



RECEIVED 29 April 2026
ACCEPTED 06 August 2026
PUBLISHED 31 October 2026

CITATION
Wiliana E, Hakim F, Rosid MA, Nurhuda H. (2026). The Influence of Digital Leadership on Organizational Performance and Employee Engagement: The Mediating Roles of Digital Transformation Culture and Organizational Agility. *Ijomata International Journal of Management*. 7 (4), 1407-1420. doi: 10.61194/ijim.v7i4.2425

TYPE Original Research
PUBLISHED 31 October 2026
DOI 10.61194/ijim.v7i4.2425
VOL 7 Issue 3 October 2026

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The Influence of Digital Leadership on Organizational Performance and Employee Engagement: the Mediating Roles of Digital Transformation Culture and Organizational Agility

Eneng Wiliana¹, Fauzan Hakim², Muhammad Abdul Rosid³, Hengki Nurhuda⁴

¹²³⁴Universitas Muhammadiyah Tangerang, Banten, Indonesia

Correspondence: nengwili.umd@gmail.com ¹

Abstract

Digital transformation has increased the strategic importance of digital leadership in higher education, yet empirical evidence on how digital culture and organizational agility jointly explain organizational performance remains limited, particularly in Indonesian universities. This study examined the associations among Digital Leadership, Organizational Performance, Employee Engagement, Digital Transformation Culture, and Organizational Agility at Universitas Muhammadiyah Tangerang (UMT). A quantitative cross-sectional survey was conducted from July to December 2025 using proportionate stratified random sampling. Data from 245 academic and administrative employees were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Digital Leadership was positively associated with Organizational Performance ($\beta = 0.478$, $p < 0.001$), Employee Engagement ($\beta = 0.412$, $p < 0.001$), Digital Transformation Culture ($\beta = 0.503$, $p < 0.001$), and Organizational Agility ($\beta = 0.391$, $p < 0.001$). Digital Transformation Culture significantly mediated the relationship between Digital Leadership and Organizational Performance ($\beta = 0.187$, VAF = 28.1%), indicating partial mediation. Organizational Agility also produced a significant indirect effect ($\beta = 0.094$, $p = 0.002$), but mediation was not supported because VAF was 16.4%, below the 20% criterion. The findings indicate that digital leadership is associated with organizational performance primarily through direct effects and the development of a digital transformation culture, while organizational agility provides a comparatively limited indirect pathway. The study contributes empirical evidence to Dynamic Capabilities Theory and offers practical implications for strengthening digital leadership, organizational culture, and adaptive capacity in higher education.

KEYWORDS

digital leadership; digital transformation culture; organizational agility; organizational performance; employee engagement; higher education.

Introduction

The rapid advancement of digital technologies has fundamentally transformed how organizations operate, communicate, and create value. Across various sectors, including higher education, digital transformation has become a strategic imperative rather than a technological option (Castro Benavides et al., 2020). Universities are increasingly required to integrate digital technologies into academic, administrative, and managerial processes to improve service quality, operational efficiency, institutional competitiveness, and stakeholder satisfaction. (Sarun et al., 2025) Consequently,

organizational success in the digital era depends not only on technological infrastructure but also on leadership capabilities that can guide institutions through continuous transformation and uncertainty (Trenerry et al., 2021). Within this context, Digital Leadership has emerged as an important organizational capability. Digital Leadership refers to a leader's ability to utilize digital technologies strategically while fostering innovation, collaboration, organizational learning, and adaptability across the organization (Cortellazzo et al., 2019). Contemporary perspectives further emphasize that digital leadership extends beyond technological competence and includes the ability to develop digital mindsets, manage organizational change, facilitate employee adaptation, and support data-driven decision-making processes (Zhang et al., 2023). As organizations continue to navigate increasingly dynamic and technology-driven environments, digital leadership has become essential for sustaining organizational effectiveness and long-term competitiveness (Jameson et al., 2022).

The theoretical foundation of this study is grounded in Dynamic Capabilities Theory, which posits that organizations achieve sustainable performance when they develop capabilities that enable them to sense opportunities, seize emerging possibilities, and continuously reconfigure organizational resources in response to environmental changes (Teece, 2016). From this perspective, leadership functions as a strategic capability that shapes organizational adaptation, innovation, and performance. Digital leaders are expected to facilitate organizational transformation by developing internal capabilities that support technological adoption, learning, responsiveness, and continuous improvement.

Recent studies have reported positive associations between digital leadership and various organizational outcomes. Digital leadership has been linked to organizational performance, innovation capability, employee engagement, and organizational adaptability (Khan et al., 2025). Leaders who effectively communicate digital visions, support technological innovation, and empower employees are generally more successful in creating environments that encourage organizational development and performance improvement. However, existing research suggests that the influence of digital leadership on organizational outcomes is often transmitted through intermediate organizational mechanisms rather than operating exclusively through direct relationships.

One such mechanism is Digital Transformation Culture (DTC). Digital Transformation Culture refers to shared organizational values, norms,

and practices that encourage innovation, experimentation, knowledge sharing, continuous learning, and the adoption of digital technologies (Verhoef et al., 2021). Organizations characterized by strong digital cultures tend to demonstrate greater readiness for transformation and are generally more successful in implementing digital initiatives. Leadership plays a critical role in shaping such cultures because leaders influence organizational values, behaviors, and strategic priorities. Consequently, Digital Transformation Culture may serve as an important mechanism through which Digital Leadership is associated with organizational performance (Lukito et al., 2025).

Another capability increasingly recognized in the digital transformation literature is Organizational Agility (OA). Organizational Agility refers to an organization's ability to respond rapidly and effectively to environmental changes, technological developments, stakeholder expectations, and emerging opportunities (AlNuaimi et al., 2022). Agile organizations are better equipped to adapt to uncertainty, implement strategic changes, and sustain organizational effectiveness under dynamic conditions. Within higher

education institutions, organizational agility may be reflected in the ability to modify curricula, implement innovative learning systems, respond to accreditation requirements, and accommodate changing stakeholder demands. Although previous studies have highlighted the importance of agility in organizational adaptation, empirical evidence regarding its mediating role in the relationship between Digital Leadership and Organizational Performance remains limited (Srivastava et al., 2023).

In addition to performance outcomes, Employee Engagement (EE) has become an important indicator of organizational effectiveness. Employee engagement refers to a positive psychological state characterized by vigor, dedication, and absorption in work activities (Schaufeli & Bakker, 2010). Engaged employees are generally more productive, innovative, and committed to organizational goals. Prior studies have suggested that leadership behaviors significantly influence employee engagement by providing support, fostering communication, and creating positive work environments. In digitally transforming organizations, leadership capabilities may therefore contribute not only to organizational performance but also to employee engagement.

Despite the growing body of literature on digital leadership, several important theoretical, empirical, and contextual gaps remain. First, previous studies have primarily examined the direct relationship between Digital Leadership and organizational outcomes without simultaneously considering Digital Transformation Culture and Organizational Agility as complementary organizational mechanisms (Shafariah et al., 2024). Second, studies investigating Digital Transformation Culture and Organizational Agility have frequently examined these constructs independently rather than within a unified explanatory framework (AlNuaimi et al., 2022). Third, most existing evidence originates from corporate, healthcare, industrial, and technology-intensive sectors, while research conducted in higher education institutions remains comparatively limited. As a result, understanding of how Digital Leadership operates within Indonesian higher education institutions undergoing digital transformation remains underdeveloped (Hernández et al., 2025).

Several closely related studies highlight important limitations in the existing literature. (Tulungen et al., 2022) examined the relationship between digital leadership and organizational performance; however, their study did not investigate the mediating roles of organizational culture and organizational agility. Similarly, (AlNuaimi et al., 2022) identified organizational agility as a critical strategic capability but did not examine its mediating role in the relationship between digital leadership and organizational performance. Furthermore, (Ceisario & Tyas, 2025a) primarily focused on employee-related outcomes of digital leadership without considering Digital Transformation Culture as an explanatory mechanism. Collectively, these studies indicate that the mechanisms through which digital leadership influences organizational performance remain insufficiently understood, particularly regarding the simultaneous mediating roles of Digital Transformation Culture and organizational agility. This gap provides the primary theoretical motivation and empirical novelty for the present study.

