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Research Article

The Effect of Digital Leadership and Human Capital Agility on Employee Performance through Work Engagement in Technology-Based Organizations

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Abstract. This study aims to examine the influence of Digital Leadership and Human Capital Agility on Work Engagement and Employee Performance in the context of digital transformation. Rapid technological developments require organizations to strengthen leadership capabilities, workforce adaptability, and employee engagement to maintain sustainable performance. This study employed a quantitative approach using Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze data collected from 250 respondents through a structured questionnaire. The proposed model was evaluated through measurement and structural model testing, including validity, reliability, coefficient of determination, and hypothesis testing. The findings indicate that all proposed relationships are positive and statistically significant. Digital Leadership positively influences Work Engagement (β = 0.371) and Employee Performance (β = 0.345), while Human Capital Agility has a positive effect on Work Engagement (β = 0.399) and Employee Performance (β = 0.200). Furthermore, Work Engagement significantly improves Employee Performance (β = 0.306). The structural model explains 38.3% of the variance in Work Engagement and 46.1% of the variance in Employee Performance, indicating a moderate explanatory power. Human Capital Agility emerges as the strongest predictor of Work Engagement, whereas Digital Leadership provides the greatest direct contribution to Employee Performance. These findings suggest that organizational performance in the digital era is influenced not only by effective leadership but also by employees' adaptability and engagement. This study contributes to the literature by integrating leadership, agility, engagement, and performance within a single framework and offers practical implications for organizations seeking to improve employee performance through digital leadership development, workforce agility enhancement, and employee engagement initiatives.

Keywords: Digital Leadership; Digital Transformation; Employee Performance; Human Capital Agility; PLS-SEM; Work Engagement.

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1. Introduction

The rapid advancement of digital technologies has fundamentally transformed organizational operations, competitive strategies, and value creation processes. Technology-based organizations are increasingly required to adapt to digital transformation initiatives,

including artificial intelligence, cloud computing, big data analytics, and digital collaboration platforms. In this environment, employee performance has become a critical determinant of organizational success, as it directly influences productivity, innovation, and long-term competitiveness.

Despite substantial investments in digital technologies, many organizations continue to face challenges in achieving optimal employee performance. Recent evidence suggests that technological adoption alone is insufficient to ensure organizational effectiveness, as employees often encounter increased workloads, uncertainty, and continuous changes in work processes. Consequently, organizations must develop leadership capabilities and workforce adaptability to support employees in navigating digital transformation successfully.

One leadership approach that has gained considerable attention is digital leadership. Digital leadership refers to a leader's ability to leverage digital technologies, promote innovation, facilitate organizational learning, and guide employees through rapidly changing digital environments. Previous studies have demonstrated that digital leadership contributes positively to organizational performance by enhancing communication, collaboration, and employee participation in transformation initiatives. Leaders who effectively utilize digital technologies can create supportive work environments that encourage employees to achieve higher levels of performance.

In addition to leadership, human capital agility has emerged as an essential organizational capability in the digital era. Human capital agility reflects employees' ability to adapt quickly to environmental changes, acquire new competencies, and respond effectively to emerging challenges. Agile employees are generally more flexible, resilient, and capable of maintaining performance under conditions of uncertainty. Prior studies have reported that workforce agility contributes to organizational adaptability, resilience, and sustainable competitive advantage.

Another important factor influencing employee performance is work engagement, which represents a positive psychological state characterized by vigor, dedication, and absorption in work activities. Engaged employees are more motivated, committed, and willing to exert additional effort in achieving organizational goals. Existing literature consistently indicates that work engagement is associated with higher productivity, innovation, and overall job performance.

The relationships among digital leadership, human capital agility, work engagement, and employee performance can be explained through the Conservation of Resources (COR) Theory and Social Exchange Theory (SET). COR Theory suggests that employees seek to acquire and preserve valuable resources that help them cope with workplace demands. In this context, digital leadership provides organizational resources through technological support and strategic guidance, while human capital agility represents a personal resource that enables effective adaptation to change. These resources are expected to foster higher levels of work engagement, which subsequently enhance employee performance. Similarly, SET argues that employees tend to reciprocate supportive organizational practices by demonstrating stronger engagement and improved performance.

