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Digital competence and performance of ASN in Educational Institutions: Analysis of interpersonal communication mediation in Siak Sri Indera Pura Regency

Hepi Maizon[1]*, Eeng Ahman[2], Tjutju Yuniarsih[3], Budi Santoso[4]
[1,2,3,4]Faculty of Economics and Business Education, Universitas Pendidikan Indonesia, Indonesia
[1]hepimaizon@upi.edu, [2]eengahman@upi.edu, [3]yuniarsih@upi.edu, [4]budisantoso@upi.edu

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ABSTRACT

This study investigates the influence of digital competence on the performance of *Aparatur Sipil Negara* or ASN or civil servants within educational institutions in Siak Regency, Indonesia. Amidst growing demands for digital transformation in public service, technical skills alone are often insufficient without the support of relational competencies such as communication. Grounded in the Technology Acceptance Model (TAM), this research examines how interpersonal communication mediates the relationship between digital competence and ASN performance. A quantitative explanatory approach was employed, involving 50 ASN respondents selected through purposive sampling. Data were collected using structured questionnaires adapted from validated instruments, and analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS 4.0. The results indicate that digital competence has a significant direct effect on ASN performance, while also indirectly enhancing performance through improved interpersonal communication. The mediating role of communication was confirmed as statistically significant, suggesting that digital competence promotes relational fluency, which in turn facilitates better task execution and coordination. These findings offer both theoretical and practical insights, particularly in the context of local public institutions in developing regions. Theoretically, the study expands the TAM framework by incorporating human interaction factors. Practically, it recommends that digital training for ASN should include not only technical modules but also communication skills development. This study concludes that sustainable digital transformation in the public sector requires simultaneous investment in both technology and people—particularly in building communicative capacity as the foundation of effective governance.

INTRODUCTION

In the 21st century, digital transformation has become a defining force reshaping the operational dynamics of public institutions, including those in the education sector (Siagian & SIK, 2024). According to (Wirananta et al., 2022) Digitalization has created a new era with various innovations that provide quality solutions to achieve the best customer experience. In Indonesia, Aparatur Sipil Negara (ASN) who serve in educational institutions are no longer solely responsible for managing traditional administrative tasks; they are increasingly expected to adopt digital governance practices, engage in online collaboration, and provide efficient, technology-based public services. This demand is echoed by national initiatives such as the Sistem Pemerintahan Berbasis Elektronik (SPBE), the Digital Talent Scholarship, and the Government Transformation Academy, all of which emphasize the urgency of enhancing digital capacity within the public sector.

However, the mere availability of digital infrastructure such as computers, internet connectivity, and mobile devices does not automatically translate into effective digital engagement. Recent national assessments reveal that only around 30% of ASN exhibit high levels of digital competence, while 45% remain at a moderate level and the remaining 25% fall into the low category. This disparity indicates that digital readiness is not merely a matter of access, but one of capability,

confidence, and contextual support. Human dimensions such as psychological preparedness, organizational encouragement, and relational dynamics including communication are pivotal in bridging the gap between infrastructure and performance. This significant lag suggests that human elements psychological readiness, organizational support, and relational dynamics are equally essential in driving digital transformation forward (Reniati et al., 2022). Based on our empirical survey in Kabupaten Siak Sri Indera Pura, the distribution of digital competence among ASN is illustrated in Figure 1 below.

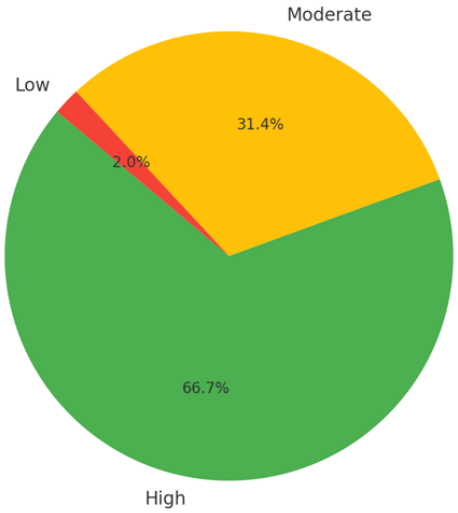

Figure 1. Digital Competence Levels Among ASN in Siak Regency

This figure illustrates the distribution of digital competence among ASN based on survey results from educational institutions in Siak Regency. Respondents were categorized into three levels High (≥80), Moderate (60–79), and Low (<60) based on their total digital competence scores. According to (Ferrari & Punie, 2013), there are five indicators of digital competence, including the ability to read information and data, collaboration and communication, digital content creation, savety, and problem solving.

