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Digital Leadership and Digital Transformation in Enhancing Public Sector Employee Performance: The Mediating Roles of Digital Culture and Digital Competence

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ABSTRACT: Digital government initiatives increasingly require public organizations to align leadership, technological transformation, workplace culture, and employee capabilities. This study examines the direct effects of digital leadership and digital transformation on public sector employee performance and investigates the mediating roles of digital culture and digital competence. A quantitative explanatory survey was conducted among 374 employees of the Konawe Selatan Regency Government, Southeast Sulawesi, Indonesia. The research model was assessed using partial least squares structural equation modeling (PLS-SEM). The results reported in the dissertation indicate positive and statistically significant direct associations of digital leadership with digital culture ($\beta = 0.949$), employee performance ($\beta = 0.856$), and digital transformation ($\beta = 0.891$). Digital transformation was positively related to digital competence ($\beta = 0.892$), employee performance ($\beta = 0.605$), and digital culture ($\beta = 0.159$). Both digital culture ($\beta = 0.330$) and digital competence ($\beta = 0.415$) were positively associated with performance. The indirect effect through digital culture, calculated from the displayed constituent path coefficients, is $\beta = 0.313$ (0.949×0.330); its bootstrap significance requires verification. The dissertation reports a significant indirect effect through digital competence ($\beta = 0.370$; $p < 0.001$). These findings suggest that digitalization may influence employee performance through complementary organizational and individual mechanisms. The study contributes contextual evidence from subnational government in eastern Indonesia and underscores the importance of developing digital culture and employee competence alongside digital infrastructure. The significance of the recalculated cultural mediation pathway should be verified using the original SmartPLS bootstrap output.

1. INTRODUCTION

Digital government should be understood as an organizational change agenda rather than a discrete investment in hardware, software, or connectivity. Public institutions operate through formal procedures, statutory accountability, and interdependent administrative units. Consequently, the performance contribution of new digital applications depends on how leaders translate strategic objectives into practical routines and how employees develop confidence in the systems they are expected to use. This distinction is especially relevant when institutional digitalization indicators improve faster than evidence concerning individual work outcomes. The present analysis therefore separates technology-enabled organizational change from employee-level performance and considers the intervening organizational and individual mechanisms (Vial, 2019; Verhoef et al., 2021).

The study setting offers a useful opportunity to examine these issues beyond large metropolitan or private-sector organizations. Konawe Selatan Regency is a local government in Southeast Sulawesi, Indonesia, where employees work within

different administrative functions and service responsibilities. The dissertation describes an ongoing effort to digitize public administration alongside challenges related to employee readiness, inconsistent implementation across units, and the development of digital work practices. These observations motivate the research question but should not be interpreted as independently verified causal evidence. The survey model provides a more specific empirical test of the proposed relationships.

At the conceptual level, digital leadership concerns the ability to articulate a digital vision, facilitate adaptation, and coordinate people around technology-related change. Digital transformation refers to organizational changes in processes and services enabled by digital technologies. Digital culture captures shared expectations and practices concerning digital collaboration, learning, and innovation, whereas digital competence represents the individual knowledge and abilities required to use digital resources effectively. Employee performance is treated as a distinct outcome. Separating these constructs is important because the existence of digital tools alone does not demonstrate that employees are using them productively (Barney, 1991; Teece et al., 1997).

Digital transformation in public administration entails more than introducing new information systems. It requires coordinated changes in organizational routines, leadership behavior, employee capabilities, and service processes. The technology–organization–environment perspective emphasizes the interdependence of technical and organizational conditions, while resource-based and dynamic-capability approaches explain why the ability to mobilize and reconfigure resources matters for organizational outcomes [3, 30].

For local governments, the challenge is particularly salient because digital services must operate within established administrative procedures, uneven resource conditions, and diverse employee capabilities. Indonesia’s Electronic-Based Government System (SPBE) policy provides the institutional framework for public-sector digitalization [24]. The dissertation describes Konawe Selatan Regency as a setting with improving SPBE evaluations while identifying an unresolved question: whether progress in organizational digital systems translates into improved individual employee performance.

Digital leadership can provide direction and facilitate adoption, yet its effects may depend on the development of a digital-oriented culture and employee skills. Prior research on digital leadership, digital transformation, and performance provides relevant but context-dependent findings [27, 32, 16, 33]. Organizational culture theory suggests that shared assumptions and behavioral norms shape the implementation of organizational change [28]. Human capital theory highlights the productive value of individual capabilities [6].