Although previous studies have examined the effects of digital leadership, workforce agility, work engagement, and employee performance, empirical evidence integrating these variables within a single framework remains limited. Furthermore, most prior research has focused primarily on direct relationships, while the mediating role of work engagement has

received relatively limited attention, particularly in technology-based organizational settings undergoing digital transformation.

Therefore, this study aims to examine the effects of Digital Leadership and Human Capital Agility on Employee Performance through Work Engagement in technology-based organizations. Specifically, this research investigates the direct effects of Digital Leadership and Human Capital Agility on Employee Performance, as well as the mediating role of Work Engagement in these relationships. By employing a Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, this study seeks to provide a comprehensive understanding of the factors influencing employee performance in the digital era and to offer practical insights for organizations seeking to maximize the benefits of digital transformation.

2. Literature Review

Digital Leadership

Digital Leadership represents a leadership capability that enables individuals to strategically utilize digital technologies in guiding organizational transformation, fostering innovation, and facilitating continuous learning. Within technology-driven organizations, leaders are increasingly expected to integrate technological advancements into managerial processes while supporting employees in adapting to rapidly evolving business environments. Effective digital leaders not only encourage technological adoption but also cultivate collaborative cultures that enhance knowledge sharing, creativity, and organizational responsiveness. Consequently, digital leadership has become a critical organizational capability that supports employee engagement and improves overall organizational performance.

Human Capital Agility

Human Capital Agility refers to the capacity of employees to respond effectively to environmental changes through adaptability, flexibility, continuous learning, and proactive behavior. In highly dynamic organizational settings, agility enables individuals to cope with uncertainty, acquire new competencies, and adjust their work practices according to emerging demands. Employees possessing high levels of agility are generally characterized by resilience and learning orientation, allowing them to sustain effectiveness despite technological disruptions and organizational transformation. Therefore, workforce agility is increasingly recognized as an essential factor contributing to organizational sustainability and competitiveness.

Work Engagement

Work Engagement reflects a positive and fulfilling psychological state that manifests through vigor, dedication, and absorption in work-related activities. Employees who exhibit strong engagement tend to demonstrate high levels of enthusiasm, persistence, and emotional attachment toward their jobs. Such conditions encourage individuals to invest additional effort in achieving organizational objectives and maintaining high-quality performance. Existing research consistently identifies work engagement as a key psychological mechanism through which organizational resources influence employee attitudes and behavioral outcomes.

Employee Performance

Employee Performance refers to the degree to which employees effectively fulfill their assigned responsibilities and contribute to organizational goals. Beyond traditional measures

such as productivity and task completion, contemporary perspectives emphasize adaptability, innovation, collaboration, and continuous improvement as important dimensions of performance. In digitally intensive environments, employee performance increasingly depends on an individual's ability to learn, adapt, and collaborate effectively while responding to evolving organizational demands.

Related Work and Research Gap

Prior research has consistently highlighted the importance of Digital Leadership, Human Capital Agility, and Work Engagement in shaping organizational and employee outcomes. Studies on digital leadership have demonstrated its role in facilitating technological adaptation, innovation, and organizational transformation, while research on human capital agility emphasizes employees' capacity to respond effectively to environmental uncertainty and changing job demands. Similarly, work engagement has been widely recognized as a critical predictor of employee effectiveness, productivity, and overall job performance.

Despite the growing body of literature, several important gaps remain. From a theoretical perspective, existing studies have largely examined Digital Leadership and Human Capital Agility as independent organizational resources without sufficiently explaining how these resources interact to influence employee performance through psychological mechanisms. Although the Conservation of Resources (COR) Theory and Social Exchange Theory (SET) suggest that organizational and personal resources may enhance employee outcomes by fostering positive work-related attitudes, empirical validation of this integrated mechanism remains limited.

