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Digital Leadership and Innovative Work Behavior among Civil Servants in North Maluku: The Mediating Roles of Psychological Empowerment and Work Engagemen

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Abstract: This study investigates how digital leadership enhances innovative work behavior among civil servants in the Provincial Government of North Maluku by examining the mediating roles of psychological empowerment and work engagement. An explanatory quantitative approach was employed, utilizing a Likert-scale questionnaire administered to employees involved in data management, information systems, and digital services across 46 regional organizations. A total of 173 valid responses were analyzed using variance-based structural equation modeling. The results show that digital leadership has no direct influence on innovative work behavior, but has a significant positive effect on psychological empowerment and work engagement, both of which significantly enhance innovative work behavior. The proposed model explains 53.9 percent of the variance in innovative work behavior. These findings indicate that digital leadership becomes more effective when it strengthens employees' psychological and motivational resources, proving that successful digital transformation depends not only on technological adoption but also on human resource readiness and capability in the public sector.

Keywords: digital leadership, innovative work behavior, psychological empowerment, public sector, work engagement.

INTRODUCTION

Innovative work behavior has become an important concern in contemporary public administration, particularly because digital government reform requires employees who can recognize workplace problems, develop new ideas, support practical solutions, and apply improvements in their daily tasks. In the public sector, innovation is not limited to the adoption of applications or information systems. It also involves the readiness of civil servants to reassess work routines, simplify service procedures, use data to support decision-making, and collaborate beyond organizational boundaries. This need has become increasingly important as governments continue to implement electronic-based governance and as citizens demand

public services that are more responsive, transparent, and accessible. Recent studies on digital transformation emphasize that technology can create meaningful value only when it is supported by capable human resources, adaptive leadership, and organizational readiness (Cortellazzo et al., 2019 ; Kane et al., 2019 ;Schwarzmüller et al., 2018).

Indonesia has institutionalized digital government through the Electronic-Based Government System (SPBE). This policy direction asks government agencies to integrate processes, data, digital infrastructure, and services in a more coherent way. In the regional government context, the policy creates a managerial demand for leaders who are able to direct digital change while also developing the human side of transformation. The Provincial Government of North Maluku has shown progress in SPBE evaluation, reaching a good category in 2025. However, the challenge is not finished when the formal index improves. Digital reform still depends on the ability of civil servants to adopt new practices, share information, and develop workable innovations inside their respective regional apparatus organizations. Reports on digital mindset and digital leadership among Indonesian civil servants also show that leadership capability remains an important lever for accelerating institutional transformation (KemenPANRB, 2024 ; Kencono et al., 2024).

Digital leadership is often regarded as an important driver of innovation because leaders in digital contexts are expected to provide direction, communicate a clear technological vision, support experimentation, and connect employees with emerging digital opportunities. In organizational studies, digital leadership is linked to the ability to facilitate technology-based change, strengthen trust in digital initiatives, and create a work climate that encourages creativity (Abbu et al., 2025; Çetinkaya & Sürücü, 2025; Erhan et al., 2022). However, the influence of digital leadership on innovative behavior does not always occur directly. Although leadership can offer guidance, resources, and strategic direction, employees still require psychological strength and internal motivation to convert such support into innovative actions. Therefore, the relationship between leadership and innovation needs to be understood through internal employee mechanisms, particularly psychological empowerment and work engagement.

Psychological empowerment refers to an intrinsic form of motivation that is reflected in meaning, competence, self-determination, and impact. Employees are more likely to seek, develop, and apply new ideas when they perceive their work as meaningful, believe they have the ability to perform digital tasks, have sufficient autonomy in making decisions, and feel that their contributions are valued. Work engagement, in contrast, describes a positive work-related state that is shown through vigor, dedication, and absorption. Employees with strong engagement tend to demonstrate enthusiasm, perseverance, and active involvement in completing their responsibilities. These two constructs are especially important in the public sector because innovation frequently depends on voluntary effort that goes beyond formal job requirements. Recent empirical evidence indicates that psychological empowerment and work engagement can help explain how leadership promotes innovation in both public and private organizational settings (Gao & Gao, 2024; Khan et al., 2025; Vu et al., 2025).

