

THE INFLUENCE OF DIGITAL LEADERSHIP AND DIGITAL TRANSFORMATION ON EMPLOYEE WORK EFFECTIVENESS IN GOVERNMENT AGENCIES IN GUNUNGSITOLI CITY

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Received: 05/07/2026 | Revised: 13/07/2026 | Accepted: 20/07/2026 | Published: 10/08/2026

Abstract

Digital transformation in the government sector requires organizations to implement adaptive leadership and technology-based work systems to improve employee work effectiveness. This study aims to analyze the influence of Digital Leadership on employee work effectiveness, the influence of Digital Transformation on employee work effectiveness, and the influence of both variables simultaneously on the Regional Government Organization of Gunungsitoli City Government. The study used a quantitative approach with a questionnaire distribution method. The population was 1,468 people with a research sample of 94 employees selected using purposive sampling. Data were collected through a Likert scale questionnaire with a research instrument that had met validity requirements with a Corrected Item-Total Correlation value greater than 0.30 and reliability with a Cronbach's Alpha value of each variable above 0.70 and analyzed using validity tests, reliability tests, classical assumption tests, and multiple linear regression. The results showed that Digital Leadership had no significant effect on employee work effectiveness with a regression coefficient of 0.080 and a significance value of 0.559 (>0.05). In contrast, Digital Transformation has a positive and significant effect with a regression coefficient of 0.489 and a significance value of 0.000 (<0.05). Simultaneously, Digital Leadership and Digital Transformation have a significant effect on employee work effectiveness ($F = 18.716$; $\text{sig.} = 0.000$). The coefficient of determination (R^2) value of 0.291 indicates that both variables are able to explain 29.1% of the variation in employee work effectiveness. This study concludes that employee work effectiveness is more influenced by the success of digital transformation implementation than individual digital leadership. Therefore, the Gunungsitoli City Government needs to strengthen digital transformation through infrastructure development, system integration, increasing digital competency of the apparatus, and strengthening digital leadership capacity on an ongoing basis.

Keywords: Digital Leadership, Digital Transformation, Employee Work Effectiveness, Local government.

1. Introduction

The effectiveness of employee performance in government agencies in Indonesia is a strategic issue in efforts to achieve good governance. Work effectiveness is measured not only by the achievement of administrative targets but also by the quality of public services provided to the public. In the context of bureaucratic reform and the implementation of the Electronic-Based Government System (SPBE), the effectiveness of civil servant (ASN) work is a crucial indicator of the success of public sector organizations. According to Aryadi (2020), work effectiveness is the ability to carry out established goals accurately and efficiently. Improving employee effectiveness is a key requirement for developing a modern bureaucracy in Indonesia. The implementation of SPBE is expected to simplify bureaucratic procedures, accelerate service processes, and utilize digital technology to support more accurate decision-making.

Digital leadership is a strategic variable in driving work effectiveness, as the success of digital transformation depends heavily on the quality of leadership capable of synergizing technology with human resources in a harmonious and sustainable manner. Digital leadership in Gunungsitoli City still faces several challenges. Based on indicators of digital direction and vision, not all leaders are able to clearly communicate digital transformation goals to employees. Digital transformation has indeed been implemented through various electronic-based applications and systems. However, based on digital transformation indicators, several challenges remain. In terms of technology implementation,

some work processes are still semi-manual. In terms of infrastructure readiness, network disruptions and device limitations persist in some work units. The digital competency of civil servants is uneven, creating disparities in system operational capabilities. The phenomenon in Gunungsitoli City shows that employee work effectiveness is not yet fully optimal despite the implementation of digital leadership. Based on initial observations and interviews with several employees, it was found that services have begun to use digital technology, resulting in more work completion being influenced by digital systems rather than leadership intervention. However, timely task completion also faces challenges, particularly during the transition to digital systems, which requires technical adaptations and changes in work habits.

