THE INFLUENCE OF DIGITAL LEADERSHIP ON INNOVATIVE WORK BEHAVIOR WITH DIGITAL SELF-EFFICACY AS A MEDIATING VARIABLE AND ORGANIZATIONAL LEARNING CULTURE AS A MODERATING VARIABLE AMONG CIVIL SERVANTS IN REGENCY X

Lina Apriliani
Universitas Pancasakti, Tegal, Indonesia
apriliani581@gmail.com

Ahmad Hanfan
Universitas Pancasakti, Tegal, Indonesia
ahmadhanfan@yahoo.com

Abstract

This study examines the effect of digital leadership on innovative work behavior with digital self-efficacy as a mediating variable and organizational learning culture as a moderating variable among civil servants. Using a quantitative explanatory approach with a survey design, data were collected from 200 civil servants in Regional Government Organizations in Central Java Province and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The findings show that digital leadership has a positive and significant effect on innovative work behavior (β=0.312; $p<0.01$) both directly and through the mediation of digital self-efficacy (β indirect=0.154; $p<0.01$). Digital leadership is also a strong predictor of digital self-efficacy (β=0.483; $p<0.01$). However, organizational learning culture does not moderate the relationship between digital self-efficacy and innovative work behavior (β=0.050; p=0.448). These findings confirm that effective digital leadership, supported by employees' digital self-confidence, is a key determinant of innovative work behavior in the era of digital transformation.

Keywords: Digital Leadership, Innovative Work Behavior, Digital Self-Efficacy, Organizational Learning Culture, Civil Servants

INTRODUCTION

The acceleration of digital transformation in Indonesia's government sector has become an inevitable phenomenon in line with the advancement of information and communication technologies. The implementation of the Electronic-Based Government System (SPBE), as mandated by Presidential Regulation Number 132 of 2022, encourages all government institutions to adopt digital technology in the delivery of public services. Based on the 2024 evaluation by the Ministry of Administrative and Bureaucratic Reform (Kemenpan-RB), the National SPBE Index reached 3.12 out of a scale of 5, categorized as "Good," increasing from 2.79 in 2023 (Kemenpan-RB, 2024). The evaluation was conducted across 615 central and regional government institutions; however, only 48 institutions (7.8%) achieved a "very satisfactory" rating. This achievement indicates that although the trend of government digitalization continues to improve, there remains a significant gap in the quality of SPBE implementation across regions. At the international level, Indonesia's e-Government ranking in the United Nations (UN) survey in 2024 rose by 13 positions, from 77th to 64th out of 193 countries (United Nations, 2024). By 2025, SPBE policy is even being transformed into a Digital Government framework that prioritizes impact and user satisfaction (Kemenpan-RB, 2025).

Despite the continuous development of digital infrastructure, the success of digital transformation is not solely determined by the availability of technology, but also heavily depends on the readiness of human resources to adopt and innovate with such technology (Margiono, 2021). The main challenges faced by local governments in implementing SPBE are not only technical issues, but also the behavioral readiness and digital competencies of civil servants (ASN) who operate the system on a daily basis.

Civil servants (ASN), as the driving force of bureaucracy, face significant challenges in the era of digital transformation. The shift from manual to digital ways of working, the use of online service applications, and the demand to generate innovations in public services require fundamental changes in work behavior. In this context, innovative work behavior (IWB) becomes a highly relevant construct. IWB refers to a set of employee behaviors that include generating new ideas, promoting these ideas to others, and implementing them in daily work practices (De Jong & Den Hartog, 2010).

One of the key factors driving innovative work behavior is leadership. In the context of digital transformation, the concept of leadership has evolved into digital leadership, defined as the capacity of leaders to leverage digital technologies to motivate and guide organizational members (Erhan et al., 2022; Zeike et al., 2019). Lin (2024) defines digital leadership as a set of competencies and behavioral processes used by leaders to utilize digital technologies in order to influence attitudes, emotions, cognition, and performance, thereby creating value and enabling organizational digital transformation. Although previous studies have shown that digital leadership positively influences IWB (Hadi et al., 2024; Sagbas et al., 2023), the mechanisms through which digital leadership affects employees' innovative behavior remain insufficiently explored, particularly in the Indonesian public sector.