From an empirical perspective, prior findings have predominantly focused on direct relationships among leadership, agility, engagement, and performance variables. While Digital Leadership has been associated with improved employee performance and Human Capital Agility has been linked to greater adaptability and effectiveness, relatively few studies have simultaneously investigated these constructs within a unified framework. Furthermore, the mediating role of Work Engagement has received comparatively limited attention, resulting in an incomplete understanding of the processes through which organizational and individual resources contribute to performance outcomes.

A contextual gap is also evident in the literature. Most previous studies were conducted in conventional organizational settings or examined digital transformation variables independently. Empirical evidence from technology-based organizations, where rapid technological change, continuous innovation, and workforce adaptability are essential for organizational success, remains relatively scarce. Consequently, the applicability of existing findings to digitally intensive organizational environments is not yet fully established.

To address these limitations, the present study develops and tests an integrated research model that examines the direct and indirect effects of Digital Leadership and Human Capital Agility on Employee Performance through Work Engagement in technology-based organizations. By incorporating leadership capability, workforce adaptability, and employee engagement within a single structural framework, this study seeks to extend current theoretical understanding and provide empirical evidence regarding the mechanisms that drive employee performance in the context of digital transformation.

Table 1. Summary of Previous Studies and Research Gap.

Author	Variables	Main Findings	Research Gap
Cortellazzo et al. (2019)	Digital Leadership	Supports organizational transformation	Did not examine engagement
Muduli (2017)	Workforce Agility	Enhances adaptability	No mediation analysis
Saks (2019)	Work Engagement	Improves employee performance	No digital transformation context
Schaufeli (2021)	Engaging Leadership	Strengthens engagement	Did not include agility
Current Study	DL–HCA–WE–EP	Integrated structural model	Addresses identified gaps

Hypothesis Development

Digital Leadership has become increasingly important in organizations undergoing digital transformation because leaders are expected to facilitate technological adaptation, promote innovation, and support employees in responding to dynamic work environments. According to Conservation of Resources (COR) Theory, organizational resources provided by leaders can strengthen employees' psychological capacity to cope with job demands and uncertainty. Digital leaders create supportive work conditions through effective communication, technological guidance, and continuous learning opportunities, enabling employees to feel more confident and involved in their work activities.

Based on these arguments, the following hypothesis is proposed:

H1: Digital Leadership → Work Engagement

The increasing complexity of digital transformation initiatives requires leaders to provide strategic direction, technological support, and continuous communication to employees. According to Conservation of Resources Theory, organizational resources supplied by leaders can enhance employees' psychological capacity to manage work-related challenges. Digital leaders facilitate access to information, encourage innovation, and create supportive work environments that foster employee confidence and involvement. As employees perceive greater support and clarity from leadership, they are more likely to develop stronger emotional and cognitive attachment to their work. Therefore, Digital Leadership is expected to strengthen Work Engagement.

H1: Digital Leadership positively influences Work Engagement.

H2: Human Capital Agility → Work Engagement

Human Capital Agility reflects employees' ability to adapt to changing circumstances while maintaining effectiveness and motivation. Individuals possessing agile characteristics are generally more capable of handling uncertainty and embracing new learning opportunities. From the perspective of Conservation of Resources Theory, adaptive capability constitutes a valuable personal resource that supports positive psychological functioning. Employees who can quickly adjust to evolving work demands are more likely to experience meaningful involvement and enthusiasm in their work activities. Consequently, higher levels of agility are expected to promote stronger Work Engagement.

H2: Human Capital Agility positively influences Work Engagement.

H3: Digital Leadership → Employee Performance

Digital leaders contribute to organizational effectiveness by facilitating innovation, providing technological guidance, and creating conditions that support employee development. Social Exchange Theory suggests that employees tend to reciprocate favorable

treatment and organizational support through positive work behaviors. When leaders effectively manage digital transformation and empower employees to utilize technological resources, employees are more likely to improve productivity, creativity, and overall effectiveness. Therefore, Digital Leadership is expected to positively affect Employee Performance.

H3: Digital Leadership positively influences Employee Performance.

H4: Human Capital Agility → Employee Performance

In rapidly changing organizational environments, employee performance increasingly depends on the ability to adapt and respond proactively to emerging challenges. Agile employees possess greater flexibility in addressing complex situations, adopting new technologies, and identifying effective solutions to work-related problems. These adaptive capabilities enable individuals to maintain productivity and achieve organizational objectives despite environmental uncertainty. Consequently, Human Capital Agility is expected to contribute positively to Employee Performance.

