

The Effect of Digital Leadership, ICT Competence, and Organizational Support on Organizational Performance Through the Effectiveness of Digital Application Use (Case Study at Kardinah Regional Hospital, Tegal City)

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Abstract: *This study aims to comprehensively analyze the influence of Digital Leadership, ICT Competence, and Organizational Support on the Organizational Performance of Kardinah Regional General Hospital, Tegal City through the Effectiveness of Digital Application Use as an intervening variable. This explanatory research study uses a quantitative approach. The study population includes all 950 employees of Kardinah Regional General Hospital (724 medical/paramedical personnel and 226 non-medical personnel). The sample was calculated using the Taro Yamane formula with a precision of 5%, resulting in 300 respondents. Data were collected through a structured questionnaire with an interval scale of 1–7 and analyzed using Structural Equation Modeling (SEM) based on AMOS 23 and the Sobel Test to test the mediation effect. The results of the structural analysis show that Digital Leadership ($\beta = 0.630$, CR = 5.908, $p < 0.001$), ICT Competence ($\beta = 0.667$, CR = 6.767, $p < 0.001$), and Organizational Support ($\beta = 0.741$, CR = 6.669, $p < 0.001$) have a positive and significant effect on the Effectiveness of Using Digital Applications. The Effectiveness of Using Digital Applications has a positive and significant effect on Organizational Performance ($\beta = 0.800$, CR = 5.587, $p < 0.001$). On the other hand, the direct effect of Digital Leadership ($\beta = -0.011$, $p = 0.915$), ICT Competence ($\beta = -0.018$, $p = 0.855$), and Organizational Support ($\beta = 0.094$, $p = 0.383$) on Organizational Performance is proven to be insignificant. The Sobel test confirms that the Effectiveness of Digital Application Use acts as a full mediating variable on the influence of Digital Leadership ($t = 4.000$), ICT Competence ($t = 4.108$), and Organizational Support ($t = 3.439$) on Organizational Performance. Practical implications emphasize that optimizing digital applications (SIMRS & RME) is the main key to achieving superior hospital performance.*

Keywords: *Digital Leadership, ICT Competence, Organizational Support, Effectiveness of Digital Application Use, Organizational Performance, Structural Equation Modeling (SEM AMOS).*

INTRODUCTION

The era of globalization and digital transformation in the Industry 4.0 era presents crucial challenges for all industrial sectors, particularly public healthcare. Healthcare facilities are required to consistently provide comfortable, high-quality services in accordance with national standards in providing promotive, preventive, curative, and rehabilitative services (Theresia et al., 2024). As the primary referral hospital within the Tegal City Government, Kardinah Regional Hospital is required to make innovative breakthroughs to maintain its competitive advantage. This advantage no longer relies solely on conventional medical aspects, but rather on superior Human Resources (HR) competency and the adoption of integrated Information and Communication Technology (ICT) (Elmario, 2024; Bessen & Righi, 2023).

Digital Leadership plays a key role in directing and integrating ICT into organizational strategy. Effective digital leaders not only master technological functionality but also possess the visionary capacity to inspire, motivate, and direct staff in the face of accelerated change (Wijaya et al., 2023; Maryati & Siregar, 2022). Furthermore, Organizational Performance reflects an institution's success in effectively managing financial, information, and human resources to achieve strategic goals and maintain sustainable competitiveness (Mwagonga & Kinyua, 2023). The foundation of superior performance is largely determined by the Organizational Maturity Level, which encompasses business process management, organizational culture, and innovation integration.

