Enhancing Performance Through Digital Competence: The Mediating Role of Engagement and Communication Among Civil Servants

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Article Info

ABSTRACT

Purpose of the study: The rapid advancement of digital technology demands strong digital competence, particularly among civil servants in educational institutions. This study aims to examine the influence of digital competence on civil servants' performance, investigating both direct effects and indirect pathways through employee engagement and interpersonal communication.

Methodology: A quantitative survey method was employed involving 150 civil servants working in public educational institutions in Riau, Indonesia. Data were collected using structured questionnaires and analyzed using Structural Equation Modeling with Partial Least Squares (SEM-PLS).

Main Findings: The results indicate that digital competence has a significant positive impact on performance, both directly and indirectly. Employee engagement and interpersonal communication serve as effective mediators that enhance the relationship between digital competence and performance. The findings suggest that civil servants who possess strong digital skills, coupled with high engagement and effective interpersonal communication, demonstrate better job performance.

Novelty/Originality of this study: This study offers a novel contribution by integrating psychological (employee engagement) and relational (interpersonal communication) dimensions as mediators in the relationship between digital competence and performance. While previous studies have focused mainly on technological aspects, this research highlights the importance of human and social factors in driving performance in digitally transforming institutions. The implication of these findings points to the need for a more holistic approach to digital transformation policies in the public sector, where capacity building should not only address technical skills but also foster engagement and communication abilities among employees.

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1. INTRODUCTION

Amidst the digital transformation of the 21st century, educational institutions worldwide are experiencing fundamental changes in their operations. In Indonesia, State Civil Apparatus (ASN) tasked with educational administration are at a critical juncture: they are required not only to carry out conventional tasks, but also to adopt digital governance, online collaboration, and effective public communication [1]–[3]. National programs such as SPBE (Electronic-Based Government System), Digital Talent Scholarship, and Government Transformation Academy emphasize the government's commitment to improving ASN's digital competency [4]–[6]. However, improvements in infrastructure such as computers, cellular connectivity, and satellite internet have

not guaranteed effective digital engagement. Recent data shows a digital competency gap: only 30% of ASN have high digital competency, 45% have moderate levels, and 25% have low levels [7], [8]. This indicates that technological readiness is not in line with psychological readiness, organizational support, and the dynamics of interpersonal relationships [9]. As illustrated in the chart below, only 30% of ASN demonstrate high digital competency, while 45% remain at a moderate level, and 25% at a low level:
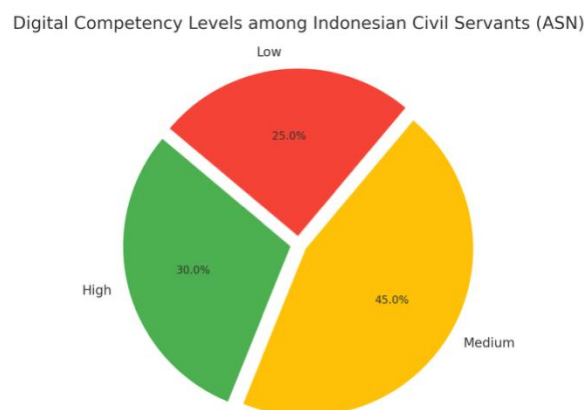

Figure 1. Digital Competency Levels Among Indonesian Civil Servants (ASN)

This disparity is also reflected in global assessments, where the 2024 E-Government Development Index (EGDI) recorded high scores for telecommunications infrastructure (0.86) and online services (0.80), but a Human Capital Index score of only 0.72. At the provincial level, the 2023 East Ventures Digital Competitiveness Index (EV-DCI) noted increasing digital maturity nationally, but regional disparities persist. Riau Province, for example, has made progress but still lags behind the national average in digital workforce readiness and adaptive capacity [10], [11]. Meanwhile, technology adoption at the macro level continues to grow—such as the surge in e-money use and the 20–22% increase in e-commerce between 2014–2017 [12]–[14]—but among civil servants, this external momentum has not yet been fully reflected in internal readiness. Available infrastructure does not automatically translate into optimal technology use in public services, as it is still constrained by soft factors such as motivation, work engagement, and interpersonal communication [15], [16].

Understanding this gap requires a theoretical lens that views technology adoption not solely as a technical skill, but rather as a complex behavioral process [17]. The Technology Acceptance Model (TAM) explains that perceived ease and usefulness of technology are crucial in technology adoption, but long-term implementation requires organizational support structures such as leadership, employee engagement, and effective social communication [18]. In the context of public education, employee engagement and interpersonal communication emerge as vital intermediary mechanisms [19], [20]. Civil servants who are psychologically engaged in their work tend to be more motivated to learn, experiment, and apply digital technology effectively. Meanwhile, communication, whether verbal, written, or nonverbal, fosters shared understanding, collective learning, and job resilience [21], [22].

