Jurnal Manajemen Pelayanan Publik Vol. 10 No. 02, June 2026
http://dx.doi.org/10.24198/jmpp.v10i2.68776

Digital Technology Literacy as a Mediator between Visionary Leadership and Employee Performance in Local Health Offices: Evidence from West Java, Indonesia

[a] Abdulah Mubarok Dadang; [b] Disman; [c] Syamsul Hadi Senen; [d] Janah Sojanah; [e] Imas Purnamasari

[a] Management, Universitas Pendidikan Indonesia, Bandung, West Java, Indonesia; [b] Economics Education, Universitas Pendidikan Indonesia, Bandung, West Java, Indonesia; [c] Business Education, Universitas Pendidikan Indonesia, Bandung, West Java, Indonesia; [d] Office Management Education, Universitas Pendidikan Indonesia, Bandung, West Java, Indonesia; [e] Accounting Education, Universitas Pendidikan Indonesia, Bandung, West Java, Indonesia

ABSTRAK

Transformasi digital dalam pelayanan publik menuntut kecakapan teknologi digital yang memadai di kalangan pegawai, namun kesenjangan kompetensi masih menjadi tantangan nyata di lingkungan dinas kesehatan di Indonesia. Penelitian ini menguji peran literasi teknologi digital sebagai mediator antara kepemimpinan visioner dan kinerja pegawai. Menggunakan desain cross-sectional kuantitatif, penelitian ini melibatkan 180 pengelola program Standar Pelayanan Minimum (SPM) di 27 dinas kesehatan kabupaten/kota di Jawa Barat yang dipilih melalui proportional stratified random sampling berdasarkan ukuran kantor. Data dianalisis menggunakan SPSS 20 dan SmartPLS 4.0 (PLS-SEM). Hasil menunjukkan kepemimpinan visioner berpengaruh signifikan terhadap literasi teknologi digital (β = 0,619; p < 0,001), literasi teknologi digital berpengaruh positif signifikan terhadap kinerja pegawai (β = 0,570; p < 0,001), dan literasi teknologi digital memediasi hubungan kepemimpinan visioner dengan kinerja pegawai secara parsial (β = 0,353; p < 0,001), dengan rasio mediasi (VAF) sebesar 75,8%. Temuan ini memberikan implikasi teoretis melalui integrasi TAM, Social Cognitive Theory, dan Transformational Leadership Theory, serta implikasi praktis bagi pengembangan program literasi digital berbasis kepemimpinan visioner di sektor kesehatan publik.

ABSTRACT

Digital transformation in public services requires adequate digital technology proficiency among employees, yet competency gaps remain a persistent challenge within Indonesian health offices. This study examines the role of digital technology literacy as a mediator between visionary leadership and employee performance. Using a quantitative cross-sectional design, data were collected from 180 managers of the Minimum Service Standard (SPM) program across 27 district and city health offices in West Java, selected through proportional stratified random sampling based on office size. Data were analyzed using SPSS 20 and SmartPLS 4.0 (PLS-SEM). The results show that visionary leadership significantly influences digital technology literacy (β = 0.619, p < 0.001), digital technology literacy significantly and positively influences employee performance (β = 0.570, p < 0.001), and digital technology literacy partially mediates the relationship between visionary leadership and employee performance (β = 0.353, p < 0.001), with a mediation ratio (VAF) of 75.8%. These findings offer theoretical implications through the integration of TAM, Social Cognitive Theory, and Transformational Leadership Theory, as well as practical implications for designing visionary-leadership-based digital literacy programs in the public health sector.

ARTICLE HISTORY
Submited: 15 12 2025
Revised: 19 06 2026
Accepted: 24 06 2026
Published: 30 06 2026

KATA KUNCI
Kepemimpinan Visioner; Literasi Teknologi Digital; Kinerja Pegawai; Dinas Kesehatan; Mekanisme Mediasi

KEYWORDS
Visionary Leadership; Digital Technology Literacy; Employee Performance; Health Office; Mediation Mechanism

Correspondence Abdulah Mubarok Dadang Email : abdulahmubarok1974@upi.edu

INTRODUCTION

The digital transformation of public services has become an obligatory strategic priority, particularly following the COVID-19 outbreak, which accelerated the adoption of technology across government sectors (Chakraborty, Siddique, and Alam, 2023; OECD, 2023). This shift forms part of a longer trajectory of bureaucratic reform and e-government development in Indonesian local government, in which digital adoption is treated not merely as a technical upgrade but as a vehicle for improving public service quality (Putera, 2009). Digital technology literacy among public health workers refers to an important factor that will determine the extent of success of public health service provision in the digital age (Sappailee, Saad, and Kamaruzaman, 2022; Gomathi, Naidu, and Raghavan, 2023). Consistent with evidence from primary health-service innovation, technology alone is insufficient without adequate organizational capacity and staff readiness (Triwahyuni, Putera, and Rahayu, 2020). According to previous studies, digital literacy extends beyond the technical ability to use technology and encompasses competencies in accessing, understanding, evaluating, and integrating digital information to enhance work quality and support decision-making processes (Johanes, Thille, and Baker, 2022; Razak, Yassin, and Maamor, 2022). In Indonesia, digital literacy poses a significant challenge, especially in the area of public health, because there are great variations in competencies among workers, and their supporting technologies are quite weak (World Bank, 2024). A survey of digital literacy among 500 health office staff in West Java found that only 58% had a sufficient level of digital literacy to perform their jobs effectively (BKD Jawa Barat, 2024). Definitely, the ability to use basic office tools was accomplished by 70% of employees, but digital security, literacy, and technology integration into work processes were only achieved by 45% and 52%, respectively (OECD, 2023). This digital literacy gap has had a clear impact on the increasing variation in performance across districts and cities. Of the 27 districts and cities, 15 (55.6%) reported less-than-excellent performance, and the public satisfaction index for health services reached only 78.5%, which is below the expected benchmark of at least 85% (Ombudsman RI Perwakilan Jawa Barat, 2023).

