

DIGITAL LEADERSHIP AND ORGANIZATIONAL AGILITY: DRIVING GOVERNMENT PERFORMANCE THROUGH INNOVATION CAPABILITY

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Abstract

This study investigates how Digital Leadership, Organizational Agility, and Technological Innovation shape Government Performance, while considering Leadership Enhancement and Digital Innovation as intervening mechanisms. Drawing on Dynamic Capability Theory, the study argues that organizational capabilities generate performance improvements primarily through processes of capability transformation, rather than solely through direct relationships between organizational capabilities and performance. A quantitative explanatory research design was adopted, based on survey responses from 300 civil servants holding managerial positions within local government institutions in North Aceh Regency, Bireuen Regency, and Lhokseumawe City, Indonesia. The hypothesized relationships were empirically assessed using Structural Equation Modelling–Partial Least Squares (SEM-PLS). The empirical results indicate that Digital Innovation constitutes the strongest determinant of Government Performance, as reflected in both its largest direct effect and highest effect size. Technological Innovation likewise exerts a statistically significant direct influence on Government Performance. However, neither Digital Leadership nor Organizational Agility demonstrates a direct effect on Government Performance; instead, both significantly contribute to Digital Innovation and Leadership Enhancement. The mediation results further establish Digital Innovation as the principal pathway through which Digital Leadership, Organizational Agility, and Technological Innovation translate into improved Government Performance. Leadership Enhancement also mediates these relationships, although its mediating contribution is comparatively weaker. Taken together, the findings provide support for fourteen of the seventeen hypothesized relationships, whereas three hypotheses are not supported. The study advances the literature on digital government and strategic management by broadening the application of Dynamic Capability Theory to the public-sector context. The findings indicate that organizational capabilities contribute to superior government performance mainly when they are converted into innovation-driven transformation processes. From a practical perspective, policymakers should place greater emphasis on developing digital innovation, strengthening digital leadership capabilities, fostering organizational agility, and maximizing the potential of technological innovation as complementary pathways for improving government performance and creating greater public value.

Keywords: Digital Leadership; Organizational Agility; Technological Innovation; Leadership Enhancement; Digital Innovation; Government Performance.

1. Introduction

The accelerating development of digital technologies has reshaped the way governments function, provide public services, and engage with citizens. Governments worldwide are increasingly required to enhance efficiency, transparency, responsiveness, and accountability through digital transformation initiatives (Dwivedi et al., 2021; Haug et al., 2023; Guenduez, 2025). In this context, digital transformation extends beyond the adoption of technological solutions and represents a broader process of organizational change that depends on leadership capabilities, innovation capacity, and organizational adaptability (Alomari & Sandhu, 2024; Shamayleh & Nurgabdeshev, 2025). This transformation places greater demands on governments to cultivate organizational capabilities that allow public

institutions to adapt effectively to rapidly evolving technological, economic, and societal conditions (Juknevičienė et al., 2025). Government performance constitutes a central measure of public-sector effectiveness. Public institutions are considered high performing when they are capable of delivering quality services, maintaining accountability, managing public resources efficiently, and generating meaningful public value for citizens (Cepiku et al., 2021; Lee, 2022; Popa et al., 2024). Yet, significant investments in information technology and digital government initiatives have not necessarily resulted in corresponding improvements in organizational performance across many public institutions (Nurdin et al., 2023; Guenduez, 2025). The persistence of this gap indicates that the mere implementation or adoption of digital technologies does not automatically translate into better government performance. Rather, the organizational capabilities surrounding digital transformation may determine whether technological investments can be effectively converted into improved institutional outcomes. An expanding body of research emphasizes Digital Leadership as a critical organizational capability for managing digital transformation and facilitating organizational change (Dwivedi et al., 2021; Elia et al., 2022; Yusuf et al., 2023; Alomari & Sandhu, 2024). Digital leaders are instrumental in establishing strategic digital directions, cultivating innovation, supporting organizational learning, and helping employees navigate technological transitions (Ren et al., 2025). Prior research has linked effective digital leadership to stronger innovation capabilities, greater organizational resilience, and improved service quality across both private- and public-sector settings (Elia et al., 2022; Juknevičienė et al., 2025). However, evidence concerning whether Digital Leadership directly improves organizational performance remains inconclusive, particularly in the public-sector environment. This inconsistency indicates the need to examine the mechanisms through which digital leadership may translate into superior government performance rather than assuming that its effects occur exclusively through a direct pathway.

Beyond the role of leadership, Organizational Agility has increasingly been recognized as a vital organizational capability for navigating dynamic and uncertain environments. It reflects an organization's capacity to identify and interpret changes in its external environment, respond promptly to emerging challenges, and adjust internal processes in accordance with evolving stakeholder expectations (AlNuaimi et al., 2022; Ludviga, 2023). Evidence from previous research indicates that organizations characterized by greater agility are more capable of stimulating innovation, enhancing the quality of managerial decision-making, and sustaining operational effectiveness amid changing circumstances (Morton, 2023; ElBadawy, 2024). Despite these insights, the extent to which Organizational Agility translates into improved Government Performance remains inadequately established, especially within public-sector institutions in developing countries.

Technological Innovation constitutes another important organizational capability in an increasingly digital environment. It encompasses the adoption, development, and utilization of emerging technologies to improve organizational processes and enhance the delivery of services (Kim, 2022; Zhang & Li, 2025). Prior research indicates that technological innovation can contribute to greater operational efficiency, facilitate digital transformation, and reinforce organizational competitiveness (Hong et al., 2022; Popa et al., 2024). In the public sector, technological innovation has likewise been linked to improvements in public service quality, administrative efficiency, and citizen satisfaction (Nurdin et al., 2023; Guenduez, 2025). However, the mechanisms through which technological innovation is converted into higher Government Performance through processes of organizational transformation remain insufficiently explored.

The present study draws upon Dynamic Capability Theory (Teece, 2007; Teece, 2018), which posits that superior organizational performance depends not simply on the ownership of valuable resources but, more importantly, on an organization's capacity to integrate, reconfigure, and transform those resources in response to changes in its external environment. Within this theoretical perspective, Digital Leadership, Organizational Agility, and Technological Innovation are conceptualized as strategic organizational capabilities. Nevertheless, possessing these capabilities does not inherently ensure improved performance. Their contribution to organizational outcomes depends on the extent to which they are translated into concrete organizational actions and innovation outcomes capable of generating value.