Social Cognitive Theory, proposed by Bandura (1986), provides a theoretical framework to understand this mechanism. One of the central concepts in this theory is self-efficacy. In the digital context, this concept evolves into digital self-efficacy (DSE), which refers to an individual's belief in their ability to use digital technologies effectively

(Compeau & Higgins, 1995). Zhu et al. (2025) found that DSE mediates the relationship between digital leadership and employees' innovative behavior in the Chinese hospitality industry. However, whether a similar mechanism applies in the context of Indonesia's more hierarchical and bureaucratic local government institutions still requires empirical investigation.

In addition to individual factors, organizational learning culture (OLC) is assumed to moderate the relationship between DSE and IWB. When an organization has a strong learning culture, employees with high digital self-efficacy are more likely to translate their confidence into innovative behavior (Marsick & Watkins, 2003).

Several research gaps underpin this study. First, most studies on digital leadership and IWB have been conducted in the private sector (Wang et al., 2025; Abbas et al., 2024; Zhu et al., 2025), while research in Indonesia's local government bureaucracy remains very limited. Second, previous studies have not explored the moderating role of OLC as a representation of organizational contextual factors. Third, studies examining a moderated mediation model with this configuration of variables in the context of civil servants are still lacking. Therefore, this study aims to analyze the direct effect of digital leadership on IWB, the mediating role of DSE, and the moderating role of OLC.

RESEARCH METHOD

This study employs a quantitative explanatory approach with a survey design to examine the causal relationship between digital leadership (DL) and innovative work behavior (IWB), with digital self-efficacy (DSE) as a mediating variable and organizational learning culture (OLC) as a moderating variable, using PLS-SEM analysis processed with SmartPLS 4. The research population includes all civil servants (ASN), both permanent (PNS) and contract-based (PPPK), working in Regional Government Organizations (OPD) in a regency/city in Central Java Province that has implemented SPBE.

The sampling technique uses proportionate stratified random sampling based on OPD categories, resulting in a target sample of 200 respondents in accordance with the guidelines of Hair et al. (2019). Primary data were collected through the distribution of a Likert-scale questionnaire (1–5) consisting of 24 items developed from validated indicators in previous studies. Digital leadership is measured using 6 indicators adapted from Zeike et al. (2019) and Zhu et al. (2025). Innovative work behavior is measured using 6 indicators from De Jong and Den Hartog (2010). Digital self-efficacy is measured using 6 indicators from Compeau and Higgins (1995) and Rohatgi et al. (2016). Organizational learning culture is measured using 6 indicators from Marsick and Watkins (2003).

Data analysis is conducted through outer model evaluation (convergent validity, discriminant validity, and reliability) and inner model evaluation (hypothesis testing using path coefficients, t-statistics, and p-values with a bootstrapping procedure of 5,000 subsamples). The mediation effect is tested using specific indirect effects, while the moderating effect is analyzed using the product indicator approach. The selection of PLS-SEM is based on its advantage in handling complex models with mediation and moderation variables simultaneously (Hair et al., 2019).

Vol. 9. No. 2 (2026)
Page: 16164-16173

RESULT AND DISCUSSION

Respondent Characteristics

Of the 220 questionnaires distributed, 207 were returned, and 200 were deemed suitable for analysis (a response rate of 90.9%). Respondent characteristics are presented in Table 1.

Table 1.
Respondent Characteristics

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	109	54.5
	Female	91	45.5
Age	21–30 years	30	15.0
	31–40 years	76	38.0
	41–50 years	64	32.0
	>50 years	30	15.0
Education	Bachelor's (S1)	125	62.5
	Master's (S2)	44	22.0
	Others	31	15.5
Work Tenure	>10 years	87	43.5
	6–10 years	49	24.5
	1–5 years	64	32.0

Source: Researcher data processing, 2026

Measurement Model

The measurement model evaluation was conducted to ensure the validity and reliability of the instrument. Figure 1 shows the PLS-SEM measurement model used in this study.