The present study therefore investigates an integrated model comprising digital leadership, digital transformation, digital culture, digital competence, and employee performance in a regency government. Its contribution is to assess two distinct mediating pathways—an organizational-cultural pathway and an individual-competence pathway—within one public-sector setting. This context-specific test extends existing discussion of digital leadership and digital capabilities [19, 9, 14].

1.1 Conceptual framework and hypotheses

The resource-based view offers a rationale for examining complementary organizational resources rather than digital infrastructure in isolation. Technology investments may be broadly accessible, while leadership practices, organizational norms, and accumulated employee skills differ substantially across institutions. Dynamic capability arguments further suggest that organizations must repeatedly integrate and reconfigure resources when technological conditions change (Barney, 1991; Teece et al., 1997). In the public sector, this process also depends on established rules and public-service obligations, making the conversion of digital initiatives into individual performance a particularly important empirical question.

Two mediation mechanisms are distinguished. The first is cultural: leaders can encourage experimentation, knowledge sharing, and routine use of digital systems, which may support more effective performance. The second is capability-based: transformation initiatives can increase opportunities to acquire and apply digital competencies, thereby supporting employee performance. These paths are not conceptually interchangeable. A supportive culture does not automatically imply that employees possess the necessary skills, while technically competent employees may still face organizational barriers to applying their capabilities. Testing both paths can therefore clarify which mechanisms are most salient in the observed setting (Shin et al., 2023; Hair et al., 2021).

Digital leadership is expected to shape digital culture, facilitate transformation, and support employee performance. Digital transformation may strengthen employees’ digital competence and the workplace’s digital culture while improving

performance through more effective processes. Digital culture and competence are proposed as complementary mechanisms translating digital initiatives into individual outcomes [4, 28, 27, 25].

H1: Digital leadership → digital culture

H2: Digital leadership → employee performance

H3: Digital culture → employee performance

H4: Digital transformation → digital competence

H5: Digital transformation → employee performance

H6: Digital competence → employee performance

H7: Digital leadership → digital transformation

H8: Digital transformation → digital culture

H9: Digital leadership → digital culture → employee performance

H10: Digital transformation → digital competence → employee performance

2. MATERIALS AND METHODS

2.1 Study setting and research design

The unit of analysis is the individual government employee, while the institutional context is the Konawe Selatan Regency Government. The cross-sectional design permits estimation of associations among measured constructs at the time of the survey. It does not establish temporal precedence or rule out alternative explanations, such as pre-existing digital readiness or differences between organizational units. Accordingly, the terms “effect” and “mediation” in the model refer to statistically specified relationships rather than definitive experimental causal effects. The dissertation provides the substantive research setting and reports 374 respondents; any additional claims about sampling frames or response rates should be checked against the original field records before publication.

The study used a quantitative, explanatory cross-sectional survey of employees working in the Konawe Selatan Regency Government, Southeast Sulawesi, Indonesia. The dissertation reports a target population of 5,640 employees and an analytical sample of 374 respondents. The data were collected using a structured questionnaire. The specific fieldwork dates and institutional ethics approval details require confirmation before journal submission.

2.2 Measurement and data collection

The distinction between the two mediators is also important for measurement interpretation. Digital culture concerns collective patterns of behavior and expectations as perceived by respondents, whereas digital competence concerns the employee’s capacity to perform digital tasks. Because both are assessed through an individual survey, digital culture scores should be interpreted as employee perceptions of workplace culture rather than an independently aggregated organization-level measure. This distinction limits the strength of claims about organizational culture across separate departments. The reported measurement statistics are presented in the results without reconstructing missing item-level observations.

Five latent constructs were measured: digital leadership (X1), digital transformation (X2), digital culture (Y1), digital competence (Y2), and employee performance (Y3). The dissertation describes multi-item questionnaires scored on five-point agreement scales. Construct-level measurement statistics are reproduced from the dissertation, rather than estimated anew. The study draws on organizational culture, resource-based, and digital leadership literature to motivate its constructs [28, 3, 22].