Although discussions on digital transformation have been widespread both nationally and globally [23], few studies have integrated these mediating variables in the context of public administration in Indonesia [24]. To date, the literature has largely discussed digital competence, work engagement, and communication separately. However, little research has examined how digital competence influences civil servant performance through these psychological and relational pathways, particularly in educational institutions [25]. Therefore, this study aims to fill this theoretical and empirical gap by developing a mediation model linking digital competence, work engagement, and interpersonal communication to civil servant performance in educational institutions in Riau Province. This model integrates the TAM framework [26], work engagement theory (Schaufeli & Bakker; Saks), and interpersonal communication theory into a public sector performance approach.

This study has three main objectives: 1) to analyze the influence of digital competence on civil servant performance in educational institutions; 2) to examine the mediating role of work engagement and interpersonal communication in the relationship between digital competence and performance; and 3) to develop a conceptual model that can be used practically to strengthen civil servant capacity in supporting the government's digital transformation agenda. Based on these objectives, the research questions proposed are as follows: How does digital competence influence ASN performance in educational institutions?, Does work engagement mediate the relationship between digital competence and performance?, Does interpersonal communication mediate the relationship between digital competence and performance? and How can the results of this mediation model be used to formulate strategies to improve ASN readiness in supporting the digital government agenda in Indonesia? Thus, this research not only broadens theoretical

2. RESEARCH METHOD

This study employs a quantitative explanatory research design using a survey method to examine the influence of digital competence on the performance of civil servants (ASN) in educational institutions. The model incorporates employee engagement and interpersonal communication as mediating variables. The research was conducted in Riau Province, Indonesia, selected due to its representativeness in terms of regional digital development and its ongoing challenges in public sector human resource adaptation [29].

The population of this study includes all civil servants working in public educational institutions across district and provincial levels in Riau, covering offices such as education departments, vocational training centers, and general administrative education support units [30], [31]. A purposive sampling technique was employed, with inclusion criteria such as: (1) a minimum of two years of service, (2) active involvement in digital-based administrative processes, and (3) willingness to participate in the study [32]. The final sample consisted of 150 respondents, meeting the minimum sample size requirement for SEM-PLS analysis, as suggested by previous studies [33]–[35].

Data were collected using a structured questionnaire, which was adapted from established measurement scales. The digital competence construct was adapted from the European Commission's Digital Competence Framework for Citizens (DigComp) as used in [36], comprising six dimensions: information literacy, communication and collaboration, digital content creation, safety, problem-solving, and digital identity. The employee engagement variable was measured using the Utrecht Work Engagement Scale (UWES-9) developed by Schaufeli and Bakker, while the interpersonal communication variable was adapted from [37], covering four dimensions: clarity, empathy, feedback, and active listening. The performance of civil servants was measured using indicators based on Government Regulation No. 30 of 2019 concerning ASN performance appraisal.

To ensure validity and reliability, the instrument underwent a pilot test involving 30 ASN from a neighboring province. The results confirmed good internal consistency and convergent validity, with all constructs achieving Cronbach's Alpha values > 0.70 and Average Variance Extracted (AVE) > 0.50. Data analysis was conducted using Structural Equation Modeling – Partial Least Squares (SEM-PLS) with the assistance of SmartPLS 4.0 software [38]. SEM-PLS was selected due to its capability to handle complex mediation models and suitability for relatively small sample sizes [39]. The analysis included path coefficient estimation, bootstrapping for hypothesis testing, and evaluation of R^2 (coefficient of determination), Q^2 (predictive relevance), and f^2 (effect size) to assess model fit and predictive power [40].

3. RESULTS AND DICUSSION

This study aimed to examine the influence of digital competence on the performance of civil servants (ASN) in public educational institutions, with employee engagement and interpersonal communication as mediating variables. Data obtained from 150 respondents civil servants in educational institutions throughout Riau were analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS) to evaluate both direct and indirect effects among digital competence, employee engagement, interpersonal communication, and performance [41]. The model estimation yielded strong internal consistency and convergent validity across constructs, allowing for valid interpretation of path coefficients. The conceptual framework of this study derived from the Technology Acceptance Model (TAM), Utrecht Work Engagement Theory, and communication behavior theory guided the structural analysis and illustrates the proposed direct and indirect relationships among the studied variables. This framework reflects a holistic approach to public sector digital transformation by integrating technical, psychological, and relational dimensions of civil servant performance. Figure 2 presents this framework visually.

