

The Effect of Digital Leadership and Digital Literacy on Employee Performance at the Cirebon City Education Office

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Abstract: This study aims to analyze the influence of digital leadership and digital literacy on the performance of non-teacher structural employees at the Cirebon City Education Office. The research uses a quantitative method with an associative approach. The population in this study is 242 employees, with the research sample determined using probability sampling techniques through the simple random sampling method. Data were collected through a Likert scale questionnaire and analyzed using multiple linear regression with the help of SPSS. The results of the study show that digital leadership and digital literacy have a positive and partially significant effect on employee performance. Simultaneously, digital leadership and digital literacy also have a significant effect on the performance of non-teacher structural employees at the Cirebon City Education Office. This research is expected to be a consideration for government agencies in improving employee performance through strengthening digital leadership and increasing digital literacy.

INTRODUCTION

Advances in information and communication technology in the era of the Industrial Revolution 4.0 have had a significant impact on various areas of life, including work systems and public services in government agencies. This shift requires the government to carry out a comprehensive digital transformation, not only in terms of technological infrastructure, but also to encourage the improvement of the quality of human resources (HR) that are adaptive to change. (Menkominfo, 2021) noted that the adoption of digital-based systems in government has increased by 45% over the past five years, especially in the education and public service sectors. However, the effectiveness of its implementation is highly dependent on the ability of leaders and apparatus to manage technology and integrate it with organizational strategies.

In the context of public organizations, digital leadership (*digital leadership*) is one of the key factors in supporting digital transformation. Digital leaders not only function as decision-makers, but also act as agents of change who are able to direct, motivate, and shape a digital technology-oriented work culture. (Tulungen, Tewal, & Pandowo, 2022) explains that digitally literate leaders are able to leverage technology to accelerate communication, strengthen collaboration, and create sustainable work innovation. Research by (Cavus, Aghamiri, & Sancar,

2025) shows that digital leadership has a positive effect on employee performance, especially through improving the efficiency of decision-making and technology-based communication. Digitally competent leaders are also able to build a collaborative work ecosystem that fosters creativity and employee participation in achieving organizational goals.

In addition to digital leadership, digital literacy is also an important factor in supporting the success of organizational transformation. (Law, Woo, de la Torre, & Wong, 2018) defines Digital literacy refers to a person's ability to understand, evaluate, and utilize digital technology appropriately and responsibly. Employees with a high level of digital literacy are able to use various applications and data more efficiently to support better performance and public services. According to (Kirana & Prabowo, 2021) Digital literacy plays a significant role in increasing employee productivity and work accuracy, as it allows them to manage information more quickly and precisely. Instead, research (Dahman, Goso, Sahrir, & Salju, 2023) found that the low level of digital literacy among local government sector employees is the main obstacle in the implementation of digital-based information systems. Lack of training, limited tools, and lack of leadership support have also slowed down the digital transformation process.

A similar phenomenon also occurred at the Cirebon City Education Office, where some employees still had difficulty using information system and digital technology applications optimally. As a result, the effectiveness and efficiency of the work have not reached their maximum potential. Therefore, the specific objectives of this study are: (1) to analyze the effect of digital leadership on employee performance; (2) to analyze the effect of digital literacy on employee performance; and (3) to examine the simultaneous effect of digital leadership and digital literacy on employee performance at the Cirebon City Education Office.

This research is expected to make scientific contributions to the strengthening and development of the concept of digital leadership and digital literacy in the context of public organizations, as well as provide practical input for increasing human resource capacity and the effectiveness of government apparatus performance in the digital era.

LITERATURE REVIEW

Digital Leadership

Digital leadership refers to a leader's ability to integrate digital technology into organizational strategy and in the team management process, so as to be able to create an adaptive and responsive work environment to technological developments. In the public sector, digital leadership is crucial to creating a clear vision, inspiring teams, and facilitating effective collaboration in implementing technology-based solutions (Khaira, 2024). Leaders who are competent in digital technology can create a supportive work environment, thereby increasing team motivation and performance, especially among the younger generation who want adaptive and collaborative leadership (Khaira, 2024).