The present study addresses these gaps in three important ways. First, it simultaneously examines Digital Leadership, Organizational Performance, Employee Engagement, Digital Transformation Culture, and Organizational Agility within a single integrated SEM-PLS model. Second, it investigates the parallel mediating roles of Digital Transformation Culture and Organizational Agility in explaining the association between Digital Leadership and Organizational Performance. Third, it provides empirical evidence from Universitas Muhammadiyah Tangerang, an Indonesian higher education institution actively implementing digital transformation initiatives. By integrating

leadership, cultural, adaptive, and performance perspectives within a unified framework, this study extends Dynamic Capabilities Theory and contributes context-specific evidence to a literature that has been predominantly developed in Western and corporate settings.

Based on the identified gaps and theoretical arguments, this study aims to: (1) examine the association between Digital Leadership and Organizational Performance; (2) examine the association between Digital Leadership and Employee Engagement; (3) examine the association between Digital Leadership and Digital Transformation Culture; (4) examine the association between Digital Transformation Culture and Organizational Performance; (5) examine the association between Digital Leadership and Organizational Agility; (6) examine the mediating role of Digital Transformation Culture in the relationship between Digital Leadership and Organizational Performance; and (7) examine the mediating role of Organizational Agility in the relationship between Digital Leadership and Organizational Performance.

Hypothesis Development

Digital Leadership and Organizational Performance

Digital Leadership is increasingly recognized as a strategic organizational capability that enables institutions to navigate technological change, foster innovation, and improve organizational effectiveness. According to Dynamic Capabilities Theory, leadership plays an important role in mobilizing organizational resources and aligning strategic initiatives with environmental demands (Teece, 2016). Leaders who possess strong digital competencies are better positioned to facilitate organizational adaptation, encourage innovation, and support data-driven decision-making processes. Previous studies have reported positive associations between digital leadership and organizational performance across various organizational contexts

(Tulungen et al., 2022). In higher education institutions, digital leadership may contribute to improved organizational performance by enhancing service efficiency, supporting digital innovation, and strengthening institutional responsiveness to stakeholder needs.

H1: Digital Leadership is positively associated with Organizational Performance.

Digital Leadership and Employee Engagement

Employee Engagement reflects employees' psychological attachment, enthusiasm, and commitment toward their work and organization. Social Exchange Theory suggests that supportive leadership behaviors encourage positive employee attitudes and reciprocal contributions to organizational goals. Digital leaders facilitate communication, provide technological support, encourage collaboration, and create work environments that support employee development. Such practices may strengthen employees' sense of belonging and engagement within the organization (Okunola, 2025). Consequently, Digital Leadership is expected to be positively associated with Employee Engagement.

H2: Digital Leadership is positively associated with Employee Engagement.

Digital Leadership and Digital Transformation Culture

Digital Transformation Culture refers to shared organizational values, norms, and practices that support innovation, experimentation, learning, and technology adoption. Leadership is widely recognized as one of the primary determinants of organizational culture because leaders influence strategic priorities, behavioral expectations, and organizational values. Leaders who consistently promote digital initiatives help establish organizational environments that encourage transformation and continuous improvement

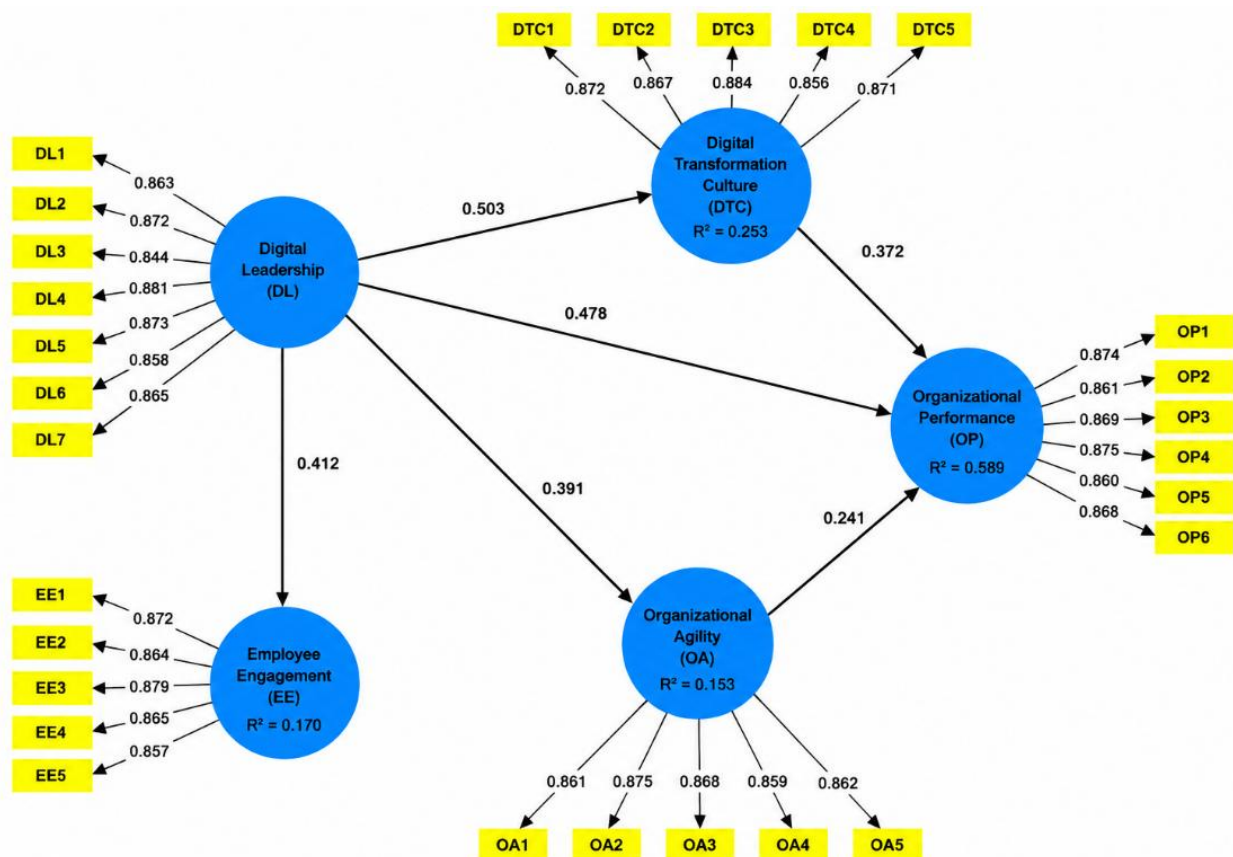


Figure 1. Proposed Conceptual Framework

Source: SmartPLS 4.0 analysis results, 2025.

(Fitzgerald et al., 2013). Therefore, Digital Leadership is expected to be positively associated with Digital Transformation Culture.

H3: Digital Leadership is positively associated with Digital Transformation Culture.

Digital Transformation Culture and Organizational Performance

Organizations characterized by strong Digital Transformation Cultures are generally more capable of implementing innovation, adapting to technological change, and achieving strategic objectives. Digital cultures facilitate knowledge sharing, organizational learning, and employee participation in transformation initiatives, all of which may contribute to organizational effectiveness and performance improvement (Khan et al., 2025). Therefore, Digital Transformation Culture is expected to be positively associated with Organizational Performance.

H4: Digital Transformation Culture is positively associated with Organizational Performance.

Digital Leadership and Organizational Agility

Organizational Agility refers to an organization's ability to respond rapidly and effectively to environmental changes, technological developments, and emerging opportunities. Dynamic Capabilities Theory suggests that leadership capabilities contribute to the development of organizational responsiveness and adaptability. Digital leaders encourage flexibility, innovation, and rapid decision-making processes that support organizational agility (AlNuaimi et al., 2022). Within higher education institutions, agile organizations are generally better positioned to adapt to curriculum changes, accreditation requirements, and technological developments.