H4: Human Capital Agility positively influences Employee Performance.

H5: Work Engagement → Employee Performance

Work Engagement represents a motivational state that encourages employees to invest physical, cognitive, and emotional resources into their work. Highly engaged employees tend to display greater persistence, commitment, and willingness to exceed formal job requirements. Such behaviors often translate into higher levels of effectiveness, productivity, and organizational contribution. Therefore, employees who experience stronger engagement are expected to achieve superior performance outcomes.

H5: Work Engagement positively influences Employee Performance.

3. Materials and Methods

Research Design

This study adopted a quantitative research approach to examine the structural relationships among Digital Leadership, Human Capital Agility, Work Engagement, and Employee Performance. A cross-sectional survey design was utilized to capture respondents' perceptions within a specific period. Considering the predictive orientation of the research model and the inclusion of multiple latent constructs, Partial Least Squares Structural Equation Modeling (PLS-SEM) was selected as the primary analytical technique.

Population and Sample

The target population consisted of employees working in technology-oriented organizations that actively implement digital technologies within their operational and managerial processes. Respondents were selected using purposive sampling to ensure adequate experience with digital work environments and organizational transformation initiatives. A total of 250 valid responses were obtained and included in the analysis. This sample size exceeded the minimum requirement recommended for PLS-SEM and was considered sufficient for evaluating the proposed structural model.A total of 250 valid responses were obtained and analyzed. This sample size satisfies the minimum requirements for PLS-SEM analysis and provides sufficient statistical power for evaluating complex structural relationships.

Table 2. Respondent Profile (N = 250).

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	142	56.8
	Female	108	43.2
	Total	250	100.0
Age	< 25 years	42	16.8
	25–34 years	104	41.6
	35–44 years	67	26.8
	45–54 years	28	11.2
	> 54 years	9	3.6
	Total	250	100.0
Education Level	Diploma	36	14.4
	Bachelor's Degree	145	58.0
	Master's Degree	62	24.8
	Doctoral Degree	7	2.8
	Total	250	100.0
Tenure	< 2 years	48	19.2
	2–5 years	97	38.8
	6–10 years	61	24.4
	11–15 years	29	11.6
	> 15 years	15	6.0
	Total	250	100.0

The demographic profile of the respondents is presented in Table 2. Based on gender distribution, male respondents accounted for 56.8% of the sample, while female respondents represented 43.2%. In terms of age, the majority of respondents were between 25 and 34 years old (41.6%), followed by those aged 35–44 years (26.8%), indicating that most participants were in the productive working-age group.

Regarding educational attainment, most respondents held a Bachelor's degree (58.0%), followed by a Master's degree (24.8%), suggesting that the sample consisted largely of well-educated employees capable of adapting to technology-driven work environments. With respect to organizational tenure, the largest proportion of respondents had worked between two and five years (38.8%), followed by six to ten years (24.4%). This distribution indicates that most participants possessed sufficient organizational experience while remaining actively involved in digital transformation initiatives within their respective organizations.

Data Collection and Measurement

Data were collected through an online structured questionnaire. All constructs were measured using previously validated scales and adapted to the context of technology-based organizations. Responses were assessed using a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

The study included four latent constructs:

a. Digital Leadership (4 indicators)
b. Human Capital Agility (4 indicators)
c. Work Engagement (3 indicators)
d. Employee Performance (4 indicators)

Table 3. Operational Definition of Variables.

Variable	Dimensions	Source
Digital Leadership	Digital Communication, Technology Adaptation, Digital Innovation, Technology-Based Decision Making	Eberl & Drews (2021)
Human Capital Agility	Adaptability, Learning Agility, Flexibility, Responsiveness	Muduli (2017)
Work Engagement	Vigor, Dedication, Absorption	Schaufeli (2021)

Employee Performance	Work Quality, Work Quantity, Work Effectiveness, Task Completion	Aguinis (2019)

Research Framework

Based on the literature review, Digital Leadership and Human Capital Agility were hypothesized to influence Employee Performance both directly and indirectly through Work Engagement. Accordingly, Work Engagement was positioned as a mediating variable linking organizational capabilities to performance outcomes.