Despite the growing literature, several gaps remain. First, many studies on digital leadership focus on private organizations or technology-intensive industries, while the public sector has distinct characteristics, including procedural constraints, hierarchical structures, political accountability, and service obligations. Second, research on digital leadership in Indonesian local government is still developing, particularly at the provincial level in Eastern Indonesia. Third, the mediating role of psychological empowerment and work engagement is often examined separately, although both cognitive and affective pathways may operate simultaneously. Addressing these gaps is important because public digital transformation requires not only leaders who understand technology, but also civil servants who feel empowered and engaged enough to innovate within institutional rules.

Considering these issues, the problem formulation in this research is structured through the following specific questions:

1. Does digital leadership have a positive influence on innovative work behavior among civil servants?
2. Does digital leadership have a positive influence on psychological empowerment?
3. Does digital leadership have a positive influence on work engagement?
4. Does psychological empowerment have a positive influence on innovative work behavior?
5. Does work engagement have a positive influence on innovative work behavior?
6. Does psychological empowerment mediate the relationship between digital leadership and innovative work behavior?
7. Does work engagement mediate the relationship between digital leadership and innovative work behavior?

By answering these questions, this study examines the influence of digital leadership on innovative work behavior among civil servants in the Provincial Government of North Maluku, with psychological empowerment and work engagement positioned as parallel mediating variables. This study offers three main contributions to the existing literature. First, it presents empirical evidence from a regional public sector setting in Eastern Indonesia. Second, it explains the indirect mechanisms through which digital leadership influences innovative behavior. Third, it provides practical insights for strengthening SPBE implementation by emphasizing the development of human resources. The main argument of this study is that digital leadership becomes more effective when it creates psychological conditions that allow civil servants to transform digital direction into innovative work behavior.

Digital Leadership and Innovative Work Behavior

Digital leadership refers to the ability of leaders to use digital knowledge, strategic vision, creativity, collaboration, and technological awareness to guide organizations through digital change. Unlike conventional leadership, digital leadership requires leaders to understand how technology changes work processes, communication patterns, decision-making, and value creation. Leaders in digital settings are expected to encourage experimentation, support cross-functional collaboration, and reduce uncertainty related to new systems. Studies in different organizational settings show that digital leadership can support individual creativity, employee performance, engagement, and innovative behavior (Latif et al., 2025; Öngel et al., 2024; Wang et al., 2022)

Innovative work behavior is commonly described as a set of behaviors through which employees explore opportunities, generate ideas, champion ideas, and implement them in work settings. This concept emphasizes the behavioral process of innovation rather than the final innovation output alone. In bureaucratic organizations, innovative behavior may appear in practical forms such as simplifying documentation, improving coordination, using digital dashboards, redesigning information flows, or providing new ways of serving citizens. De Jong, J., Den Hartog (2010) emphasize that innovative behavior includes both creative and implementation-oriented actions. Janssen (2000) also links innovative behavior to work-role performance in situations where employees need to respond to demands for improvement.

The link between digital leadership and innovative work behavior can be explained through social exchange and resource-based perspectives. When leaders provide clear digital direction, support learning, and encourage experimentation, employees perceive that the organization values their contribution. Such perceptions can trigger reciprocal effort and make employees more willing to contribute ideas (Ahmad et al., 2023). However, in highly regulated public organizations, the direct effect may be weaker because employees still need autonomy,

confidence, and emotional energy before taking innovative actions. Therefore, this study proposes that digital leadership may influence innovative work behavior directly and indirectly.