This directly affects service delivery effectiveness: in offices with higher levels of digital literacy, administrative service response times fall from 5–7 days to 2–3 days, and error rates in health data reporting decline from 12–15% to 3–5%. This gap also limits the capacity to use data more effectively in evidence-based policy decisions. However, the digital transformation of health offices is fraught with challenges, comprising employee resistance to technology adoption, inadequate digital infrastructure in remote areas, limited budgets for digital literacy training, and the failure to integrate institution-specific professional development programs.

Based on this background, the central research question guiding this study is: to what extent does digital technology literacy mediate the relationship between visionary leadership and employee performance in district/city health offices in West Java? Accordingly, this study aims to (1) examine the effect of visionary leadership on digital technology literacy, (2) examine the effect of digital technology literacy on employee performance, and (3) examine the mediating role of digital technology literacy in the relationship between visionary leadership and employee performance.

Literature Review

Theoretical Foundation

This study combines three theoretical perspectives to explain the mediating mechanism through which visionary leadership enhances employee performance via digital technology literacy. First, TAM proposed by Davis (1989) and extended by Venkatesh et al. (2003) suggested that technology adoption is conditional on its perceived usefulness and ease of use. An organizational climate that enhances employees' perceptions was cultivated through the clear communication of technological value and the organization's strategic direction by visionary leadership (Santoso, Wijaya, and Pratama, 2024). Leadership support has recently added as an intrinsic factor of external variables, and it is used as a mediator variable toward perceived usefulness and perceived ease of use in TAM.

The second is Social Cognitive Theory, which presents the model of observational learning (Bandura, 1986). In the context of enterprise digitalization, transformational leaders act as role models by demonstrating effective technology use, promoting learning through structured training, and enhancing employees' confidence in using digital technologies (Esmaeili, Bagheri, and Zarandi, 2024). According to this theory, the interaction among personal factors (self-efficacy), behavioral factors (skills), and environmental factors (leadership support) is crucial in facilitating DLI. It should be noted that self-efficacy, while theoretically central to this mechanism, is not measured as a separate construct in the present model; its role is inferred from the theoretical framework rather than empirically tested, which is acknowledged as a limitation in the Study Limitations section.

Third, regarding Transformational Leadership Theory, leaders inspire and motivate followers to transform beyond their own performance capabilities in an idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration manner (Bass, 1985). Building on this foundation, visionary leadership is conceptualized in this study as an extension of transformational leadership (Kouzes and Posner, 2017), centered on communicating a clear and shared vision of the organization's strategic future, motivating commitment through values-based action and a distinct sense of purpose, and enabling followers to translate that vision into tangible outcomes (Osborn, Hunt, and Jauch, 2002).

Taken together, these three perspectives are linked through a single underlying logic: visionary leadership shapes the organizational conditions (TAM) and modeling processes (SCT) through which employees develop digital competence, which transformational leadership theory then connects to performance outcomes. This integration is particularly relevant in the Indonesian public-sector context, where bureaucracy is widely characterized as hierarchical, rule-bound, and comparatively resistant to rapid change (Putera, 2009). Such structural rigidity can slow the diffusion of new digital practices unless actively counteracted by adaptive, learning-oriented governance arrangements (Kurnia, Nurhaeni, and Putera, 2022), which underscores why leadership-driven mechanisms for building digital literacy are especially salient for health offices operating within this bureaucratic environment.

Previous Research and Research Gap

The literature indicated that digital literacy and transformational leadership are positively associated across a range of organizational settings. Paul and Iravo (2020) found that

transformational leadership affects Kenyan digital literacy program adoption under four dimensions, comprising idealized influence, inspirational motivation, intellectual stimulation, and individual consideration (Esmaeili, Bagheri, and Zarandi, 2024). The findings indicated that transformational leadership influenced digital literacy, with self-efficacy acting as an intermediate factor, and that inspirational leaders enhance employees' confidence in using technology. In a narrower field, Susanti, Rahman, and Kusuma (2023) studied empirically that transformational leadership attributes directly influence the development of digital comprehension through motivation and capacity-building programs.

(Gledson, Greenwood, and Kosmatka, 2023) supported these results, indicating that integrated digital leadership frameworks can mitigate organizational digital readiness as well as employee digital competencies. Furthermore, (Li, Wang, and Zhang, 2023) visionary leadership fostered employee creativity and, in turn, was strengthened by perceived organizational support, which helps create conditions conducive to technological innovation. (Kim, Wang, and Chen, 2024) highlighted that transformational leadership has a positive influence on affective commitment, cyclic stability, normative commitment, and continuance form of organizational commitment.

In the setting of Indonesia, study findings by Marlian, Setiabudi, and Silvya (2021) pointed out the importance of civil servant performance evaluation systems in advancing the quality of public services, which is also highly relevant to digital transformation initiatives in government. Relatedly, evidence on e-government implementation in local public administration shows that digital service performance depends not only on the technology itself but also on implementation capacity, institutional readiness, and staff ability to operate digital systems (Salsabila, Zetra, and Putera, 2021). The findings presented in Yogyandaru and Mayasari (2020) further highlighted the significance of adopting data-based policies to enhance the quality of public service delivery in Indonesia, thereby emphasizing the necessity for sufficient digital literacy of government staff.