Although digital transformation in government organizations has attracted increasing scholarly interest, significant gaps remain in the existing literature. First, prior research has largely treated Digital Leadership, Organizational Agility, and Technological Innovation as independent variables that directly predict organizational performance (AlNuaimi et al., 2022; Kim, 2022; Yusuf et al., 2023). Consequently, comparatively limited attention has been devoted to understanding the capability-transformation processes through which these organizational capabilities are converted into Government Performance. Second, empirical research examining Leadership Enhancement and Digital Innovation as mediating mechanisms remains limited, particularly within public-sector organizations (Hong et al., 2022;

Ren et al., 2025). Third, the existing empirical evidence is concentrated largely in developed-country contexts, leaving relatively limited evidence concerning local government institutions in developing countries (Guenduez, 2025; Zhang & Li, 2025). In response to these research gaps, this study develops a model that explains Government Performance through the mediating roles of Leadership Enhancement and Digital Innovation in the relationships involving Digital Leadership, Organizational Agility, and Technological Innovation. Leadership Enhancement captures the process by which organizations develop stronger leadership capabilities and improve managerial effectiveness, whereas Digital Innovation encompasses the development and implementation of novel digital services, processes, and governance solutions. By incorporating these two mediating mechanisms within a single analytical framework, the study offers a more integrated explanation of how strategic organizational capabilities are transformed into improved performance outcomes in the public sector. The novelty of this study extends beyond the simple integration of several constructs into a unified conceptual framework. Its primary contribution lies in proposing and empirically testing a capability-transformation mechanism in which Leadership Enhancement and Digital Innovation serve as mediating pathways through which organizational capabilities are translated into Government Performance. More specifically, the study conceptualizes Digital Innovation as a strategic mechanism of capability transformation, enabling Digital Leadership, Organizational Agility, and Technological Innovation to be converted into enhanced public value and improved government performance. This approach broadens the application of Dynamic Capability Theory to the digital government context while providing deeper insight into how organizational capabilities are transformed into tangible outcomes within public-sector institutions. Building on this perspective, the study examines both the direct and indirect relationships between Digital Leadership, Organizational Agility, Technological Innovation, and Government Performance. It specifically investigates whether Leadership Enhancement and Digital Innovation mediate the effects of these organizational capabilities on Government Performance.

2.1 Dynamic Capability Theory

This study adopts Dynamic Capability Theory (DCT) as its principal theoretical foundation for explaining how organizations develop, integrate, and reconfigure their resources in response to changing environmental conditions (Teece, 2007). The theory emphasizes that dynamic capabilities enable organizations to identify emerging opportunities, capitalize on strategic possibilities, and transform existing resources into improved performance outcomes (Teece, 2018). Within the context of digital transformation, this perspective is particularly relevant to public organizations that must continuously respond to technological disruption, evolving citizen expectations, and increasing demands for transparency and accountability.

From the DCT perspective, Digital Leadership, Organizational Agility, and Technological Innovation can be understood as organizational capabilities that facilitate adaptation and transformation. Nevertheless, the possession of such capabilities does not necessarily translate directly into superior performance. Their contribution to organizational outcomes depends on the ability to mobilize and transform these capabilities into concrete organizational actions and value-generating outcomes. Accordingly, this study conceptualizes Leadership Enhancement and Digital Innovation as capability-transformation mechanisms through which organizational capabilities are translated into improved Government Performance. This conceptualization places the transformation process, rather than direct capability effects alone, at the center of explaining how public organizations convert their strategic capabilities into performance outcomes.

2.2 Digital Leadership

Digital Leadership encompasses the capacity of organizational leaders to strategically leverage digital technologies to direct organizational transformation, stimulate innovation, and enhance performance. Alomari and Sandhu (2024) characterize digital leadership as the alignment of digital strategies with organizational objectives, accompanied by the cultivation of collaboration and organizational learning. In public-sector environments, this capability becomes increasingly important because technological disruption and environmental uncertainty require leaders to guide organizations through continuous adaptation (Juknevičienė et al., 2025). Ren et al. (2025) further suggest that digital leadership contributes to the development of dynamic capabilities that enable organizations to pursue service innovation and strengthen organizational effectiveness. Thus, digital leadership extends beyond technological proficiency and encompasses the strategic and managerial capacity required to translate digital resources into organizational transformation.

2.3 Organizational Agility

Organizational Agility represents an organization's capacity to detect environmental changes, respond to emerging conditions, and rapidly adjust its strategies, processes, and resources accordingly. This capability is reflected in organizational flexibility, responsiveness, and continuous learning, which collectively enable organizations to cope with changing circumstances and emerging challenges (Ludviga, 2023). Morton (2023) highlights the contribution of organizational agility to faster decision-making and the reconfiguration of organizational resources, while AlNuaimi et al. (2022) emphasize its importance in supporting digital transformation and innovation. Within the public sector, organizational agility is particularly relevant because government institutions must continuously accommodate changing citizen expectations, emerging policy demands, and evolving environmental conditions. Consequently, greater organizational agility can strengthen the capacity of government organizations to adapt their operations and responses in ways that remain aligned with changing public needs.

2.4 Technological Innovation

Technological Innovation refers to an organization's capacity to adopt, implement, and utilize emerging technologies to enhance internal processes, service delivery, and operational efficiency. Within government institutions, this capability may be manifested through the deployment of digital platforms, artificial intelligence, big data analytics, and cloud-based systems as instruments for improving administrative and service functions. Kim (2022) argues that technological innovation can strengthen organizational effectiveness by enhancing information-processing capabilities and supporting more effective decision-making. Consistent with this view, Zhang and Li (2025) demonstrate that technological innovation can reinforce digital government initiatives while contributing to the modernization of public-sector institutions. Thus, technological innovation represents not merely the introduction of new technological tools but also the organizational capacity to employ those technologies in ways that improve institutional processes and public service delivery.