Conceptual Framework: Digital Competence, Engagement, Communication, and Performance
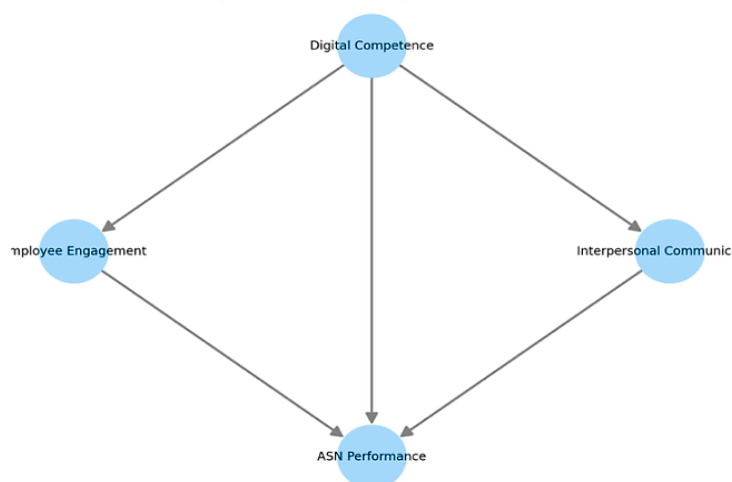

Figure 2. Conceptual Framework

Analisis SEM-PLS mengonfirmasi semua hubungan yang dihipotesiskan dengan koefisien jalur yang signifikan secara statistik. Kompetensi digital ditemukan memiliki efek langsung yang signifikan dan positif terhadap kinerja pegawai negeri sipil, dengan koefisien jalur sebesar 0,38 (p < 0,01). Dalam menjawab pertanyaan penelitian kedua dan ketiga, analisis tersebut juga mengungkapkan bahwa kompetensi digital secara signifikan memengaruhi keterlibatan karyawan (β = 0,52, p < 0,001) dan komunikasi interpersonal (β = 0,47, p < 0,001), yang menyoroti peran mendasarnya dalam membentuk dinamika internal organisasi. Lebih lanjut, kedua mediator—keterlibatan karyawan dan komunikasi interpersonal—memberikan efek langsung yang signifikan terhadap kinerja, dengan koefisien masing-masing β = 0,36 dan β = 0,33 (p < 0,01), sehingga menegaskan peran mediasi variabel-variabel ini dalam hubungan antara kompetensi digital dan kinerja. Tabel 1 merangkum temuan statistik untuk setiap hubungan dalam model.

Table 1. Path Coefficients and Significance Values

No	Relationship	Path Coefficient	p-Value	Significance
1	Digital Competence → ASN Performance	0.38	0.001	Yes
2	Digital Competence → Employee Engagement	0.52	0.000	Yes
3	Digital Competence → Interpersonal Communication	0.47	0.000	Yes
4	Employee Engagement → ASN Performance	0.36	0.002	Yes
5	Interpersonal Communication → ASN Performance	0.33	0.005	Yes

As shown in Table 1, all proposed relationships were statistically significant. To enhance interpretability, these relationships are further illustrated in Figure 2, which maps the structural paths of the model, reinforcing the role of engagement and communication as key mediators in translating digital competence into improved performance. These results are visualized in the following figure:
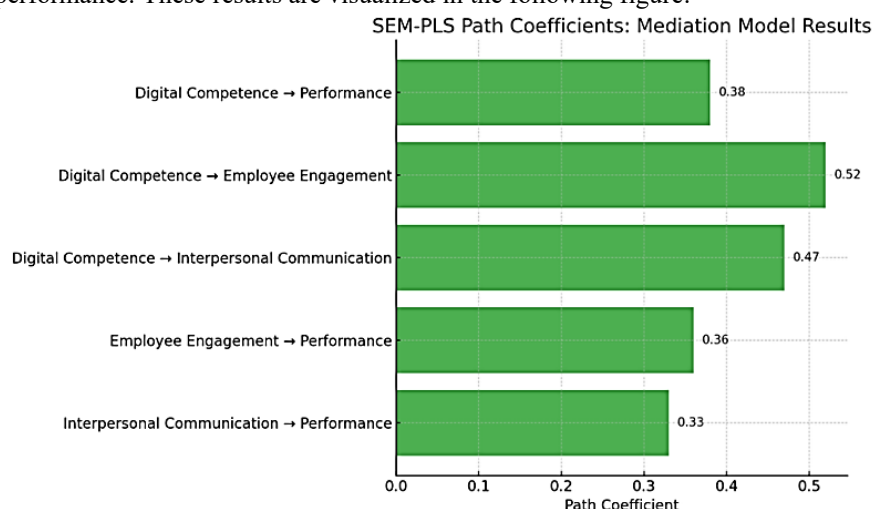