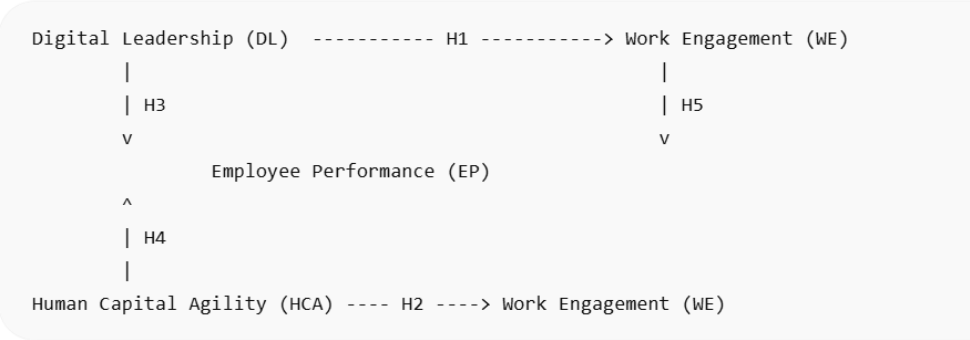

Figure 1. Proposed Research Framework.

Data Analysis Procedure

Data analysis was conducted using SmartPLS software and consisted of two stages. First, the measurement model was evaluated to assess indicator reliability, convergent validity, discriminant validity, and internal consistency reliability. Second, the structural model was examined to evaluate path coefficients, coefficient of determination (R^2), and hypothesis testing through bootstrapping procedures.

The analytical process followed these steps:

a. Data collection and screening.
b. Measurement model assessment.
c. Structural model assessment.
d. Hypothesis testing.
e. Mediation effect analysis.
f. Interpretation of findings.

Validity and Reliability Assessment

Measurement quality was evaluated following established PLS-SEM guidelines. Convergent validity was assessed using outer loadings (> 0.70) and Average Variance Extracted (AVE > 0.50). Reliability was examined through Cronbach's Alpha and Composite Reliability values exceeding 0.70. Discriminant validity was verified using the Heterotrait–Monotrait Ratio (HTMT < 0.90).

Table 4. Measurement Evaluation Criteria.

Assessment	Indicator	Threshold
Indicator Reliability	Outer Loading	> 0.70
Convergent Validity	AVE	> 0.50
Internal Consistency	Cronbach's Alpha	> 0.70
Internal Consistency	Composite Reliability	> 0.70
Discriminant Validity	HTMT	< 0.90
Multicollinearity	VIF	< 5.00

Common Method Bias Assessment

To minimize the possibility of common method bias, full-collinearity variance inflation factors (VIFs) were examined. All VIF values were below the recommended threshold of 3.3, indicating that common method bias was unlikely to affect the results. Harman's single-factor test further confirmed that no single factor accounted for the majority of the variance.

Hypothesis Testing

Hypotheses were tested using a bootstrapping procedure with 5,000 resamples. Relationships were considered significant when the t-value exceeded 1.96 and the p-value was below 0.05. The mediating role of Work Engagement was evaluated through indirect effect analysis, allowing assessment of both direct and indirect relationships among the study variables.

Structural Model Specification

The proposed structural model is expressed as follows:

Work Engagement Model

$$Z = \beta_1 X_1 + \beta_2 X_2 + \varepsilon_1 \quad \text{(i)}$$

Employee Performance Model

$$Y = \beta_3 X_1 + \beta_4 X_2 + \beta_5 Z + \varepsilon_2 \quad \text{(ii)}$$

where:

a. X_1 = Digital Leadership
b. X_2 = Human Capital Agility
c. Z = Work Engagement
d. Y = Employee Performance
e. β = Path Coefficients
f. ε = Error Terms

The model assumes that Digital Leadership and Human Capital Agility influence Employee Performance directly and indirectly through Work Engagement.