2.5 Leadership Enhancement

Leadership Enhancement refers to deliberate and systematic efforts to develop leadership capabilities so that leaders are better equipped to respond to environmental changes and guide organizational transformation, particularly in the context of digitalization. In the public sector, leadership enhancement provides an important foundation for developing digital literacy, adaptive competencies, and the leadership capacity required to manage increasingly complex technological environments (OECD, 2023). Abdi et al. (2024) show that ethical and empowerment-oriented leadership approaches can strengthen organizational effectiveness by fostering managerial capacity. Similarly, Elia et al. (2022) emphasize that strengthening digital leadership can facilitate collaboration and stimulate innovation, while Dwivedi et al. (2021) underscore the importance of leadership capability in enabling successful digital government transformation. Accordingly, Leadership Enhancement can be viewed as an organizational transformation mechanism through which leadership capabilities are strengthened and subsequently mobilized to support innovation, adaptation, and improved organizational outcomes.

2.6 Digital Innovation

Digital Innovation refers to the use of digital technologies to develop new services, processes, and governance solutions that generate greater public value. Hong et al. (2022) identify digital innovation as an important driver of efficiency and transparency in public organizations. In addition, Guenduez (2025) shows that digital innovation can strengthen public trust by enabling more responsive and data-driven public services. Haug et al. (2023) further demonstrate its contribution to evidence-based decision-making and faster policy implementation. Digital innovation can also encourage citizen participation and contribute to improvements in government services (Nurdin et al., 2023).

2.7 Government Performance

Government Performance reflects the extent to which public organizations achieve policy objectives, deliver effective public services, and contribute to societal welfare. Lee (2022) argues that the adoption of digital technologies increasingly shapes government performance by improving organizational responsiveness and service quality. Innovation also plays an important role in strengthening transparency and accountability within public-sector organizations (Popa et

al., 2024). ElBadawy (2024) similarly finds that organizational adaptability supports performance improvement, while Cepiku et al. (2021) emphasize the contribution of public management reforms to stronger government outcomes.

2.8 Conceptual Distinction Between Constructs

Although they are closely related, Technological Innovation and Digital Innovation represent distinct constructs. Technological Innovation concerns the adoption and implementation of new technologies within an organization. Digital Innovation, by contrast, focuses on using these technologies to develop new services, processes, and forms of public value. In this sense, Technological Innovation represents the technological input, whereas Digital Innovation reflects the resulting innovation through the application of technology. Digital Leadership and Leadership Enhancement are likewise conceptually different. Digital Leadership concerns the competencies, behaviors, and strategic vision required to lead digital transformation. Leadership Enhancement refers to the process and outcomes of strengthening leadership capacity through learning, empowerment, and capability development. Thus, Digital Leadership represents an existing leadership capability, whereas Leadership Enhancement captures the process of developing and strengthening that capability within the organization.

2.9 Hypothesis Development

2.9.1 Digital Leadership and Government Performance

Digital Leadership enables organizations to formulate digital strategies, support innovation initiatives, and improve organizational effectiveness. Leaders with strong digital competencies are better positioned to align technological resources with organizational objectives and facilitate digital transformation. Previous studies indicate that digital leadership contributes positively to organizational performance by improving decision-making quality, responsiveness, and service delivery (Yusuf et al., 2023; Ren et al., 2025). Therefore, the following hypothesis is proposed:

H1: Digital Leadership has a significant effect on Government Performance.

2.9.2 Digital Leadership and Digital Innovation

Digital leaders encourage experimentation, learning, and technology adoption, thereby creating conditions that support innovation. Their strategic vision and commitment to digital transformation facilitate the development of innovative public services and organizational processes (Hong et al., 2022; Juknevičienė et al., 2025). Therefore, the following hypothesis is proposed:

H2: Digital Leadership has a significant effect on Digital Innovation.

2.9.3 Digital Leadership and Leadership Enhancement

Digital Leadership can contribute to the development of leadership capacity within organizations. Through mentoring, empowerment, knowledge sharing, and continuous learning, digital leaders can strengthen the adaptive competencies needed to manage organizational change in the digital era (OECD, 2023; Abdi et al., 2024). Based on this reasoning, the following hypothesis is proposed:

H3: Digital Leadership has a significant effect on Leadership Enhancement.

2.9.4 Organizational Agility and Government Performance

Organizational Agility enables organizations to respond effectively and rapidly to changes in their environment and evolving stakeholder demands. Organizations with greater agility are better able to adapt their processes, respond to uncertainty, and sustain performance under changing conditions (Ludviga, 2023; ElBadawy, 2024). Accordingly, the following hypothesis is proposed:

H4: Organizational Agility has a significant effect on Government Performance.

2.9.5 Organizational Agility and Digital Innovation

Organizational Agility can support Digital Innovation by enabling rapid experimentation, flexible allocation of resources, and collaborative approaches to problem-solving. These capabilities allow organizations to adjust more quickly to emerging technological opportunities and develop innovative digital solutions. Previous research indicates

that organizational agility provides favorable conditions for digital innovation and broader organizational transformation (AlNuaimi et al., 2022; Morton, 2023). Therefore, the following hypothesis is proposed:

H5: Organizational Agility has a significant effect on Digital Innovation.

2.9.6 Organizational Agility and Leadership Enhancement

Organizations with greater agility tend to foster continuous learning, adaptability, and leadership development. By enabling managers to respond flexibly to changing conditions, such environments can strengthen managerial competencies and improve leadership effectiveness in navigating organizational change (OECD, 2023; Abdi et al., 2024). Therefore, the following hypothesis is proposed:

H6: Organizational Agility has a significant effect on Leadership Enhancement.

2.9.7 Technological Innovation and Government Performance

Technological Innovation can improve operational efficiency, service quality, and organizational effectiveness by enabling public organizations to adopt more effective technologies and work processes. The use of advanced technologies can strengthen organizational capabilities and, consequently, contribute to improved performance outcomes (Kim, 2022; Popa et al., 2024). Therefore, the following hypothesis is proposed:

H7: Technological Innovation has a significant effect on Government Performance.

2.9.8 Technological Innovation and Digital Innovation

Technological Innovation provides the technological foundation and resources required to develop and implement Digital Innovation. The adoption of emerging technologies creates new opportunities for organizations to redesign processes, develop digital services, and introduce innovative solutions to organizational and public-service needs (Zhang & Li, 2025; Kim, 2022). Therefore, the following hypothesis is proposed:

H8: Technological Innovation has a significant effect on Digital Innovation.