This research is expected to provide input for government agency leaders in Gunungsitoli City in formulating and implementing adaptive leadership strategies to the development of digital technology so as to improve employee work effectiveness and support the success of sustainable digital service transformation. Based on the background description above, the author raised the research title "The Influence of Digital Leadership and Digital Transformation on Employee Work Effectiveness in Government Agencies in Gunungsitoli City"

2. THEORETICAL REVIEW

Digital Leadership

The development of digital technology has brought fundamental changes to the way organizations are run, including in leadership. Digital leaders are those who are able to design a clear and meaningful vision for digital processes and execute appropriate strategies (Qiao et al., 2024). Therefore, leadership is no longer understood solely as the ability to direct and control human resources, but also as the capacity to respond to increasingly complex and dynamic environmental changes. Leadership in the digital era requires leaders to have a clear vision, the ability to continuously learn, and the ability to respond to the uncertainty created by technological developments (Tarumingkeng, 2023). Digital leadership is also seen as a paradigm shift from traditional hierarchical leadership to more collaborative and participatory leadership. Digital leadership plays a crucial role in utilizing digital technology to achieve work effectiveness. Digital leaders are required to integrate empathy, communication, and humanitarian values in the use of technology, so that digitalization does not eliminate the social dimension of the organization (Schwab, 2021). Digital leadership in government agencies also plays a crucial role in driving bureaucratic reform through the use of digital technology. In carrying out government duties, digital leadership also plays a role in building a collaborative and performance-oriented work culture among civil servants. Digital leaders are no longer positioned as the main controller, but as facilitators who encourage collaboration across work units through the use of digital platforms.

Digital Transformation

Digital transformation is a fundamental process of change that involves the strategic use of digital technology to transform the way organizations operate, deliver services, and create new value. Effective implementation of digital transformation has been shown to increase the speed of employee work processes, improve state revenue, enhance user compliance, and strengthen the quality of budget execution through efficiency and accuracy in resource management (Mulyana, 2025). Digital transformation is inseparable from changes in organizational work systems that prioritize efficiency, transparency, and speed in decision-making. Therefore, digital transformation is understood as a holistic and integrated process, not as a partial implementation of technology (Pettalongi et al., 2025). Digital transformation in the public sector is a systematic government effort to utilize digital technology to improve the quality of public services, bureaucratic effectiveness, and accountability in government administration. Digital transformation in government aims not only to increase administrative efficiency but also to create more transparent, participatory, and responsive governance to the needs of the community. Thus, digital transformation is a strategic instrument in modern bureaucratic reform.

Work Effectiveness

The success of government agencies in achieving development goals and providing public services is largely determined by the level of work effectiveness of their staff. Employee work effectiveness can be understood as an individual's ability to complete work correctly and on target. Effective employees not only complete work on time but also produce work quality that meets the organization's needs. In government organizations, work effectiveness is an

indicator in implementing each program, ensuring that every step in providing services can run smoothly (Prameswari and Widiyawati, 2024). Work effectiveness also provides benefits for employees, particularly in increasing job satisfaction and a sense of responsibility for their work. Employees who work effectively tend to have role clarity, better work motivation, and greater opportunities for self-development, in line with what Sarwoto stated in his book, "Employee Work Effectiveness Analysis," that work effectiveness plays a crucial role in creating harmonious working relationships between employees and the organization (Aryadi, 2020).