2.3 Statistical analysis

The assessment of the measurement model and structural model serves different purposes. Internal consistency statistics evaluate the coherence of indicators assigned to each construct, while average variance extracted summarizes convergent validity. Structural path coefficients describe the direction and magnitude of conditional relationships in the specified model. Coefficients of determination summarize explained variation in endogenous constructs. A mediation claim additionally

requires an estimate of the specific indirect effect and its sampling uncertainty, ideally from bootstrapped confidence intervals rather than the significance of constituent paths alone (Hair et al., 2021; Hayes, 2018).

For transparency, the article preserves the coefficients reported in the dissertation except where an explicitly documented arithmetic discrepancy is identified. In the digital leadership–digital culture–performance pathway, multiplying the displayed component coefficients yields 0.31317, or 0.313 after rounding, rather than the separately reported value of 0.266. This arithmetic reconstruction does not replace a SmartPLS bootstrap estimate: the standard error, t statistic, p value, and confidence interval for the reconstructed indirect coefficient cannot be inferred from multiplication alone. The affected inference is therefore marked for confirmation rather than presented as independently verified.

The dissertation applied partial least squares structural equation modeling (PLS-SEM), including assessment of outer loadings, Cronbach’s alpha, composite reliability, average variance extracted (AVE), coefficients of determination, and bootstrapped direct and indirect effects. The reporting approach follows established PLS-SEM and mediation guidance [11, 26, 13]. The present manuscript transcribes the reported results; it does not claim an independent reanalysis of the underlying data.

3. RESULTS AND DISCUSSION

3.1 Descriptive statistics and measurement model

Descriptive construct means are useful for understanding respondents’ overall assessments, but they are not a substitute for tests of the hypothesized structural relationships. High mean ratings can coexist with meaningful differences among respondents and do not establish that a construct is a causal driver of performance. The interpretation of mean scores also depends on the underlying response scale and indicator coding. Accordingly, the descriptive results in Table 1 are considered alongside the reliability and validity evidence in Table 2 rather than used as standalone evidence of hypothesis support.

Composite reliability and average variance extracted address two complementary questions: whether the indicators exhibit adequate shared consistency and whether the construct explains a sufficient portion of its indicator variance. Although the dissertation reports favorable values for these statistics, complete assessment of discriminant validity would also require the relevant interconstruct comparisons, such as heterotrait–monotrait ratios, when available. The present article does not invent missing diagnostic results. Any submission version should be reconciled with the original measurement output to ensure that all claims about validity are traceable.

Table 1. Mean Scores of Study Constructs

Construct	Code	Mean	Interpretation
Digital leadership	X1	4.19	Good
Digital transformation	X2	4.17	Good
Digital culture	Y1	4.18	Good
Digital competence	Y2	4.19	Good
Employee performance	Y3	4.19	Good

Source: Processed data, 2026

Table 2. Internal Consistency and Convergent Validity

Construct	Cronbach α	Composite reliability	AVE
Digital leadership	0.922	0.939	0.721
Digital transformation	0.860	0.915	0.781
Digital culture	0.922	0.937	0.680
Digital competence	0.902	0.927	0.718
Employee performance	0.945	0.953	0.694

Source: Processed data, 2026

All reported composite reliability estimates exceeded 0.90 and AVE values exceeded 0.50, suggesting adequate internal consistency and convergent validity in the reported measurement model [11]. These statistics do not by themselves establish discriminant validity; HTMT or equivalent results should be added if available.

3.2 Structural model

The path coefficients in Table 4 should be read as estimates conditional on the other relationships included in the model. A positive coefficient means that higher values of the predictor are associated with higher values of the outcome within the specified structural system; it does not necessarily indicate that an intervention increasing that predictor would produce the same magnitude of change. This distinction is relevant for policy recommendations because employee performance may also depend on work design, resources, task complexity, and institutional constraints that are not fully represented by the five constructs.

The reported explained-variance statistics in Table 3 offer a complementary perspective on model fit at the endogenous-construct level. However, explained variance is not evidence that all relevant theoretical mechanisms have been included, nor does it demonstrate out-of-sample predictive accuracy. Predictive assessment would require an additional procedure and its corresponding results. The article therefore limits its conclusions to the reported model estimates and emphasizes the need for replication across departments and local governments.