2.9.9 Technological Innovation and Leadership Enhancement

The adoption and implementation of new technologies require leaders to acquire new competencies and adapt their managerial approaches to changing organizational conditions. Technological Innovation can therefore stimulate leadership development by creating new learning requirements and strengthening managers' capacity to lead technology-driven organizational change (OECD, 2023; Abdi et al., 2024). Therefore, the following hypothesis is proposed:

H9: Technological Innovation has a significant effect on Leadership Enhancement.

2.9.10 Leadership Enhancement and Government Performance

Leadership Enhancement can strengthen Government Performance by improving managerial effectiveness, employee engagement, and the organization's capacity to implement strategic initiatives. Stronger leadership capabilities enable managers to translate organizational strategies into effective actions and coordinate resources toward desired institutional outcomes (Abdi et al., 2024; OECD, 2023). Therefore, the following hypothesis is proposed:

H10: Leadership Enhancement has a significant effect on Government Performance.

2.9.11 Digital Innovation and Government Performance

Digital Innovation can strengthen Government Performance by improving operational efficiency, transparency, service quality, and citizen engagement. By enabling public organizations to redesign services and administrative processes, digital innovation can enhance institutional responsiveness and create greater public value. Previous research provides empirical support for a positive relationship between Digital Innovation and public-sector performance (Hong et al., 2022; Guenduez, 2025). Therefore, the following hypothesis is proposed:

H11: Digital Innovation has a significant effect on Government Performance.

2.9.12 The Mediating Role of Leadership Enhancement

Dynamic Capability Theory suggests that organizational capabilities do not necessarily influence performance through direct relationships alone. Their effects may be realized through intermediate organizational mechanisms that enable capabilities to be developed, mobilized, and transformed into organizational outcomes. Leadership Enhancement

represents one such mechanism, through which Digital Leadership, Organizational Agility, and Technological Innovation may contribute indirectly to Government Performance by strengthening leadership capacity and managerial effectiveness (Ren et al., 2025; OECD, 2023). Based on this theoretical reasoning, the following mediation hypotheses are proposed:

H12: Leadership Enhancement significantly mediates the effect of Digital Leadership on Government Performance.

H13: Leadership Enhancement significantly mediates the effect of Organizational Agility on Government Performance.

H14: Leadership Enhancement significantly mediates the effect of Technological Innovation on Government Performance.

2.9.13 The Mediating Role of Digital Innovation

Digital Innovation can function as a transformation mechanism through which organizational capabilities are converted into improved performance outcomes. Digital Leadership, Organizational Agility, and Technological Innovation provide the capabilities and conditions needed to develop and implement innovative digital services, processes, and governance solutions. Through these innovation outcomes, organizational capabilities can contribute to Government Performance indirectly rather than solely through direct effects (Guenduez, 2025; Hong et al., 2022). Based on this reasoning, the following hypotheses are proposed:

H15: Digital Innovation significantly mediates the effect of Digital Leadership on Government Performance.

H16: Digital Innovation significantly mediates the effect of Organizational Agility on Government Performance.

H17: Digital Innovation significantly mediates the effect of Technological Innovation on Government Performance.

3. Research Methodology

3.1 Research Design

This study employed a quantitative explanatory research design to examine the relationships among Digital Leadership, Organizational Agility, Technological Innovation, Leadership Enhancement, Digital Innovation, and Government Performance. A cross-sectional survey approach was used to assess both the direct and indirect relationships among the proposed constructs. Data were collected using structured questionnaires administered to civil servants working in local government institutions.

3.2 Population and Sample

The population comprised civil servants holding managerial positions in local government institutions across North Aceh Regency, Bireuen Regency, and Lhokseumawe City, Aceh Province, Indonesia. These three regions were selected because they represent important administrative centers in Aceh Province and have undertaken initiatives related to digital government, public-service modernization, and technology-based governance. They also differ in administrative complexity, organizational capacity, and the maturity of their digital transformation efforts. This variation provides an appropriate setting for examining how organizational capabilities and innovation contribute to government performance.

Purposive sampling was used to ensure that respondents had relevant knowledge and experience concerning leadership, organizational innovation, and digital transformation. Eligible respondents included heads of departments or agencies, secretaries, division heads, section heads, subdivision heads, and other officials with direct managerial or decision-making responsibilities. A total of 300 valid responses were obtained and included in the analysis. This sample size exceeds the minimum requirements commonly applied in PLS-SEM, including the ten-times rule and the inverse square root method. Hair et al. (2022) further indicate that samples above 200 observations are generally adequate for estimating complex structural models involving multiple latent constructs and mediation relationships. Accordingly, the 300-respondent sample was considered adequate for producing stable and reliable parameter estimates.

3.3 Respondent Characteristics

Table 1. Demographic Profile of Respondents (n = 300)

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	182	60.7

	Female	118	39.3
	Total	300	100.0
Age	25–35 years	48	16.0
	36–45 years	97	32.3
	46–55 years	112	37.3
	Above 55 years	43	14.4
	Total	300	100.0
Educational Level	Diploma	15	5.0
	Bachelor's Degree	168	56.0
	Master's Degree	104	34.7
	Doctoral Degree	13	4.3
	Total	300	100.0
Position	Head of Department/Agency	22	7.3
	Secretary	31	10.3
	Division Head	86	28.7
	Section Head	103	34.3
	Subdivision Head/Others	58	19.4
	Total	300	100.0
Years of Service	Less than 5 years	26	8.7
	5–10 years	74	24.7
	11–20 years	121	40.3
	More than 20 years	79	26.3
	Total	300	100.0

3.4 Data Collection Procedure and Ethical Considerations

Data were collected through a self-administered questionnaire distributed both electronically and through direct engagement with respondents. Participation was voluntary, and respondents were informed of the academic purpose of the study before completing the questionnaire. Informed consent was obtained from all respondents prior to participation. The study maintained respondent anonymity and confidentiality, and no personally identifiable information was collected. Respondents were also informed that their participation was voluntary and that the data would be used exclusively for academic research purposes. These procedures were adopted to uphold ethical research standards and reduce potential response bias.

3.5 Measurement of Variables

All constructs were measured using multi-item scales adapted from previously validated instruments. Responses were recorded on a five-point Likert scale ranging from 1 (**strongly disagree**) to 5 (**strongly agree**). The measurement instruments were drawn from established research on Digital Leadership, Organizational Agility, Technological Innovation, Digital Innovation, and Government Performance. Before the main data collection, the measurement items were reviewed and contextually refined to ensure their relevance to local government institutions in Indonesia while retaining the conceptual meaning of the original scales.