3. Research Methods

This type of explanatory research is used to explain the influence of Digital Leadership (X1) and Digital Transformation (X2) on Employee Work Effectiveness (Y). With this approach, it is expected to obtain a clear picture of the relationship pattern between variables that are studied objectively and measurably about the Influence of Digital Leadership and Digital Transformation on Employee Work Effectiveness in Government Agencies in Gunungsitoli City. This study uses a quantitative approach and is carried out in the Gunungsitoli City Government, which is located in North Sumatra Province, Indonesia. Gunungsitoli City functions as a center of government administration as well as a center of economic activity and public services in the Nias Islands region. The population in this study consists of 1,128 ASN, 23 Full-Time PPPK and 317 Part-Time PPPK totaling 1,468 people and the determination of the population is adjusted to the focus of the research which examines the role of digital leadership and digital transformation in increasing employee work effectiveness. The sample determination in this study used a purposive sampling technique because it has criteria including ASN and PPPK status, has worked for at least one year, uses digital-based applications, and is willing to be a respondent so that with the consideration that not the entire population of 1,468 ASN uses the digital service system actively. By using the Slovin formula at a 10% error rate, a minimum sample size of 94 respondents was obtained. Determination of the number of samples was carried out using the Slovin formula so that $n = 93.62$ respondents were obtained. Thus, it can be concluded that the number of samples in this study was 94 respondents, so that from 32 OPDs in Gunungsitoli City, each OPD took a sample of 3 people, but there were some OPDs that took a sample of 2 people. Measurement of respondents' answers used a five-level Likert scale, which consisted of the categories Strongly Agree (score 5), Agree (score 4), Neutral (score 3), Disagree (score 2), and Strongly Disagree (score 1). The Likert scale is used to measure respondents' attitudes, perceptions, and opinions regarding the statements submitted in a structured and systematic manner (Machali, 2021). Validity testing is carried out using the Corrected Item-Total Correlation technique, which measures each question item with a total score. A statement item is declared valid if the Corrected Item-Total Correlation value is $> r$ table (> 0.3) with a significance level of 5%, and the research instrument is declared suitable for use if all variables have a Cronbach's Alpha value ≥ 0.70 . Hypothesis testing in this study was carried out through multiple linear regression analysis using several statistical tests, namely the t-test to determine the partial effect, the F-test to test the simultaneous effect, and the coefficient of determination (R^2) to see the magnitude of the contribution of the independent variables. All tests were carried out at a significance level of 5% ($\alpha = 0.05$). The Coefficient of Determination uses Adjusted R-Square, which is a development of the standard R-Square in multiple linear regression analysis.

4. Results and Discussion

Research result

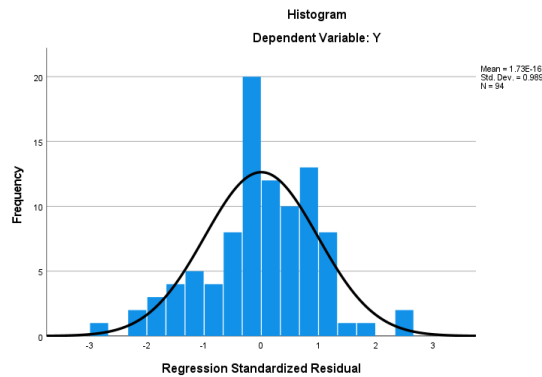
Based on the results of distributing questionnaires to 94 respondents, data obtained that the number of male respondents was 60 people or 63.8%, while female respondents were 34 people or 36.2%, thus, it can be seen that the respondents in this study were dominated by male employees. The ages of respondents were in the range of 28 years to 55 years. The age data of respondents were grouped into several age categories. The most respondents were in the 31–40 age group, namely 41 people or 43.6%. Furthermore, the 41–50 age group was 28 people or 29.8%, the 20–30 age group was 20 people or 21.3%, while the 51–60 age group was 5 people or 5.3%. Most of the respondents were Civil Servants (PNS), namely 87 people or 92.6%. Meanwhile, there were 7 respondents with Government Employee status with a Work Agreement (PPPK) or 7.4%. Respondents based on length of service were dominated by employees with 11–15 years of service, totaling 42 people or 44.7% of the total respondents. Furthermore, respondents with a working period of 1–5 years amounted to 21 people or 22.3%, then respondents with a working period of 16–20 years were 14 people or 14.9%. Respondents with a working period of 6–10 years amounted to 10 people or 10.6%, while respondents with a working

period of more than 20 years were 7 people or 7.5%

Instrument Testing and Classical Assumptions

The Digital Leadership variable (X1) has a *Corrected Item-Total Correlation* value between 0.459 to 0.802, Digital Transformation (X2) obtained a *Corrected Item-Total Correlation* value in the range of 0.540 to 0.893, and Employee Work Effectiveness (Y) showed a *Corrected Item-Total Correlation* value between 0.533 to 0.829. The results of the reliability test showed that all research variables had a Cronbach's Alpha value above 0.70. Digital Leadership obtained a *Cronbach's Alpha* value of 0.896. The Digital Transformation variable obtained a *Cronbach's Alpha* value of 0.896, while the Employee Work Effectiveness variable obtained a *Cronbach's Alpha* value of 0.903.