Psychological Empowerment as a Cognitive Pathway

Psychological empowerment refers to a motivational state that describes how employees perceive their role, authority, and influence in the workplace. Spreitzer (1995) explains psychological empowerment through four core dimensions, namely: a). meaning; b). competence; c). self-determination; and d). impact. Meaning reflects the extent to which work is consistent with personal values. Competence refers to employees' confidence in their ability to perform assigned tasks. Self-determination describes the perceived freedom to choose how work is carried out. Impact refers to the belief that individual actions can contribute to organizational outcomes. These dimensions are important for civil servants because innovation in government often begins when employees believe that their work creates public value and that they are capable of improving existing procedures.

Digital leadership can enhance psychological empowerment by clarifying the purpose of digital transformation, ensuring access to relevant information, supporting the development of digital skills, and allowing employees to adjust digital tools according to operational needs. From this perspective, digital leaders are not only responsible for introducing technology, but also for helping employees understand why change is necessary and how they can take part in the transformation process. Recent studies indicate that leadership and empowerment are closely related to innovative behavior because empowerment strengthens employees' sense of ownership and intrinsic motivation (Helmy et al., 2019; Indrayanti et al., 2025; Surya et al., 2023).

Psychological empowerment is therefore expected to mediate the relationship between digital leadership and innovative work behavior. A civil servant may recognize that leaders support digitalization, but innovative behavior is more likely to emerge when the employee feels competent, trusted, and able to make a meaningful contribution. Empowerment converts leadership signals into a cognitive belief that innovation is both achievable and valuable. Gao & Gao (2024) found that digital leadership can encourage innovative behavior through cognitive and affective processing mechanisms. In this study, psychological empowerment is positioned as the cognitive mechanism that connects digital direction with innovative action.

Work Engagement as an Affective Pathway

Work engagement refers to a positive work-related condition that is reflected in: a). vigor; b). dedication; and c). absorption. Vigor describes employees' energy and persistence, dedication reflects enthusiasm and a sense of significance, while absorption refers to deep concentration and involvement in work. Engagement is important because innovative work behavior requires more than simply following routine procedures. Employees must be willing to invest effort in identifying problems, developing ideas, and persuading others to accept change. (Schaufeli et al., 2002) explain that engagement represents a motivational state that encourages active participation in work. Recent studies in the public sector also show that engagement can serve as a link between leadership and innovative behavior (Li et al., 2024; Sabuhari et al., 2025).

Digital leadership can strengthen work engagement when leaders provide clear direction and reduce uncertainty during technological transformation. When civil servants understand the digital vision, receive adequate guidance, and experience supportive coordination, they are more likely to view their work as relevant to future organizational needs. This condition can increase dedication and encourage employees to contribute extra effort. Agustina et al. (2020) found that digital leadership may influence work engagement through trust and self-efficacy.

Khan et al. (2025) also emphasize that digital leadership can improve empowerment and techno-work engagement in public service settings.

Work engagement is therefore expected to act as an affective pathway linking digital leadership to innovative work behavior. While psychological empowerment explains the cognitive belief that innovation is possible, work engagement explains the energy, enthusiasm, and persistence required to translate that belief into action. Digital leadership may establish a strategic direction, but engaged civil servants are the ones who continue to solve problems and implement improvements. For this reason, this study examines work engagement as a second mediator alongside psychological empowerment.

Hypothesis Development

Based on the reviewed literature, this study develops seven hypotheses. First, digital leadership is expected to have a positive influence on innovative work behavior. Second, digital leadership is expected to positively affect psychological empowerment. Third, digital leadership is expected to enhance work engagement. Fourth, psychological empowerment is expected to contribute positively to innovative work behavior. Fifth, work engagement is expected to have a positive effect on innovative work behavior. Sixth, psychological empowerment is expected to mediate the relationship between digital leadership and innovative work behavior. Seventh, work engagement is expected to mediate the relationship between digital leadership and innovative work behavior. The conceptual model of this study is presented in Figure 1.