Table 2. Measurement Constructs, Indicators, and Sources

Construct	Code	Number of Indicators	Measurement Source
Digital Leadership	DL	5	Adapted from Alomari and Sandhu (2024); Ren et al. (2025)
Organizational Agility	OA	5	Adapted from Ludviga (2023); AlNuaimi et al. (2022)
Technological Innovation	TI	5	Adapted from Kim (2022); Zhang and Li (2025)
Leadership Enhancement	LE	5	Adapted from OECD (2023); Abdi et al. (2024)
Digital Innovation	DI	7	Adapted from Hong et al. (2022); Guenduez (2025)
Government Performance	GP	5	Adapted from Lee (2022); Popa et al. (2024)

The measurement instruments were based on established scales from prior validated studies. To ensure their suitability for the local government setting, the original items were critically reviewed and subsequently reworded to capture the specific characteristics of public-sector organizations and their digital transformation activities. This contextualization was undertaken while retaining the underlying meaning of the original measures. The full questionnaire is reported in Appendix A.

Table 3. Operationalization of Constructs

Construct	Operational Definition
Digital Leadership (DL)	The ability of leaders to formulate digital strategies, utilize digital technologies, encourage innovation, and guide organizational transformation in achieving organizational objectives.
Organizational Agility (OA)	The ability of an organization to rapidly sense, respond, and adapt to environmental changes through flexibility, responsiveness, and continuous learning.
Technological Innovation (TI)	The adoption, development, and utilization of new technologies, systems, and digital infrastructure to improve organizational processes, efficiency, and service delivery.
Leadership Enhancement (LE)	The process of strengthening leadership competencies, managerial capabilities, adaptive capacity, and leadership effectiveness within an organization.
Digital Innovation (DI)	The creation and implementation of new digital services, processes, governance solutions, and public value through the effective application of digital technologies.
Government Performance (GP)	The effectiveness of government organizations in achieving organizational goals, delivering quality public services, improving accountability, and enhancing societal welfare.

Table 3 clarifies the conceptual meaning and operational boundaries of the constructs examined in this study. Although Technological Innovation and Digital Innovation are closely related, they capture different aspects of digital transformation. Technological Innovation concerns the adoption and use of technological resources and digital infrastructure, whereas Digital Innovation refers to the new services, processes, and governance solutions developed through the application of these technologies. Digital Leadership and Leadership Enhancement also represent distinct concepts. Digital Leadership concerns the competencies and behaviors required to lead digital transformation, whereas Leadership Enhancement reflects the strengthening of leadership capacity through organizational learning, empowerment, and capability development.

3.6 Common Method Bias Assessment

Because the data were collected from a single source through a cross-sectional survey, the possibility of Common Method Bias (CMB) was assessed. Following Kock (2021), full collinearity VIF values were examined to determine whether common method bias was present. All VIF values were below the recommended threshold of 3.3. These results indicate that common method bias was unlikely to materially affect the relationships examined in the model.

3.7 Data Analysis Technique

Data were analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS 4.0. SEM-PLS was chosen because the study is prediction-oriented, includes multiple latent constructs, and examines several mediation relationships. The method is also appropriate for complex models in which the measurement and structural components need to be assessed within the same analytical framework (Hair et al., 2022). The analysis followed two stages. First, the measurement model was assessed in terms of indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Second, the structural model was evaluated using path coefficients, the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), model fit measures, and bootstrapping. Model fit was assessed using the Standardized Root Mean Square Residual (SRMR), while out-of-sample predictive performance was examined through PLSpredict. Together, these procedures allowed the study to assess both the explanatory and predictive performance of the proposed model.

4. Research Findings

4.1 Measurement Model Assessment

The measurement model was assessed based on indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Following Hair et al. (2022), indicator loadings of 0.70 or higher were regarded as satisfactory. Internal consistency was evaluated using Composite Reliability (CR), with values above 0.70 indicating acceptable reliability. Convergent validity was established when the Average Variance Extracted (AVE) exceeded 0.50.

4.1.1 Indicator Reliability

Figure 1 presents the measurement model generated using Smart PLS

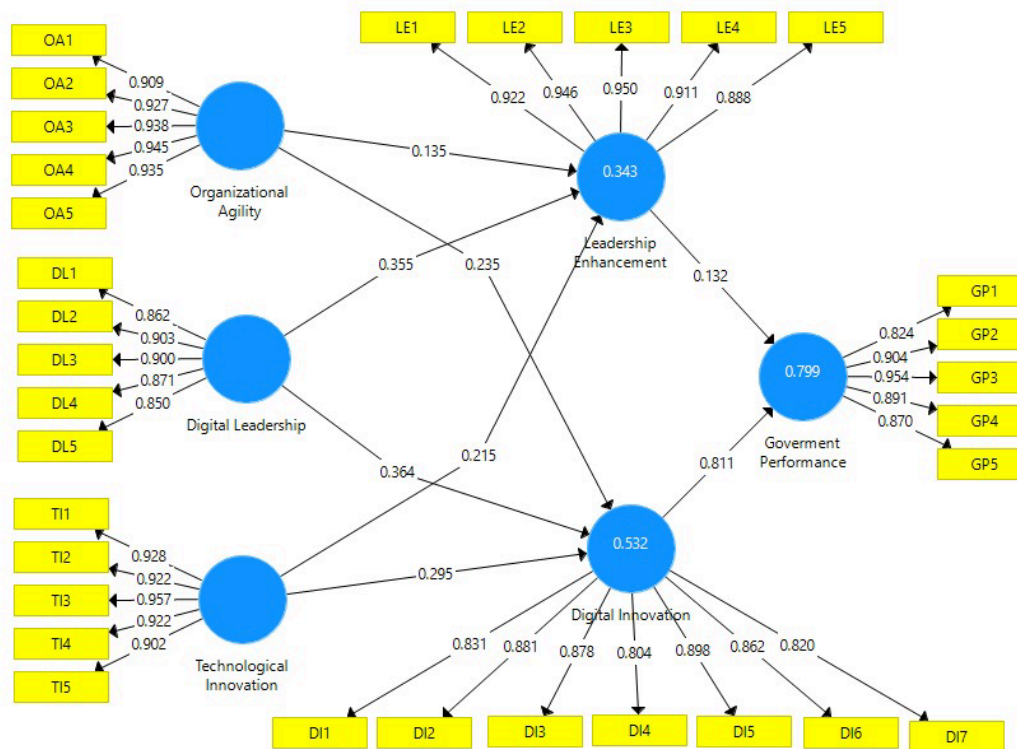


Figure 1. Outer Model

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Table 4 reports the outer loadings of all indicators. The loadings range from 0.804 to 0.957, with all values exceeding the recommended minimum of 0.70. This indicates that each indicator meets the criterion for satisfactory indicator reliability and, therefore, was retained for the subsequent analysis.