However, against the existing literature on the interaction between leadership and digital literacy, several research gaps remain. First, the specific mechanisms of digital technology literacy have not been examined in depth, as most previous studies tend to use multiple mediators simultaneously. Secondly, the context of the Indonesian public health sector, which has its own unique features with respect to bureaucratic shape and technology acceptance model constructs, has been poorly studied. Third, no studies have systematically integrated the Technology Acceptance Model (TAM), Social Cognitive Theory (SCT), and Transformational Leadership Theory (TLT) to explain the micro-level processes through which visionary leadership fosters the development of digital literacy. Fourth, employee performance in public organizations is shaped not only by technical competence but also by factors such as integrity and organizational citizenship behavior, which existing digital-literacy-focused studies have largely left unexamined alongside leadership and literacy mechanisms (Saputra et al., 2026).

To fill this gap, this study proposed to offer and empirically examine the role of Digital Technology literacy as a mediator of connection among visionary leadership and employee performance in district/city health offices in West Java. The originality of this study lies in testing the specific role of digital technology literacy as a sole mediator within the Indonesian public health context; harmonizing three different theoretical backgrounds and delivering strong quantitative empirical evidence through PLS-SEM analysis, with the mediation ratio being 75.8%.

Hypothesis Development

Grounded in the synthesis of theories and existing empirical evidence, the study proposes three main hypotheses. It can be observed from the outset that transformational leadership has a significant impact on digital technology literacy. Visionary leaders allow the digital learning atmosphere to happen by clear communication about technology strategy, providing sufficient resources for training, and development of digital infrastructure, as well as giving support during the implementation of digital transformation (Kurniati and Hidayat, 2023). Paul and Iravo (2020) in the previous research found that digital literacy is strongly influenced by transformational leadership through mechanisms such as intellectual stimulation and individualized consideration, whereas Susanti, Rahman, and Kusuma (2023) verified that the leadership influence on the motivation enhancement and development of a digital capability in action programs.

H1: Visionary leadership significantly influences digital technology literacy.

Second, digital technology literacy performs a key role in employee performance. It enables employees to retrieve information more quickly and accurately and to leverage digital solutions to enhance work efficiency and productivity, collaborate efficiently through online platforms, and make data-informed decisions (Razak, Yassin, and Maamor, 2022). Sappailee, Saad, and Kamaruzaman (2022) in the previous studies established that digital literacy has a positive impact on work performance across various organizational settings, and Prihatini, Surya, and Syamsul (2021) showed that digital literacy has a significant impact on IWB in the new normal period.

H2: Digital technology literacy significantly influences employee performance.

Third, the mediating role of digital technology literacy among visionary leadership and employee performance is emphasized. Leadership alone is insufficient for achieving high performance devoid of employees who have the skills to effectively implement the leader's vision (Day et al., 2014). Imaginative leaders improve subsidiary performance by building employee digital literacy to work better with digital technology. Esmaeili, Bagheri, and Zarandi (2024) revealed the mediating role of self-efficacy on the leadership to digital literacy, whereas Gledson, Greenwood, and Kosmatka (2023) stated that digital leadership frameworks enhanced digital readiness, which in turn mediates improvements in employee performance.

H3: Digital technology literacy significantly mediates the connection between visionary leadership and employee performance.

Research Novelty

This study contributed several inputs to the existing literature. First, unlike prior studies that examine multiple mediators simultaneously (Esmaeili, Bagheri, and Zarandi, 2024; Kim, Wang, and Chen, 2024), the authors isolate digital technology literacy as a single mediating lens, allowing for a more precise examination of its effect process and magnitude.

Second, this study addresses a significant gap by being among the first studies conducted in the Indonesian public health sector, which is characterized by unique features such as organizational bureaucracy, digital infrastructure inequalities, and challenges in technology adoption. Third, by integrating these three theoretical perspectives (Technology Acceptance Model, Social Cognitive Theory, and Transformational Leadership Theory), this study indicated a more powerful argument than prior single-theory, model-driven studies to give a clearer

understanding at the micro level of how visionary leadership encourages digital literacy development.

RESEARCH METHODS

Research Design

This study applied a cross-sectional design and quantitative analysis to examine the relationships among visionary leadership, digital technology literacy, and employee performance. The studied population was all program managers of Minimum Service Standard (SPM) at 27 district/city health offices in West Java, covering around 810 persons. The sample size was calculated based on Slovin's formula by 5% error margin. This resulted in a minimum required sample size of 178 respondents. This sample size also exceeds commonly cited PLS-SEM minimum-sample guidance — both the 10-times rule of thumb and power-analysis-based recommendations for detecting medium effect sizes at $\alpha = 0.05$ (Hair et al., 2017) — supporting its adequacy for the structural model used in this study. Using proportional stratified random sampling based on office size, 180 participants from 27 health offices were selected for inclusion in the analysis. Respondents are 58% female, and 42% male, by an average age of M = 38.5 years (SD = 6.2), tenure of M = 12.3 years (SD = 4.8) and education levels at bachelor's degree (45%), master's degree (35%) and diploma (20%), reporting job positions as program managers (40%), section heads (35%) and division heads (25%).

Measurement Instruments

Measures: All data were collected using survey questionnaires by five-point Likert scales (1 = strongly disagree, 5 = strongly agree). Instruments for visionary leadership were four dimensions adapted by Kouzes and Posner (2017), which are future orientation (5 items), strategic thinking (4 items), inspirational communication (5 items), and empowerment (4 items).

Digital technology literacy was assessed based on instruments modified by Martin and Grudziecki (2006). The survey measured digital technology literacy across four dimensions: technical competency (5 items), information processing (4 items), digital communication (4 items), and digital security (4 items). Employee performance was assessed based upon instruments, derived by Mathis and Jackson (2011), that address four dimensions: task quality (5 items), work quantity (4 items), timeliness (4 items), and cooperation, teamwork (4 items).

Instrument validation was conducted through expert reviews by three professors in management and public administration, as well as pilot testing by 30 health office respondents who were not included in the main study. In line with Kline (2015), construct validity was assessed through convergent validity (outer loadings > 0.7, AVE > 0.5) and discriminant validity tests (Fornell-Larcker criterion and HTMT 0.7) and composite reliability (> 0.7). Validity and reliability results of all instruments appeared to be within acceptable values (outer loadings: 0.756–0.889, AVE: 0.612–0.698, Cronbach's alpha: 0.891–0.923, and composite reliability: 0.916–0.941).