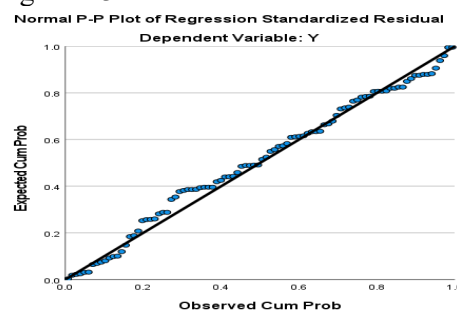
Figure 4.2 Histogram



(Source: Researcher Processing, 2026)

Based on the results of the residual histogram output, it can be seen that the distribution of residual data forms a pattern resembling a bell-shaped curve.

Figure 4.3 P-P Plot of Standardized Regression



(Source: Researcher Processing, 2026)

The results of the P-P Plot of Regression Standardized Residual test show that the residual points are spread around the diagonal line and mostly follow the direction of the line so that they do not show extreme deviations.

Table 4. 1One-Sample Kolmogorov-Smirnov Tests

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			94
Normal Parameters ^{a,b}	Mean		.0000000
	Standard Deviation		4.09137492
Most Extreme Differences	Absolute		.088
	Positive		.062
	Negative		-.088
Test Statistics			.088
Asymp. Sig. (2-tailed) ^c			.067
Monte Carlo Sig. (2-tailed) ^d	Sig.		.070
	99% Confidence Interval	Lower Bound	.063
		Upper Bound	.077
a. Test distribution is Normal.			
b. Calculated from data.			
c. Lilliefors Significance Correction.			
d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 624387341.			

(Source: Researcher Processing, 2026)

Normality testing was also conducted using the *One-Sample Kolmogorov-Smirnov statistical test*. Based on the SPSS output, the Asymp. Sig. value was 0.067.

The relationship between the Digital Leadership variable and Work Effectiveness obtained a significance value in the Linearity section of <0.000. This value is smaller than 0.05, thus indicating a linear relationship between Digital Leadership and Work Effectiveness.

Table 2 Results of the Linearity Test of Digital Leadership to Work Effectiveness

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Work Effectiveness * Digital Leadership	Between Groups	(Combined)	614,676	15	40,978	2,020	.024
		Linearity	379,797	1	379,797	18,721	.000
		Deviation from Linearity	234,879	14	16,777	.827	.638
	Within Groups		1582,430	78	20,288		
	Total		2197.106	93			

(Source: Researcher Processing, 2026)

In the Deviation from Linearity section, a significance value of <0.638 was obtained. This value is greater than 0.05, indicating a linear relationship between the two variables. Based on the results of the linearity test between the Digital Transformation variable and Work Effectiveness, a significance value in the Linearity section was obtained of <0.000. This value is smaller than 0.05, indicating a significant linear relationship between Digital Transformation and Work Effectiveness.

Table 3 Results of the Linearity Test of Digital Transformation to Work Effectiveness

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Work Effectiveness * Digital Transformation	Between Groups	(Combined)	1120,042	18	62,225	4,333	.000
		Linearity	634,462	1	634,462	44,180	.000
		Deviation from Linearity	485,581	17	28,564	1,989	.053
	Within Groups		1077.064	75	14,361		
	Total		2197.106	93			

(Source: Researcher Processing, 2026)

The significance value in the *Deviation from Linearity* section is 0.053. This value is greater than 0.05, so it can be concluded that there is no significant deviation from the linear form.

Multicollinearity testing in this study was conducted by examining the Tolerance and Variance Inflation Factor (VIF) values in the SPSS output. Based on the SPSS output, the following results were obtained:

Table 4 Multicollinearity Test

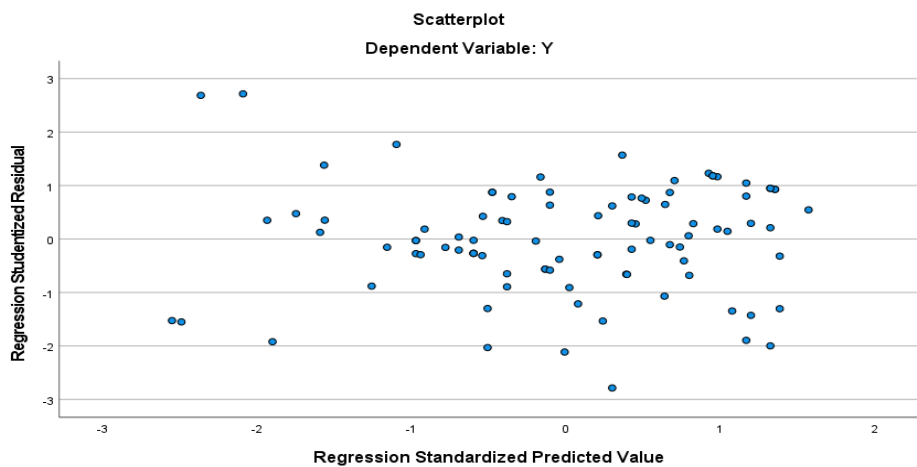
Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	18,331	4,395		4,171	.000		
	Digital Leadership	.080	.136	.073	.587	.559	.502	1,991
	Digital Transformation	.489	.125	.486	3,903	.000	.502	1,991

a. Dependent Variable: Work Effectiveness

(Source: Researcher Processing, 2026)

Based on the table, the Digital Leadership variable has a Tolerance value of 0.502, which means it is greater than 0.10. In addition, the VIF value is 1.991, which means it is less than 10. These results indicate that the Digital Leadership variable does not experience symptoms of multicollinearity in the regression model. The resulting scatterplot shows that the residual points are randomly distributed around the zero line on the vertical axis (Regression Studentized Residual) and do not form a specific pattern. This condition indicates that the regression model does not experience heteroscedasticity.

Figure 4.7 Image of Heteroscedasticity Test Results



(Source: Researcher Processing, 2026)

The results of the regression coefficients are shown in the output coefficients table.

Table 5 Multiple Linear Regression Analysis

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18,331	4,395		4,171	.000
	Digital Leadership	.080	.136	.073	.587	.559
	Digital Transformation	.489	.125	.486	3,903	.000
a. Dependent Variable: Work Effectiveness						

(Source: Researcher Processing, 2026)

Based on the results of multiple linear regression analysis, the regression equation obtained $\gamma = 18.331 + 0.080 X_1 + 0.489 X_2$. The results of multiple linear regression analysis indicate that Digital Transformation is the main factor contributing to increasing Employee Work Effectiveness, while Digital Leadership has not shown a significant influence partially.

Table 6 t-test (Partial)

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18,331	4,395		4,171	.000
	Digital Leadership	.080	.136	.073	.587	.559
	Digital Transformation	.489	.125	.486	3,903	.000
a. Dependent Variable: Work Effectiveness						

(Source: Researcher Processing, 2026)

Based on the test results, the Digital Leadership variable obtained a regression coefficient value of 0.080 with a t-value

of 0.587 and a significance level of 0.559. This significance value is greater than 0.05 ($0.559 > 0.05$).

Table 7 F Test (Simultaneous)

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	640,347	2	320,173	18,716	.000b
	Residual	1556,759	91	17,107		
	Total	2197.106	93			
a. Dependent Variable: Work Effectiveness						
b. Predictors: (Constant), Digital Transformation, Digital Leadership						

(Source: Researcher Processing, 2026)

The test results in the ANOVA table obtained a calculated F value of 18.716 with a significance level of 0.000. This significance value is smaller than 0.05 ($0.000 < 0.05$).

Table 8 Coefficient of Determination (R^2) Test

Model Summary				
Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	0.540a	0.291	0.276	4.136
a. Predictors: (Constant), Digital Transformation, Digital Leadership				

(Source: Researcher Processing, 2026)

The analysis yielded an R-square value of 0.291, or 29.1%. This indicates that the Digital Leadership and Digital Transformation variables explain 29.1% of the variation in Employee Work Effectiveness, with the remaining 70.9% explained by other factors not included in this research model.

Discussion of Research Results

Based on the partial test results (t-test), the Digital Leadership variable obtained a regression coefficient value of 0.080 with a calculated t-value of 0.587 and a significance level of 0.559. These results indicate that Digital Leadership has a positive relationship with Employee Work Effectiveness, but this influence is not statistically significant because the significance value is greater than 0.05. This is similar to previous research where Digital Leadership did not show a significant influence on the performance of millennial employees in East Java (Gehan & Yulianti, 2024).