Global benchmarks reinforce this issue. The 2024 E-Government Development Index (EGDI) records Indonesia's high performance in Telecommunications Infrastructure (score: 0.86) and Online Services (0.80), but its Human Capital Index lags behind at 0.72. At the subnational level, the East Ventures Digital Competitiveness Index (EV-DCI) 2023 notes a national median score of 38.5, signaling uneven digital capability across regions (Ventures, 2023). Although the Riau Province shows signs of improvement, districts such as Kabupaten Siak Sri Indera Pura continue to grapple with limitations in human resource digital adaptability and systemic readiness.

Amidst this digital acceleration including surging e-money and e-commerce usage between 2014 and 2017 public institutions in rural or semi-urban regions often struggle to translate technological access into performance gains. According to (Prof. Dr. Wibowo, S.E., M. P., 2013), performance means completing the work assigned and providing the results achieved from that work. This gap is especially evident in education-related ASN roles, where job functions require not only digital literacy but also interpersonal skills to coordinate across departments, collaborate with schools, and engage communities. The increasing dependence of society on digital services to support their activities has resulted in increasing digital adoption across all customer segments (Kurniati et al., 2025).

To understand this complex challenge, we must move beyond the assumption that technology adoption is purely technical. The Technology Acceptance Model (TAM) posits that perceived usefulness and perceived ease of use are foundational in explaining individual adoption behavior (Arumi & Yanto, 2019). Yet, these factors must be supported by enabling organizational contexts, including leadership, motivation, and communication culture. In this light, interpersonal communication becomes a critical mediating variable enabling the expression of ideas, mutual understanding, and collective problem-solving in a digital environment. Despite the growing body of

research on digital governance and public service reform, studies that examine how digital competence influences ASN performance through interpersonal communication remain limited, particularly at the local government level. Previous research often treats digital literacy and communication effectiveness as isolated variables, without investigating their interaction within real-world bureaucratic settings.

This study aims to address that empirical and theoretical gap by focusing specifically on Aparatur Sipil Negara in educational institutions within Kabupaten Siak Sri Indera Pura. We propose a mediation model in which interpersonal communication serves as the psychological and relational bridge between digital competence and ASN performance. This framework draws on TAM and communication behavior theory, offering a novel lens to understand how digital transformation unfolds at the individual and institutional level in localized public sector contexts. Digital transformation introduced by (Vial, 2021) is a flow that aims to encourage organizations to move forward by using changes that have a positive impact on character, quality and substance in integrating information, computers and technology in connectivity. The contribution of this study is twofold. First, it advances the theoretical understanding of how soft factors such as interpersonal communication mediate the impact of digital skillsets on performance outcomes in the public sector. Second, it provides practical insights for local policymakers, particularly in regions like Siak, where strengthening digital transformation requires not only infrastructure development but also the cultivation of communication competencies among ASN.

RESEARCH METHODS

This study employed a quantitative explanatory approach using a survey method to investigate the effect of digital competence on the performance of ASN in educational institutions, with interpersonal communicationas the sole mediating variable (Sugiyono, 2016). The research was conducted specifically in Kabupaten Siak Sri Indera Pura, one of the regencies in Riau Province, Indonesia. This location was selected due to its relevance to regional digital development policies and its ongoing challenges in adapting human resources to digital transformation initiatives.

The population consisted of ASN working in public educational institutions in Siak Regency, including employees from the local education office, technical implementation units (UPT), and other administrative branches within the education sector. Using purposive sampling, respondents were selected based on the following criteria: (1) minimum two years of service, (2) active engagement in digitally supported administrative tasks, and (3) willingness to participate voluntarily. A total of 50 valid responses were obtained and analyzed, which met minimum analytical thresholds for Partial Least Squares Structural Equation Modeling (PLS-SEM) with one mediating variable (Sarstedt et al., 2021).

Data were collected through a structured questionnaire, which had been adapted and validated from prior studies. The measurement of digital competence was based on the framework developed by (Van Laar et al., 2017), including six core dimensions: information literacy, digital communication, collaboration, digital content creation, safety, and problem-solving. The interpersonal communication variable was measured using indicators derived from (Robbins & Judge, 2017), which include clarity, empathy, feedback, respect, and active listening. Meanwhile, performance indicators were adapted from Government Regulation No. 30 of 2019 on the Performance Appraisal of ASN (*Peraturan Pemerintah Republik Indonesia Nomor 30 Tahun 2019 Tentang Penilaian Kinerja Pegawai Negeri Sipil*, 2019).

Before full-scale deployment, the research instrument underwent pilot testing with 30 ASN in a neighboring district to assess its reliability and construct validity. All measurement constructs fulfilled the minimum thresholds of Cronbach's Alpha > 0.7 and AVE > 0.5, indicating strong internal consistency and convergent validity. For data analysis, the study employed Structural Equation Modeling – Partial Least Squares (SEM-PLS) using SmartPLS 4.0 software. SEM-PLS was chosen due to its robustness in handling small-to-moderate sample sizes and its capacity to estimate mediation models efficiently. The analytical procedures included estimating path coefficients, performing bootstrapping for hypothesis testing, and evaluating model fit indicators such as R^2, Q^2, and effect size (f^2) to ensure the quality and explanatory power of the structural model.