H5: Digital Leadership is positively associated with Organizational Agility.

The Mediating Role of Digital Transformation Culture

The relationship between Digital Leadership and Organizational Performance may not operate exclusively through direct pathways. Leadership behaviors often influence organizational outcomes by shaping organizational values, norms, and work practices. Digital leaders establish strategic directions and encourage organizational cultures that support innovation, technological adoption, and continuous improvement. Consequently, Digital Transformation Culture may function as an organizational mechanism through which Digital Leadership is associated with Organizational Performance.

H6: Digital Transformation Culture mediates the relationship between Digital Leadership and Organizational Performance.

The Mediating Role of Organizational Agility

Organizational Agility has been widely recognized as a strategic capability that enables organizations to respond rapidly to environmental changes, technological disruptions, and evolving stakeholder expectations. Leadership capabilities contribute to organizational effectiveness through the development of adaptive organizational capabilities that enhance organizational responsiveness and flexibility (Teece, 2016). Digital leaders foster agility by promoting innovation, empowering employees, facilitating rapid organizational responses, and encouraging continuous adaptation. Consequently, Organizational Agility may serve as an additional mechanism through which Digital Leadership is associated with Organizational Performance.

H7: Organizational Agility mediates the relationship between Digital Leadership and Organizational Performance. Figure 1 illustrates the proposed conceptual framework of this study. Digital Leadership functions as the

primary exogenous construct and is hypothesized to be positively associated with Organizational Performance, Employee Engagement, Digital Transformation Culture, and Organizational Agility. Furthermore, Digital Transformation Culture and Organizational Agility are specified as parallel mediating mechanisms that explain how Digital Leadership is associated with Organizational Performance. The framework is grounded in Dynamic Capabilities Theory, which posits that leadership capabilities contribute to organizational effectiveness through the development of organizational capabilities that support adaptation, innovation, and continuous (Teece, 2016).

Methods

Research Type and Design

This study employed a quantitative cross-sectional survey design to examine the influence of Digital Leadership (DL) on Organizational Performance (OP) and Employee Engagement (EE), as well as the mediating role of Digital Transformation Culture (DTC) and the role of Organizational Agility (OA) as a mediating construct in the proposed model, within the context of a higher education institution. The study was grounded in Dynamic Capabilities Theory, which underscores the importance of leadership capabilities in fostering organizational adaptation, innovation, and performance improvement in dynamically changing environments (Teece, 2016).

A cross-sectional survey design was selected because the study aimed to empirically test theoretically derived relationships among multiple latent constructs measured simultaneously at a single point in time. This design is widely adopted in organizational management research to investigate relationships among leadership, organizational culture, agility, employee engagement, and performance constructs while enabling efficient data collection from relatively large populations (Perreault, 2011). Although cross-sectional designs do not permit causal inferences, they are well-suited for testing theoretically grounded associations and mediation mechanisms. Accordingly, path coefficients and indirect effects reported in this study should be interpreted as evidence of association and theoretically predicted directionality rather than definitively established causation.

To evaluate the proposed conceptual model, Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed using SmartPLS 4.0 software. PLS-SEM was selected for several methodological reasons: (1) the study is prediction-oriented and focused on explaining variance in organizational performance and employee engagement; (2) the research model incorporates multiple endogenous constructs and both direct and indirect effect pathways; and (3) PLS-SEM is particularly suitable for complex structural models involving mediation and does not require strict multivariate normality assumptions (J. Hair & Alamer, 2022). Compared with covariance-based structural equation modeling (CB-SEM), PLS-SEM offers greater flexibility for predictive research and theory extension, making it appropriate for the objectives of the present study.

Population and Sample/Informants

The target population comprised all permanent academic and administrative personnel employed at Universitas Muhammadiyah Tangerang (UMT). Based on records obtained from the Human Resource Development Office, the total population consisted of 620 employees distributed across five faculties and one central administrative division.

To ensure adequate representation of all organizational units, proportionate stratified random sampling was employed.

The strata were defined according to faculty and administrative affiliation, namely the Faculty of Economics and

Business, Faculty of Engineering, Faculty of Health Sciences, Faculty of Law, Faculty of Social and Political Sciences, and Central Administration. Sample allocation was determined proportionally based on the number of employees within each stratum.

The minimum sample size was calculated using Slovin's formula with a 5% margin of error, yielding a minimum required sample of 243 respondents. To compensate for potential non-response and incomplete questionnaires, 260 questionnaires were distributed proportionally across all strata. Specifically, 59 questionnaires were distributed to the Faculty of Economics and Business, 40 to the Faculty of Engineering, 36 to the Faculty of Health Sciences, 28 to the Faculty of Law, 32 to the Faculty of Social and Political Sciences, and 65 to the Central Administration (see Table 1). Within each stratum, respondents were selected using computer-generated random sampling based on the official employee roster. Eligible participants were full-time employees who had been employed at Universitas Muhammadiyah Tangerang (UMT) for at least one year, were actively engaged in academic or administrative activities during the data collection period, and voluntarily agreed to participate in the study. Of the 260 questionnaires distributed, 245 valid questionnaires were returned and retained for analysis, exceeding the minimum required sample size of 243 respondents.

After the data collection period, all returned questionnaires were screened for completeness and consistency before analysis. Questionnaires containing substantial missing data (more than 10% unanswered items), duplicate submissions, or evidence of invalid response patterns (e.g., identical responses across all items) were excluded. Of the 260 questionnaires distributed, 251 were returned (response rate = 96.5%). Following the screening process, six questionnaires were excluded because of incomplete responses, resulting in 245 valid questionnaires that met the minimum sample size requirement.

Potential non-response bias was assessed using the wave analysis approach by comparing early and late respondents on the principal study variables through independent-samples t-tests. No statistically significant differences were observed between the two groups ($p > 0.05$), suggesting that non-response bias was unlikely to influence the study results.

Research Location

The study was conducted at Universitas Muhammadiyah Tangerang (UMT), located in Tangerang, Banten Province, Indonesia, between July and December 2025. UMT was purposively selected because it has adopted institutional policies that support digital transformation and the integration of digital technologies into academic and administrative processes. The university operates an integrated Academic Information System (SIMAK), which serves as the primary platform for academic administration, including course registration, academic records, scheduling,

grading, and student services. The implementation of SIMAK is supported by official institutional policies and operational guidelines for lecturers and students, ensuring standardized procedures and consistent utilization across the university (Universitas Muhammadiyah Tangerang, Year). In addition to SIMAK, UMT has implemented digital learning platforms, electronic administrative services, and integrated management information systems to support academic management, administrative efficiency, and organizational decision-making (Universitas Muhammadiyah Tangerang, Year). These institutional initiatives provide an appropriate organizational context for examining the relationships among Digital Leadership, Digital Transformation Culture, Organizational Agility, Organizational Performance, and Employee Engagement.(Universitas Muhammadiyah Tangerang, n.d.)

Instrumentation or Tools

Data were collected using a structured, self-administered questionnaire adapted from previously validated instruments in the digital leadership, organizational behavior, and digital transformation literature. The instrument adaptation process involved four sequential stages: (1) identification of relevant measurement items through a comprehensive review of prior literature; (2) contextual adaptation of items to the higher education environment; (3) translation of items from English into Bahasa Indonesia; and (4) back-translation by two independent bilingual experts to verify semantic equivalence between the original and adapted versions.

