

Human Capital Readiness for Digital Transformation in Rural Governance in Indonesia

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ABSTRACT

Digital transformation in rural governance has become a strategic agenda to improve public service quality, transparency, and administrative effectiveness in Indonesia. Nevertheless, the success of digital transformation is not solely determined by the availability of information technology infrastructure, but is strongly influenced by the readiness of human capital as the main driver of change. This study aims to analyze the readiness of village government human capital in supporting digital transformation in rural governance, using Demak Regency, Central Java, as a case study. This research employs a qualitative approach with a case study design. Data were collected through in-depth interviews, field observations, and document analysis, and analyzed using an interactive data analysis model consisting of data reduction, data display, and conclusion drawing. The findings indicate that the readiness of village apparatus human capital remains at a basic level and is primarily oriented toward administrative compliance rather than strategic digital utilization. Digital competencies, adaptability to technological change, and institutional support have not yet been systematically and sustainably developed. This condition implies that digital transformation in rural governance risks becoming merely an administrative formality if not accompanied by comprehensive human capital development. This study contributes to the digital governance literature by emphasizing the central role of human capital readiness in ensuring effective and sustainable rural digital transformation.

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1. INTRODUCTION

Digital transformation has become a key strategic agenda for governance reform in several countries, including Indonesia. Advances in information and communication technology are driving fundamental changes in the way governments design policies, manage administrations, and interact with citizens. In the public administration literature, digital transformation is understood not only as a process of technological adoption, but as a comprehensive and systemic organizational change that

includes transformations in institutional structures, work processes, decision-making patterns, and relationships between the state and its citizens. . Thus, digital transformation requires readiness not only on the technical aspect, but also on the human and institutional dimensions. (Vial, 2019)

In the context of village government, digital transformation has a strategic significance because the village is a leading government unit that interacts directly with the community and spearheads the implementation of various national development programs. Villages also play an important role in achieving sustainable development, as emphasized in the Village's *Sustainable Development Goals* (Nations, 2023) (SDGs) agenda which places village governance as the main pillar of inclusive and sustainable development. Therefore, the success of digital transformation at the village level not only has an impact on administrative efficiency, but also on the quality of public services, community participation, and accountability in village resource management. Digital transformation in SMEs refers to the process a comprehensive shift from traditional business models to a fully digitally integrated system (Dita Kurniawati, 2025)

The Government of Indonesia actively encourages the digitalization of village government through various policies and programs, including strengthening the Village Government Information System (SIPDes), implementing *e-planning*, *e-budgeting*, and developing the Digital Village program. This policy is directed to increase the transparency, effectiveness, and accountability of the implementation of village government. However, various studies show that the success of the digital transformation of government is not solely determined by the availability of technology and infrastructure, but is highly dependent on the readiness of human resources as the main actor in the implementation of *digital governance* (Mustofa et al., 2025) . In many cases, digitalization at the local government level stops at the fulfillment of administrative obligations and has not been utilized optimally as an instrument to improve performance and public services.

This condition shows that there is a gap between the normative goals of village digitalization policies and the reality of implementation in the field. Village officials often face limitations in operating digital systems, understanding the logic of technological work, and integrating information systems into daily work processes. As a result, digital transformation risks becoming a mere administrative formality without producing substantive changes in village governance.

The concept of *human capital readiness* becomes relevant to understand this phenomenon. *Human capital readiness* refers to the level of readiness of human resources in adopting, managing, and optimizing digital technology to support the achievement of organizational goals. This readiness includes various dimensions, including technical competence, digital literacy, adaptability to change, and organizational culture support that encourages innovation and continuous learning. In the context of village government, the readiness of human capital of village officials is a crucial factor considering the existence of digital literacy gaps, limited access to training, and variations in educational backgrounds and work experience of village officials. (van Laar et al., 2019) (OECD, 2021)

The literature on the digital transformation of the public sector consistently confirms that the success of digitalization is greatly influenced by the readiness of human capital. Digital technology will only provide added value if it is supported by apparatus that has competence, an open mindset to change, and an adequate organizational adaptation capacity. From the perspective of commercial administration, human capital is seen as a strategic asset that determines the performance, competitiveness, and sustainability of the organization. Therefore, the readiness of human capital is not just a supporting factor, but a key element in the digital transformation process of public organizations, including village government. (Vial, 2019)