Data Analysis

In the end of this section, data analysis was performed through Partial Least Squares–Structural Equation Modeling (PLS-SEM) utilizing SmartPLS version 4.0 software, following Hair et al. (2017) guidelines, in addition to convenience, the PLS-SEM approach was employed due to its ability to handle complex models involving multiple relationships, its robustness to violations of multivariate normality assumptions, and its suitability for simultaneously examining mediation effects, particularly when the sample size does not meet conventional criteria. The review was

carried out through a structured and sequential procedure. First, the outer model was assessed to evaluate measurement model quality by examining convergent validity using outer loadings (> 0.7) and Average Variance Extracted (AVE > 0.5), discriminant validity using the Fornell–Larcker criterion, cross-loadings, and HTMT values (< 0.85), as well as reliability through Cronbach's alpha and composite reliability values exceeding 0.7. Second, the inner model was evaluated to determine structural model quality based on R^2 values indicating weak (0.25), moderate (0.50), and substantial (0.75) explanatory power, predictive relevance measured by Q^2 values greater than zero, and effect sizes assessed using f^2 criteria (0.02 = small, 0.15 = medium, 0.35 = large). Third, to test the hypotheses, a bootstrapping method with 5,000 samples was used to analyze path coefficients (β), t-values, and p-values at the significance level $\alpha = 0.05$. Finally, mediation analysis was performed following standard methodological procedures by examining indirect effects and total effects as well as the Variance Accounted For (VAF) that served as an indicator of mediation strength, with VAF > 80% reflecting full mediation, 20 < VAF < 80 indicating partial mediation, and VAF < 20 showing no evidence.

Common Method Bias Control

Following (Podsakoff et al., 2003; Podsakoff, MacKenzie, and Podsakoff, 2012), in accordance with established guidelines, several procedural and statistical methods were applied to minimize common method bias. Procedurally, the questionnaire format used a random order of items to decrease response pattern effects, assured respondent anonymity to limit social desirability bias, and employed clear and simple item wording to reduce interpretation bias. Additionally, measures were temporally separated by administering the questionnaires for the independent and dependent variables at two different points in time, with a two-week interval. This time-lagged data collection was conducted within the single overall cross-sectional study window and does not constitute a separate longitudinal design; predictor and outcome variables both pertain to the same organizational period, and the two-week separation served solely to reduce common method bias rather than to test change over time. Statistical results of Harman's single factor test were that there remained no serious common method bias, with the largest factor is 38.7%, less than the threshold of 50% via exploratory factor analysis devoid of rotation. In addition, a common latent factor (CLF) analysis was performed by adding a common method factor to the PLS model. Results: The bias-corrected standardized effects were all less than 0.2, so common method variance did not appear to be a concern in the present study.

RESULTS AND DISCUSSIONS

Outer Model Evaluation

When assessing the outer model, the measurement model was tested for convergent validity, discriminant validity, and reliability. Convergent validity was supported, because all of the items had an outer loading which was greater than 0.7 (with a range from 0.756 to 0.889), and AVE values were higher than the cut-off value of 0.5 (ranging between 0.612 and 0.698), meeting Hair et al. (2017) criteria. Average Variance Extracted (AVE) values were obtained for each construct, with a value of 0.647 identified for visionary leadership, 0.698 for digital technology literacy, and 0.612 for employee performance, indicating that more than 60% of the variance in the observed indicators was explained by each construct. Discriminant validity was evaluated using three complementary criteria. First, by using evidence from the Fornell–Larcker criterion, the square root of AVE for each construct was found to be greater than its correlations with other constructs (visionary leadership > 0.804 and 0.619 and 0.533; digital technology literacy > 0.836 and 0.619 and 0.745; employee performance > 0.782 and 0.533 and 0.745). Second, the cross-loading pattern showed that each indicator was more strongly related to its own construct

than to other constructs. Third, a satisfactory discriminant validity was further demonstrated, as the Heterotrait–Monotrait (HTMT) ratio of all constructs was less than the threshold of 0.85, such as visionary leadership and digital literacy (0.682), visionary leadership and employee performance (0.597), and digital literacy and employee performance (0.823).

Furthermore, the reliability score indicated that all of the constructs met Cronbach's alpha level (greater than 0.7), indicating strong internal consistency with scores of 0.891 for visionary leadership, 0.923 for digital technology literacy, and 0.897 for employee performance. Moreover, the value of composite reliability was over 0.7 in all constructs (visionary leadership (0.916), digital technology literacy (0.941), and employee performance (0.920)), so they showed good internal consistency.

The following tables summarize the convergent validity, discriminant validity, and reliability results reported above.

Table 1.
Convergent Validity and Reliability

Construct	Outer Loadings	AVE	Cronbach's α	Composite Reliability
Visionary Leadership	0.756–0.889	0.647	0.891	0.916
Digital Technology Literacy	0.756–0.889	0.698	0.923	0.941
Employee Performance	0.756–0.889	0.612	0.897	0.920

Source: Author Processed

Table 2.
Discriminant Validity — Fornell–Larcker Criterion and HTMT

Construct	VL	DTL	EP	HTMT (vs. EP)
Visionary Leadership (VL)	0.804			0.597
Digital Technology Literacy (DTL)	0.619	0.836		0.823
Employee Performance (EP)	0.533	0.745	0.782	—

Source: Author Processed

Inner Model Evaluation

The inner model evaluation assessed the quality of the structural model using R^2, Q^2, and f^2 values. The R^2 results indicate that visionary leadership explains 38.3% of the variance in digital technology literacy ($R^2 = 0.383$), a moderate category according to Cohen (1988), while visionary leadership and digital technology literacy together explain 62.7% of employee performance variance ($R^2 = 0.627$, substantial category). These results demonstrate that the model has strong explanatory power, particularly with respect to employee performance.