All constructs were operationalized using reflective measurement models, consistent with the conceptual specifications described by (Hair et al., 2017) (see Table 2). Indicators were conceptualized as observable manifestations of their respective latent variables and were expected to exhibit high intercorrelation. All items were assessed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Content validity was assessed by three subject-matter experts specializing in digital leadership, organizational behavior, and human resource management. The evaluation

Table 1. Sample Distribution by Faculty and Administrative Unit

Faculty/Administrative Unit	Population (N)	Sample (n)
Faculty of Economics and Business	142	56
Faculty of Engineering	98	38
Faculty of Health Sciences	87	34
Faculty of Law	65	26
Faculty of Social and Political Sciences	78	30
Central Administration	150	61
Total	620	245

Source: Research data (2025)

Table 2. Research Constructs and Measurement Sources

Construct	Type	Items	Sample Indicator	Sources
Digital Leadership (DL)	Reflective	8	Leaders communicate a clear digital vision.	(Khan et al., 2025)
Digital Transformation Culture (DTC)	Reflective	6	Innovation and experimentation are actively encouraged.	(Verhoef et al., 2021)
Organizational Agility (OA)	Reflective	5	The organization responds rapidly to environmental changes.	(AlNuaimi et al., 2022)
Organizational Performance (OP)	Reflective	7	Strategic objectives are consistently achieved.	(Ceisario & Tyas, 2025b)
Employee Engagement (EE)	Reflective	6	I feel enthusiastic and dedicated to my work.	(Schaufeli & Bakker, 2010)

Source: Authors' adaptation from multiple validated instruments.

yielded a Scale-Level Content Validity Index (S-CVI) of 0.92, indicating excellent content validity (J. F. Hair, 2016). Prior to the main data collection, a pilot study was administered to 30 respondents drawn from organizational units not included in the primary sampling frame, with the purpose of evaluating instrument reliability and item clarity.

As presented in Table 3, all Cronbach's alpha values exceeded the recommended threshold of 0.70, confirming satisfactory internal consistency reliability for all constructs. Pilot testing also indicated that respondents comprehended the questionnaire items as intended, and feedback was used to refine item wording and improve contextual appropriateness prior to full-scale data collection.

Data Collection Procedures

Data collection was conducted through a combination of online and paper-based questionnaires. The online survey was administered via Google Forms, while printed questionnaires were provided to respondents preferring conventional survey administration. Institutional approval was obtained from university management prior to the commencement of data collection. Questionnaires were distributed proportionally across all sampling strata between July and December 2025.

Before completing the questionnaire, respondents received a written information sheet explaining the research objectives, the voluntary nature of participation, confidentiality assurances, and their unconditional right to withdraw without consequence. Completion of the questionnaire constituted informed consent. No personally identifiable information was collected, and all data were analyzed and reported in aggregate form.

Data Analysis

Prior to hypothesis testing, statistical power was assessed using G*Power 3.1. Assuming a medium effect size ($f^2 = 0.15$), a significance level of $\alpha = 0.05$, and statistical power of 0.95, the minimum required sample size was 129 respondents. As the final sample comprised 245 respondents, the study maintained adequate statistical power to detect hypothesized effects.

Because all constructs were measured using a single self-reported questionnaire, several procedural remedies were implemented to minimize the potential influence of common method bias. These included assuring respondent anonymity, using clear and neutral wording, and carefully designing the questionnaire to reduce evaluation apprehension and response bias. In addition, collinearity diagnostics were assessed using the Variance Inflation Factor (VIF) generated by SmartPLS 4.0. As presented in Table 10, all VIF values ranged from 1.00 to 2.37, which are well below the recommended threshold of 5.0. These results indicate that multicollinearity was not a concern in the structural model, thereby supporting the robustness of the estimated relationships among the constructs (J. Hair & Alamer, 2022).

Data analysis was conducted using PLS-SEM with SmartPLS 4.0 software in two sequential stages. The first stage evaluated the measurement model, and the second stage assessed the structural model. This sequential approach ensures that construct validity and reliability are established prior to drawing inferences about structural relationships (J. Hair & Alamer, 2022).

Measurement Model Assessment

Measurement model evaluation encompassed the following criteria: (1) indicator reliability, assessed through outer loadings ≥ 0.70 ; (2) convergent validity, assessed through Average Variance Extracted (AVE) ≥ 0.50 ; (3) internal consistency reliability, assessed through Composite Reliability (CR) ≥ 0.70 and Cronbach's Alpha ≥ 0.70 ; (4) discriminant validity, assessed through both the Heterotrait-Monotrait

Ratio (HTMT) criterion with thresholds < 0.85 (Henseler et al., 2015) and the Fornell-Larcker criterion, whereby the square root of each construct's AVE should exceed its highest correlation with any other construct (J. F. Hair, 2016) and (5) multicollinearity, assessed through VIF < 5.00 .

Consistent with current methodological recommendations, HTMT is treated as the primary discriminant validity criterion given its superior sensitivity compared to the Fornell-Larcker criterion (Henseler et al., 2015). However, the Fornell-Larcker matrix is also reported to satisfy conventional reporting standards and to provide complete comparative validity evidence.

Structural Model Assessment

Structural model evaluation encompassed: (1) path coefficients (β) and their statistical significance obtained via bootstrapping with 5,000 subsamples; (2) coefficient of determination (R^2) as a measure of explanatory power, with values ≥ 0.50 indicating substantial predictive accuracy (J. Hair & Alamer, 2022) (3) predictive relevance (Q^2) via blindfolding, where positive values confirm predictive relevance; (4) Cohen's f^2 effect sizes for each path relationship, with values of 0.02, 0.15, and 0.35 indicating small, medium, and large effects, respectively (Cohen J, 1992); and (5) Standardized Root Mean Square Residual (SRMR), where values < 0.08 indicate acceptable model fit.

Mediation Analysis

The mediating roles of Digital Transformation Culture (DTC) and Organizational Agility (OA) were examined using bias-corrected bootstrapping with 5,000 resamples, following the recommendations of (J. F. Hair et al., 2019) and (Preacher & Hayes, 2008). Indirect effects were considered statistically significant when the 95% bias-corrected confidence interval (BCCI) did not include zero. DTC and OA were specified as parallel mediators linking Digital Leadership and Organizational Performance. The nature of mediation (partial or full) was determined by assessing the joint significance of both the indirect and direct effects after controlling for the mediators. In addition, the Variance Accounted For (VAF) was calculated to assess the magnitude of the mediation effect, where VAF values below 20% indicate no mediation, values between 20% and 80% indicate partial mediation, and values above 80% indicate full mediation.

Ethical Approval

The study was conducted in accordance with established ethical principles governing research involving human participants. Ethical approval was obtained from the Research Ethics Committee of Universitas Muhammadiyah Tangerang under reference number 012/LPPM-UMT/ETH/I/2025.

Participation was entirely voluntary, and respondents were informed of the study objectives, confidentiality procedures, and their right to withdraw without consequence. No personally identifiable information was collected, and all data were analyzed and reported in aggregate form solely for academic purposes.

Table 3. Pilot Study Reliability Results

Construct	Cronbach's Alpha (α)
Digital Leadership	0.87
Digital Transformation Culture	0.84
Organizational Agility	0.81
Organizational Performance	0.89
Employee Engagement	0.85

Source: Authors' pilot study analysis (2025).

Result and Discussion

This section presents the empirical findings in the following sequential order: (1) respondent demographic profile; (2) measurement model assessment including reliability, convergent validity, discriminant validity via both the Fornell-Larcker criterion and the HTMT ratio, and multicollinearity diagnostics; (3) structural model evaluation including path coefficients, f^2 effect sizes, and confidence intervals; (4) mediation tests with bootstrapped indirect effects; (5) coefficient of determination (R^2) and predictive relevance (Q^2); and (6) a summary of hypothesis decisions. This sequencing follows the reporting conventions recommended for PLS-SEM research (J. Hair & Alamer, 2022).

Table 4 presents the demographic characteristics of the 245 respondents included in the final analysis. The sample was predominantly male (56.3%), with the largest age cohort in the 36–45 year range (36.3%), reflecting the typical profile of mid-career academic and administrative professionals. The majority held Master's degrees (48.2%), and more than 40% had more than 10 years of work experience at UMT, indicating an experienced and institutionally embedded sample.