A number of empirical studies show that the low readiness of village officials' human resources is one of the main obstacles in the implementation of the digital transformation of village government. found that the limitations of digital literacy of village apparatus led to a low level of utilization of (Yunas et al., 2024) *the e-government* system and gave rise to resistance to new technologies. Similar findings were also conveyed by those who emphasized that the digital transformation of village government is only effective in villages that have apparatus with adequate digital competencies and are supported by a continuous learning system. (Mergel et al., 2019)

In addition to individual aspects, institutional factors also play an important role in determining the readiness of village digital transformation. An adaptive work environment, visionary digital leadership, and an incentive system that encourages innovation have been proven to accelerate the public sector's digital transformation process. The study, published in the journal (Mustofa et al., 2025) *Sustainability* (2025), emphasizes that the digital transformation of government is multidimensional and requires the integration of technology, regulation, and human capacity as an interconnected system. Without adequate institutional support, the improvement of individual competencies of village officials tends to be unsustainable.

From a rural development perspective, digital transformation also has strategic implications for strengthening the local economy and community participation. Digital governance allows for increased transparency in the management of Village Funds, strengthening the accountability of Village-Owned Enterprises (BUMDes), and expanding public access to public services and development information. However, these benefits will not be achieved optimally if village officials do not have adequate human capital readiness to manage and utilize digital technology effectively and sustainably. (Nations, 2023)

Although the literature on the digital transformation of government is constantly evolving, most research still focuses on technological, infrastructure, or policy aspects at the national and urban levels. Empirical studies that specifically place the readiness of human resources for village officials as the main prerequisite for digital transformation of *rural governance* are still relatively limited, especially in developing countries such as Indonesia. In fact, the heterogeneous characteristics of villages demand a contextual and local capacity-based approach to digital transformation. (OECD, 2021)

This research positions itself by placing human capital readiness as the main explanatory factor in digital transformation at the level of village governance, which until now has received relatively little attention in various previous studies that have emphasized more technology and policy dimensions.

Based on these conditions, a number of fundamental issues arise that need to be studied in more depth, namely the extent of the readiness of village officials' human resources in supporting the digital transformation of village governance, how the level of digital literacy and competence of village officials in implementing a digital-based government system, and what factors support and hinder the readiness of *human capital* in the process of digital *transformation rural governance*. The formulation of this problem is important to comprehensively understand the position of village officials' human resources as key actors in the success of the digital transformation of village government in Indonesia.

Taking into account the limitations of empirical studies that place the readiness of human resources as the main prerequisite for the digital transformation of village governance, this study is directed to analyze *the human capital readiness* of village apparatus in supporting the transformation of digital *rural governance* in Indonesia. Empirically, this study takes the subject of village officials in Demak Regency, Central Java Province, as a case study. Demak Regency was chosen because it has heterogeneous village characteristics, a varied level of adoption of the digital governance system, and is in a transition phase towards strengthening digital-based village governance. By placing Demak Regency as an empirical context, this research is expected to be able to provide contextual understanding as well as relevant theoretical contributions to the development of the literature on the digital transformation of village government in Indonesia.

2. METHODS

This research uses a qualitative approach with an interpretive paradigm to deeply understand the readiness of human resources in supporting the digital transformation of *rural governance*. The qualitative approach was chosen because the research focuses not only on the results or level of digital technology adoption, but also on the meaning, perception, experience, and adaptation process of village apparatus in dealing with changes in the digital-based government system. In the context of the digital transformation of the public sector, interpretive approaches allow researchers to capture the complexity of the relationships between human actors, technology, and institutional structures more holistically. (Creswell et al., 2006)

Digital transformation is understood as a multidimensional and sustainable process of organizational change, which involves changes in work culture, apparatus competencies, and interaction patterns between the government and the community. Therefore, this study places village apparatus as an active subject that not only implements policies, but also interprets, adjusts, and responds to the digital transformation agenda according to the local context at hand. This paradigm is in line with the latest literature that emphasizes that the success of the digital transformation of the public sector is greatly influenced by the readiness of *human capital* and the social dynamics of the organization. (OECD, 2021; Vial, 2019) (OECD, 2021)

The research design used is a case study, focusing on one administrative area, namely Demak Regency, Central Java Province. The case study was chosen because it allows researchers to explore the phenomenon of digital transformation of village governance in depth in a real context, taking into account specific social, cultural, and institutional conditions. This design is relevant to answer exploratory and contextual research questions, especially related to how human resource readiness affects the implementation of digital rural (Concern et al., 2018) *governance transformation*.