Theoretically, the relationship between digital leadership and performance is described through Contingency Theory by Fred Fiedler (1958) who stated that there is no one leadership style that is most effective in all situations. Leadership effectiveness depends on the fit between leadership styles, subordinate characteristics, and work environment conditions. This means that the success of the organization will increase if the leader is able to adjust his leadership behavior and strategy to the situational needs of the organization (Maryati & Siregar, 2022). In the context of modern organizations, this theory is particularly relevant to the digital age, where changes in the work environment are rapid and full of uncertainty. Leaders are required to have flexibility and digital intelligence in dealing with organizational dynamics and employee technology

capabilities.

Digital literacy

Digital literacy refers to a person's ability to appropriately utilize digital devices and technologies to access, manage, combine, evaluate, and analyze various digital information sources. This ability allows individuals to build new knowledge, generate media of expression, and communicate with others in a variety of life situations to support social development. Digital literacy includes several forms of literacy, such as computer literacy, information technology, visual literacy, media literacy, and communication literacy (Effiyaldi, Mulyono, & Suratno, 2024). Individuals with digital literacy are required to be able to formulate information search strategies, including effectively utilizing search engines to find information relevant to their needs. Furthermore, skills in using technology and information through digital devices also support the effectiveness and efficiency of activities in various contexts, such as education, work, and daily life (Reddy, Chaudhary, & Hussein, 2023).

The theory of digital literacy in this study refers to Framework for Information Literacy for Higher Education developed by ACRL (Association of College and Research Libraries, 2015). This framework thus emphasizes that digital literacy is not only related to technical ability to use technology, but includes the ability to find, evaluate, process, and use digital information effectively and ethically. ACRL views that individuals who are able to understand the value of information, assess source authority, and implement appropriate search strategies will be better equipped to adapt to the demands of technology-based work. As stated (Koch & Fehlmann, 2025), a reciprocal relationship is expected to occur, where digital performance can also influence and improve digital literacy. Further, various individual factors, such as environmental factors, will moderate transfers e.g., motivation, interest, and performance.

In a workplace environment that includes both private and public sector contexts, researchers have also established an empirical relationship between digital literacy and a range of productivity-related outcomes. A study by (Abdulkareem & Ramli, 2021) Finding a strong correlation between digital literacy and performance e-government in the public sector in Nigeria.

Employee Performance

Human Capital Theory developed by Gary S. Becker is an important foundation in understanding employee performance in this study, because the theory emphasizes that performance is the result of organizational and individual investment in the form of knowledge, skills, experience, and competencies that employees have as described in (Aman-Ullah, Mehmood, Amin, & Abbas, 2022).

The term performance is often considered to be synonymous with work output, work performance, productivity, effectiveness, or goal achievement. However, performance basically refers to a set of behaviors related to organizational goals. Performance is a synonym for the word behavior. Performance is what a person actually does and can observe, including actions that support organizational goals (Kirana & Prabowo, 2021). Performance is not the result of an action, but the action itself. Employee performance refers to the assessment of employees' actions in their work (Mardianti & Suprpti, 2025). Campbell, (1990) Declaring performance as individual actions and behaviors that are aligned with organizational goals.

Dahman et al (2023) Identify Employee Performance as the level of absence or attendance, ability to meet targets, and timeliness in completing tasks. Organizations must realize that employees must get the right qualities and abilities. The performance of an employee is produced from the qualitative and quantitative work that he or she does according to the

responsibilities given. (Boys & Amp; Pattiruh, 2020) adding that performance is employee behavior that is in accordance with their role or work. So, employee performance results from the employee's qualitative and quantitative work, ability to achieve goals, and responsibility to achieve those goals.

RESEARCH METHOD

The type of research used in this study is associative quantitative. This study uses saturated sampling by making all employees as a sample. The residents in this study are employees of the Cirebon Regency Housing, Settlements, and Land Office with 75 respondents. The research data was collected using a questionnaire on a likert scale of 1-5 because this scale is able to measure the attitudes, opinions, and perceptions of a person or group towards a social phenomenon (Sugiyono, 2020). This study aims to determine the extent of the influence of independent variables, namely Compensation (X_1), Job Satisfaction (X_2), on the dependent variable of Employee Performance (Y). By using the spss software version 25. The frame of thought is described as follows:

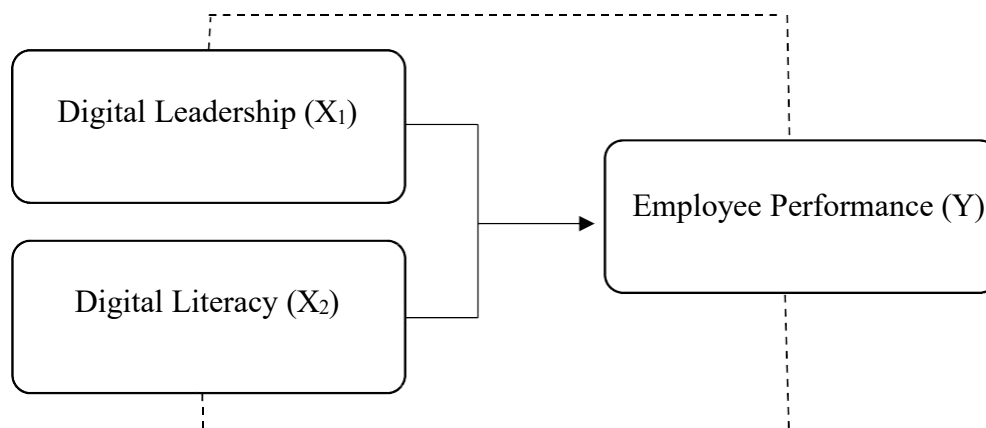


Figure 1. Frame of Mind

RESULTS AND DISCUSSION

Validity Test

Table 1. Research Variable Validity Test Results

<u>Digital Literacy</u>			
No	R calculated	R table	Description
1	0,629	0,1598	Valid
2	0,570	0,1598	Valid
3	0,513	0,1598	Valid
4	0,434	0,1598	Valid
5	0,651	0,1598	Valid
6	0,504	0,1598	Valid
7	0,536	0,1598	Valid
<u>Digital Leadership</u>			
No	R calculated	R table	Description
1	0,621	0,1598	Valid
2	0,706	0,1598	Valid
3	0,636	0,1598	Valid
4	0,651	0,1598	Valid

5	0,499	0,1598	Valid
6	0,597	0,1598	Valid
7	0,634	0,1598	Valid
8	0,555	0,1598	Valid

Employee Performance

No	R calculated	R table	Description
1	0,579	0,1598	Valid
2	0,556	0,1598	Valid
3	0,483	0,1598	Valid
4	0,497	0,1598	Valid
5	0,470	0,1598	Valid
6	0,504	0,1598	Valid
7	0,550	0,1598	Valid
8	0,546	0,1598	Valid

Source : SPSS Version 25

The validity test was carried out to find out the extent to which the statement items in the questionnaire were able to measure the variables studied. The validity test used the Pearson correlation with the degree of freedom ($df = n - 2 = 151$), so that the table r value of 0.1598 was obtained.

The results of the validity test showed that all statement items in the variables Digital Leadership (X_1), Digital Literacy (X_2), and Employee Performance (Y) had a calculated r value greater than the r table (0.1598). Thus, all statement items are declared valid and suitable for use as research instruments.

Reliability Test

Table 2. Reliability Test of Research Variable

Variable	Cronbach Alpha	Rehabilitation standards	Description
Digital Leadership (X_1)	0,613	> 0,60	Reliabel
Digital Literacy (X_2)	0,764	> 0,60	Reliabel
Employee Performance (Y)	0,619	> 0,60	Reliabel

Source : SPSS Version 25

The reliability test is used to determine the level of consistency of the research instrument. The test results showed that Cronbach's Alpha score for the Digital Leadership variable was 0.613, Digital Literacy was 0.764, and employee performance was 0.619. The entire value of Cronbach's Alpha is greater than 0.60, so it can be concluded that all research instruments are reliable.

Normality Test

Table 3. Normality Test Result One-Sample Kolmogorov-Smirnov Test

No	Variable	Asmp.sig.(2-tailed)	Decesion Criteria	Description
1.	Digital Leadership (X_1)	0,200	> 0,05	Normal
2.	Digital Literacy (X_2)			Normal
3.	Employee Performance (Y)			Normal

Source : SPSS Version 25

The normality test was carried out using the Kolmogorov–Smirnov method. The results of the initial test showed the value of Asymp. Sig. of 0.200 (>0.05) indicates that the residual data is normally distributed (Ghozali, 2021). Thus, it can be concluded that the assumption of normality

has been fulfilled.