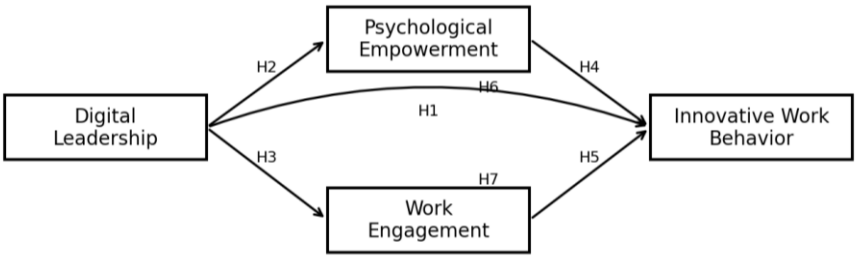

Figure 1. Conceptual framework of the study
Source: Developed by the authors from the thesis model (2026).

METHODS

This study employed an explanatory quantitative design because it aimed to examine causal relationships among latent variables and assess mediation effects within a theoretically developed model. The research was conducted within the Provincial Government of North Maluku, Indonesia, involving 46 regional apparatus organizations under the provincial administrative structure. This setting was selected because the province is currently implementing electronic-based government reform, while the human capability aspect of digital transformation remains essential for improving institutional performance. The study was carried out from April to June 2026.

The accessible population consisted of civil servants who were directly involved in data management, information systems, digital services, application management, electronic government implementation, or related administrative support activities. The initial sampling frame included 285 civil servants identified from official personnel records, organizational documents, data steward assignments, and task documents issued by regional apparatus organizations. Purposive sampling was used because not all civil servants were directly relevant to the constructs examined in this study. To be included as respondents, civil servants had to be actively employed, involved in digital government activities, and willing to complete the questionnaire voluntarily. Senior leaders who served as the object of digital leadership assessment were excluded to minimize common source bias. Questionnaires with incomplete

responses, duplicate entries, or straight-lining answer patterns were also removed. After the screening process, the final dataset consisted of 173 valid responses.

Data were collected through a structured online questionnaire distributed via official communication channels. The questionnaire consisted of screening questions, demographic information, and measurement items for four latent variables. Digital leadership was treated as the independent variable and measured using the dimensions of creativity, thinking and inquisitiveness, curiosity, deep knowledge, and global vision and collaboration. Psychological empowerment was measured through meaning, competence, self-determination, and impact. Work engagement was assessed through vigor, dedication, and absorption. Innovative work behavior was measured through idea exploration, idea generation, idea championing, and idea implementation. All items were rated on a five-point Likert scale, ranging from strongly disagree to strongly agree. Overall, the instrument contained 48 reflective indicators.

Table 1. Operational variables and measurement dimensions

Variable	Role	Dimensions	Items	Source
Digital Leadership	Independent variable	Creativity; thinking and inquisitiveness; curiosity; deep knowledge; global vision and collaboration	17	(Zhu, 2015) adapted in the thesis instrument
Psychological Empowerment	Mediator 1	Meaning; competence; self-determination; impact	12	(Spreitzer, 1995)
Work Engagement	Mediator 2	Vigor; dedication; absorption	9	(Schaufeli et al., 2002)
Innovative Work Behavior	Dependent variable	Idea exploration; idea generation; idea championing; idea implementation	10	(De Jong, J., Den Hartog, 2010)

Source: Processed from the research instrument (2026).

Data were analyzed using descriptive statistics and Partial Least Squares Structural Equation Modeling (SEM-PLS). Descriptive statistics were applied to summarize the respondents' characteristics and to describe the overall tendency of each variable based on its mean score. SEM-PLS was performed with SmartPLS 4.1 because the proposed model consisted of multiple latent constructs, reflective indicators, and two parallel mediating variables. This analytical approach is appropriate for explanatory and predictive research, especially when the study focuses on estimating structural relationships, validating the measurement model, and testing mediation effects through bootstrapping procedures (Hair, Risher, Sarstedt, & Ringle, 2019).

