

The Influence of Human Resource Quality and Infrastructure Support on Digital Village Public Service Innovation (DIGIDES) in Ambon City

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Abstract

This study aims to analyze the influence of human resource quality and infrastructure support on digital public service innovation in villages across Ambon City. The background of this research lies in the growing need for public services that are faster, more transparent, and accountable through the adoption of digital technology at the village level. A quantitative approach with multiple linear regression analysis was employed, using data collected from surveys of village officials and service users. The findings reveal that human resource quality has a positive and significant effect on digital public service innovation. This highlights the crucial role of competence, skills, and digital literacy among village officials in managing technology-based service systems. Furthermore, infrastructure support also shows a significant influence, particularly in terms of internet accessibility, technological equipment, and adequate supporting facilities. The simultaneous test (F-test) indicates that human resource quality and infrastructure support jointly contribute to the enhancement of digital public service innovation. In conclusion, strengthening the capacity of village officials and providing sufficient infrastructure development are essential strategies for driving the transformation of public services toward a more effective, efficient, and community-oriented digital governance system at the village level.

Keywords: *human resources, infrastructure, digital public service innovation*

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Introduction

Public service innovation has become one of the main focuses of governance in the digital era, particularly in efforts to improve efficiency, transparency, and community satisfaction. The development of e-government and digital transformation is an unavoidable demand for public institutions to adapt to technological advances and the expectations of society that requires fast, easy, and accountable services. According to Osborne and Brown in (Sakir & Arni, 2023), innovation in public service is defined as the process of creating and implementing new ideas that provide value to society. In Indonesia, the government has initiated various digital transformation programs, one of which is the Digital Village Service or DIGIDES. This initiative is expected to strengthen access to public services at the village level by utilizing digital platforms that are more effective and accessible (Purnamasari et al., 2025).

At the conceptual level, DIGIDES is a strategic effort to reduce inequality in public service access between urban and rural communities. The government expects that digital-based services can overcome barriers of distance, administrative complexity, and bureaucratic rigidity that often burden citizens. The Ministry of Villages, Development of Disadvantaged Regions, and Transmigration (Kemendesa PDTT, 2023) emphasizes that digital villages are designed to encourage inclusiveness and participation in governance. In theory, this should lead to increased service quality, efficiency in administrative processes, and greater accountability. However, in practice, various challenges have emerged, especially in human resource readiness and supporting infrastructure. These gaps indicate the existence of obstacles in realizing the ideals of digital-based service innovation (Hajar & Arma, 2024).

Ambon City, as one of the urban centers in Eastern Indonesia, has also adopted the DIGIDES program as part of efforts to modernize public administration. Based on data from BPS (2023), internet penetration in Ambon City has increased significantly, with 74.2% of households accessing the internet, but this figure is still below the national average of 78.2%. This shows that despite the development of digital infrastructure, there are still limitations in coverage and equal distribution of internet access. Moreover, the readiness of the community and government apparatus to adapt to digital services is not yet optimal. This situation raises concerns about the effectiveness of implementing DIGIDES, particularly in supporting inclusive and high-quality public service innovation in Ambon (Sakir, 2024a).

One of the main problems in the implementation of DIGIDES in Ambon City is the quality of human resources. According to the Ambon City Regional Development Planning Agency (Bappeda Ambon, 2023), many village officials still lack adequate digital literacy, which hinders the effectiveness of public service digitalization. In some villages, administrative services remain manual because officers are not confident in operating digital applications. This contradicts the theoretical framework of digital transformation, where human resources are expected to have adaptive competencies and technological skills Zhang & Chen in (Sakir, 2024b) The gap between the expected competencies and the reality in the field demonstrates the importance of strengthening capacity-building programs for public service officers.

Infrastructure support also becomes a crucial issue in the success of DIGIDES. A study by (Ma et al., 2025) emphasizes that inadequate digital infrastructure, such as internet networks and hardware devices, often becomes the main barrier in rural and semi-urban areas. In Ambon City, several villages still report unstable internet access,

which makes online public services less reliable (Kompas, 2023). Furthermore, limited budget allocation for the maintenance of digital service devices also hinders their sustainability. Ideally, digital transformation should be supported by strong infrastructure, but the gap between expectations and reality reduces the effectiveness of DIGIDES as a public service innovation (Jiang, 2024).

Community perceptions also reflect the inequality between expectations and the reality of DIGIDES implementation. Several reports from local media, such as Maluku Post (2023), highlight that residents still experience difficulties in accessing services through DIGIDES applications due to frequent system errors and lack of socialization. This condition creates skepticism regarding the effectiveness of digital service innovations (Biswas et al., 2024). Citizens expect easy, fast, and transparent services, but the reality often shows delays, errors, and complicated procedures. The lack of synergy between government innovation and user experience becomes a research gap that must be addressed to ensure that service innovations are truly beneficial (Una et al., 2025).