Table 4. Outer Loading Results

Construct	Indicator	Loading
Organizational Agility	OA1	0.909
OA2	OA2	0.927
OA3	OA3	0.938
OA4	OA4	0.945
OA5	OA5	0.935
Digital Leadership	DL1	0.862
DL2	DL2	0.903
DL3	DL3	0.900
DL4	DL4	0.871
DL5	DL5	0.850
Technological Innovation	TI1	0.928
TI2	TI2	0.922
TI3	TI3	0.957
TI4	TI4	0.922
TI5	TI5	0.902
Leadership Enhancement	LE1	0.922
LE2	LE2	0.946
LE3	LE3	0.950
LE4	LE4	0.911
LE5	LE5	0.888
Digital Innovation	DI1	0.831
DI2	DI2	0.881
DI3	DI3	0.878
DI4	DI4	0.804
DI5	DI5	0.898
DI6	DI6	0.862
DI7	DI7	0.820
Government Performance	GP1	0.824
GP2	GP2	0.904
GP3	GP3	0.954
GP4	GP4	0.891
GP5	GP5	0.870

4.1.2 Reliability and Convergent Validity

Table 5. Reliability and Convergent Validity

Construct	Cronbach's Alpha	rho A	Composite Reliability	AVE
Digital Innovation	0.938	0.941	0.950	0.729
Digital Leadership	0.925	0.927	0.944	0.770
Government Performance	0.933	0.935	0.950	0.791
Leadership Enhancement	0.957	0.957	0.967	0.853
Organizational Agility	0.961	0.963	0.970	0.866
Technological Innovation	0.959	0.959	0.968	0.859

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The results for reliability and convergent validity indicate that all constructs meet the required measurement criteria. Cronbach's Alpha values range from 0.925 to 0.961, all above the recommended threshold of 0.70, indicating satisfactory internal consistency. Composite Reliability values range from 0.944 to 0.970, further confirming the reliability of the constructs. The AVE values range from 0.729 to 0.866 and are all above the minimum threshold of 0.50, providing evidence of satisfactory convergent validity.

4.1.3 Discriminant Validity

Table 6. HTMT Results

Construct	DI	DL	GP	LE	OA	TI
DI	-	0.672	0.948	0.609	0.555	0.627
DL	-	-	0.624	0.564	0.466	0.579
GP	-	-	-	0.636	0.568	0.637
LE	-	-	-	-	0.406	0.490
OA	-	-	-	-	-	0.478
TI	-	-	-	-	-	-

Table 7. Fornell-Larcker Criterion

Construct	DI	DL	GP	LE	OA	TI
Digital Innovation	0.854					
Digital Leadership	0.630	0.877				
Government Performance	0.887	0.581	0.890			
Leadership Enhancement	0.580	0.532	0.602	0.924		
Organizational Agility	0.532	0.442	0.539	0.391	0.931	
Technological Innovation	0.602	0.547	0.605	0.471	0.459	0.927

The Fornell–Larcker criterion provides further evidence of discriminant validity. The correlation between Digital Innovation and Government Performance is relatively high at 0.887; nevertheless, the two constructs remain conceptually distinct and were therefore retained as separate constructs in the structural model.

4.2 Structural Model Assessment

4.2.1 Coefficient of Determination (R^2)

Table 8. Coefficient of Determination (R^2)

Endogenous Construct	R^2	Adjusted R^2
Digital Innovation	0.532	0.528
Government Performance	0.799	0.798
Leadership Enhancement	0.343	0.336

The model explains 53.2% of the variance in Digital Innovation, 34.3% in Leadership Enhancement, and 79.9% in Government Performance. These findings indicate that the proposed model has substantial explanatory power, particularly in explaining variations in Government Performance

4.2.2 Effect Size (f^2)

Table 9. Effect Size (f^2)

Relationship	f^2	Interpretation
Digital Leadership → Digital Innovation	0.186	Moderate
Digital Leadership → Leadership Enhancement	0.126	Small to Moderate
Organizational Agility → Digital Innovation	0.087	Small
Organizational Agility → Leadership Enhancement	0.020	Small
Technological Innovation → Digital Innovation	0.120	Small to Moderate
Technological Innovation → Leadership Enhancement	0.045	Small
Digital Innovation → Government Performance	2.170	Very Large
Leadership Enhancement → Government Performance	0.058	Small

The effect size analysis shows that Digital Innovation has the largest effect on Government Performance ($f^2 = 2.170$). This result indicates that Digital Innovation represents the most influential construct in the structural model.

4.2.3 Predictive Relevance (Q^2)

Table 10. Predictive Relevance (Q^2)

Endogenous Construct	Q^2
Leadership Enhancement	0.287
Digital Innovation	0.379
Government Performance	0.626

All Q^2 values are above zero, indicating that the model demonstrates satisfactory predictive relevance and has adequate predictive capability.

4.2.4 Model Fit Assessment

Table 11. Model Fit Assessment

Fit Index	Saturated Model	Estimated Model
SRMR	0.052	0.066
d ULS	1.407	2.266
d G	1.235	1.275
Chi-Square	1940.087	1960.712
NFI	0.837	0.836

Model fit assessment produced SRMR values of 0.052 for the saturated model and 0.066 for the estimated model, both falling below the 0.08 criterion. The NFI values were likewise above 0.80, indicating that the proposed model meets the criteria for an acceptable overall fit

4.2.5 Direct Effects

Table 12. Direct Effects Results

Relationship	Path Coefficient (β)	p-value	Decision
Digital Leadership → Digital Innovation	0.364	0.000	Supported
Digital Leadership → Leadership Enhancement	0.355	0.000	Supported
Organizational Agility → Digital Innovation	0.235	0.000	Supported
Organizational Agility → Leadership Enhancement	0.135	0.046	Supported
Technological Innovation → Government Performance	0.090	0.015	Supported
Technological Innovation → Digital Innovation	0.295	0.000	Supported
Technological Innovation → Leadership Enhancement	0.215	0.000	Supported
Leadership Enhancement → Government Performance	0.132	0.007	Supported
Digital Innovation → Government Performance	0.811	0.000	Supported

All Q^2 values exceed zero, indicating satisfactory predictive relevance and supporting the predictive capability of the proposed model.