The measurement model was evaluated by examining convergent validity, discriminant validity, and reliability. Convergent validity was assessed through indicator loadings and average variance extracted (AVE), while reliability was examined using Cronbach's alpha, composite reliability rho_a, and composite reliability rho_c. The structural model was then assessed based on path coefficients, t-statistics, p-values, R-square, effect size, and Q-square predictive relevance. Hypothesis testing was conducted using the bootstrapping method. Mediation effects were evaluated by observing the significance of indirect effects and their

confidence intervals. The interpretation of the results followed widely accepted SEM-PLS criteria, in which relationships with p-values below 0.05 were considered statistically significant.

RESULTS AND DISCUSSION

Respondent Profile and Descriptive Findings

The respondent profile indicates that the sample represented civil servants with varied demographic and employment backgrounds. Male respondents accounted for 54.91% of the sample, while female respondents accounted for 45.09%. The largest age group was above 46 years old, representing 37.57% of respondents, followed by 41-45 years old at 20.23%. Most respondents held undergraduate degrees, and most were permanent civil servants. The tenure distribution showed that 33.53% had worked for more than 20 years, indicating that the sample included many experienced employees who were familiar with government procedures and administrative routines. Table 2 summarizes the main respondent profile.

Descriptive results show that the overall perception of all variables was high. Digital leadership obtained an average score of 4.018, indicating that respondents perceived their leaders as reasonably capable of providing direction for digital work. Psychological empowerment obtained an average score of 4.09, suggesting that civil servants generally felt their work was meaningful and that they had adequate competence, although the impact dimension was relatively lower. Work engagement had the highest average score at 4.14, showing that respondents were generally energetic and dedicated. Innovative work behavior obtained an average score of 4.00, which also falls in the high category, although the exploration of ideas remained a relatively weaker aspect. These descriptive findings indicate that the organizational context already contains a positive foundation for digital transformation, but innovation still depends on more specific psychological and work-related mechanisms.

Table 2. Summary of respondent profile

Characteristic	Dominant category	Frequency	Percentage
Gender	Male	95	54.91%
Age	>46 years	65	37.57%
Education	Bachelor degree	113	65.32%
Employment status	Civil servant/PNS	153	88.44%
Tenure	>20 years	58	33.53%
Valid sample	Total respondents	173	100%

Table 3. Descriptive summary of research variables

Variable	Mean	Interpretation	Main note
Digital Leadership	4.018	High	Leaders were perceived as capable of directing digital work.
Psychological Empowerment	4.09	High	Meaning and competence were strong, while impact was relatively lower.
Work Engagement	4.14	High	Respondents showed strong vigor, dedication, and absorption.
Innovative Work Behavior	4.00	High	Idea exploration remained a comparatively weaker aspect.

Source: Survey data processed by the authors (2026).

Measurement Model Assessment

The measurement model assessment shows that all constructs satisfied the established standards for validity and reliability. Digital leadership demonstrated strong internal consistency, with a Cronbach's alpha of 0.978, composite reliability rho_c of 0.980, and an AVE of 0.741. Psychological empowerment also met the required criteria, as indicated by a Cronbach's alpha of 0.930, composite reliability rho_c of 0.942, and an AVE of 0.642. Work engagement obtained a Cronbach's alpha of 0.893, composite reliability rho_c of 0.914, and an AVE of 0.543. Similarly, innovative work behavior showed reliable and valid measurement properties, with a Cronbach's alpha of 0.916, composite reliability rho_c of 0.930, and an AVE of 0.599. Since all AVE values exceeded the minimum threshold of 0.50 and all reliability coefficients were above the recommended value of 0.70, the reflective constructs can be regarded as valid and consistently measured (Hair et al., 2019) A summary of the measurement model results is provided in Table 4.

Table 4. Measurement model reliability and convergent validity

Latent variable	Cronbach's alpha	rho_a	rho_c	AVE	Decision
Digital Leadership	0.978	0.980	0.980	0.741	Valid and reliable
Psychological Empowerment	0.930	0.931	0.942	0.642	Valid and reliable
Work Engagement	0.893	0.894	0.914	0.543	Valid and reliable
Innovative Work Behavior	0.916	0.919	0.930	0.599	Valid and reliable

Source: SmartPLS output processed by the authors (2026).