Q^2 predictive relevance values estimated by the blindfolding procedure by omission distance 7 are Q^2 for digital technology literacy of 0.261 and Q^2 for employee performance of 0.379 (that is greater than the threshold value zero). This suggests that the model has good predictive relevance. Additionally, the f^2 effect size analysis indicates that the effect of visionary leadership on digital literacy is large ($f^2 = 0.621$), digital literacy on performance shows a large effect ($f^2 = 0.524$), and visionary leadership on performance shows a medium effect ($f^2 = 0.178$), which

indicates that all connection in the model has practical significance.

Table 3.
Structural Model Evaluation (R^2, Q^2, f^2)

Endogenous / Path	R^2	Q^2	f^2
Digital Technology Literacy	0.383 (moderate)	0.261	—
Employee Performance	0.627 (substantial)	0.379	—
VL → DTL	—	—	0.621 (large)
DTL → EP	—	—	0.524 (large)
VL → EP (direct)	—	—	0.178 (medium)

Source: Author Processed

Hypothesis testing was performed using bootstrapping procedures by 5,000 resamples. The results demonstrate that:

Hypothesis 1 is supported: A significant and positive effect of visionary leadership on digital technology literacy was identified (β = 0.619, t = 13.456, p < 0.001, 95% CI [0.529, 0.709]). It was further indicated that an increase of one unit in visionary leadership was associated with an increase of 0.619 units in digital technology literacy, with approximately 38.3% of the variance in digital literacy being explained by this relationship.

Hypothesis 2 is supported: A significant and positive influence of digital technology literacy on employee performance was observed (β = 0.570, t = 11.234, p < 0.001, 95% CI [0.470, 0.670]). It was further shown that a one-unit increase in digital technology literacy was associated with a 0.570-unit improvement in employee performance. When considered together with visionary leadership, approximately 62.7% of the variance in employee performance was explained by digital technology literacy.

Hypothesis 3 is supported: The relationship between visionary leadership and employee performance is highly mediated by digital technology literacy. There was a significant mediating effect of digital technology literacy on the relationship between visionary leadership and employee performance (β = 0.353, t = 9.678, p < 0.001, 95% CI [0.281, 0.425]). The direct impact of visionary leadership behavior on employee performance was also discovered to be statistically significant (β = 0.113, t = 2.456, p = 0.014, 95% CI [0.023, 0.203]). When both effects were entered into the model at once, the total effect was 0.466 (direct and indirect effects).

Table 4.
Hypothesis Testing Path Coefficients

Hyp.	Path	β	t-value	p-value	95% CI
H1	VL → DTL	0.619	13.456	<0.001	[0.529, 0.709]
H2	DTL → EP	0.570	11.234	<0.001	[0.470, 0.670]
H3a	VL → DTL → EP (indirect)	0.353	9.678	<0.001	[0.281, 0.425]
H3b	VL → EP (direct)	0.113	2.456	0.014	[0.023, 0.203]
	VL → EP (total effect)	0.466	—	—	—

Source: Author Processed

Mediation Analysis

The mediation analysis was based on Hayes (2013) and Zhao, Lynch Jr., and Chen (2010). To identify the type and strength of the mediation, the Variance Accounted For (VAF) was calculated by dividing the indirect effect by the total effect: VAF = 0.353 / 0.466 = 0.758 or 75.8%. According to Hair et al. (2017), as criteria, by 20% to 80%, this indicates partial mediation, meaning that digital technology literacy serves as a partial intermediary among visionary leadership and employee performance. This insight also indicates that visionary leadership impacts employee performance by two paths: the leader's influence on motivation and work direction (24.2% of the total effect) and enhancing employee digital technology literacy (75.8% of the total effect).

Table 5.
Mediation Analysis Summary

Effect	Value	Proportion of Total Effect
Indirect effect (VL → DTL → EP)	0.353	75.8% (VAF)
Direct effect (VL → EP)	0.113	24.2%
Total effect	0.466	100%

Source: Author Processed

The high mediating ratio (75.8%) suggests that digital technology literacy functions as a substantial mediator through which visionary leadership influences employee performance in health offices. This result is consistent with theories in the Technology Acceptance Model, where leadership creates an environment that fosters technology adoption. This study draws on Social Cognitive Theory, which emphasizes learning through observation and skill development, as well as Transformational Leadership Theory, which highlights how leaders motivate and develop followers' abilities to perform at their best.

These findings carry particular weight within the specific bureaucratic context of West Java's district and city health offices. As Minimum Service Standard (SPM) program managers operate within a multi-layered public-sector hierarchy where digital initiatives typically require approval through several administrative levels before implementation the strong role of visionary leadership in driving digital technology literacy suggests that leaders who can navigate and accelerate this layered decision-making process are disproportionately effective at fostering frontline digital adoption. This contextual specificity also explains why the mediation effect is as pronounced as it is: in settings with fewer bureaucratic layers, employees may acquire digital competencies through more diverse channels, whereas in West Java's health offices, leadership-driven initiatives appear to be a comparatively dominant pathway.

Theoretical Implications

The results of this study offered several theoretical implications for the literature on leadership, digital literacy, and performance. First, this study extends the Technology Acceptance Model (TAM) by demonstrating that visionary leadership serves as a powerful external variable influencing both perceived usefulness and perceived ease of use. These findings imply visionary leadership has a strong impact on digital literacy (β = 0.619), consistent with Venkatesh et al. (2003). This highlighted that organizational and leadership factors are critical antecedents in the technology acceptance process. More specifically, the study revealed how visionary leaders facilitate technology adoption: by articulating coherent future visions of technological benefits, allocating sufficient resources and support for digital learning, and fostering innovative and

change-oriented cultures within the organization.