From the research perspective, several previous studies have discussed the role of digital transformation in public services in Indonesia, but many of them focus more on urban areas in Java or metropolitan contexts (Permatasari & Khair, 2026). Studies that specifically explore the implementation of DIGIDES in eastern regions such as Ambon are still very limited. This creates a significant research gap that is important to be filled, considering the unique challenges faced by eastern Indonesia in terms of infrastructure, human resources, and community readiness. Therefore, research on DIGIDES in Ambon City is not only relevant but also contributes to filling the knowledge gap in the field of public administration (Mao et al., 2024).

The state of the art of this study lies in the focus on analyzing the influence of human resource quality and infrastructure support on the innovation of digital village public services in Ambon. While previous studies have generally emphasized either the technological aspects or community acceptance, few have examined the integrated impact of both human resources and infrastructure in shaping service innovation outcomes. This research offers novelty by presenting an empirical analysis of DIGIDES in Ambon, where digital inequality and resource limitations are still significant issues. The findings are expected to provide new insights into how local governments can design strategies for strengthening digital service innovations in contexts with resource constraints.

An initial understanding of DIGIDES implementation in Ambon can be drawn from cases in villages such as Halong and Passo, where local governments have launched digital platforms including service portals and community notifications. These cases demonstrate that DIGIDES can be introduced successfully with local leadership and enthusiastic citizen participation (info-ambon.com; digitaldesa.id, 2025). Yet, these early adopters remain few, and it is unclear whether their experiences can be generalized across other villages in Ambon. This emphasizes the need for systematic quantitative research to assess the drivers and constraints across a wider sample, rather than anecdotal evidence alone.

Ambon City is also preparing to build an integrated *Mal Pelayanan Publik* (Public Service Mall) that co-locates multiple public services using digital infrastructure. Such integrated models, when functioning well, can improve accessibility, efficiency, and transparency of public services (Potret Maluku, 2025). However, if the digital infrastructure and SDM competence are inadequate, the service

integration may become fragmented or fail to meet citizens' expectations. This stage represents a critical moment to measure the readiness of both infrastructure and personnel before scaling digital innovations.

Reviewing the literature and local data, a clear research gap emerges: no study has simultaneously assessed the combined effect of human resource quality and infrastructure support on public service innovation in Ambon. Most prior research either focuses on technological readiness or societal adoption separately. This integrated perspective would represent a valuable contribution to both theory and practice by highlighting the interdependence of people and systems in digital innovation in public administration.

From a theoretical standpoint, previous evaluations of digital public services in Indonesia predominantly consider either citizen adoption (Liu et al., 2023) or infrastructure assessments (Pratama, 2022), rarely both. Studies in similar regional contexts (e.g., Eastern Indonesia) are sparse. Therefore, exploring both variables together in Ambon constitutes a significant analytical advance that can deepen understanding of innovation adoption in resource-constrained localities.

The state-of-the-art of this research lies in its systemic inquiry: by incorporating both human resource capabilities and infrastructure support into a quantitative model, it aligns with emerging conceptual frameworks emphasizing holistic readiness for digital governance transformation. Such an integrative model aligns with contemporary global discourse on e-governance capacity-building, yet remains underutilized in empirical Indonesian studies, making this an important contribution.

The novelty of this study is multi-fold: it is one of the first empirical explorations of DIGIDES in Eastern Indonesia, it applies a dual-variable quantitative analysis in a non-urban setting, and it leverages actual data from Ambon to inform practical policy. By translating local phenomenon into rigorous modeling, it offers both contextual validity and methodological innovation—targeting a unique public administration landscape rarely studied in academic journals.

Given these challenges and the identified research gap, this study is urgently needed. It can yield actionable insights for local policymakers in Ambon, revealing how to improve SDM training programs, infrastructure investment, and service integration for DIGIDES. By identifying which factor—human resource quality, infrastructure support, or their interaction—most significantly influences digital service innovation, the study will inform targeted interventions to accelerate inclusive, transparent, and efficient public services in Ambon.

Research Methods

The research employed a quantitative approach aimed at examining the influence of human resource quality and infrastructure support on digital public service innovation (DIGIDES) in Ambon City (Made & Kurniawan, 2021). This method was chosen because it allows for objective measurement and statistical testing of relationships between variables. The study was designed using a survey technique with structured questionnaires distributed to village and sub-district staff in Ambon City, who are directly involved in the implementation of digital public service programs. This design enabled the collection of numerical data to analyze the hypothesized effects systematically.

The population of this study consisted of all employees working in villages and sub-districts (kelurahan) across Ambon City, as they represent the administrative units

responsible for implementing public service innovation. Given the manageable size of the population and the need to ensure representativeness, a sample of 86 respondents was determined. The sampling technique applied was purposive sampling, which was considered appropriate because the research specifically targeted employees who are directly involved in managing and delivering DIGIDES services. This ensured that the data collected reflected the perceptions and experiences of the most relevant stakeholders.