Table 3. Explained Variance of Endogenous Constructs

Endogenous construct	R ²	Adjusted R ²
Digital culture	0.906	0.905
Employee performance	0.891	0.890
Digital competence	0.795	0.794

Source: Processed data, 2026

Table 4. Direct Path Coefficients and Hypothesis Tests

Hypothesis	Path	β	t statistic	p value
1	DL $\rightarrow$ DC	0.949	110.815	<0.001
2	DL $\rightarrow$ EP	0.856	36.477	<0.001
3	DC $\rightarrow$ EP	0.330	4.341	<0.001
4	DT $\rightarrow$ DComp	0.892	50.844	<0.001
5	DT $\rightarrow$ EP	0.605	13.463	<0.001
6	DComp $\rightarrow$ EP	0.415	6.932	<0.001
7	DL $\rightarrow$ DT	0.891	48.610	<0.001
8	DT $\rightarrow$ DC	0.159	3.743	<0.001

Source: Processed data, 2026.

The dissertation reports statistically significant positive effects for all eight direct paths. The largest reported direct coefficient connects digital leadership and digital culture ($\beta = 0.949$), followed by digital leadership and digital transformation ($\beta = 0.891$). Digital transformation has a smaller positive association with digital culture ($\beta = 0.159$). These differences suggest that shared digital norms may be more closely linked to leadership practices than to technological change alone. Because several coefficients are unusually large, potential construct overlap and multicollinearity warrant additional checks before submission.

3.3 Mediation analysis

The interpretation of mediation requires particular care because the study uses a single cross-sectional survey. The proposed indirect pathways are theoretically meaningful and statistically testable, but the temporal sequence implied by mediation is not

observed directly. Moreover, the digital leadership pathway contains a documented inconsistency between the reported indirect coefficient and the product of the displayed component paths. The corrected product is presented transparently as an arithmetic value; it is not assigned an unverified bootstrap significance level. This distinction prevents a potentially misleading claim that the revised coefficient has passed the same inferential test as the original estimate (Hayes, 2018).

The competence pathway should likewise be interpreted with attention to the distinction between technological implementation and human capability development. A positive transformation-to-competence association is compatible with employees learning through exposure to new systems, training, or changed workflows. Yet the study design does not identify which of these processes was most influential. Future research could measure training intensity, application usage, and learning opportunities separately to determine how transformation efforts are converted into usable skills.

Table 5. Specific Indirect Effects

Hypothesis	Mediating path	β indirect	t statistic	p value	Interpretation
1	DL $\rightarrow$ DC $\rightarrow$ EP	0,266	4,025	0,000	Partial (reported)
2	DT $\rightarrow$ DComp $\rightarrow$ EP	0.370	6.979	0.001	Partial (reported)

Source: Processed data, 2026

The results presented in Table 5 indicate that digital culture mediates the relationship between digital leadership and employee performance, with a reported indirect effect coefficient of 0.266, a t-statistic of 4.025, and a p-value below 0.001. Similarly, digital competence significantly mediates the relationship between digital transformation and employee performance, with an indirect effect coefficient of 0.370, a t-statistic of 6.979, and a p-value below 0.001. These findings suggest that digital culture and digital competence serve as important mediating mechanisms in enhancing employee performance within local government institutions. Digital competence demonstrates a larger reported indirect effect than digital culture, highlighting the importance of employees' digital capabilities in translating digital transformation into improved performance. Both relationships are reported as partial mediation, although this classification requires confirmation of the corresponding direct effects.

3.4 Discussion and theoretical implications

The theoretical contribution of the model lies in linking leadership and transformation processes to employee performance through two distinct mediating domains. Digital culture represents a shared social context that can make digital work practices legitimate and routine, while digital competence represents an individual capability that enables employees to execute tasks with digital tools. Considering these domains together avoids reducing transformation to a purely technological phenomenon and aligns with broader accounts of organizational adaptation (Vial, 2019; Verhoef et al., 2021).

The results should also be situated within the particular governance environment. Unlike private firms, local government organizations face legal mandates, public accountability, and the need for consistent service provision across administrative units. Consequently, leadership may be expressed through coordination, resource prioritization, and support for learning rather than through unrestricted strategic experimentation. These conditions offer a plausible explanation for why digital initiatives may produce different employee-level outcomes across public organizations. The present data, however, do not support direct comparisons with other jurisdictions, so this interpretation remains a theoretical proposition for further testing.

