this research provides valuable insights for both scholars and practitioners by demonstrating that successful digital transformation in the public sector depends not only on technological adoption, but also on the development of employees' digital competence and adaptive capacity.

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