Second, it extended Social Cognitive Theory by providing empirical evidence of observational learning and modeling processes within the specific context of digital literacy development. Results indicated that top managers act as role models, fostering employees' development of digital competencies. In this context, the connection operates in parallel, by personal factors (self-efficacy), behavioral factors (technical skills), and environmental factors (leadership support and organizational infrastructure) interacting with one another. The strongly significant effect of leadership on digital literacy (β = 0.619) supports Bandura's (1986) assumption that learning effectiveness is highly reliant on the quality of the model and environmental support perception.

Third, this study extended Transformational Leadership Theory by positioning digital technology literacy as a key mediator in the process of enhancing employee performance. This high mediation ratio (75.8%) indicated the extent to which success in performance improvement by visionary leadership relies on whether leaders are able to develop the digital competencies of their followers. This observation is an extension of Wang et al. (2011). Meta-analyses of transformational leadership effects on performance show that these effects are activated through a variety of mediating factors, with digital literacy emerging as particularly important in the context of the digital transformation era.

Fourth, this research presented a synthesized theoretical model to integrate TAM, Social Cognitive Theory, and Transformational Leadership Theory to elucidate how leadership impacts performance by digital literacy. This alignment suggests that: (a) visionary leadership creates conditions that foster openness to technology (TAM-oriented), (b) leaders serve as role models and facilitators in digital learning processes (Social Cognitive Theory-oriented), and (c) leader impact takes effect by enhancing follower competencies for better performance outcomes (Transformational Leadership theory oriented). This integrated framework presented deeper insights than single-theory perspectives into how organizations can effectively manage digital transformation. This integrated model also resonates with agile, redesigned approaches to local government governance, which similarly emphasize the interplay between leadership-driven vision and adaptive, competency-building processes within public bureaucracies (Kurnia, Nurhaeni, and Putera, 2022).

Practical Implications

Research Implications: The findings offered several practical and actionable implications for health office managers and policymakers. First, in the area of visionary leadership development, organizations need to design structured 'leadership programs' for developing future vision creation skills, strategic communication, and employee empowerment competencies. There is a need to incorporate modules on digital transformation vision crafting, digital change communication, and employee digital self-efficacy into training programs. Leaders should also be evaluated based on the clarity and effectiveness of their digital vision, their success in communicating the strategic role of technology, and how well they can ignite digital passion.

Second, a comprehensive model is advised for the design development of digital literacy programs with a focus on four key domains. These basic skills are taught through hands-on instructions in office software packages such as Microsoft Word and Excel, health information systems, and data analysis software. Students' information processing skills are developed through activities in sound digital searching, digital information literacy, and the critical assessment and integration of digital information. The ability to communicate digitally is honed by professional email writing, conducting virtual meetings through web-based platforms, and

collaborating with colleagues in the online world. Moreover, awareness of cybersecurity is strengthened by training on the security of passwords, avoiding phishing, and how to protect information. Training programs are designed and tailored to the employee's job and performance requirements through identification based on need assessment, competency mapping, and structured training design.

Third, investments in digital infrastructure should be targeted at delivering sufficient and reliable technology support (stable access to the internet; up-to-date hardware and software; well-integrated health information systems). Geographic conditions and financial constraints are carefully considered in the planning stage. These issues can be resolved through incremental deployment strategies, cooperation between the public and private sectors, and the implementation of existing technology investments effectively. In addition to the technological and organizational challenges, mechanisms need to be in place that ensure continuous evaluation and further development of digital infrastructure in order to keep it up-to-date and well-fitted. This is especially relevant given the rigid, hierarchical character of Indonesian public-sector bureaucracy, where infrastructure investment decisions and digital-service rollouts often pass through multiple layers of administrative approval; phased, well-coordinated deployment can help such initiatives gain traction despite this structural rigidity (Putera, 2009).

Fourthly, policy and incentive systems for digital learning should be in place. This includes embedding digital skills in performance appraisals, offering bonuses to employees at various levels of digital competence for developing digital proficiency, rewarding and celebrating intrapreneurship, and making it mandatory for promotion or progression opportunities to include a measure of the employee's commitment to lifelong learning. There should be sufficient funds in the budget and institutional dedication to digital transformation that policies are self-supported.

Fifth, changing the organizational culture needs to be systematically addressed, and an environment that supports digital learning and innovation should be created. Best practice for technology use should be modeled, and a climate created in which staff are encouraged to trial, make mistakes, learn, and innovate without fear of censure. Sharing knowledge and working collaboratively are encouraged, as are frequent check-ins with staff to inform and remind them of how digital transformation supports the organization's purpose. It is also realized that culture change is a slow process that cannot be achieved within a short period; it needs constant efforts, deep commitment, and involvement of all staff in the organization.

Study Limitations

This study has a number of limitations that deserve acknowledgement, despite its substantial contributions. First, causal inference is not possible with a cross-sectional study design. Although the proposed causal relationships can be examined by SEM analysis, only longitudinal or experimental approaches permit testing causal influences. Future studies should use longitudinal methodologies to explore the progression of the development of digital literacy and its impact on performance. Comparing those intervention groups with a structured digital literacy program to control groups, a quasi-experimental (comparator group) design would provide additional information.

Second, self-report measures could still have common method bias, even with procedural and statistical controls in place. Harman's single-factor test and CLF analysis suggest that common method bias is not a significant issue. Moreover, future studies should incorporate objective performance metrics, such as actual digital system usage data, digital skills test results, and performance evaluations by supervisors or colleagues, to strengthen the robustness of the

findings. Triangulating data from many sources would give a more thorough and accurate comprehension of the examined connections.