Table 1. Recapitulation of Kardinah Regional Hospital Organizational Maturity Values (2021–2025)

No.	Year	Maturity Value & Category Level
1	2021	39 (High Level: Interval 37.1–46)
2	2022	35 (Moderate Level: Interval 28.1–37)
3	2023	33 (Moderate Level: Interval 28.1–37)
4	2024	36 (Moderate Level: Interval 28.1–37)
5	2025	39 (High Level: Interval 37.1–46)

Table 1 shows fluctuations in the organizational maturity scores of Kardinah Regional Hospital, indicating that business process governance, innovation culture, and human resource capabilities are unstable. In addition to the gap phenomenon, a review of the scientific literature reveals a controversial research gap regarding the direct influence of antecedent variables on organizational performance, as summarized in Table 2:

Table 2. Research Gap Matrix of Previous Research

Variable Relationship	Significant Influence	No Significant Impact
Digital Leadership → Organizational Performance	Mollah et al. (2023) ; Maryati & Siregar (2022)	Antonopoulou et al. (2021) ; Rumapea et al. (2024) ; Pattanaik et al. (2025)
ICT Competence → Organizational Performance	Barba-Sánchez et al. (2024) ; J. Yu & Moon (2021)	Zhao et al. (2021) ; Wicaksono & Prasetyo (2023) ; Laily et al. (2025)
Organizational Support → Organizational Performance	Hasan et al. (2023) ; Jeong & Kim (2022)	Ramdhani & Sawitri (2017) ; Rubel et al. (2023) ; F. Wang (2025)

To bridge the inconsistency of the findings (research gap), this study proposes the variable of Effectiveness of Digital Application Use as an intervening (mediating) variable. At Kardinah Tegal Regional Hospital, although technologies such as the Hospital Management Information System (SIMRS) and Electronic Medical Records (RME) have been implemented, initial observations indicate that there are still operational obstacles from employees. Therefore, this study aims to examine the extent to which Effectiveness of Digital Application Use is able to mediate the influence of Digital Leadership, ICT Competence, and Organizational Support on Organizational Performance.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Resource-Based View (RBV)

The Resource-Based View (RBV) views organizations as a combination of unique resources and capabilities (Barney et al., 2001; Raharjo, 2022). Intangible resources such as Digital Leadership, ICT Competence, and Organizational Support constitute strategic capital. However, RBV theory emphasizes that possessing latent resources will not yield performance advantages unless they are converted into organizational capabilities. In this context, the Effectiveness of Digital Application Use acts as an explanatory capability that transforms resource capital into superior hospital performance efficiency, accuracy, and quality.

Conceptual Definition and Dimensions of Variables

1. Digital Leadership: The strategic capacity of leaders to utilize ICT, manage change, build a digital culture, and motivate teams (Maryati & Siregar, 2022; Sameh, 2022; Adenekan, 2025). Measured through the following dimensions: Communication Skills, Cultural Capabilities, and Technological Capabilities.
2. ICT Competence: An individual's technical and cognitive skills in operating and utilizing digital devices and applications (Hidayat et al., 2023; Adhim & Suherman, 2024). Measured through the following dimensions: Technology Literacy, Information Literacy, and Digital Communication Literacy.
3. Organizational Support: The form of assistance, facilities, and recognition provided by management to facilitate employees (Eisenberger et al., 2020; Kurniawati & Chalimah, 2024). Measured through the following dimensions: Instrumental Support, Informational Support, and Emotional Support.
4. Effectiveness of Digital Application Use: Optimal, efficient, and time-/energy-saving use of digital applications (Cendana & Penfui, 2025; Zuya et al., 2025). Measured through the following dimensions: Intensity of Use, Ease of Use, and Impact of Use.
5. Organizational Performance: The level of achievement of the institution's operational and service results (Conđu, 2020; Mwagana & Kinyua, 2023). Measured through the following dimensions: Service Effectiveness, Internal Efficiency, and Adaptability.