The SRMR values for both the saturated model (0.052) and the estimated model (0.066) are below the recommended threshold of 0.08, indicating acceptable model fit. The NFI values also exceed 0.80, providing further

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evidence of acceptable overall model fit. Model fit assessment produced SRMR values of 0.052 for the saturated model and 0.066 for the estimated model, both falling below the 0.08 criterion. The NFI values were likewise above 0.80, indicating that the proposed model meets the criteria for an acceptable overall fit. The direct-effects results show that Digital Innovation has the largest effect on Government Performance ($\beta = 0.811$, $p < 0.001$), followed by Leadership Enhancement and Technological Innovation.

4.2.6 Indirect Effects

Table 13. Indirect Effects Results

Indirect Relationship	Indirect Effect (β)	Result
Digital Leadership → Digital Innovation → Government Performance	0.295	Supported
Organizational Agility → Digital Innovation → Government Performance	0.191	Supported
Technological Innovation → Digital Innovation → Government Performance	0.239	Supported
Digital Leadership → Leadership Enhancement → Government Performance	0.047	Supported
Organizational Agility → Leadership Enhancement → Government Performance	0.018	Rejected
Technological Innovation → Leadership Enhancement → Government Performance	0.028	Supported

The mediation results indicate that Digital Innovation plays the central role in transmitting the effects of the antecedent constructs to Government Performance. Leadership Enhancement also serves as an intervening mechanism, but its indirect effects are comparatively weaker.

4.2.7 Hypothesis Testing Results

Table 14. Summary of Hypothesis Testing

Hypothesis	Relationship	Result
H1	Digital Leadership → Government Performance	Rejected
H2	Digital Leadership → Digital Innovation	Supported
H3	Digital Leadership → Leadership Enhancement	Supported
H4	Organizational Agility → Government Performance	Rejected
H5	Organizational Agility → Digital Innovation	Supported
H6	Organizational Agility → Leadership Enhancement	Supported
H7	Technological Innovation → Government Performance	Supported
H8	Technological Innovation → Digital Innovation	Supported
H9	Technological Innovation → Leadership Enhancement	Supported
H10	Leadership Enhancement → Government Performance	Supported
H11	Digital Innovation → Government Performance	Supported
H12	Digital Leadership → Leadership Enhancement → Government Performance	Supported
H13	Organizational Agility → Leadership Enhancement → Government Performance	Rejected
H14	Technological Innovation → Leadership Enhancement → Government Performance	Supported
H15	Digital Leadership → Digital Innovation → Government Performance	Supported
H16	Organizational Agility → Digital Innovation → Government Performance	Supported
H17	Technological Innovation → Digital Innovation → Government Performance	Supported

Fourteen of the seventeen hypotheses were supported, whereas H1, H4, and H13 were not supported. The results identify Digital Innovation as the strongest determinant of Government Performance and show that it represents the main pathway through which Digital Leadership, Organizational Agility, and Technological Innovation contribute to improved organizational outcomes.

5. Discussion

The findings shed light on how organizational capabilities are translated into government performance under conditions of digital transformation. Consistent with Dynamic Capability Theory (Teece, 2007; Teece, 2018), the results indicate that Digital Leadership, Organizational Agility, and Technological Innovation do not operate only as direct

determinants of performance. Their contribution is also realized through capability-transformation processes, particularly Leadership Enhancement and Digital Innovation.

Digital Innovation shows the strongest direct relationship with Government Performance. Its effect size is also very large ($f^2 = 2.170$), clearly exceeding those of the other predictors in the model. This result suggests that the performance benefits of digital transformation depend not simply on whether government organizations adopt new technologies, but on how effectively those technologies are converted into new services, processes, and governance solutions. The finding is consistent with Hong et al. (2022) and Guenduez (2025), who identify digital innovation as an important contributor to efficiency, transparency, and public value creation in the public sector.

The results further show that Digital Leadership has significant effects on both Digital Innovation and Leadership Enhancement, but its direct effect on Government Performance is not significant. This pattern suggests that leadership capability does not automatically produce better organizational outcomes. Its contribution becomes more evident when leadership capabilities are converted into innovation initiatives and processes that strengthen leadership capacity. The finding is consistent with the logic of Dynamic Capability Theory, in which organizational capabilities create value through their transformation and deployment rather than through direct effects alone. It also accords with Ren et al. (2025), who argue that digital leadership contributes to organizational effectiveness by enabling innovation and capability development.

A similar pattern emerges for Organizational Agility. Although it significantly affects Digital Innovation and Leadership Enhancement, its direct effect on Government Performance is not significant. The result suggests that an agile organizational environment can facilitate adaptation, learning, and innovation, but these capabilities do not necessarily improve performance unless they are translated into concrete organizational actions. This finding is in line with previous research that positions organizational agility primarily as an enabler of innovation and organizational transformation rather than as a direct determinant of performance (AlNuaimi et al., 2022; Morton, 2023).

The findings further indicate that Technological Innovation contributes positively to Government Performance through both direct and indirect pathways. Unlike Digital Leadership and Organizational Agility, Technological Innovation maintains a significant direct effect on Government Performance. This result suggests that the adoption and use of technological resources can generate immediate improvements in operational efficiency, information processing, and service quality within government institutions. At the same time, its significant effects on Digital Innovation and Leadership Enhancement indicate that technological resources also provide an important basis for wider organizational transformation. These findings are consistent with Kim (2022) and Zhang and Li (2025), who highlight the strategic contribution of technological innovation to the advancement of digital government initiatives.

The mediating role of Leadership Enhancement provides another important insight. Although Leadership Enhancement has a significant effect on Government Performance, its mediation effects are smaller than those associated with Digital Innovation. Specifically, the indirect effects through Leadership Enhancement are significant for Digital Leadership and Technological Innovation, but not for Organizational Agility. This pattern suggests that strengthening leadership capacity contributes to government performance, but primarily as a supporting mechanism rather than as the main pathway through which organizational capabilities are converted into performance outcomes.