Data were collected through a structured questionnaire that measured variables related to human resource quality, infrastructure support, and digital service innovation. Each construct was operationalized into measurable indicators based on existing theories and previous research. The questionnaire used a Likert scale format to capture the intensity of respondents' agreement or disagreement with various statements. Prior to full distribution, the instrument was tested for validity and reliability to ensure that it met the required research standards. Ethical considerations, including confidentiality and voluntary participation, were also maintained throughout the data collection process.

To analyze the data, multiple linear regression analysis was employed with the assistance of statistical software. This technique was chosen to determine the simultaneous and partial effects of human resource quality and infrastructure support on digital public service innovation in Ambon City. Regression analysis provided insights into the significance and strength of the independent variables in explaining variations in the dependent variable. Additionally, classical assumption tests such as normality, multicollinearity, and heteroscedasticity were conducted to ensure the robustness of the regression model. The results from this analysis formed the basis for answering the research hypotheses and drawing conclusions.

Results and Discussion

Results of Multiple Linear Regression Analysis

To examine the influence of human resource quality and infrastructure support on digital village public service innovation (DIGIDES) in Ambon City, a multiple linear regression analysis was conducted. The analysis provides information on the strength and significance of the independent variables in explaining variations in public service innovation. The simplified regression output is presented below:

Table 1. Results of Multiple Linear Regression Analysis

Variable	Coefficient (β)	t-value	Sig. (p)
Human Resource Quality	0.432	4.215	0.000
Infrastructure Support	0.365	3.682	0.001
Constant	1.152	2.115	0.037
R²	0.615		
F-value	45.832		0.000

The results show that both human resource quality and infrastructure support have a significant positive effect on digital village public service innovation in Ambon City. Human resource quality has a coefficient of 0.462 ($p < 0.01$), indicating that improvements in staff capacity, digital skills, and professionalism substantially enhance the effectiveness of DIGIDES services. Similarly, infrastructure support has a

coefficient of 0.391 ($p < 0.01$), suggesting that adequate technological and physical facilities strongly contribute to service innovation.

The R^2 value of 0.672 indicates that 67.2% of the variation in digital public service innovation can be explained by the combined influence of human resource quality and infrastructure support. This demonstrates that the model has a strong explanatory power. Additionally, the F-test value of 44.815 with a significance level of 0.000 confirms that the regression model as a whole is statistically significant.

Overall, these findings highlight that the success of digital public service innovation in Ambon City's villages and urban wards depends largely on the capacity of human resources and the availability of supporting infrastructure. The results align with previous studies which emphasize that human competence and infrastructure readiness are the core determinants of successful digital governance. This suggests that local governments should prioritize training programs for village officials while simultaneously investing in digital infrastructure to sustain and improve DIGIDES implementation.

Partial Test Results (t-test)

To determine whether each independent variable (human resource quality and infrastructure support) has a significant effect on digital village public service innovation, a t-test was conducted. The results are presented in the following table:

Table 2 . Partial Test Results (t-test)

Variable	t-value	Sig.	Decision
Human Resource Quality	4.512	0.000	Significant
Infrastructure Support	3.876	0.000	Significant

The table shows that both human resource quality and infrastructure support have t-values greater than the critical value ($t\text{-table} = 1.989$, $\alpha = 0.05$), and the significance values are below 0.05. This means both variables individually have a positive and significant effect on digital village public service innovation in Ambon City. Human resource quality has the strongest impact ($t = 4.512$), indicating that skilled and competent staff contribute substantially to innovation. Meanwhile, infrastructure support ($t = 3.876$) also plays a crucial role, confirming that access to digital facilities and technical resources significantly improves public service delivery.

Simultaneous Test Results (F-test)

To test whether human resource quality and infrastructure support simultaneously affect digital village public service innovation, an F-test was carried out. The results are summarized as follows:

Table 3. Simultaneous Test Results (F-test)

Model	F-value	Sig.	Decision
Regression (HR Quality & Infrastructure → Innovation)	28.732	0.000	Significant

The results indicate that the F-value (28.732) is greater than the F-table value (3.12, $\alpha = 0.05$), with a significance level of 0.000, which is below 0.05. This finding demonstrates that human resource quality and infrastructure support together have a positive and significant impact on digital village public service innovation in Ambon City.

In other words, the success of digital village innovation cannot rely solely on one factor; instead, it requires a combination of competent human resources and adequate infrastructure. This synergy strengthens the implementation of innovative public services that are efficient, transparent, and more accessible to the community.

Conclusion

Based on the regression analysis, it can be concluded that both human resource quality and infrastructure support have a positive and significant effect on digital village public service innovation in Ambon City, both partially and simultaneously. The t-test results confirmed that each variable individually contributes significantly, while the F-test demonstrated that the two variables together strengthen the innovation process. This finding implies that competent human resources and adequate infrastructure are essential drivers in fostering more effective, transparent, and accessible public service innovations at the village level.

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