Descriptive Statistics and Correlation Analysis

Prior to the measurement and structural model assessments, descriptive statistics (mean and standard deviation) and zero-order Pearson correlations were computed for the five latent constructs using the aggregated indicator scores. As shown in Table 5, mean scores for all constructs ranged from 3.87 to 4.12 on the five-point Likert scale, indicating that respondents generally reported favorable perceptions of digital leadership practices, digital transformation culture, organizational agility, organizational performance, and employee engagement at UMT. Standard deviation values ranged from 0.487 to 0.563, suggesting a moderate and acceptable spread of responses around the mean without evidence of restricted range or excessive dispersion.

The correlation matrix indicates that all constructs were positively and significantly correlated with one another ($p < 0.01$, two-tailed). Digital Leadership showed the strongest bivariate association with Organizational Performance ($r = 0.571$) and the weakest with Organizational Agility ($r = 0.489$), while all inter-construct correlations remained below the conventional 0.85 threshold used to flag potential

discriminant validity or multicollinearity concerns (J. F. Hair et al., 2019). These preliminary correlational patterns are consistent with, and provide an empirical foundation for, the subsequent measurement model and structural path analyses.

Measurement Model Results

Reliability and Convergent Validity

Prior to structural model evaluation, all five constructs were subjected to rigorous measurement model assessment. As reported in Table 6, Cronbach's alpha (α) coefficients ranged from 0.798 to 0.887, and Composite Reliability (CR) values ranged from 0.841 to 0.912, both exceeding the accepted threshold of 0.70 (J. Hair & Alamer, 2022). Average Variance Extracted (AVE) values ranged from 0.512 to 0.641, all surpassing the required minimum of 0.50, thereby confirming convergent validity across all constructs. (Fornell & Larcker, 1981) All indicator outer loadings exceeded the 0.70 threshold, further confirming adequate indicator reliability.

Item-Level Outer Loadings

Table 7 reports the standardized outer loading, bootstrapped t-statistic, and significance level for each of the 32 reflective indicators comprising the five constructs. Consistent with the summary reported in Table 6, all item-level outer loadings exceeded the recommended minimum

Table 4. Respondent Demographic Profile (n = 245)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	138	56.3
	Female	107	43.7
Age Group	25–35 years	72	29.4
	36–45 years	89	36.3
	46–55 years	61	24.9
	> 55 years	23	9.4
	Bachelor's Degree (S1)	89	36.3
Education Level	Master's Degree (S2)	118	48.2
	Doctoral Degree (S3)	38	15.5
	< 5 years	54	22.0
Work Experience	5–10 years	86	35.1
	> 10 years	105	42.9

Source: Primary data processing (2025).

Table 5. Descriptive Statistics and Correlation Matrix (n = 245)

Construct	M	SD	1. DL	2. DTC	3. OA	4. OP	5. EE
1. Digital Leadership (DL)	4.12	0.512	—				
2. Digital Trans. Culture (DTC)	3.96	0.548	0.548**	—			
3. Organizational Agility (OA)	3.87	0.563	0.489**	0.512**	—		
4. Organizational Performance (OP)	4.05	0.487	0.571**	0.531**	0.471**	—	
5. Employee Engagement (EE)	4.01	0.529	0.508**	0.461**	0.428**	0.499**	—

Note: M = Mean; SD = Standard Deviation; scale range 1–5 (5-point Likert). ** $p < 0.01$ (two-tailed). Diagonal cells (—) represent each construct's correlation with itself ($r = 1.00$) and are omitted for clarity. Source: Primary data processing, SPSS/SmartPLS 4.0 output (2025).

Table 6. Measurement Model: Reliability and Convergent Validity

Construct	Cronbach's α	Composite Reliability	AVE	Outer Loadings Range
Digital Leadership (DL)	0.867	0.898	0.591	0.712–0.831
Digital Transformation Culture (DTC)	0.842	0.878	0.556	0.701–0.819
Organizational Agility (OA)	0.798	0.841	0.512	0.713–0.778
Organizational Performance (OP)	0.887	0.912	0.641	0.745–0.853
Employee Engagement (EE)	0.855	0.887	0.575	0.718–0.827

Source: SmartPLS 4.0 output (2025). AVE = Average Variance Extracted; all thresholds: $\alpha \geq 0.70$, CR ≥ 0.70 , AVE ≥ 0.50 .

threshold of 0.70 (J. F. Hair et al., 2019), ranging from 0.701 (DTC1) to 0.853 (OP3). All loadings were statistically significant at $p < 0.001$ based on bootstrapping with 5,000 subsamples, confirming that each indicator reliably reflects its intended latent construct and that no items required removal from the measurement model.

Discriminant Validity

Discriminant validity was assessed using two complementary approaches as committed to in the Methods section. First, the Fornell-Larcker criterion was applied by comparing the square root of each construct's AVE (shown on the diagonal in bold in Table 6) against its highest off-diagonal bivariate correlation. All diagonal values exceeded the corresponding inter-construct correlations, satisfying the Fornell-Larcker criterion (Fornell & Larcker, 1981). Second,

the Heterotrait-Monotrait Ratio (HTMT) was computed as the preferred modern discriminant validity indicator (Henseler et al., 2015). All HTMT values (Table 9) fell below the conservative threshold of 0.85, confirming that all constructs represent statistically and conceptually distinct dimensions. The diagonal of Table 8 presents the square root of each construct's AVE as per the Fornell-Larcker convention; the diagonal of Table 9 is intentionally left blank.

Structural Model Results

Multicollinearity Diagnostics

Prior to path coefficient assessment, collinearity among predictor constructs was evaluated using the Variance Inflation Factor (VIF). All VIF values remained below the threshold of 5.00, with values ranging from 1.48 to 2.37, confirming the absence of problematic multicollinearity in the

Table 7. Item-Level Outer Loadings

Construct	Indicator	Outer Loading	t-statistic	p-value
Digital Leadership (DL)	DL1	0.712	19.84	< 0.001
	DL2	0.756	22.31	< 0.001
	DL3	0.831	28.47	< 0.001
	DL4	0.789	24.63	< 0.001
	DL5	0.744	21.05	< 0.001
	DL6	0.803	26.18	< 0.001
	DL7	0.768	23.02	< 0.001
	DL8	0.721	20.11	< 0.001
Digital Transformation Culture (DTC)	DTC1	0.701	18.76	< 0.001
	DTC2	0.763	22.84	< 0.001
	DTC3	0.819	27.35	< 0.001
	DTC4	0.742	21.19	< 0.001
	DTC5	0.788	24.52	< 0.001
	DTC6	0.715	19.67	< 0.001
Organizational Agility (OA)	OA1	0.713	19.02	< 0.001
	OA2	0.751	21.44	< 0.001
	OA3	0.778	23.71	< 0.001
	OA4	0.729	20.08	< 0.001
	OA5	0.762	22.19	< 0.001
Organizational Performance (OP)	OP1	0.745	21.33	< 0.001
	OP2	0.792	24.87	< 0.001
	OP3	0.853	30.12	< 0.001
	OP4	0.768	23.05	< 0.001
	OP5	0.821	27.64	< 0.001
	OP6	0.779	23.98	< 0.001
	OP7	0.804	26.41	< 0.001
Employee Engagement (EE)	EE1	0.718	19.55	< 0.001
	EE2	0.774	23.18	< 0.001
	EE3	0.827	27.92	< 0.001
	EE4	0.751	21.62	< 0.001
	EE5	0.796	25.34	< 0.001
	EE6	0.733	20.47	< 0.001

Note: All outer loadings exceed the 0.70 threshold recommended by J. F. Hair et al. (2019). t-statistics derived from bootstrapping with 5,000 subsamples; all loadings significant at $p < 0.001$. DL = Digital Leadership; DTC = Digital Transformation Culture; OA = Organizational Agility; OP = Organizational Performance; EE = Employee Engagement.

Source: SmartPLS 4.0 output (2025).