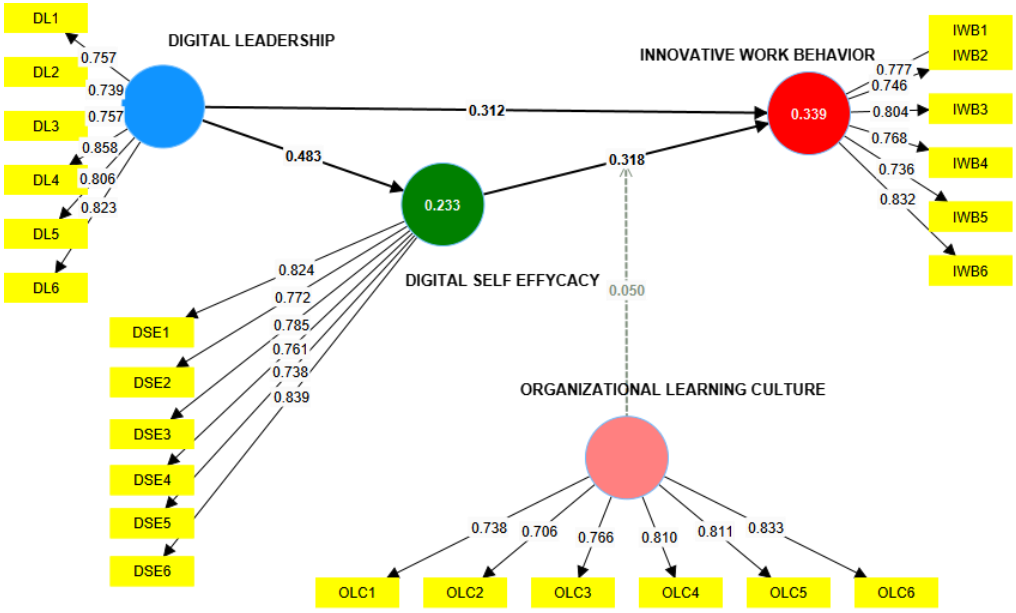

Figure 1.
PLS-SEM Measurement Model
Source: Researcher data processing using SmartPLS 4, 2026

Convergent Validity

The outer loading results show that all indicators have values above 0.70 (ranging from 0.706 to 0.858), thus meeting convergent validity at the indicator level. Table 2 presents the results of the factor loading test for each construct.

Table 2.
Factor Loading Test Results

Construct	Indicator	Factor Loading
Digital Leadership (DL)	DL1	0,757
	DL2	0,739
	DL3	0,757
	DL4	0,858
	DL5	0,806
	DL6	0,823
Digital Self-Efficacy (DSE)	DSE1	0,824
	DSE2	0,772
	DSE3	0,785
	DSE4	0,761
	DSE5	0,738
	DSE6	0,839
Innovative Work Behavior (IWB)	IWB1	0,777
	IWB2	0,746
	IWB3	0,804
	IWB4	0,768
	IWB5	0,736
	IWB6	0,832
Organizational Learning Culture (OLC)	OLC1	0,738
	OLC2	0,706
	OLC3	0,766
	OLC4	0,810
	OLC5	0,811
	OLC6	0,833

Source: Researcher data processing, 2026

Reliability

The reliability test in Table 3 shows that all constructs have Cronbach's Alpha and Composite Reliability values exceeding 0.70, and AVE values exceeding 0.50. These findings confirm that all constructs have strong internal consistency.

Table 3.
Reliability Test Results

Construct	Cronbach's Alpha	rho_a	CR (rho_c)	AVE
Digital Leadership	0,880	0,886	0,909	0,626
Digital Self-Efficacy	0,877	0,880	0,907	0,620
Innovative Work Behavior	0,869	0,875	0,902	0,605

Org. Learning Culture	0,869	0,876	0,902	0,606

Source: Researcher data processing, 2026

Goodness of Fit

The goodness of fit results show an SRMR value of 0.054, which is below the maximum limit of 0.08. This indicates that the model used has a good level of fit.