Multicollinearity Test

Table 4. Multicollinearity Test Results

No	Variable	Tolerance	VIF	Description
1.	Digital Leadership (X_1)	0.901	1.110	No multicollinearity detected
2.	Digital Literacy (X_2)	0.901	1.110	No multicollinearity detected

Source : SPSS Version 25

Based on the results of the multicollinearity test above, it shows that the variables of digital leadership and digital literacy produce a tolerance value of >0.10 and a value of Variance Inflation Factor (VIF) <10 . This confirms that there are no symptoms of multicollinearity between independent variables in the regression model.

Heteroscedasticity Test

Table 5. Heteroscedasticity Test Results

Variable	Sig	Description
Digital Leadership (X_1)	0.157	No heteroskedasticity detected
Digital Literacy (X_2)	0.979	No heteroskedasticity detected

Source : SPSS Version 25

All independent variables that passed the heteroscedasticity test using the glycer test had a significance value of >0.05 . Which indicates that there are no symptoms of heteroscedasticity, which means that it has fulfilled the assumption of homoscedasticity.

Multiple Linear Regression Test

Table 6. Multiple Linear Regression Test Results

Model	Unstandardized Coefficients		Unstandardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	15.859	2.763		5.739	0,000
Digital Leadership	.271	.078	.257	3.479	0,036
Digital Literacy	.321	.062	.380	5.149	0,002

a. Dependent Variabel : Employee Performance

Source : SPSS Version 25

Based on the results of the multiple linear regression test, the regression equation obtained is as follows: $Y = 15.859 + 0.271(X_1) - 0.321(X_2) + e$

This equation shows that digital leadership (X_1) has a positive coefficient direction toward employee performance (Y) of 0.271. This means that if compensation increases, employee performance tends to increase. Meanwhile, digital literacy (X_2) also has a positive coefficient of 0.321, indicating that job satisfaction has a direct relationship with employee performance. In other words, in this research model, an increase in job satisfaction is followed by an increase in employee performance, assuming other variables remain constant.

Hypothesis Test

Table 7. Partial t-Test Results

Model	Unstandardized Coefficients		Unstandardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	15.859	2.763		5.739	0.000
Digital Leadership	.271	.078	.257	3.479	0.036
Digital Literacy	.321	.062	.380	5.149	0.002

Source : SPSS Version 25

The t-test analysis reveals that digital leadership (X1) exerts a positive and statistically significant influence on employee performance, as indicated by a t-value of 3.271 and a significance level of 0.001. Likewise, digital literacy (X2) is also found to have a positive and significant effect, with a t-value of 3.804 and a significance value of 0.000. Given that both significance values are below the 0.05 threshold, it can be inferred that each independent variable partially contributes to variations in employee performance. The positive direction of these relationships suggests that higher levels of digital leadership and digital literacy tend to be associated with improved employee performance, emphasizing their relevance in organizational contexts.

Table 8. Simultaneous F-Test Results

Model	Sum of squares	Df	Mean square	F	Sig.
Regression	216.510	2	108.255	27.696	0.003
Residual	578.483	148	3.909		
Total	794.993	150			

Source : SPSS Version 25

The results of the F-test indicate that the calculated F value is 27.696 with a significance level of 0.000 (< 0.05). This finding demonstrates that digital leadership (X1) and digital literacy (X2) simultaneously exert a statistically significant effect on employee performance (Y). Accordingly, both independent variables collectively contribute to explaining the variation in employee performance, underscoring their substantive role as key determinants in enhancing organizational performance

Test of Determination Coefficient

Table 9. Results of the Determination Coefficient Test

Model	R	R Square	Adjusted R Square	Std.Error of the Estimate
1	0.522	0.272	0.263	1.97704

Source : SPSS Version 25

The statistical analysis yields a correlation coefficient (R) of 0.522, which reflects a moderate association between digital leadership and digital literacy with employee performance. The coefficient of determination (R Square) of 0.272 indicates that 27.2% of the variability in employee performance is accounted for by these two independent variables, whereas the remaining 72.8% is attributed to other factors not included in the model. Additionally, the Adjusted R Square value of 0.263 suggests that, after controlling for the number of predictors and sample size, the model maintains a consistent and reliable explanatory capability.

DISCUSSION

The Influence of Digital Leadership on Employee Performance

Multiple linear regression analysis in this study reveals that digital leadership has a positive and meaningful influence on employee performance. With a significance value of 0.001 (smaller than 0.05), the regression coefficient obtained is 0.271. These results also indicate employee performance. Theoretically, digital leadership refers to managerial capabilities in providing direction, integrating, and optimizing the use of digital technology for smooth operations and the achievement of company goals. This is consistent with the studies conducted by (ALfares & Banikhaled, 2022) which concludes that digital leadership has a substantial impact on employee performance.