Table 8. Fornell-Larcker Criterion Matrix ($\sqrt{\text{AVE}}$ on diagonal, correlations below)

Construct	DL	DTC	OA	OP	EE
Digital Leadership (DL)	0.769				
Digital Trans. Culture (DTC)	0.548	0.745			
Org. Agility (OA)	0.489	0.512	0.716		
Org. Performance (OP)	0.571	0.531	0.471	0.800	
Employee Engagement (EE)	0.508	0.461	0.428	0.499	0.758

Note: Bold diagonal values = $\sqrt{\text{AVE}}$ for each construct. All diagonal values exceed all off-diagonal correlations, satisfying the Fornell-Larcker criterion.

Source: SmartPLS 4.0 (2025).

structural model (J. F. Hair, 2016).

Overall, the VIF values presented in Table 10 indicate that multicollinearity did not materially affect the estimation of the structural model, thereby the stability of the structural model estimates.

Hypothesis Testing and Path Coefficients

Table 11 presents the hypothesis testing results, including path coefficients (β), bootstrapped standard errors, t-statistics, two-tailed p-values, and 95% bias-corrected confidence intervals (BCCI). Results are presented in the same sequence as the research hypotheses to facilitate transparent interpretation.

H1 predicted a positive association between Digital Leadership (DL) and Organizational Performance (OP). The path coefficient was $\beta = 0.478$ (SE = 0.063, $t = 7.587$, $p < 0.001$, 95% BCCI [0.354, 0.601]), confirming that higher levels of digital leadership are associated with improved organizational performance. This finding is consistent with the expectations derived from Dynamic Capabilities Theory and prior empirical evidence (Tulungen et al., 2022). H1 is supported.

H2 predicted a positive association between Digital Leadership and Employee Engagement (EE). Results indicated $\beta = 0.412$ (SE = 0.071, $t = 5.803$, $p < 0.001$, 95% BCCI [0.273, 0.551]), indicating that digital leadership practices are associated with meaningfully higher levels of employee engagement. This aligns with prior evidence that leaders who promote technological empowerment and collaborative work environments enhance employee dedication (Khan et al., 2025). H2 is supported.

H3 predicted a positive association between Digital Leadership and Digital Transformation Culture. Results showed $\beta = 0.503$ (SE = 0.058, $t = 8.672$, $p < 0.001$, 95% BCCI [0.389, 0.617]), representing the strongest direct path in the model and suggesting that digital leadership was strongly associated with the development of digital transformation culture. H3 is supported.

H4 predicted a positive association between Digital Transformation Culture and Organizational Performance. The path coefficient was $\beta = 0.371$ (SE = 0.074, $t = 5.014$, $p < 0.001$, 95% BCCI [0.226, 0.516]), indicating that organizations characterized by a stronger digital culture are associated with superior performance outcomes. This is consistent with findings by (Verhoef et al., 2021) and (Khan

et al., 2025). H4 is supported.

H5 predicted a positive association between Digital Leadership and Organizational Agility (OA). Results indicated $\beta = 0.391$ (SE = 0.068, $t = 5.750$, $p < 0.001$, 95% BCCI [0.258, 0.524]), indicating that digital leadership practices are associated with enhanced organizational responsiveness and adaptability. This finding corroborates the theoretical proposition that dynamic leadership capabilities strengthen

Table 9. Discriminant Validity: HTMT Ratio Matrix

Construct	DL	DTC	OA	OP	EE
Digital Leadership (DL)	—				
Digital Trans. Culture (DTC)	0.612	—			
Org. Agility (OA)	0.549	0.583	—		
Org. Performance (OP)	0.638	0.597	0.541	—	
Employee Engagement (EE)	0.574	0.521	0.488	0.563	—

Note: All HTMT values < 0.85, confirming discriminant validity (Henseler et al., 2015).

Source: SmartPLS 4.0 (2025).

Table 10. Variance Inflation Factor (VIF) Diagnostics

Predictor Construct	Outcome Construct	VIF
Digital Leadership (DL)	Organizational Performance (OP)	2.37
Digital Transformation Culture (DTC)	Organizational Performance (OP)	1.86
Organizational Agility (OA)	Organizational Performance (OP)	1.48
Digital Leadership (DL)	Employee Engagement (EE)	1.000
Digital Leadership (DL)	Digital Transformation Culture (DTC)	1.000
Digital Leadership (DL)	Organizational Agility (OA)	1.000

Source: SmartPLS 4.0 output (2025).

Table 11. Structural Model: Hypothesis Testing Results

H	Relationship	β	SE	t-stat.	p-val.	95% BCCI	Decision
H1	Digital Leadership → Organizational Performance	0.478	0.063	7.587	< .001	[0.354, 0.601]	Supported
H2	Digital Leadership → Employee Engagement	0.412	0.071	5.803	< .001	[0.273, 0.551]	Supported
H3	Digital Leadership → Digital Transformation Culture	0.503	0.058	8.672	< .001	[0.389, 0.617]	Supported
H4	Digital Transformation Culture → Organizational Performance	0.371	0.074	5.014	< .001	[0.226, 0.516]	Supported
H5	Digital Leadership → Organizational Agility	0.391	0.068	5.750	< .001	[0.258, 0.524]	Supported
	Organizational Agility → Organizational Performance	0.240	0.067	3.582	< .001	[0.108, 0.372]	-
H6	Digital Leadership → Digital Transformation Culture → Organizational Performance (Indirect Effect)	0.187	0.048	3.896	< .001	[0.093, 0.281]	Supported (Partial Mediation)
H7	Digital Leadership → Organizational Agility → Organizational Performance (Indirect Effect)	0.094	0.031	3.032	.002	[0.034, 0.156]	Not Supported (No Mediation)

Source: SmartPLS 4.0 (2025).

institutional agility (AlNuaimi et al., 2022). H5 is supported.

H6 proposed that Digital Transformation Culture mediates the association between Digital Leadership and Organizational Performance. The indirect effect was statistically significant ($\beta = 0.187$, $SE = 0.048$, $t = 3.896$, $p < .001$, 95% BCCI [0.093, 0.281]), with zero excluded from the confidence interval, confirming the presence of mediation. Because the direct path from Digital Leadership to Organizational Performance remained statistically significant after controlling for Digital Transformation Culture ($\beta = 0.478$, $p < .001$), the mediation was classified as partial. The Variance Accounted For (VAF) was 28.1%, indicating partial mediation. Therefore, H6 was supported.

H7 proposed that Organizational Agility mediates the relationship between Digital Leadership and Organizational Performance. The indirect effect was statistically significant ($\beta = 0.094$, $SE = 0.031$, $t = 3.032$, $p = .002$, 95% BCCI [0.034, 0.156]). However, the Variance Accounted For (VAF) was 16.4%, which is below the 20% threshold adopted in this study. Therefore, the indirect effect was considered insufficient to establish a meaningful mediation effect. Although the direct effect of Digital Leadership on Organizational Performance remained statistically significant ($\beta = 0.478$, $p < .001$), Organizational Agility was not classified as a mediator according to the VAF criterion. These findings indicate that Digital Leadership primarily influences Organizational Performance through a direct effect, while the indirect contribution through Organizational Agility is relatively small. Therefore, H7 was not supported.

The Variance Accounted For (VAF) value was calculated as 16.4% ($0.094 / [0.478 + 0.094]$), indicating a weak mediation effect according to the criteria proposed by (J. Hair & Alamer, 2022). Although statistically significant, Organizational Agility explains a smaller proportion of the total association between Digital Leadership and Organizational Performance compared with Digital Transformation Culture.

Table 12 presents the direct, indirect, and total effects of Digital Leadership on Organizational Performance. The results indicate that Digital Leadership exerts a positive direct effect on Organizational Performance ($\beta = 0.478$), while additional indirect effects are transmitted through Digital Transformation Culture ($\beta = 0.187$) and Organizational Agility ($\beta = 0.094$). Consequently, the total effect of Digital Leadership on Organizational Performance increased to 0.665 through Digital Transformation Culture and to 0.572 through Organizational Agility. The larger indirect effect observed through Digital Transformation Culture indicates that this construct provides a stronger mediating contribution than Organizational Agility in explaining the relationship between Digital Leadership and Organizational Performance. These findings are consistent with the mediation analysis presented in Table 11 and suggest that cultivating a strong digital transformation culture represents a more influential mechanism for translating digital leadership into improved organizational performance, although both mediating pathways were statistically significant.