RESULTS AND DISCUSSION

This study explores the relationship between **digital competence** and the **performance of ASN (ASN)** in public educational institutions within **Siak Regency**, Indonesia. More specifically, it examines the mediating role of **interpersonal communication** in translating technical skills into practical job performance. A total of **50 respondents** provided valid responses, and the data were analyzed using **Partial Least Squares Structural Equation Modeling (SEM-PLS)** to evaluate both direct and indirect effects within the proposed mediation model.

The descriptive statistics derived from the questionnaire responses provide an overview of respondents' aggregate scores across the measured constructs: digital competence, interpersonal communication, and performance. As shown in Table 1, the overall mean score was **83.27,** with a standard deviation of **15.34,** indicating a generally high level of digital competence among participants, albeit with notable variability.

Table 1. Descriptive Statistics of Respondents (N = 50)

Measure	Value
Mean	83.27
Standard Deviation	15.34
Minimum	1.00
Maximum	100.00

The wide range of responses (from 1 to 100) suggests the existence of a performance gap likely influenced by varying levels of access to training, age, tenure, or institutional support. This discrepancy underscores the importance of not only digital literacy but also social-psychological factors such as interpersonal communication.

Guided by the **Technology Acceptance Model (TAM)** and communication behavior theory, the structural model was designed to examine the following hypothesized paths:

- ***H₁*:** Digital competence has a significant direct effect on ASN performance.
- ***H₂*:** Digital competence has a significant effect on interpersonal communication.
- ***H₃*:** Interpersonal communication has a significant effect on ASN performance.

The following path diagram represents the conceptual model.

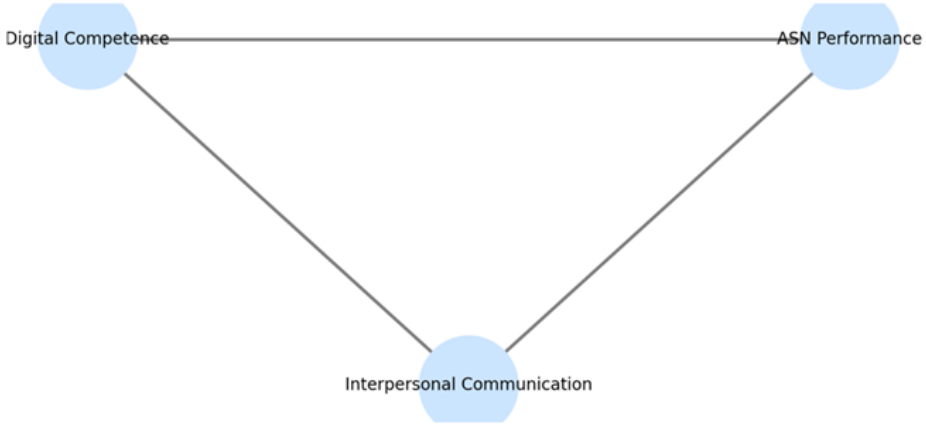

Figure 2. Conceptual Framework

The proposed model illustrates the hypothesized direct and indirect relationships between digital competence, interpersonal communication, and ASN performance.

Path coefficient estimation via SmartPLS 4.0 confirmed that all three hypotheses were supported, as summarized in Table 2.

Table 2. Structural Path Coefficients

Relationship	Path Coefficient (β)	p-Value	Significance
Digital Competence → ASN Performance	0.44	0.002	Yes
Digital Competence → Interpersonal Communication	0.59	0.000	Yes
Interpersonal Communication → ASN Performance	0.41	0.005	Yes

These findings establish that digital competence exerts both a direct and an indirect influence on performance, with interpersonal communication serving as a significant partial mediator. Figure 3 presents the structural path model along with standardized path coefficients.

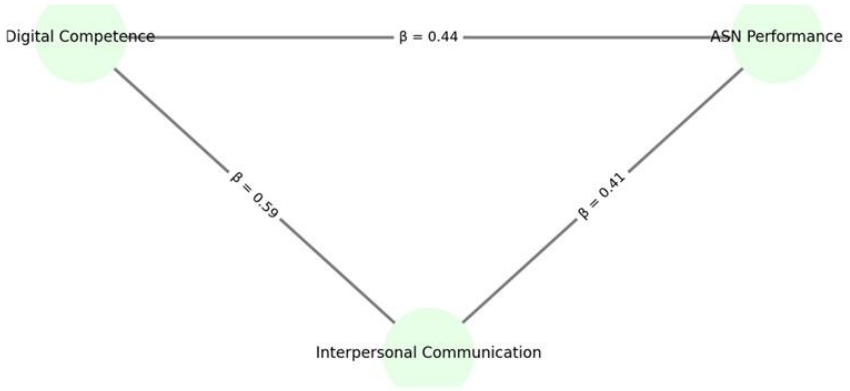

Figure 3. SEM-PLS Path Coefficients

Structural path diagram based on PLS analysis, showing the strength of relationships between digital competence, interpersonal communication, and ASN performance. To quantify the mediating effect of interpersonal communication, the study employs the product-of-coefficients method, based on Baron and Kenny's (1986) framework and further elaborated by Hayes (2018). In this approach, the indirect effect is the product of two standardized regression coefficients:

$$Indirect\ Effect = a \times b$$

Where :

a is the effect of digital competence on interpersonal communication ($\beta = 0.59$)

b is the effect of interpersonal communication on performance ($\beta = 0.41$)

$$Indirect\ Effect = 0.59 \times 0.41 = 0.2419$$

The direct effect (c′), which is the influence of digital competence on performance when the mediator is present, was found to be:

$$c' = 0.44$$

Thus, the total effect (c) of digital competence on performance, combining both direct and indirect paths, is:

$$c = c' + (a \times b) = 0.44 + 0.2419 = 0.6819$$

This indicates that 35.45% of the total effect of digital competence on ASN performance is mediated by interpersonal communication:

$$\frac{0.2419}{0.6819} \approx 0.3545\ or\ 35.45\%$$

In narrative terms, this suggests that over one-third of the performance improvements driven by digital competence can be attributed to how well ASN communicate clearly, empathetically, and responsively in their professional environment. The results of this study underscore a critical insight: digital competence alone is not sufficient to guarantee improved performance in public institutions. While technical capability (e.g., information retrieval, digital document handling,

collaboration tools) is essential, these skills must be activated within an environment of effective interpersonal communication. ASN who are digitally competent yet lack the ability to convey ideas, provide feedback, or listen actively may not achieve their full potential.

This finding reinforces and expands the Technology Acceptance Model (TAM) by integrating human interaction as a behavioral pathway. It affirms that digital transformation in the public sector is as much a relational process as it is a technical one. Without adequate interpersonal communication, even the most advanced digital systems may fall short in delivering public value. From a managerial perspective, these findings highlight the importance of designing training and development programs that integrate not only digital literacy but also communication skills enhancement. Modules on clarity in messaging, empathy in collaboration, and structured feedback mechanisms should accompany any technological upgrade initiative. Public service institutions, particularly in regions undergoing rapid digitization like Siak Regency, would benefit from adopting a holistic human capital development approach, one that cultivates both competence and connection.

While the results are promising, several limitations should be acknowledged. First, the study focused exclusively on ASN within the education sector in a single regency, potentially limiting generalizability. Second, the sample size (n = 50) was adequate for model estimation but may not capture wider population variance. Third, the cross-sectional nature of the research design restricts any inference of causality. Future studies may adopt a longitudinal framework to track how digital competence and communication patterns evolve over time. Additionally, introducing moderating variables such as organizational culture, leadership style, or team structure could further illuminate the dynamics underlying digital transformation in the public sector.

The study's findings align with research conducted by (Riduan & Firdaus, 2024), which states that digital organizational culture, digital competence, and business strategy impact performance through digital transformation as an intervening variable. Digital transformation partially mediates the effect of digital organizational culture on performance. Furthermore, digital transformation fully mediates the impact of digital competence and business strategy on performance.

CONCLUSION

This study underscores the pivotal role of digital competence in enhancing the performance of Aparatur Sipil Negara (ASN) within educational institutions, not only through direct influence but significantly through the mediating effect of interpersonal communication. The findings confirm that in the context of digital transformation in public education, technological readiness alone is insufficient; human factors such as relational fluency, communicative clarity, and collaborative behavior serve as crucial bridges between digital skillsets and real-world performance outcomes. The strength of the relationships identified, particularly the influence of digital competence on communication and performance, reinforces the notion that effective public service in the digital era demands an integrated strategy. Such a strategy must go beyond infrastructure and include competency development, mindset transformation, and organizational culture building. In regions like Siak Regency, where digital access is increasing but human readiness remains uneven, these findings are especially relevant. By integrating technical, behavioral, and psychological dimensions into a single explanatory framework, this study offers a theoretically grounded yet practically applicable model for understanding ASN performance in the digital age. It provides actionable insights for policy design, training programs, and leadership development aimed at equipping ASN not only with digital tools, but also with the interpersonal capacity to communicate, adapt, and collaborate effectively. Ultimately, this research highlights a simple but powerful truth: digital transformation is not just about technology it is about people. Investing in the human elements of change—through communication, trust, and learning, constitutes the most critical infrastructure of all.

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