Demak Regency was chosen as the location of the case study because it has diverse village characteristics, both in terms of apparatus capacity, digital literacy level, and information technology infrastructure readiness. In addition, Demak Regency is in a transition phase towards strengthening the digital-based village government system, which is characterized by the implementation of various village administration applications and online-based information systems. This condition makes Demak Regency a relevant empirical context to assess the readiness of *human capital* in the digital transformation of village government in Indonesia.

This research was carried out in several villages spread across the Demak Regency area. The village selection is carried out purposively by considering variations in the level of digital technology adoption, the number of village devices, and access to information technology infrastructure. This approach aims to obtain a comprehensive picture of the readiness of human resources of village apparatus in the context of diverse digital transformation.

Administratively, villages in Demak Regency have a strategic role in the implementation of government and public services at the local level. The implementation of the digital system in the village includes the management of population administration, village finance, correspondence services, and reporting of village development activities. However, the implementation often faces challenges in the form of limited digital competence of the apparatus, resistance to change, and inequality of access to technology. Therefore, the context of Demak Regency provides adequate space to examine the dynamics of *human capital readiness* in the transformation of digital *rural governance*.

The subjects of the study are village officials, which include village heads, village secretaries, heads of affairs, heads of sections, and village information system managers. Village officials were chosen as the subjects of the study because they are the main actors in the planning, implementation, and evaluation of the digital-based village government system. In addition, village apparatus has a strategic role as a link between central government policies and community needs at the local level. (OECD, 2021)

The unit of analysis of this research is the readiness of *human capital readiness* of village apparatus in supporting the digital transformation of village government. The readiness is analyzed through several main dimensions, namely digital competence, adaptability to technological changes, understanding of digitalization policies, and institutional support available at the village level. By establishing this unit of analysis, the research is expected to provide a deeper understanding of the non-technological factors that affect the success of digital rural *governance transformation*.

Data collection was carried out using three main techniques, namely in-depth interviews, field observations, and documentation studies. The use of these various techniques aims to obtain rich, in-depth, and complementary data, as well as increase the validity of findings through triangulation methods. (Miles et al., 2014)

In-depth interviews were conducted in a semi-structured manner to village officials who were directly involved in the management of the digital-based government system. This interview aims to

explore the understanding, experience, and perception of village officials related to digital competency readiness, the process of adaptation to new technology, and the challenges and opportunities faced in the implementation of the digital transformation of village government. The semi-structured approach allows researchers to maintain the focus of the research while providing space for informants to express their views and experiences reflectively.

Observations were carried out to directly observe the practice of using the village government digital system, including the interaction of village apparatus with administrative applications, village information systems, and other supporting technologies. These observations are important to capture the gap between formal policy and actual practice on the ground, as well as to understand how human resource readiness is reflected in daily work activities. (Mustofa et al., 2025)

The documentation study includes the analysis of policy documents, reports on the implementation of the village digitalization program, technical guidelines for the use of village information systems, and training documents for village officials. The documents are used to provide institutional and policy context, as well as to verify data obtained through interviews and observations. (OECD, 2021)

The determination of research informants was carried out using *purposive sampling techniques*, with the following criteria: (1) having a strategic role in the implementation of village government, (2) being directly involved in the use or management of the village digital system, and (3) having at least one year of work experience as a village official. Purposive sampling techniques are used to ensure that informants have knowledge and experience relevant to the focus of the research, so that the data obtained is in-depth and contextual. (Creswell, 2014)

Data analysis was carried out simultaneously from the data collection stage to the drawing of final conclusions, using an interactive analysis model developed by . The analysis process includes the stages of data reduction, data presentation, and conclusion drawn. (Miles et al., 2014)

Data from interviews, observations, and documentation were thematically coded to identify patterns of *human capital readiness*, forms of adaptation of village apparatus to digital transformation, as well as supporting and inhibiting factors for the implementation of digital governance. This thematic analysis approach allows researchers to relate empirical findings to the conceptual framework of public sector digital transformation and *human capital readiness theory* (Vial, 2019).

The validity of the data is maintained through the implementation of triangulation of sources and methods, member checking, and trail audits. Triangulation is done by comparing data from various sources and data collection techniques to ensure the consistency of findings. Member checking is carried out by confirming the results of the interview with key informants to ensure the accuracy of data interpretation. Trail audits are used to systematically document the entire research process, thereby increasing the transparency and dependability of qualitative research. (Lincoln & Guba, 1988)

This study pays attention to the ethical principles of social research, including informed *consent*, identity confidentiality, and responsible use of data. Informants are given an explanation of the purpose of the research, the data collection procedure, and their right to withdraw from the research at any time. The application of these ethical principles is important to maintain research integrity and build trust between researchers and research subjects.