Table 4.
Model Goodness of Fit Results

Criteria	Saturated Model	Estimated Model
SRMR	0,054	0,064
d_ULS	0,868	1,211
d_G	0,289	0,296
Chi-square	329,339	333,857
NFI	0,868	0,866

Source: Researcher data processing, 2026

Structural Model

In testing the structural model, the coefficient of determination (R^2) for digital self-efficacy was 0.233, indicating that 23.3% of the variance in DSE can be explained by digital leadership. The R^2 for innovative work behavior was 0.339, indicating that 33.9% of the variance in IWB can be explained by the predictor variables in the model.

Based on the hypothesis testing results in Table 5, digital leadership was shown to have a positive and significant effect on innovative work behavior with a T-statistic of 4.572 and a p-value of 0.000. This finding supports hypothesis H1. Furthermore, digital leadership also significantly influenced digital self-efficacy (T=9.375; p=0.000), supporting H2. Digital self-efficacy significantly influenced IWB (T=4.346; p=0.000), supporting H3.

Table 5.
Hypothesis Testing Results (Direct Effect)

Path	Original (O)	Mean (M)	STDEV	T Statistics	P Values
DL -> IWB	0,312	0,313	0,068	4,572	0,000
DL -> DSE	0,483	0,487	0,052	9,375	0,000
DSE -> IWB	0,318	0,316	0,073	4,346	0,000
OLC -> IWB	0,090	0,098	0,059	1,527	0,127
OLC x DSE -> IWB	0,050	0,050	0,066	0,759	0,448

Source: Researcher data processing, 2026

Based on the mediation analysis results in Table 6, digital self-efficacy was shown to significantly mediate the relationship between digital leadership and innovative work behavior (β=0.154; T=3.872; p=0.000). The mediation is partial because the direct path from DL → IWB is also significant.

Table 6.
Mediation Analysis Results (Specific Indirect Effect)

Path	Original (O)	Mean (M)	STDEV	T Statistics	P Values
DL -> DSE -> IWB	0,154	0,154	0,040	3,872	0,000

Source: Processed data by the researcher, 2026

However, the interaction variable between OLC and DSE does not show a significant effect on IWB. The low T-statistic value (0.759) and high p-value (0.448) indicate that organizational learning culture does not function as a variable that strengthens or weakens the relationship between digital self-efficacy and innovative work behavior. In other words, although DSE has a significant effect on IWB, this relationship does not depend on the level of organizational learning culture.

Discussion

The finding that digital leadership has a positive and significant effect on IWB ($\beta = 0.312$; $p < 0.01$) is consistent with studies by Wang et al. (2025) and Hadi et al. (2024). In the context of local government bureaucracy, OPD leaders who demonstrate a clear digital vision, are able to communicate the direction of digital transformation, and empower employees will encourage innovative work behavior.

Digital leadership is the strongest predictor of digital self-efficacy in this model ($\beta = 0.483$; $p < 0.01$). Consistent with Zhu et al. (2025) and Compeau and Higgins (1995), digital leaders enhance employees' DSE through the provision of technology training, technical support, and role modeling in the use of technology. According to Bandura (1997), mastery experience and verbal persuasion from leaders are the primary sources of self-efficacy enhancement. For civil servants in local governments, OPD leaders who actively facilitate the use of SPBE and provide digital application training will significantly increase their subordinates' digital self-confidence.

DSE has a positive and significant effect on IWB ($\beta = 0.318$; $p < 0.01$), confirming Social Cognitive Theory that self-efficacy is a strong predictor of proactive and innovative behavior (Bandura, 1997). DSE is also proven to partially mediate the relationship between DL and IWB (β indirect = 0.154; $p < 0.01$), indicating that digital leadership influences IWB both directly and indirectly through the enhancement of DSE.

An interesting finding is the absence of a moderating effect of OLC ($\beta = 0.050$; $p = 0.448$). This result suggests that the strength of the influence of DSE on IWB does not depend on the level of organizational learning culture. Several explanations supported by empirical evidence can be proposed.