Framework Think Conceptual

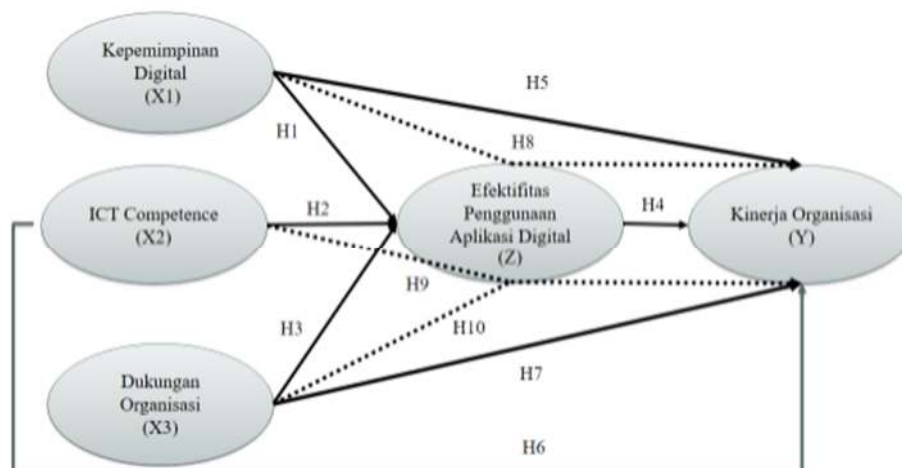


Figure 1. Framework Think Conceptual

Hypothesis Development

Based on study theoretical and empirically, 10 research hypotheses were formulated:

H1: Digital Leadership has a positive influence on the Effectiveness of Using Digital Applications at Kardinah Regional Hospital.

H2: ICT Competence has a positive effect on the Effectiveness of Using Digital Applications at Kardinah Regional Hospital.

H3: Organizational support has a positive effect on the effectiveness of digital application use at Kardinah Regional Hospital.

H4: The Effectiveness of Using Digital Applications has a positive effect on Organizational Performance at Kardinah Regional Hospital.

H5: Digital Leadership has a positive effect on Organizational Performance at Kardinah Regional Hospital.

H6: ICT Competence has a positive effect on Organizational Performance at Kardinah Regional Hospital.

H7: Organizational support has a positive effect on Organizational Performance at Kardinah Regional Hospital.

H8: Effectiveness of Digital Application Usage mediates the influence of Digital Leadership on Organizational Performance.

H9: Effectiveness of Digital Application Usage mediates the influence of ICT Competence on Organizational Performance.

H10: Effectiveness of Digital Application Usage mediates the influence of Organizational Support on Organizational Performance.

METHODS

This quantitative study used an explanatory research design to test the causal relationship between variables (Sugiyono, 2020). The study was conducted at Kardinah Regional Hospital, Tegal City (Jl. KS. Tubun No. 2, Tegal). The study population included all 950 Kardinah Regional Hospital employees (724 medical/paramedical and 226 non-medical). The sample size was determined using the Taro Yamane formula with a tolerance of error $d = 5\%$.

$$n = N / (N(d)^2 + 1) = 950 / (950(0.05)^2 + 1) = 281.48 \text{ (rounded to 300 respondents).}$$

Primary data were collected using an online questionnaire based on a 7-point interval scale (1 = Strongly Disagree, 7 = Strongly Agree). Operational definitions of the variables and details of the research indicators are presented in Table 3:

Table 3. Operational Definitions of Research Variables and Indicators

Variables	Dimensions	Operational Indicators
Digital Leadership (X1)	Communication Skills	1. Digital vision and communication of direction 2. Digital empowerment of employees
	Cultural Capabilities	3. Encourage a culture of learning & innovation

Variables	Dimensions	Operational Indicators
		4. Become a role model for the use of ICT
	Technological Capabilities	5. Adaptation to technological changes 6. Data-based decision making
ICT Competence (X2)	Technology Literacy	1. Operate basic software/hardware 2. Solve minor technical problems independently
	Information Literacy	3. Searching & managing digital information 4. Utilizing digital data for tasks
	Communication Literacy	5. Using digital communication instruments 6. Sharing digital documents securely
Organizational Support (X3)	Instrumental Support	1. Availability of device & internet facilities 2. Allocation of digital development budget
	Informational Support	3. Regular digital application training 4. Availability of guides & IT helpdesk
	Emotional Support	5. Appreciation for digitalization efforts 6. Management concern during the digital transition
Effectiveness of Digital Application Use (Z)	Intensity of Use	1. Frequency of daily application use 2. Level of task dependence on the application
	Ease of Use	3. Ease of access & system operation 4. Intuitive & unambiguous interface (UI)

Variables	Dimensions	Operational Indicators
	Impact of Use	5. Improved accuracy & quality of work 6. Saving time and service effort
Organizational Performance (Y)	Service Effectiveness	1. Speed of service to patients 2. Data quality & completeness of reports
	Internal Efficiency	3. Reducing operational costs 4. Increasing employee productivity
	Adaptability	5. Innovation in developing new services 6. Speed of adaptation to technological changes