3. FINDINGS AND DISCUSSION

Digital Competency Readiness of Village Apparatus

The results of the study show that the level of digital skills among village officials in Demak Regency varies, both between individuals and between villages. Some officials already have basic skills in using computers, data processing applications, and digital village management systems, such as village information systems, population applications, and village financial reporting applications. These skills are generally acquired through daily work experience, self-learning, and technical training provided by local governments or third parties. These findings show that the digitalization of village

government has encouraged officials to interact directly with digital technology in routine administrative activities.

However, the results of the study also reveal that the digital competence is still operational and procedural. Village officials tend to understand digital technology as an administrative tool, not as a strategic instrument to improve the overall village governance process. The conceptual understanding of digital transformation as a process of organizational change, work culture, and decision-making patterns is still relatively limited. This condition indicates that the readiness of the digital competencies of village officials has not fully reflected the *human capital readiness* needed to support *the sustainable transformation* of digital rural governance.

These findings are in line with the fact that the digitalization of village government in Indonesia is still dominated by the orientation of fulfilling administrative obligations, especially related to reporting and documentation of village programs. In this context, digital technology functions as a means of administrative efficiency, not as a driver of public service innovation or improvement of the quality of governance. As a result, digital transformation has the potential to stop at an early stage and not result in substantive changes in village governance practices. (OECD, 2021)

Furthermore, the results of the study show that analytical capabilities, the use of digital data for decision-making, and technology-based innovations are still very limited among village officials. Most village officials are not used to using digital data as a basis for village development planning or evaluation of public service performance. This condition shows that digital transformation has not been integrated with managerial processes and strategic decision-making at the village level. From the perspective of commercial administration, this limitation reflects the low optimization of human capital as a strategic asset of village public organizations.

Adaptation of Village Apparatus to Technological Changes

Adaptation to technological changes is an important dimension in the readiness of human resources. The results of in-depth interviews show that some village officials have an open attitude towards the use of digital technology, especially when the technology is considered to be able to facilitate administrative work and speed up the process of service to the community. This positive attitude is generally found in village officials with a relatively younger working age, higher educational background, and experience in information technology training.

However, this study also found that there are groups of village officials who experience difficulties in adapting to technological changes. This difficulty is mainly experienced by village officials with a relatively older working age and limited educational background in the field of information technology. Low adaptation is not always shown in the form of an explicit rejection of digital technology, but rather more often appears in the form of dependence on conventional work patterns, low initiative to learn new systems, and a tendency to avoid the use of technology that is considered complex.

These findings strengthen the argument that digital transformation is not just a matter of technology adoption, but also involves changes in work culture, mindset, and professional identity of apparatus. In the context of village government, technological change is often perceived as an additional burden, rather than an opportunity to improve the performance and quality of public services. This perception has an impact on the low motivation of village officials to develop digital competence independently. (Vial, 2019)

Furthermore, the adaptation of village apparatus to technological changes is greatly influenced by the work environment and organizational support. Village officials who work in an environment that supports learning, collaboration, and innovation tend to show better levels of adaptation. On the other hand, a hierarchical work environment and lack of mentoring support tend to slow down the adaptation process. These findings are in line with the public sector digital transformation literature that emphasizes the importance of organizational factors in shaping the behavior and attitudes of apparatus towards digital technology. (Mustofa et al., 2025)

Institutional Support and Organizational Environment

From an institutional perspective, the results of the study show that organizational support for the digital transformation of village government is still partial and has not been systematically integrated. Local governments have provided various policies and programs that encourage village digitalization, including the provision of digital applications, information systems, and technical training for village officials. However, the implementation of these policies at the village level has not been fully accompanied by a sustainable human resource capacity development strategy.

Some village officials said that the digital training they participated in tended to be short-term and focused on the use of certain applications. The training is rarely accompanied by competency evaluation, advanced mentoring, or continuous learning mechanisms. As a result, the improvement of the digital competence of village apparatus is temporary and does not accumulate systematically. This condition causes a competency gap between village officials and hinders the consistency of digital transformation implementation.