First, the hierarchical and formal characteristics of local government bureaucracy may hinder the substantive internalization of a learning culture. Research by Pircher Verdorfer and Van Ginkel (2024) in the *Journal of Public Administration Research and Theory* shows that public sector organizations have fundamental differences from conventional organizations that make change implementation highly challenging, including higher levels of bureaucracy, lack of market incentives, and increased goal conflicts. In such a context, a learning culture may exist formally but has not been fully internalized in daily work behavior, making it insufficient to strengthen or weaken relationships among individual variables.

Second, a study of 979 public sector employees in the Netherlands by Van der Voet et al. (2025) found that contextual moderating variables often fail to show significance in highly structured and formalized work environments. Formalization and centralization—key characteristics of bureaucracy—limit the space for contextual factors to play a moderating role. Similar findings were reported in research conducted in Indonesian public universities, which shows that despite having greater autonomy, public institutions still struggle with internal bureaucracy that hinders innovation and decision-making (Birawa & Veronica, 2024).

Third, as suggested by Zhu et al. (2025), moderating factors at the individual level, such as individual learning orientation, may be more relevant than organizational-level factors in moderating the relationship between DSE and IWB. This is because the influence of DSE on IWB is more intrinsic and personal, so the most effective reinforcing factors are also located at the individual level rather than the organizational level. Udin (2023), in his study on organizational learning culture as a moderator of the relationship between transformational leadership and employee performance in Indonesian community health centers, also found that the moderating role of OLC is not always consistent and depends on organizational context.

These findings provide an important contribution by showing that the mechanism of DSE's influence on IWB in Indonesia's public sector has dynamics that differ from theoretical assumptions developed in private sector contexts. The implication is that Social Cognitive Theory needs to be recontextualized when applied in local government bureaucratic environments, where organizational structural factors may function more as direct effects rather than as moderators of relationships between other variables.

CONCLUSION

The findings of this study confirm that digital leadership and digital self-efficacy are two important factors influencing civil servants' innovative work behavior. Digital leadership is proven to be the dominant factor in enhancing employees' digital self-efficacy ($\beta = 0.483$) and in promoting innovative work behavior both directly ($\beta = 0.312$) and indirectly through the mediation of DSE (β indirect = 0.154). However, organizational learning culture is not proven to moderate the relationship between DSE and IWB. These findings are partially consistent with Social Cognitive Theory, where the reciprocal mechanism between environmental and personal factors is confirmed, but the role of learning culture as a reinforcing factor is not supported in the bureaucratic context.

The improvement of innovative work behavior among civil servants is more strongly influenced by the quality of digital leadership and employees' digital self-efficacy independently, rather than by their interaction with organizational learning culture. The practical implication is that local governments need to prioritize the development of digital leadership competencies among OPD leaders and enhance digital technology training programs for civil servants. Future research is expected to employ longitudinal designs, multiple data sources, explore alternative moderating variables such as individual learning orientation or psychological safety, and expand the geographical scope.

REFERENCES

Abbas, S. M., Latif, M., & Sarwar, F. (2024). Digital leadership and innovative work behavior in IT sector: The mediating role of digital entrepreneurial orientation and digital organizational culture. Employee Responsibilities and Rights Journal. https://doi.org/10.1007/s10672-024-09503-7

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Prentice-Hall.

Bandura, A. (1997). Self-efficacy: The exercise of control. W. H. Freeman.

Birawa, A. P., & Veronica, S. (2024). Bureaucratic challenges in Indonesian state universities: Balancing autonomy and accountability. Journal of Higher Education Policy and Management, 46(3), 289-305.

Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. MIS Quarterly, 19(2), 189-211. https://doi.org/10.2307/249688

De Jong, J. P., & Den Hartog, D. (2010). Measuring innovative work behaviour. Creativity and Innovation Management, 19(1), 23-36. https://doi.org/10.1111/j.1467-8691.2010.00547.x

Erhan, T., Uzunbacak, H. H., & Aydin, E. (2022). From conventional to digital leadership: Exploring digitalization of leadership and innovative work behavior. Management Research Review, 45(11), 1524-1543. https://doi.org/10.1108/MRR-01-2022-0021

Hadi, S., Setiawati, L., Kirana, K. C., Lada, S. B., & Rahmawati, C. H. T. (2024). The effect of digital leadership and organizational support on innovative work behavior. Quality - Access to Success, 25(199), 74-83. https://doi.org/10.47750/QAS/25.199.09