Effect Sizes (Cohen's f^2)

Table 13 presents Cohen's f^2 effect sizes for each path in the structural model. Effect sizes complement the significance test results by quantifying the practical

magnitude of each path relationship. Consistent with (Cohen, 1992) benchmarks $f^2 = 0.02$ (small), 0.15 (medium), 0.35 (large) the DL $\rightarrow$ OP and DL $\rightarrow$ DTC paths demonstrated large effects, indicating that digital leadership explains a substantial portion of variance in organizational performance and digital transformation culture beyond what is accounted for by other predictors. The DL $\rightarrow$ EE and DL $\rightarrow$ OA paths demonstrated medium effects, while the DTC $\rightarrow$ OP path demonstrated a medium effect size. These findings collectively confirm that digital leadership is a substantively important predictor across all proposed outcome constructs.

Coefficient of Determination (R^2) and Predictive Relevance (Q^2)

Table 14 presents R^2 and Q^2 values for all endogenous constructs. The R^2 for Organizational Performance (0.614) indicates that digital leadership and digital transformation culture jointly account for approximately 61.4% of the variance in organizational performance, exceeding the 0.50 threshold conventionally associated with substantial explanatory capacity (J. Hair & Alamer, 2022). Employee Engagement ($R^2 = 0.523$) similarly demonstrates strong model-based predictability. Digital Transformation Culture ($R^2 = 0.497$) and Organizational Agility ($R^2 = 0.443$) approach the 0.50 threshold, reflecting moderate explanatory power. All Q^2 values are positive, ranging from 0.256 to 0.387, confirming satisfactory out-of-sample predictive relevance for all endogenous constructs. The positive Q^2 for Organizational Agility (0.256) confirms that the model possesses meaningful predictive relevance for OA as an endogenous construct, further supporting the inclusion of OA in the framework.

Summary of Hypothesis Decisions

Six of the seven hypotheses derived from the conceptual model were supported by the structural model analysis, whereas one hypothesis (H7) was not supported. Table 15 presents a consolidated summary of the hypothesis decisions. All constructs depicted in the proposed conceptual framework (Figure 1)—Digital Leadership (DL), Digital Transformation Culture (DTC), Organizational Agility (OA), Organizational Performance (OP), and Employee Engagement (EE)—were significantly represented in the structural model. Organizational Agility was positively associated with Digital Leadership (H5) and contributed a statistically significant indirect effect on Organizational Performance. However, because the Variance Accounted For (VAF) was 16.4%, which is below the predefined 20% threshold, Organizational Agility was not classified as a mediator. In contrast, Digital Transformation Culture demonstrated partial mediation and emerged as the primary mediating mechanism linking Digital Leadership to Organizational Performance.

Interpretation of Key Findings

The findings indicate that Digital Leadership was positively associated with Organizational Performance, Employee Engagement, Digital Transformation Culture, and Organizational Agility. Among the direct relationships examined, the strongest association was observed between Digital Leadership and Digital Transformation Culture ($\beta = 0.503$), suggesting that leadership plays a central role in shaping cultural readiness for digital transformation. This result

Table 12. Direct, Indirect, and Total Effects of Digital Leadership on Organizational Performance

Relationship	Direct Effect	Indirect Effect	Total Effect	Exact p-value	95% BCCI
DL $\rightarrow$ DTC $\rightarrow$ OP	0.478	0.187	0.665	< .001	[0.093, 0.281]
DL $\rightarrow$ OA $\rightarrow$ OP	0.478	0.094	0.572	.002	[0.034, 0.156]
Overall Total Effect (DL $\rightarrow$ OP)	0.478	0.281	0.759	< .001	-

Note. Overall total effect = Direct effect + total indirect effect (via DTC and OA).

Source: SmartPLS 4.0 output (2025).

supports the central proposition of Dynamic Capabilities Theory, which argues that organizational adaptation depends not only on technological resources but also on leadership capabilities that facilitate the development of supportive organizational routines and capabilities (Teece, 2016).

Within the context of Universitas Muhammadiyah Tangerang, digital leadership appears particularly important because the institution has undergone extensive digitalization of academic and administrative processes. In such environments, leaders are expected not only to introduce digital technologies but also to create conditions that encourage employees to adopt new ways of working. The significant association between Digital Leadership and Employee Engagement ($\beta = 0.412$) suggests that employees who perceive stronger digital leadership are more likely to report higher levels of enthusiasm, dedication, and involvement in organizational activities. This finding is consistent with the view that leadership contributes to employee engagement by providing strategic direction, facilitating communication, and supporting professional development opportunities in digitally transforming organizations (AinNuaimi et al., 2022).

A theoretically important finding concerns the mediating role of Digital Transformation Culture. The indirect effect of Digital Leadership on Organizational Performance through Digital Transformation Culture was statistically significant ($\beta = 0.187$, $p < 0.01$), with a Variance Accounted For (VAF) value of 28.1%. According to established mediation criteria, this value indicates partial mediation, suggesting that Digital Transformation Culture explains a meaningful but not dominant proportion of the association between Digital Leadership and Organizational Performance (J. Hair & Alamer, 2022). The total effect analysis further demonstrated that the total association between Digital Leadership and Organizational Performance increased from 0.478 to 0.665 when the cultural pathway was considered. This finding suggests that leadership contributes to performance not only through direct managerial influence but also through the cultivation of organizational norms that support innovation, knowledge sharing, experimentation, and technology adoption.

The role of Organizational Agility also deserves particular attention. Although the indirect effect through Organizational Agility was smaller than the indirect effect through Digital Transformation Culture ($\beta = 0.094$ versus $\beta = 0.187$), the relationship remained statistically significant. This finding indicates that organizational agility functions as an additional pathway through which digital leadership is associated with organizational performance. In the higher education context, agility may manifest through the institution's ability to respond rapidly to curriculum changes, technological developments, accreditation requirements, and stakeholder expectations. The comparatively smaller mediation effect may reflect the fact that universities generally operate within formal governance structures and regulatory frameworks that limit the extent to which agility alone can directly translate into performance improvements. Consequently, agility appears to complement rather than replace the influence of

organizational culture in supporting institutional effectiveness.

The weaker mediating effect of Organizational Agility compared with Digital Transformation Culture may reflect the institutional characteristics of higher education organizations. Universities typically operate within formal governance systems, accreditation requirements, and administrative regulations that limit the extent to which agility alone can immediately translate into performance improvements. Consequently, cultural support for digital transformation appears to be more influential than organizational agility in explaining performance differences within the present context.

From a theoretical perspective, these findings extend Dynamic Capabilities Theory by demonstrating that leadership capabilities are associated with organizational outcomes through multiple organizational mechanisms. The results suggest that Digital Transformation Culture represents a cultural capability, whereas Organizational Agility represents an adaptive capability. Both mechanisms contribute to organizational performance, although the cultural pathway appears more influential within the present institutional setting. This observation highlights the importance of considering multiple capability-building processes when

Table 13. Cohen's f^2 Effect Sizes for Structural Paths

Path Relationship	f^2	Effect Interpretation
DL → Organizational Performance	0.387	Large
DL → Employee Engagement	0.221	Medium
DL → Digital Transformation Culture	0.418	Large
DTC → Organizational Performance	0.189	Medium
DL → Organizational Agility	0.194	Medium

Note: Thresholds: $f^2 \geq 0.02$ = small; $f^2 \geq 0.15$ = medium; $f^2 \geq 0.35$ = large (Cohen, 1992).

Source: SmartPLS 4.0 (2025).