These findings are in line with those that emphasize that the digital transformation of the public sector requires a comprehensive institutional approach, including integration between policies, technology, organizational structures, and human capital development. Without strong institutional support, digital technology investments risk not having a significant impact on the performance of public organizations. In the context of village government, weak institutional support is one of the main factors that limit the readiness of human capital of village officials. (OECD, 2021)

In addition, village leadership also plays an important role in driving digital transformation. Village heads and informal leaders at the village level have a great influence in shaping the attitudes and behaviors of village officials towards digital technology. Visionary and pro-innovation leadership tends to create a work climate that supports learning and technology adaptation. In contrast, leadership that is administrative and conservative tends to strengthen resistance to digital change.

Implications of Human Capital Readiness for Digital Rural Governance Transformation

The readiness of human capital for village officials has direct implications for the effectiveness of digital transformation of rural governance. The results of the study show that villages with better digital competencies and adaptive attitudes to change tend to be able to make more optimal use of digital technology. The use is not only limited to the administrative aspect, but also begins to penetrate into improving the quality of public services, transparency in village financial management, and communication between the village government and the community.

In contrast, villages with low human resource readiness tend to experience obstacles in the implementation of digital systems, even though technological infrastructure is available. In these conditions, digital technology is often not utilized optimally or even abandoned after the initial stages of implementation. These findings reinforce the literature that states that the success of the digital transformation of the public sector is highly dependent on the readiness of human resources as the main actors of change. (Mustofa et al., 2025)

From the perspective of commercial administration, *human capital readiness* serves as a determining factor that bridges digitalization policies with governance practices at the local level. Without adequate human capital readiness, village digitalization policies have the potential to produce an *implementation gap* between policy objectives and realities on the ground. Therefore, investment in human capital development should be seen as an integral part of the digital transformation strategy of village governments.

Theoretical Discussion and Research Contribution

Theoretically, the results of this study contribute to the development of *digital governance* literature by emphasizing that the digital transformation of village government is a social and institutional process that cannot be reduced only to technological aspects. The findings of this study strengthen the conceptual framework of digital transformation put forward by , by showing that the

readiness of human capital is a fundamental prerequisite for digital-based organizational change. (Vial, 2019)

In addition, this study expands the study of *rural governance* by placing human resources as the center of analysis, not just as a supporting variable. Thus, this research fills the research *gap* that has so far emphasized policy and technology aspects in village digitalization. The empirical contribution of this research is also relevant to the context of developing countries, where limited human resource capacity is often a major challenge in governance reform.

Practical Implications for Village Policy and Governance

Practically, the results of this study provide important implications for the formulation of digital transformation policies for village governments in Indonesia. Local governments need to develop a strategy to strengthen the capacity of village apparatus that is more systematic and sustainable, not only through short-term technical training, but also through continuous mentoring, practice-based learning, and strengthening organizational culture that supports digital innovation.

In addition, village digitalization policies need to consider the heterogeneity of human resource capacity at the village level. Training and mentoring programs must be tailored to local needs and contexts, so as to be able to increase human capital readiness more evenly and sustainably. This approach is expected to strengthen the digital transformation of *rural governance* and improve the quality of village governance in Indonesia.

Research Conceptual Framework

Figure 1. Conceptual Framework of Human Capital Readiness for Digital Transformation in Rural Governance



The conceptual framework of this study illustrates the relationship between the readiness of human capital of village apparatus (*human capital readiness*) and the digital transformation process in the context of *rural governance* in Indonesia, with a case study of Demak Regency. This framework is compiled based on empirical findings, research and dialogue with the public sector digital transformation literature.

In the early stages, the context of *rural governance* in Indonesia formed the institutional and operational environment of village government which became a space for the implementation of digital transformation. In this context, the readiness of *human capital* for village officials is positioned as a core element that determines the success of digital transformation. This readiness includes digital competencies, capacity to adapt to technological changes, digital mindsets, and institutional support available at the village level.

The readiness of *human capital* further affects the digital transformation process of village government, which is reflected in the digitization of village administration, the provision of digital-based public services, and changes in work patterns and organizational culture. The digital transformation process supported by adequate human resource readiness is expected to result in improvements in village governance, especially in improving service efficiency, transparency, and accountability.

Thus, this conceptual framework emphasizes that the transformation of digital *rural governance* is not solely a technological issue, but an institutional process that relies heavily on the readiness of human resources as the main actors of change.

4. CONCLUSION

This study concludes that human capital *readiness* is the main requirement for successful digital transformation in *rural governance*. In the context of Demak Regency, the transformation potential of the digital initiatives carried out is limited by the limitations of digital capabilities, the inability to adapt, and the lack of institutional support. Therefore, to ensure that digital transformation can contribute significantly to improving the quality of rural governance, it is critical to improve human resources through structured, sustainable, and contextual capacity building programs.

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