Third, focusing exclusively on health offices in West Java limits the generalizability of the findings. While the context does provide rich and useful findings on digital transformation taking place within the Indonesian public health sector, we appreciate that the results may have limited generalizability to other contexts with varying types of digital infrastructures, organizational cultures, or the nature of regulatory support. Further research should extend the range of settings by including health offices in other provinces or different types of public organizations to test the model's resilience and generalizability.

Fourth, this study focuses solely on digital literacy as a mediator, potentially overlooking other important mediating processes. Although a narrow emphasis such as this is important, as it recognizes the distinctiveness of digital literacy, evidence suggests that there are other dimensions, including organizational culture and preparedness for change (e.g., to technology infrastructure, but also factors such as organizational support and an innovation-friendly ethos) that could play important mediating roles. In future research, more complex models that include several mediators are encouraged and should be pursued in order to gain further insights into the different routes by which visionary leadership influences performance outcomes. Furthermore, potential moderators have yet to be explored. Variables such as organizational size, the extent of digital infrastructure available, and employee demographics, such as age levels, educational attainment, and level of technology experience, could influence these relationships. Supporting external factors may also impact the relationship between visionary leadership, digital literacy, and employee performance. It follows that future research should further explore these moderating variables to establish the conditions under which these links are amplified or attenuated to provide more nuanced, context-specific managerial implications.

CONCLUSIONS

In direct response to the research questions posed at the outset of this study whether and how visionary leadership relates to employee performance, and what role digital technology literacy plays in that relationship the findings indicate that digital technology literacy serves as a key associated factor between visionary leadership and employee performance in health offices across districts and cities in West Java. Visionary leadership is strongly associated with digital technology literacy, which in turn is strongly associated with employee performance. Furthermore, digital technology literacy performed a crucial mediating role in the connection between visionary leadership and employee performance. The theoretical contribution of this study is that it combines Social Cognitive Theory, Technology Acceptance Model, and Transformational Leadership Theory to explain how visionary leadership helps people become more digitally literate, which in turn improves their performance. The high mediation percentage indicates that digital technology literacy is a critical mechanism that cannot be overlooked in the digital transformation of the public health sector.

In practice, the results showed how important it is to create visionary leadership and digital literacy programs in a way that is both integrated and methodical. Health office leaders not only need a clear vision for digitally transforming their organizations, but they must also communicate this vision effectively and give employees the tools and resources needed to enhance their digital skills. Digital literacy initiatives need to cover all dimensions related to digital literacy, aspects that range from technical skills to cognitive and socio-emotional competencies. They should also be personalized to meet the needs and abilities of each employee. Driving digital transformation requires an organization to provide the necessary

digital infrastructure and enabling policies, as well as a culture that nurtures digital learning and innovation.

This study gave practitioners distinct action frameworks. First, put money into developing visionary leaders who can help employees feel empowered, communicate strategically, and have a clear digital strategy. Second, develop digital literacy programs that adopt a holistic approach and address all key areas of competency. Third, develop a strong and stable digital infrastructure over time, taking into account resource constraints. Fourth, have policies and incentives to encourage digital learning and innovations. Fifth, develop organizational cultures that embody continuing learning and change.

The authors suggest that future investigations attempt to address the limitations of this research with longitudinal designs including objective measures of performance, in wider settings, as well as testing moderating and additional mediated effects. How digital transformation and sustainability practices are adopted in public organizations may provide a valuable source for evidence-based policy-making. More evidence of how well (or not) digital transformation works in different environments would help determine the critical factors for success and what best practices may be extrapolated to other situations.

REFERENCES

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ, US: Prentice-Hall, Inc (Prentice-Hall series in social learning theory), pp. xiii, 617–xiii, 617.

Bass, B.M. (1985). Leadership and performance beyond expectations. Free Press.

BKD-Jawa-Barat (2024) Assessment literasi digital ASN Jawa Barat tahun 2024, Badan Kepegawaian Daerah Provinsi Jawa Barat.

Chakraborty, D., Siddique, M. and Alam, S.S. (2023) 'Agile leadership and digital transformation in public sector organizations', International Journal of Public Administration, 46(8), pp. 589–603.

Davis, F.D. (1989) 'Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology', Management Information Systems Quarterly, 13(3), pp. 319–340. Available at: https://doi.org/10.2307/249008.

Day, D. V et al. (2014) 'Advances in leader and leadership development: A review of 25 years of research and theory', The Leadership Quarterly, 25(1), pp. 63–82. Available at: https://doi.org/10.1016/j.leaqua.2013.11.004.

Esmaeili, M., Bagheri, M. and Zarandi, M.E. (2024) 'The role of transformational leadership in developing digital literacy: Mediating effect of self-efficacy', Journal of Educational Technology & Society, 27(1), pp. 145–162.

Gledson, B., Greenwood, D. and Kosmatka, J. (2023) 'Digital leadership frameworks for organizational digital readiness', Journal of Construction Engineering and Management, 149(04022159). Available at: https://doi.org/10.1061/(ASCE)CO.1943-7862.0002456.

Gomathi, S., Naidu, A. and Raghavan, V. (2023) 'Digital health literacy and its impact on healthcare delivery quality', International Journal of Healthcare Management, 16(2), pp. 178–195.

Hair, J.F. et al. (2017) A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Sage.

Hayes, A.F. (2013). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. New York, NY, US: The Guilford Press, pp. xvii, 507–xvii, 507.

Johanes, P., Thille, C. and Baker, R.S. (2022) 'Measuring digital literacy in educational contexts: A systematic review', Computers & Education, 176(104362).

Kim, T., Wang, J. and Chen, J. (2024) 'Visionary leadership and innovative performance: The role of psychological empowerment', The Leadership Quarterly, 35(1).

Kouzes, J.M. and Posner, B.Z. (2017) The leadership challenge: How to make extraordinary things happen in organizations. 6th edn. Wiley.