Structural Model and Hypothesis Testing

The direct effect analysis shows that digital leadership did not have a significant direct effect on innovative work behavior (beta = 0.051, t = 0.777, p = 0.219); therefore, H1 was rejected. However, digital leadership had significant positive effects on psychological empowerment (beta = 0.411, t = 5.902, p = 0.000) and work engagement (beta = 0.400, t = 5.817, p = 0.000), supporting H2 and H3. Psychological empowerment (beta = 0.454, t = 5.540, p = 0.000) and work engagement (beta = 0.310, t = 3.602, p = 0.000) also had significant positive effects on innovative work behavior, supporting H4 and H5. The direct effect hypothesis-testing results are presented in Table 5.

Table 5. Direct effect hypothesis testing

Hypothesis/path	Beta	T statistic	P value	Result
H1: Digital Leadership -> Innovative Work Behavior	0.051	0.777	0.219	Rejected
H2: Digital Leadership -> Psychological Empowerment	0.411	5.902	0.000	Accepted
H3: Digital Leadership -> Work Engagement	0.400	5.817	0.000	Accepted
H4: Psychological Empowerment -> Innovative Work Behavior	0.454	5.540	0.000	Accepted
H5: Work Engagement -> Innovative Work Behavior	0.310	3.602	0.000	Accepted

Source: SmartPLS bootstrapping output processed by the authors (2026).

Table 6. R-square values of endogenous variables

Endogenous variable	R-square	Adjusted R-square	Predictive strength
Innovative Work Behavior	0.539	0.531	Moderate

Endogenous variable	R-square	Adjusted R-square	Predictive strength
Psychological Empowerment	0.169	0.164	Weak
Work Engagement	0.160	0.155	Weak

Source: SmartPLS output processed by the authors (2026).

Table 7. Predictive relevance of endogenous variables

Variable	Q2 predict	RMSE	MAE	Conclusion
Psychological Empowerment	0.147	0.941	0.734	Predictive relevance
Work Engagement	0.138	0.946	0.730	Predictive relevance
Innovative Work Behavior	0.111	0.956	0.739	Predictive relevance

Source: SmartPLS output processed by the authors (2026).

The explanatory and predictive results provide additional support for the model. Innovative work behavior had an R-square value of 0.539 and an adjusted R-square value of 0.531, indicating moderate explanatory power, while psychological empowerment and work engagement showed weaker R-square values of 0.169 and 0.160, respectively. All Q2 predict values were greater than zero, indicating predictive relevance for the endogenous constructs. The mediation analysis further shows that the indirect effect of digital leadership on innovative work behavior through psychological empowerment was statistically significant (beta = 0.187, t = 3.806, p = 0.000). Similarly, the indirect effect through work engagement was significant (beta = 0.124, t = 3.006, p = 0.001). These results support H6 and H7, and the indirect effect analysis is presented in Table 8.

Table 8. Indirect effect hypothesis testing

Indirect path	Beta	T statistic	P value	Conclusion
DL -> PE -> IWB	0.187	3.806	0.000	Significant, H6 accepted
DL -> WE -> IWB	0.124	3.006	0.001	Significant, H7 accepted

Source: SmartPLS bootstrapping output processed by the authors (2026).

Discussion

The absence of a significant direct relationship between digital leadership and innovative work behavior is one of the key findings of this study. This result suggests that digital leadership, on its own, is not sufficient to automatically generate innovation among civil servants. However, this does not mean that digital leadership is irrelevant. Rather, it indicates that leadership influence must first be internalized through employee-level psychological processes before it can be expressed as innovative behavior. In public organizations, employees may recognize and understand a leader's digital orientation, yet still be reluctant to act innovatively because innovation often involves procedural risks, coordination across organizational units, and uncertainty about formal authority. Therefore, leaders need to create an environment in which innovation is perceived as safe, meaningful, and practically feasible.