Instrument validity test ($n = 30$) showed that all 30 indicators had $r \text{ count} > r \text{ table}$ (0.095) and $p < 0.05$ (valid). Reliability test showed that Cronbach's Alpha value for all variables was > 0.70 (KD = 0.771; ICTC = 0.770; DO = 0.770; EUDA = 0.764; KO = 0.765). Data analysis used Structural Equation Modeling (SEM) AMOS 23, through the stages of CFA, Multivariate Outliers evaluation (Mahalanobis Distance), multivariate normality (Bollen-Stine Bootstrap), multicollinearity test, Goodness of Fit evaluation, and Sobel Test.

RESULTS AND DISCUSSION

Result

Respondent Characteristics

Details of the demographic profile of 300 respondents from Kardinah Regional Hospital are presented in Table 4:

Table 4. Demographic Profile of Respondents (n = 300)

Category	Characteristics	Number of people	Percentage (%)
Gender	Male	130	43%
	Female	170	57%
Age	20–29 Years	37	12%
	30–39 Years	123	41%
	40–49 Years	83	28%
	≥ 50 Years	57	19%
Education	High School	46	15%
	Diploma (D3)	145	48%
	Bachelor (S1)	102	34%
	Master (S2)	5	2%

Category	Characteristics	Number of people	Percentage (%)
	Doctoral (S3)	2	1%
Years of service	1–5 Years	59	20%
	6–10 Years	95	32%
	11–15 Years	74	25%
	> 16 Years	72	24%

Descriptive Analysis of Variables (Three-Box Method)

Based on the calculation of the three-box criteria (index interval 42.86–300), the average value of the variable index is: Digital Leadership = 280.17 (High; highest score KD1 = 282.29), ICT Competence = 279.19 (High; highest score ICTC5 = 280.00), Organizational Support = 278.64 (High; highest score DO2 = 279.43), Application Effectiveness = 277.60 (High; highest score EUDA6 = 278.00), and Organizational Performance = 278.19 (High; highest score KO4 = 278.00).

Evaluation of the AMOS SEM Model

1. Outlier & Normality Evaluation: Mahalanobis distance testing identified 4 multivariate outliers that were excluded so that the final analysis used $n = 296$. The Bollen-Stine Bootstrap results produced a probability value of $p = 0.650 (> 0.05)$, so the model feasibility assumption is acceptable.
2. Multicollinearity: The correlation value between independent variables is below 0.90 (KD <--> ICTC = -0.049; ICTC <--> DO = -0.115; KD <--> DO = -0.061), proving that it is free from multicollinearity.
3. Goodness of Fit Model: The SEM Full Model fit test produces indicators that meet the fit criteria (Table 5):

Table 5. Eva expands Goodness of Fit Full SEM AMOS Model

Goodness of Fit Index	Cut-off Value	Model Results	Model Evaluation
CMIN/DF	≤ 2.00	1,237	Good Fit
RMSEA	≤ 0.08	0.029	Good Fit
CFI	≥ 0.90	0.964	Good Fit
TLI	≥ 0.90	0.960	Good Fit
GFI	≥ 0.90	0.895	Marginal Fit

Hypothesis Testing and Sobel Test Results

A complete summary of the SEM AMOS structural regression estimates and the Sobel Test is presented in Table 6:

Table 6. Summary of Direct and Mediation Effect Hypothesis Testing

No.	Relationship between variables	Coef. (β)	CR / t-stat	p-value	Decision
H1	Digital Leadership → Application Effectiveness	0.630	5,908	0.000	Accepted
H2	ICT Competence → Application Effectiveness	0.667	6,767	0.000	Accepted
H3	Organizational Support → Application Effectiveness	0.741	6,669	0.000	Accepted
H4	Application Effectiveness → Organizational Performance	0.800	5,587	0.000	Accepted
H5	Digital Leadership → Organizational Performance	-0.011	-0.107	0.915	Rejected
H6	ICT Competence → Organizational Performance	-0.018	-0.183	0.855	Rejected
H7	Organizational Support → Organizational Performance	0.094	0.873	0.383	Rejected
H8	Digital Leadership → Effectiveness → Performance	0.482	4,000	< 0.05	Accepted (Mediation)
H9	ICT Competence → Effectiveness → Performance	0.552	4.108	< 0.05	Accepted (Mediation)
H10	Organizational Support → Effectiveness → Performance	0.568	3,439	< 0.05	Accepted (Mediation)