These results are in line with the empirical conditions in the agencies studied, where the average score of digital leadership is relatively high (mean = 31.36 out of a maximum score of

35), which shows that employees view leaders as able to implement digital-based leadership effectively. Leadership that is adaptive to technology allows the work process to be faster, transparent, and coordinated, thus having a direct impact on improving employee performance (Purwanto, Purba, Bernarto, & Sijabat, 2021). This is also consistent with the results of previous research by (Mullah et al., 2024) which indicates that the adoption of digital leadership strategies contributes to improving employee performance over a longer period of time to realize sustainable development. Furthermore, in today's dominant technological era, the implementation of digital leadership methods has the potential to strengthen organizational performance comprehensively.

The Influence of Digital Literacy on Employee Performance

In addition, the results of this study are consistent with the research (Dahman et al., 2023) which indicates that digital literacy has a substantial positive influence on the work performance of employees. This is evident from the value of the regression coefficient of 0.321 with a significance level of 0.000 (< 0.05). These findings indicate that the higher the ability of employees to use, understand, and utilize digital technology, the more has a positive correlation with performance output. Digital literacy allows employees to work more efficiently, manage information appropriately, and adapt to technology-based work systems that are increasingly dominant in public organizations.

Empirically, the average value of the respondents' digital literacy was relatively high (mean = 36.26 out of a maximum score of 40), which shows that the majority of employees have good digital competence. This condition supports the achievement of high performance (mean performance = 36.01 out of a maximum value of 40), because employees are able to complete tasks more effectively through the use of available digital systems. It is supported by research (Koch & Fehlmann, 2025) that digital literacy affects employee performance and overall organizational performance.

The Influence of Compensation and Job Satisfaction on Employee Performance

In comparison, the regression coefficient of digital literacy (0.321) is greater than that of digital leadership (0.271), which shows that digital literacy has a more dominant influence on employee performance. This can be explained because in daily work activities, the ability of individuals to operate and utilize technology directly determines the speed, accuracy, and quality of work completion, so that it has a stronger impact on performance.

Simultaneous F-Test analysis indicates that the dimensions of digital leadership and digital literacy have a substantial impact on employee performance, as evidenced by a significant of 0.000 (< 0.05). These findings imply that the integration between managerial functions in facilitating digital change and employee competence in utilizing technology has proven to be crucial in determining employee work outcomes in the organizations that are the subject of the study.

The adjusted determination coefficient (Adjusted R Square) of 0.263 indicates that aspects of digital leadership and digital literacy have an influence on 26.3% variation in employee performance. The remaining 73.7% was influenced by external factors not covered by this research model, including but not limited to work motivation, organizational culture, compensation system, physical work environment, and workload level. These findings confirm that although the digital element contributes substantively, employee performance is essentially the product of a complex interaction of various factors, rather than the result of a single variable.

CONCLUSION

This study shows that both digital leadership and digital literacy contribute significantly to improving employee performance at the Cirebon City Education Office. Digital leadership has a positive and significant effect on employee performance, indicating that leaders who are able to utilize digital technology effectively, encourage innovation, and support digital transformation can create a more adaptive and productive work environment. In addition, digital leaders play an important role in improving communication, accelerating decision-making processes, and motivating employees to adapt to technological changes, which ultimately enhances work effectiveness and efficiency.

Digital literacy also has a positive and significant effect on employee performance. Employees who possess strong digital competencies are better able to operate digital tools, manage and evaluate information accurately, and adapt to digital-based work systems. These abilities help employees complete tasks more efficiently, reduce errors in work processes, and improve the quality of service delivery. Therefore, the higher the level of employees' digital literacy, the greater their potential to achieve better performance outcomes.

Furthermore, digital leadership and digital literacy simultaneously have a positive and significant effect on employee performance. This indicates that effective leadership and employees' digital competence complement each other in supporting organizational performance and achieving work objectives more optimally.

Despite these findings, this study has some limitations, such as the limited sample, which only involved non-teacher structural employees in one institution, and the use of self-reported data that may not fully represent actual workplace conditions. Therefore, future studies are expected to involve a wider and more diverse sample, include additional variables such as job satisfaction, organizational culture, or employee engagement, and apply mixed methods or longitudinal approaches to provide more comprehensive and in-depth results.

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