This finding is consistent with recent studies that argue that digital leadership affects innovation through organizational and psychological mechanisms. Abbas et al. (2024) explain that digital leadership can encourage innovative work behavior through digital entrepreneurial orientation and digital organizational culture. Similarly, Gao and Gao (2024) highlight the importance of cognitive and affective processing systems in explaining the relationship between digital leadership and innovation. In the context of the Provincial Government of North Maluku, psychological empowerment and work engagement function as internal mechanisms that translate leadership signals into employee action. This implies that civil servants require more than strategic digital direction. They also need autonomy, confidence,

meaningful work roles, and sufficient work energy to transform digital direction into innovation.

The significant effect of digital leadership on psychological empowerment indicates that leaders who clearly communicate a digital vision, support learning, and encourage collaboration can strengthen employees' sense of meaning, competence, self-determination, and impact. This finding is particularly relevant because SPBE implementation requires civil servants to engage with data, systems, and service processes that may differ from conventional administrative routines. When digital direction is introduced without empowerment, employees may perceive digitalization merely as an additional administrative burden. However, when leaders also empower employees, digitalization is more likely to be understood as an opportunity to improve work processes and create greater public value.

The significant influence of psychological empowerment on innovative work behavior confirms that empowerment serves as an important cognitive foundation for innovation. Civil servants who believe that their work is meaningful and that their actions can influence organizational outcomes are more likely to explore, develop, and apply new ideas. This result is in line with previous studies showing that psychological empowerment promotes innovative behavior by strengthening ownership and self-initiated (Helmy et al., 2019; Sami et al., 2024; Surya et al., 2023). From a practical perspective, the relatively lower score on the impact dimension suggests that many civil servants still need clearer evidence that their ideas can shape organizational decisions. Therefore, leaders should establish mechanisms that allow employees to propose ideas, receive constructive feedback, and observe how valuable suggestions are translated into actual improvements.

The significant effect of digital leadership on work engagement shows that digital leaders also shape employees' emotional and motivational connection to their work. Digital transformation can generate uncertainty, especially when systems change rapidly or when employees have unequal levels of digital literacy. Leaders who are able to explain the digital agenda, coordinate resources, and support continuous learning can help reduce anxiety and strengthen employee dedication. This finding supports Agustina et al. (2020), who found that digital leadership can influence work engagement through trust and self-efficacy. It also aligns with Li et al. (2024), who emphasize the importance of digital leadership in enhancing employee engagement.

Work engagement was also found to significantly improve innovative work behavior. Civil servants with stronger engagement tend to demonstrate higher energy, persistence, and involvement, all of which are needed to sustain the innovation process. Innovative behavior is not a one-time activity, but an ongoing process that involves diagnosing problems, refining ideas, communicating with colleagues, and adapting solutions to institutional constraints. Employees with high engagement are more likely to continue these efforts even when innovation faces resistance or procedural obstacles. This finding supports the view that engagement is a valuable psychological resource for public sector innovation (Sabuhari et al., 2025; Vu et al., 2025).

The mediation results show that psychological empowerment and work engagement both mediate the relationship between digital leadership and innovative work behavior. The stronger indirect coefficient through psychological empowerment suggests that cognitive mechanisms are especially important in a bureaucratic context. Civil servants are more likely to innovate when they understand the meaning of transformation, feel capable of contributing, and believe that their decisions can create impact. Work engagement remains important as an affective resource that provides energy and dedication, but psychological empowerment appears to be the more dominant pathway in this dataset. This finding offers practical implications for leadership development. Training leaders merely to master digital tools is not enough. Leadership development programs should also strengthen empowerment-oriented practices,

such as delegation, feedback, participatory problem solving, and recognition of employee contributions.