Discussion

1. The Effect of Digital Leadership on Application Effectiveness (H1 Accepted): Path coefficient $\beta = 0.630$ (CR = 5.908; $p < 0.001$). Visionary leaders, being ICT role models, and making data-driven decisions significantly increase the effectiveness of hospital digital application utilization. These results support the findings of Brunner et al. (2023) and Chatterjee et al. (2023).
2. The Effect of ICT Competence on Application Effectiveness (H2 Accepted): Path coefficient $\beta = 0.667$ (CR = 6.767; $p < 0.001$). High employee technology and information literacy facilitates the operation of RME and SIMRS features without technical obstacles. This finding is in line with Andriansyah et al. (2024) and Setyawan et al. (2025).
3. The Effect of Organizational Support on Application Effectiveness (H3 Accepted): Path coefficient $\beta = 0.741$ (CR = 6.669; $p < 0.001$). Instrumental (budget & network), informational (training), and emotional support are the dominant factors driving application utilization. This finding strengthens Jeilani & Hussein (2025) and Xie et al. (2025).

4. The Effect of Application Effectiveness on Organizational Performance (H4 Accepted): Path coefficient $\beta = 0.800$ (CR = 5.587; $p < 0.001$). Optimizing the use of digital applications has a very strong impact on increasing service speed, cost efficiency, and employee productivity at Kardinah Regional Hospital (Zuya et al., 2025; Binsar et al., 2025).
5. Insignificant Direct Effect (H5, H6, H7 Rejected): The direct effect of Digital Leadership ($\beta = -0.011$; $p = 0.915$), ICT Competence ($\beta = -0.018$; $p = 0.855$), and Organizational Support ($\beta = 0.094$; $p = 0.383$) was proven to be insignificant. Based on the Resource-Based View (RBV) perspective, leadership, competence, and facilities are latent resources that do not automatically improve the performance of healthcare institutions without first being converted into operational capabilities through the actual use of digital applications (Barney et al., 2001; Zhao et al., 2021; Rubel et al., 2023).
6. Full Mediating Role of Effectiveness of Digital Application Usage (H8, H9, H10 Accepted): The Sobel Test results yield t-count H8 = 4.000, H9 = 4.108, and H10 = 3.439 (all $> t$ -table 1.97). This proves that Effectiveness of Digital Application Usage acts as a full mediating variable (full mediation). Leadership vision, employee competence, and support from new hospital facilities will result in improved institutional performance if they are able to encourage the optimization of digital applications in daily operations.

CONCLUSIONS

1. Digital Leadership, ICT Competence, and Organizational Support have a positive and significant influence on the Effectiveness of Using Digital Applications at Kardinah Regional Hospital, Tegal City.
2. The effectiveness of using digital applications has a positive and significant impact on the organizational performance of Kardinah Regional Hospital, Tegal City.
3. Digital Leadership, ICT Competence, and Organizational Support do not have a significant direct influence on Organizational Performance.
4. The effectiveness of the use of digital applications has been proven to act as a full mediation that connects Digital Leadership, ICT Competence, and Organizational Support to the Organizational Performance of Kardinah Regional Hospital.

Suggestion

1. Application System Optimization: Kardinah Regional Hospital Management needs to evaluate the SIMRS and RME interfaces (UI/UX) to make them intuitive and integrate systems between units to minimize manual input.
2. Competency Improvement & Helpdesk: Develop a structured digital training program and provide a 24/7 responsive IT helpdesk unit for medical and non medical personnel.
3. Strengthening Leadership Vision: Leaders should strengthen data-driven decision-making and reward work units that successfully implement digitalization.

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