Finally, the model suggests a distinction between introducing a new digital process and institutionalizing a new way of working. Introducing an application can occur relatively quickly, while building shared norms and employee competence generally requires repeated practice, guidance, and feedback. A government may therefore show progress on administrative digitalization while still needing to strengthen its workforce's ability to convert those changes into service outcomes. This distinction motivates longitudinal research that measures both system adoption and actual work performance over time.

The positive relationship between digital leadership and performance is compatible with the view that leaders support technology-related change by providing direction, facilitating coordination, and creating conditions for employee adaptation [16, 27, 19, 31]. The strong leadership–culture coefficient points to the potential importance of leaders as visible exemplars of digitally enabled routines, although its magnitude also raises measurement concerns. These findings should be interpreted as associations in cross-sectional survey data rather than definitive causal effects.

The reported positive association between digital transformation and digital competence suggests that changes to processes and tools may accompany employees' acquisition and use of digital capabilities. Digital competence is also positively associated with performance, consistent with human capital and social cognitive perspectives [6, 4, 23, 20]. The indirect path through competence is particularly relevant for local government organizations seeking to translate technology investments into day-to-day administrative effectiveness.

The mediating role of digital culture adds an organizational explanation beyond technology adoption. Employees may use digital tools more effectively where information sharing, experimentation, and digital collaboration become accepted working practices. This interpretation aligns with organizational culture theory and research on digital culture [28, 29, 1, 25]. The combined model offers a basis for investigating how organizational and individual mechanisms operate in parallel, but additional longitudinal and multi-site evidence is required to establish the temporal ordering of these relationships.

3.5 Practical implications and limitations

Practical interventions should address the two mechanisms in parallel. Leadership development can focus on articulating priorities, modeling responsible use of digital systems, and encouraging collaboration between departments. Cultural initiatives can make knowledge sharing, peer assistance, and continuous improvement visible parts of everyday work. Competence development should be linked to actual job tasks and evaluated through demonstrated skills rather than attendance at training alone. These recommendations follow the structure of the proposed model but should be treated as implementation priorities for evaluation, not as proven causal effects of a particular intervention.

Several limitations delimit the interpretation of the findings. First, cross-sectional data restrict causal inference and the ability to establish temporal order. Second, self-reported measures may share method-related variance. Third, the single-regency setting limits external generalization. Fourth, the availability of summarized rather than full underlying statistical output constrains independent validation of some measurement and mediation diagnostics. Future studies should combine multi-source performance measures, time-separated observations, and replication in other local governments. They should also report complete bootstrap confidence intervals for indirect effects and assess the sensitivity of the model to alternative specifications.

For the Konawe Selatan Regency Government, the findings suggest that digitalization policies should combine leadership development, interoperable digital workflows, peer learning, and role-specific employee training. Managers should assess not only adoption of digital platforms but also actual use, competence development, service responsiveness, and employee performance. The study is limited by its single-regency setting, self-reported cross-sectional measures, and the absence of raw-data verification in this manuscript preparation. The unusually high path estimates, potential common-method bias, discriminant validity, collinearity diagnostics, and the mediation coefficient inconsistency should be reviewed against the original analysis files.

4. CONCLUSION

Based on the results documented in the dissertation, digital leadership and digital transformation were positively associated with public sector employee performance in Konawe Selatan Regency. Digital culture and digital competence were also positively related to performance and were reported to mediate the respective leadership–performance and transformation–performance relationships. The findings support an integrated approach to digital government in which leadership, institutional culture, and employee capabilities develop alongside digital infrastructure. Future studies should replicate the model across local governments and use longitudinal designs and objective performance indicators.

Additional scholarship informs the contextual interpretation of the model, including public-sector transformation, digital skills development, leadership, and organizational learning [2, 5, 7, 8, 10, 12, 15, 17, 18, 21, 21, 32]. These studies provide conceptual comparison rather than evidence from the current sample.

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AUTHOR CONTRIBUTIONS

ST Chadidjah: conceptualization, investigation, original draft. Sudirman Zaid: supervision, conceptual review. Laode Asfahyadin Aliddin: methodological supervision and review. Wahyuniati Hamid: supervision and manuscript review.

CONFLICT OF INTEREST

The authors should confirm whether any competing interests exist before submission.

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