The findings provide several practical implications for the Provincial Government of North Maluku. First, digital leadership should be developed as a formal managerial capability across regional apparatus organizations. Leaders should be assessed not only based on administrative compliance, but also on their ability to guide digital collaboration, promote learning, and support innovation. Second, psychological empowerment should be strengthened by assigning civil servants clear roles in SPBE initiatives, involving them in service redesign, and allowing them to adapt digital tools to local organizational needs. Third, work engagement should be supported through meaningful communication, balanced workloads, recognition, and opportunities for professional growth. These efforts can help shift SPBE implementation from a compliance-oriented program into a human-centered innovation process.

These findings also contribute to academic discussion by demonstrating that digital leadership operates indirectly within a regional public sector context. Much of the existing literature on digital leadership focuses on private organizations, whereas government organizations face different institutional constraints. This study shows that, within a provincial bureaucracy, the link between leadership and innovation depends on whether employees experience empowerment and engagement. Therefore, future theories of digital leadership in public administration should include psychological mediators rather than assuming a simple direct relationship between leadership style and innovative work behavior.

CONCLUSION

This study examined how digital leadership shapes innovative work behavior among civil servants in the Provincial Government of North Maluku by positioning psychological empowerment and work engagement as parallel mediating mechanisms. The findings indicate that digital leadership does not directly translate into innovative behavior. Instead, its influence becomes significant when it strengthens employees' psychological empowerment and work engagement, both of which play important roles in encouraging innovative work behavior. Structurally, the empirical model accounts for 53.9% of the variance in innovative work behavior, reflecting a moderate and stable explanatory capacity for public sector organizations in Eastern Indonesia. These results suggest that digital leadership becomes meaningful not simply through top-down digital direction, but through its strategic ability to activate internal cognitive and affective resources within employees. Psychological empowerment emerges as the stronger cognitive pathway, demonstrating that civil servants are more likely to innovate when they perceive their work as meaningful, feel technically competent, possess operational autonomy, and believe their contributions create public impact. Meanwhile, work engagement functions as a critical affective pathway by providing the psychological energy, dedication, and persistence needed to sustain long-term innovation. Therefore, digital transformation in regional government should not be treated merely as a technological or administrative compliance program, but must be supported by leadership practices that empower and engage civil servants so they are willing and able to generate, promote, and implement new ideas in their daily tasks.

Research Limitations and Future Directions

Several limitations of this study need to be acknowledged to guide future investigations. First, the research was restricted to one provincial government, meaning that the findings may not fully capture the administrative realities of other local governments with different levels of digital maturity, organizational culture, and human resource capacity. Second, the reliance on cross-sectional data restricts the ability of this study to directly observe how digital leadership, psychological empowerment, work engagement, and innovative work behavior dynamically

develop and evolve over extended periods. Third, because the data were obtained directly from respondents' perceptions, the possibility of common method bias and social desirability bias cannot be completely eliminated, despite the rigorous screening procedures and exclusion criteria applied during data collection. Fourth, this study focused exclusively on psychological empowerment and work engagement as parallel mediating mechanisms, meaning other relevant macro factors—such as digital literacy, organizational learning, innovation climate, perceived organizational support, and psychological safety were not included in the structural model and may offer valuable additional explanations for innovative behavior in the public sector.

To address these limitations, future research should expand the empirical sample to encompass several provincial and municipal governments to test whether the parallel mediation pattern remains consistent across different regional tiers and varying levels of digital maturity. Longitudinal research designs are highly recommended to observe how digital leadership and employee innovation evolve alongside the multi-year implementation of the Electronic-Based Government System (SPBE) in Indonesia. Future studies can also incorporate contextual variables such as innovation climate, digital competence, organizational justice, and psychological safety to explain why some employees convert digital leadership into innovative behaviors more strongly than others. For practical implementation, regional governments should develop leadership training programs that systematically integrate digital capability with empowerment-based management, provide formal, accessible channels for employee-driven ideas, and continuously monitor work engagement as a core component of sustainable human resource development. Such strategic efforts will help transform digital government from a mere compliance agenda into a sustainable, innovative system.

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