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. European Business Review, 31(1), 2-24. https://doi.org/10.1108/EBR-11-2018-0203

Isbahi, M. B., Zuana, M. M. M., & Toha, M. (2024). The Multi-Social Relation of the Cattle Industry in the Plaosan Subdistrict Animal Market of Magetan Regency. *Malacca: Journal of Management and Business Development*, *1*(1), 31–46. https://doi.org/10.69965/malacca.v1i1.51

Kementerian PANRB. (2024). Keputusan Menteri PANRB No. 663/2024 tentang Hasil Evaluasi Sistem Pemerintahan Berbasis Elektronik Pada Instansi Pusat dan Pemerintah Daerah Tahun 2024. Kementerian Pendayagunaan Aparatur Negara dan Reformasi Birokrasi.

Kementerian PANRB. (2025). Dari reformasi ke dampak: Capaian Kementerian PANRB 2025 dalam pelayanan publik dan transformasi digital pemerintah. https://www.menpan.go.id/

Lin, N. (2024). Digital leadership: Definition, conceptualization, and future research directions [Catatan: Referensi ini perlu diverifikasi ulang di Scopus/Google Scholar sebelum submit].

Margiono, A. (2021). Digital transformation: Setting the pace. Journal of Business Strategy, 42(11), 315-322. https://doi.org/10.1108/JBS-11-2019-0215

Marsick, V. J., & Watkins, K. E. (2003). Demonstrating the value of an organization's learning culture. Advances in Developing Human Resources, 5(2), 132-151. https://doi.org/10.1177/1523422303005002002

Pircher Verdorfer, A., & Van Ginkel, G. (2024). Adapting to organizational change in a public sector high-reliability context: The role of negative affect and normative commitment to change. Journal of Public Administration Research and Theory, 34(3), 465-479. https://doi.org/10.1093/jopart/muae009

Rohatgi, A., Scherer, R., & Hatlevik, O. E. (2016). The role of ICT self-efficacy for students' ICT use. Computers & Education, 102, 103-116. https://doi.org/10.1016/j.compedu.2016.08.001

Sagbas, M., Erdogan, F. A., & Turan, H. (2023). Digital leadership and innovative work behavior: The role of digital culture. Journal of Business Research-Turk, 15(3), 1826-1840.

Udin, U. (2023). Linking transformational leadership to organizational learning culture and employee performance: The mediation-moderation model. International Journal of Professional Business Review, 8(3), e01229. https://doi.org/10.26668/businessreview/2023.v8i3.1229

United Nations. (2024). UN E-Government Survey 2024. Department of Economic and Social Affairs. https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2024

Van der Voet, J., Kuipers, B. S., & Groeneveld, S. (2025). Does bureaucracy demotivate public servants? An assessment of psychological mechanisms and the moderating role of age. Public Management Review. https://doi.org/10.1080/14719037.2025.2504723

Wang, Y., Park, S., & Gao, Y. (2025). Digital leadership and employee innovative performance: The role of job crafting. Frontiers in Psychology, 16, 1492264. https://doi.org/10.3389/fpsyg.2025.1492264

Zeike, S., Bradbury, K., Lindert, L., & Pfaff, H. (2019). Digital leadership skills and associations with psychological well-being. International Journal of Environmental Research and Public Health, 16(14), 2628. https://doi.org/10.3390/ijerph16142628

Zhang, Q., Li, M., & Wang, H. (2025). The impact of AI usage on innovation behavior at work. Behavioral Sciences, 15, 491.

Zhu, J., Luo, Y., & Wang, H. (2025). Digital leadership and employees' innovative behavior in the hospitality industry. Current Psychology, 44, 16283-16297. https://doi.org/10.1007/s12144-025-08358-x

Zia, A., Memon, M. A., Mirza, M. Z., Iqbal, Y. M. J., & Tariq, A. (2025). Digital job resources, digital engagement, digital leadership, and innovative work behaviour. European Journal of Innovation Management, 28(8), 3192-3216. https://doi.org/10.1108/EJIM-04-2023-0311