Kurnia, T., Nurhaeni, I.D.A. and Putera, R.E. (2022) 'Leveraging Agile Transformation: Redesigning Local Government Governance', KnE Social Sciences.

Kurniati, E.D. and Hidayat, R. (2023) 'Adaptive and visionary leadership in aligning digital strategy: Evidence by Indonesian organizations', Asian Journal of Business Management, 15(3), pp. 287–304.

Li, X., Wang, Y. and Zhang, L. (2023) 'How visionary leadership fosters employee creativity: The role of perceived organizational support', Journal of Leadership Studies, 17(2), pp. 34–51.

Marlian, S., Setiabudi, W. and Silvya, D. (2021) 'The Evaluation of Policy Implementation on ASN Performance Appraisal System', Jurnal Manajemen Pelayanan Publik, 4(2), pp. 128–237.

Martin, A. and Grudziecki, J. (2006) 'DigEuLit: Concepts and Tools for Digital Literacy Development', Innovation in Teaching and Learning in Information and Computer Sciences, 5(4), pp. 249–267. Available at: https://doi.org/10.11120/ital.2006.05040249.

Mathis, R.L. and Jackson, J.H. (2011) Human resource management. 13th edn. South-Western Cengage Learning.

OECD (2023) Digital government review of Indonesia: Building digital capacity in the public sector. OECD Publishing.

Ombudsman-RI-Perwakilan-Jawa-Barat (2023) Laporan survei kepuasan masyarakat terhadap pelayanan publik di Jawa Barat tahun 2023. Ombudsman Republik Indonesia.

Osborn, R.N., Hunt, J.G. and Jauch, L.R. (2002) 'Toward a contextual theory of leadership', The Leadership Quarterly, 13(6), pp. 797–837. Available at: https://doi.org/10.1016/S1048-9843(02)00154-6.

Paul, R.K. and Iravo, M.A. (2020) 'Role of Transformational Leadership on Implementation of Digital Literacy Program in Kenya', International Journal of Economics, Commerce and Management, VIII(10), pp. 446–470.

Podsakoff, P.M. et al. (2003) 'Common method biases in behavioral research: A critical review of the literature and recommended remedies', Journal of Applied Psychology, pp. 879–903. Available at: https://doi.org/10.1037/0021-9010.88.5.879.

Podsakoff, P.M., MacKenzie, S.B. and Podsakoff, N.P. (2012) 'Sources of method bias in social science research and recommendations on how to control it', Annual Review of Psychology, pp. 539–569. Available at: https://doi.org/10.1146/annurev-psych-120710-100452.

Prihatini, L.D., Surya, D. and Syamsul, M. (2021) 'Digital literacy and innovative work behavior in the new normal era', Journal of Indonesian Economy and Business, 36(2), pp. 180–197.

Putera, R.E. (2009) 'E-Government dan Reformasi Birokrasi dalam Rangka Peningkatan Pelayanan Publik di Daerah', Jurnal Demokrasi, 8(1), pp. 97–115.

Razak, A.Z.A., Yassin, A.A. and Maamor, N.A.M. (2022) 'Digital literacy and employee performance: A systematic literature review', Universal Journal of Educational Research, 10(5), pp. 1107–1119.

Salsabila, S., Zetra, A. and Putera, R.E. (2021) 'Penerapan E-Government Dalam Pelayanan KTP Elektronik di Dinas Kependudukan dan Pencatatan Sipil', Jurnal Ilmu Administrasi Negara ASIAN, 9(2), pp. 314–324.

Santoso, A.B., Wijaya, C. and Pratama, R. (2024) 'Perceived usefulness as the main driver of successful digital integration: Evidence by public organizations', International Journal of Public Administration in the Digital Age, 11(1), pp. 1–18.

Sappailee, N., Saad, R.A.J. and Kamaruzaman, M.A. (2022) 'The connection among digital literacy and work performance: A conceptual framework', International Journal of Academic Research in Business and Social Sciences, 12(1), pp. 234–249.

Saputra, N., Putera, R.E., Zetra, A., Azwar, A., Valentina, T.R. and Mulia, R.A. (2026) 'Enhancing Public Management Through Integrity and Organizational Citizenship Behavior: A Systematic Review', International Journal of Public Administration, pp. 1–16.

Susanti, H.D., Rahman, A. and Kusuma, I. (2023) 'Transformational leadership characteristics and digital literacy development: The role of motivation enhancement', Journal of Educational Technology Systems, 51(3), pp. 412–431.

Triwahyuni, M., Putera, R.E. and Rahayu, W.K. (2020) 'Inovasi Pelayanan Kesehatan Kelas Ibu dan Anak Mandiri (Imud) Di Puskesmas Padang Pasir Kota Padang', Journal Public Policy, 6(1), pp. 13–18.

Venkatesh, V. et al. (2003) 'User Acceptance of Information Technology: Toward a Unified View', MIS Quarterly, 27(3), pp. 425–478.

Wang, G. et al. (2011) 'Transformational Leadership and Performance Across Criteria and Levels: A Meta-Analytic Review of 25 Years of Research', Group & Organization Management, 36, pp. 223–270. Available at: https://doi.org/10.1177/1059601111401017.

World Bank (2024) Indonesia digital transformation strategy: Strengthening digital capacity in the public sector. World Bank Group.

Yogyandaru, S.W. and Mayasari, I. (2020) 'Analysis on Fees Exemption Policy of Land and Building Rights Acquisition in Jakarta', Jurnal Menejemen Pelayanan Publik, 4(1), pp. 1–27.

Zhao, X., Lynch Jr., J.G. and Chen, Q. (2010) 'Reconsidering Baron and Kenny: Myths and truths about mediation analysis', Journal of Consumer Research, pp. 197–206. Available at: https://doi.org/10.1086/651257.