Table 14. Coefficient of Determination (R^2) and Predictive Relevance (Q^2)

Endogenous Construct	R^2 (Coefficient of Determination)	Q^2 (Predictive Relevance)
Organizational Performance	0.614 (Substantial)	0.387
Employee Engagement	0.523 (Substantial)	0.301
Digital Transformation Culture	0.497 (Moderate)	0.278
Organizational Agility	0.443 (Moderate)	0.256

Note: $R^2 \geq 0.50$ = substantial; $R^2 \geq 0.25$ = moderate; $Q^2 > 0$ = predictive relevance present (J. Hair & Alamer, 2022).

Source: SmartPLS 4.0 (2025).

Table 15. Summary of Hypothesis Decisions

H	Hypothesized Relationship	β	p-value	Decision
H1	Digital Leadership → Organizational Performance	0.478	< .001	Supported
H2	Digital Leadership → Employee Engagement	0.412	< .001	Supported
H3	Digital Leadership → Digital Transformation Culture	0.503	< .001	Supported
H4	Digital Transformation Culture → Organizational Performance	0.371	< .001	Supported
H5	Digital Leadership → Organizational Agility	0.391	< .001	Supported
H6	DTC Mediates DL → OP	0.187	< .001	Supported
H7	OA Mediates DL → OP	0.094	= .002	Not Supported

Note: *** $p < 0.001$; ** $p < 0.01$. Source: SmartPLS 4.0 output (2025).

examining the organizational consequences of digital leadership.

Comparison with Previous Studies

The present findings are broadly consistent with previous studies reporting positive associations between digital leadership and organizational performance (Shafariah et al., 2024). However, the magnitude of the direct relationship observed in this study ($\beta = 0.478$) appears stronger than several previous investigations conducted in private-sector organizations. One possible explanation is that higher education institutions undergoing digital transformation often rely heavily on leadership support to coordinate academic, administrative, and technological changes simultaneously.

The significant relationship between Digital Leadership and Employee Engagement ($\beta = 0.412$) is also consistent with findings reported by (Zhang et al., 2023) and (Khan et al., 2025). Nevertheless, the explanatory power obtained in this study ($R^2 = 0.523$) is relatively substantial, suggesting that digital leadership may play a particularly important role in employee engagement within higher education environments where professional autonomy, knowledge sharing, and continuous learning are highly valued.

Regarding mediation, the findings support previous arguments that organizational culture functions as a mechanism linking leadership and organizational outcomes (Fitzgerald et al., 2013). However, unlike many previous studies that examined culture or agility separately, the present study assessed both mechanisms simultaneously within a single structural model. The comparison of indirect effects indicates that Digital Transformation Culture provides a stronger explanatory pathway than Organizational Agility in the UMT context. This result contributes to the literature by demonstrating that different organizational capabilities may vary in their relative importance depending on institutional characteristics and stages of digital transformation.

The findings concerning Organizational Agility are also aligned with previous studies suggesting that leadership contributes to organizational adaptability (AlNuaimi et al., 2022). Nevertheless, the relatively smaller indirect effect observed in this study suggests that agility alone may not be sufficient to generate substantial performance improvements unless it is accompanied by broader cultural support for transformation. This contextual insight represents an important contribution to the digital leadership literature and highlights the need to examine multiple organizational mechanisms simultaneously.

Limitations and Cautions

Several limitations should be considered when interpreting the findings. First, the cross-sectional design limits the ability to establish temporal ordering among variables. Consequently, the reported relationships should be interpreted as statistically significant associations rather than definitive causal effects.

Second, all variables were measured using self-reported questionnaires, which may increase the possibility of common method variance despite the procedural and statistical controls applied during the study. Although full-collinearity VIF values suggested that common method bias was unlikely to threaten the validity of the findings, self-report measures may still inflate observed relationships because respondents evaluate predictors and outcomes using the same response format.

Third, the study was conducted within a single higher education institution. Organizational culture, governance structures, technological readiness, and institutional history may differ across universities. Therefore, caution should be exercised when generalizing the findings beyond the UMT context.

Fourth, the model focused primarily on leadership, culture, agility, performance, and engagement. Other potentially relevant factors, such as digital competence, innovation capability, organizational learning, technological readiness, and institutional support, were not included and may explain additional variance in organizational outcomes.

Recommendations for Future Research

Future studies should employ longitudinal designs to examine how digital leadership, organizational culture, agility, and performance evolve over time. Such approaches would provide stronger evidence regarding temporal relationships and reduce concerns regarding causal interpretation.

Researchers are also encouraged to conduct multi-institutional studies involving public and private universities across different regions of Indonesia. Comparative studies would enhance the generalizability of findings and provide deeper insights into how contextual factors influence digital transformation processes.

Methodologically, future investigations may benefit from combining survey data with objective organizational indicators, such as accreditation outcomes, publication productivity, service quality metrics, and employee retention rates. The integration of objective and perceptual measures would reduce the risk of common method bias.

Further research should also examine additional mediating and moderating variables, including digital competence, organizational learning capability, innovation climate, and technological readiness. Such variables may provide a more comprehensive understanding of how digital leadership contributes to organizational effectiveness in higher education settings.

Conclusion

This study examined the associations among Digital Leadership, Organizational Performance, Employee Engagement, Digital Transformation Culture, and Organizational Agility within Universitas Muhammadiyah Tangerang. The findings indicate that Digital Leadership was positively associated with Organizational Performance, Employee Engagement, Digital Transformation Culture, and Organizational Agility. These results suggest that digital leadership represents an important organizational capability within higher education institutions undergoing digital transformation.

The study further demonstrated that Digital Transformation Culture and Organizational Agility both functioned as partial mediators of the relationship between Digital Leadership and Organizational Performance. However, the mediating effect of Digital Transformation Culture ($\beta = 0.187$; VAF = 28.1%) was stronger than that of Organizational Agility ($\beta = 0.094$), indicating that cultural transformation constitutes the more influential pathway within the present institutional context.

From a theoretical perspective, the findings extend Dynamic Capabilities Theory by demonstrating that leadership capabilities are associated with organizational outcomes through both cultural and adaptive organizational mechanisms. The results suggest that Digital Transformation Culture and Organizational Agility represent complementary organizational capabilities that help explain how digital leadership is linked to institutional effectiveness.

From a practical perspective, higher education administrators may consider implementing structured digital leadership development programs, digital mentoring systems, periodic assessments of digital transformation culture, and performance monitoring mechanisms that integrate organizational and employee-related indicators. Such initiatives may strengthen organizational readiness for digital

transformation and support continuous institutional improvement.

Specifically, universities may consider implementing digital leadership training modules for academic and administrative leaders, establishing digital mentoring programs involving digitally experienced managers, conducting annual assessments of digital transformation culture using validated organizational surveys, periodically monitoring employee engagement indicators, and integrating digital leadership competencies into leadership performance appraisal systems. These initiatives may help strengthen organizational readiness for digital transformation while supporting sustainable improvements in institutional performance and employee engagement.

The findings should be interpreted within the context of a single institution and a cross-sectional self-report design. Consequently, the conclusions reflect statistically supported associations observed among respondents at Universitas Muhammadiyah Tangerang and should not be interpreted as definitive evidence of causality.

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Author contributions

Engeng Wiliana contributed to the formulation of the research design, methodological development, analytical evaluation, initial manuscript preparation, manuscript revision and editing, as well as research coordination and project management. Fauzan Hakim was responsible for data collection, data management, and preparation of the initial manuscript draft. Hengki Nurhuda contributed to the validation process, supervised the overall research activities, critically reviewed and edited the manuscript, and secured funding for the study. All authors participated in reviewing and approving the manuscript prior to submission.

Acknowledgements

The authors gratefully acknowledge the institutional support of the Research and Community Service Institute (LPPM) of Universitas Muhammadiyah Tangerang. Sincere appreciation is extended to all academic and administrative personnel who contributed thank you for dedicating your time to participate in this research study, and to the anonymous reviewers whose constructive and detailed feedback significantly enhanced the overall quality of this manuscript.

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