The results of the hypothesis testing indicate that the Digital Transformation variable has a regression coefficient of 0.590, with a t-value of 6.133 and a significance level of 0.000. These results demonstrate that Digital Transformation has a positive and significant effect on Employee Work Effectiveness. This study aligns with previous research that found Digital Transformation has a direct positive effect on Work Effectiveness (Ariyanti & Gunarto, 2023).

Based on the results of the simultaneous test (F test), the calculated F value was 18.716 with a significance level of 0.000. These results indicate that digital leadership and digital transformation together have a positive and significant effect on employee work effectiveness. This is in line with previous research that found digital leadership and digital transformation play a strategic role in increasing work effectiveness (Sitompul et al., 2025).

The results of this study provide an understanding that improving employee work effectiveness within the Gunungsitoli City Government requires synergy between digital leadership and digital transformation. Digital leadership acts as a driver of change, while digital transformation is the primary instrument in improving the quality of work processes. The success of bureaucratic reform in the digital era will be largely determined by the organization's ability to integrate these two aspects sustainably. By strengthening digital leadership, improving employee competency, developing technological infrastructure, and optimizing electronic-based government systems, employee work effectiveness can continue to increase and support the realization of professional, modern, and service-oriented

governance.

5. Conclusion and Suggestions

Conclusion

Based on the results of research on the influence of digital leadership and digital transformation on the effectiveness of employee work in government agencies in Gunungsitoli City, the following conclusions can be drawn:

- a. Digital Leadership (X1) has a positive but not statistically significant influence on Employee Work Effectiveness (Y), because the implementation of work in OPD is more supported by a standardized digital system with a standard bureaucratic system so that employee work effectiveness is more influenced by the quality of digital transformation implementation than individual digital leadership. This finding shows that although digital leadership has a positive relationship direction, its existence is not optimally felt so that it is unable to provide a significant influence on increasing employee work effectiveness. This condition indicates that employee work effectiveness is not only determined by the leadership's ability to utilize digital technology, but is also influenced by other factors such as employee competence, technological readiness, organizational culture, and the applicable work system.
- b. Digital Transformation (X2) has a positive and significant effect on Employee Work Effectiveness (Y). This finding proves that the better the implementation of digital transformation in an organization, the higher the employee work effectiveness. The use of information technology, digitalization of work processes, easy data access, and the use of electronic systems can help employees complete work more quickly, precisely, and efficiently.
- c. Digital Leadership and Digital Transformation simultaneously have a significant impact on Employee Work Effectiveness. This indicates that both variables together can explain changes in employee work effectiveness in Gunungsitoli City's Regional Apparatus Organizations.

Suggestion

Based on the research results obtained, several suggestions that can be given are as follows:

- a. The Gunungsitoli City Government and each regional government agency (OPD) continue to need to improve digital leadership capacity through training, strengthening a digital work culture, and implementing policies that encourage optimal technology utilization. Employees are also expected to continuously improve their digital competencies and adaptability to change. Further research is recommended to include other variables, such as digital competency, organizational culture, work motivation, or readiness for change, to obtain a more comprehensive research model.
- b. The Gunungsitoli City Government needs to continue strengthening its technological infrastructure, information system integration, and digital service development. The local government is also required to ensure equal distribution of technical competencies to prevent productivity disparities among employees. Regional government agencies (OPD) are expected to optimize the digitalization of work processes through continuous system evaluation and development, while employees need to improve their digital literacy to effectively utilize technology. Future researchers can develop studies on aspects of organizational digital maturity, information system quality, and public service innovation.
- c. The government needs to integrate digital leadership development with the acceleration of digital transformation as part of bureaucratic reform, so that integrated Standard Operating Procedures (SOPs) align with leadership and managerial instructions. Regional government agencies (OPDs) are expected to build synergy between leadership, technology, and employee competency, while employees need to actively participate in every organizational digitalization program. For future researchers, it is recommended to expand the research object to other agencies or regions and use more diverse research designs to obtain more comprehensive results and have stronger generalizability.

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