In contrast, Digital Innovation constitutes the dominant mediating mechanism in the proposed model. The indirect effects of Digital Leadership, Organizational Agility, and Technological Innovation on Government Performance through Digital Innovation are all significant and considerably stronger than the corresponding mediation effects through Leadership Enhancement. This pattern provides empirical support for the central argument of Dynamic Capability Theory that organizational capabilities create greater value when they are transformed into innovation outcomes that can directly contribute to performance. In the context of local government, Digital Innovation therefore represents a critical link through which organizational capabilities are converted into improved public-sector performance.

From a theoretical perspective, the study extends the literature on digital government and strategic management by applying Dynamic Capability Theory to the public-sector context. Earlier studies have tended to examine Digital Leadership, Organizational Agility, and Technological Innovation separately or in relatively limited combinations. The present findings show that these capabilities are connected to performance through transformation mechanisms, with Digital Innovation playing a particularly prominent role in converting organizational capabilities into performance outcomes.

From a practical standpoint, the findings point to the need for government institutions to place greater emphasis on developing digital innovation, rather than treating technology acquisition as an end in itself. Investment in digital

infrastructure needs to be supported by initiatives that encourage innovation, develop leadership capacity, and improve organizational adaptability. Performance improvement therefore requires Digital Leadership, Organizational Agility, and Technological Innovation to work as complementary capabilities within an innovation-oriented transformation process. Strengthening these capabilities can help government institutions translate digital resources into better service quality, greater accountability, stronger responsiveness, and improved organizational effectiveness.

6. Conclusion, Recommendations, and Research Implications

6.1 Conclusion

This study investigated the effects of Digital Leadership, Organizational Agility, and Technological Innovation on Government Performance, with Leadership Enhancement and Digital Innovation examined as mediating mechanisms. Using SEM-PLS and data from 300 civil servants in North Aceh Regency, Bireuen Regency, and Lhokseumawe City, the analysis produced several key findings.

First, Digital Innovation had the strongest relationship with Government Performance, reflected in both the largest direct effect and the highest effect size among the predictors. This result highlights the central role of digital innovation in improving public-sector performance. Second, Technological Innovation affected Government Performance through both direct and indirect pathways, suggesting that technology adoption contributes to operational improvements while also supporting broader organizational transformation. Third, Digital Leadership and Organizational Agility did not show significant direct effects on Government Performance. Both, however, significantly contributed to Digital Innovation and Leadership Enhancement, which function as pathways through which these capabilities are translated into improved performance.

The mediation results further show that Digital Innovation is the main pathway through which organizational capabilities contribute to Government Performance. Leadership Enhancement also performs a mediating function, but its effects are comparatively smaller. Of the seventeen hypotheses tested, fourteen were supported and three were not supported. The findings suggest that improving government performance in the digital era depends largely on the capacity of public organizations to convert leadership capabilities, organizational agility, and technological resources into digital innovations that generate public value.

From a theoretical standpoint, the findings provide empirical support for Dynamic Capability Theory by showing that organizational capabilities do not necessarily translate directly into performance gains. Their contribution is realized through mechanisms that transform and mobilize these capabilities, with Digital Innovation emerging as the most prominent mechanism in this model. The study therefore extends the application of Dynamic Capability Theory to digital government by demonstrating how capability transformation operates within public-sector organizations undergoing digital transformation.

6.2 Recommendations

The findings provide several implications for strengthening government performance in the context of digital transformation.

First, government institutions need to position Digital Innovation as a strategic component of performance improvement. Investment in digital infrastructure should be accompanied by initiatives that translate technology into innovative public services, digital governance practices, and service systems that respond to citizens' needs.

Second, greater attention should be given to strengthening Digital Leadership among public-sector leaders. Leadership development programs should develop competencies in digital technologies, innovation management, data-informed decision-making, and organizational change so that leaders can effectively guide digital transformation.

Third, public organizations should strengthen Organizational Agility by creating conditions that support flexibility, continuous learning, cross-functional collaboration, and adaptive decision-making. These organizational practices can help institutions respond more effectively to changes in their operating environment and evolving public needs.

Fourth, technological investment should extend beyond the acquisition of new technologies. Government agencies need to integrate technological resources into organizational processes and innovation initiatives so that their use produces tangible improvements in public value and organizational performance.

Finally, Leadership Enhancement should remain part of the broader transformation agenda as a supporting mechanism. Although its mediating effect is smaller than that of Digital Innovation, strengthening leadership capacity remains relevant to managerial effectiveness and the sustainability of organizational transformation.

6.3 Research Implications

Theoretical Implications

This study extends the literature on strategic management, digital government, and public-sector innovation by applying Dynamic Capability Theory to the context of government organizations. The findings indicate that Digital Leadership, Organizational Agility, and Technological Innovation function as organizational capabilities whose contributions to performance are largely realized through transformation mechanisms rather than through direct effects alone. More importantly, Digital Innovation emerges as the central mechanism connecting these capabilities with Government Performance. This finding adds to the Dynamic Capability Theory literature by demonstrating empirically that innovation can serve as a key pathway through which organizational capabilities are converted into improved public-sector outcomes.

Practical Implications

For practitioners and policymakers, the findings emphasize the need for innovation-oriented digital transformation. Improving government performance requires not only technology adoption but also an organizational environment that supports innovation, leadership development, and adaptability. Digital Leadership, Organizational Agility, Technological Innovation, and Digital Innovation should therefore be developed as complementary capabilities within the transformation process. Strengthening these capabilities can improve service quality, transparency, accountability, and organizational effectiveness.

Future Research Directions

This study has several limitations that suggest directions for future research. First, the study focused on local government institutions in Aceh Province, Indonesia, which limits the generalizability of the findings to other regions and countries. Future research could test the model across different governmental and cultural contexts to assess its external validity.

Second, the cross-sectional design limits the ability to examine changes in digital transformation capabilities over time. Longitudinal research could therefore investigate how these capabilities develop and influence Government Performance over extended periods.

Third, future studies could incorporate variables such as digital culture, organizational resilience, employee digital competence, public trust, and citizen engagement to provide a broader explanation of digital government transformation and performance.

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