Figure 3. SEM-PLS Path Coefficients

The findings suggest that digital competence not only directly enhances civil servant performance, but also indirectly does so through improved psychological and relational pathways. This supports the conceptual framework wherein employee engagement and interpersonal communication act as mediating mechanisms, confirming the study's hypothesis [42]. The positive relationship between digital competence and performance aligns with prior literature [8], affirming that mastery of digital tools enables employees to execute tasks more efficiently and with higher quality. However, the additional finding that this influence is amplified through engagement and communicationenriches existing theories, particularly the Technology Acceptance Model (TAM) and Engagement Theory. These results suggest that technological proficiency alone is insufficient; psychological commitment and social interactionplay critical roles in operationalizing digital skills into actual performance outcomes [43]. From a practical perspective, the findings underscore that investments in digital infrastructure must be complemented by strategies that enhance engagement and foster effective communication. Engagement ensures that ASN feel a sense of purpose and dedication toward their digital tasks, while communication allows for knowledge-sharing, clarification, and collaborative problem-solving, particularly vital in public educational institutions where bureaucracy and team coordination are inherent.

This research contributes a novel perspective by integrating technical, psychological, and communicative dimensions within one explanatory model. While earlier studies may have observed isolated relationships, such as the impact of engagement on performance [44], [45] or the effect of communication quality on team output [46], [47], [48]. This study demonstrates their interconnectedness in a public sector education context in Indonesia, an area that remains underrepresented in digital transformation research [49], [35], [50]. Interestingly, the mediation analysis also supports the idea that digital competence promotes engagement and interpersonal communication, possibly because skilled ASN experience less frustration with tools and are more inclined to collaborate and take initiative. This self-efficacy likely translates into higher job satisfaction and relational fluency [51].

The implications of this study are both theoretical and practical. Theoretically, it supports the call for multi-dimensional frameworks in understanding digital transformation at the human level. Practically, it suggests that training programs for ASN should not only cover technical skills, but also include modules on team communication, psychological well-being, and motivational leadership. However, some limitations warrant consideration. First, the study is limited to public educational institutions in Riau, which may affect generalizability to other regions or sectors. Second, the cross-sectional design restricts conclusions about causality. Longitudinal studies could uncover how digital competence and engagement evolve over time with policy or technological change.

Future research could explore how organizational culture or leadership style moderates these relationships, or extend the model to include external factors such as citizen feedback or regulatory support. Comparative studies across provinces or between civil and private sectors may also yield valuable insights into digital readiness diversity within Indonesia.

4.   CONCLUSION

The rapid advancement of digital technology demands strong digital competence, particularly among civil servants in educational institutions. This study aims to examine the influence of digital competence on civil servants' performance, investigating both direct effects and indirect pathways through employee engagement and interpersonal communication. A quantitative survey method was employed involving 150 civil servants working in public educational institutions in Riau, Indonesia. Data were collected using structured questionnaires and analyzed using Structural Equation Modeling with Partial Least Squares (SEM-PLS). The results indicate that digital competence has a significant positive impact on performance, both directly and indirectly. Employee engagement and interpersonal communication serve as effective mediators that enhance the relationship between digital competence and performance. Civil servants who possess strong digital skills, combined with high engagement and effective interpersonal communication, demonstrate better job performance. This study highlights the essential role of digital competence in improving the performance of civil servants in educational institutions, not only through direct effects but more importantly through the mediating roles of employee engagement and interpersonal communication. These findings affirm that in the context of public sector digital transformation, technological readiness alone is insufficient. Instead, human-centric factors such as psychological commitment and effective communication are vital enablers that bridge digital capability with actual performance outcomes. More than just addressing the research questions, the findings also lead to the development of an integrative conceptual framework that synthesizes digital, psychological, and behavioral dimensions in a public organizational context. This model positions digital competence as the foundational driver, employee engagement as the affective-motivational link, and interpersonal communication as the relational mechanism that together culminate in improved performance. This theoretical synthesis contributes to the ongoing discourse on digital transformation in the public sector, particularly by emphasizing that successful transformation is anchored in a people-centered approach, not solely infrastructure or tools. In regions like Riau

Province, where digital infrastructure is growing but human readiness varies, this study offers both practical and theoretical insights. It underscores the need for strategies that cultivate digital mindsets, foster collaborative work cultures, and enhance civil servant engagement. As such, digital transformation should be redefined not merely as the implementation of technology, but as a strategic investment in human capacity positioning people as the most critical infrastructure for sustainable advancement in public education services.

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