4. Results and Discussion

Result

Measurement Model Assessment

Prior to evaluating the structural relationships among the constructs, the measurement model was assessed to ensure the adequacy of reliability and validity. Following the recommended procedures in PLS-SEM, the assessment included indicator reliability, internal consistency reliability, convergent validity, discriminant validity, and multicollinearity evaluation.

Indicator Reliability

Indicator reliability was examined using outer loading values. The results indicate that all measurement items achieved loading values above the recommended threshold of 0.70, ranging from 0.742 to 0.901. These findings demonstrate that each indicator adequately represents its corresponding latent construct and contributes meaningfully to the measurement model.

Table 5. Outer Loading Results.

Construct	Indicator	Outer Loading
Digital Leadership	DL1	0.842
	DL2	0.871
	DL3	0.815
	DL4	0.887
Human Capital Agility	HCA1	0.823
	HCA2	0.856
	HCA3	0.879
	HCA4	0.842
Work Engagement	WE1	0.901
	WE2	0.873
	WE3	0.845

Employee Performance	EP1	0.817
	EP2	0.854
	EP3	0.889
	EP4	0.842

The loading values exceeded the minimum acceptable criterion, confirming satisfactory indicator reliability.

Internal Consistency Reliability and Convergent Validity

Internal consistency reliability was evaluated using Cronbach's Alpha and Composite Reliability (CR), whereas convergent validity was assessed through the Average Variance Extracted (AVE). As presented in Table 4, all constructs achieved Cronbach's Alpha and Composite Reliability values above 0.70, indicating a satisfactory level of reliability. In addition, all AVE values exceeded the recommended threshold of 0.50, confirming that the constructs explain a substantial proportion of variance in their respective indicators.

Table 6. Reliability and Convergent Validity Results.

Construct	Cronbach's Alpha	Composite Reliability	AVE
Digital Leadership	0.876	0.915	0.729
Human Capital Agility	0.861	0.906	0.707
Work Engagement	0.848	0.908	0.767
Employee Performance	0.872	0.913	0.724

These results confirm that the measurement model possesses adequate internal consistency and convergent validity.

Discriminant Validity

Discriminant validity was assessed using the Heterotrait–Monotrait Ratio (HTMT). According to established guidelines, HTMT values below 0.90 indicate that each construct is empirically distinct from the others. As shown in Table 5, all HTMT values were below the recommended threshold, supporting the discriminant validity of the measurement model.

Table 7. HTMT Results.

Construct	DL	HCA	WE	EP
Digital Leadership	–			
Human Capital Agility	0.684	–		
Work Engagement	0.742	0.771	–	
Employee Performance	0.705	0.688	0.812	–

The results indicate that all constructs are conceptually and statistically distinguishable from one another.

Multicollinearity Assessment

To examine the potential presence of multicollinearity, Variance Inflation Factor (VIF) values were evaluated. The findings reveal that all VIF values ranged between 1.432 and 2.865, which are substantially below the critical threshold of 5.00. Therefore, multicollinearity was not considered a concern in the proposed model.

Table 8. VIF Results.

Construct Relationship	VIF
Digital Leadership → Work Engagement	1.876
Human Capital Agility → Work Engagement	1.876
Digital Leadership → Employee Performance	2.654
Human Capital Agility → Employee Performance	2.865
Work Engagement → Employee Performance	2.143

The VIF values indicate that the predictor constructs do not exhibit problematic collinearity and are suitable for subsequent structural model evaluation.

Overall, the measurement model demonstrates satisfactory psychometric properties. All constructs meet the recommended criteria for reliability, convergent validity, discriminant validity, and multicollinearity assessment, indicating that the model is appropriate for further structural analysis and hypothesis testing.

Structural Model Assessment

The structural model evaluation demonstrates that all proposed relationships are positive and statistically significant. Digital Leadership significantly influences Work Engagement ($\beta = 0.371$, $p < 0.001$) and Employee Performance ($\beta = 0.345$, $p < 0.001$). Similarly, Human Capital Agility exerts a significant effect on Work Engagement ($\beta = 0.399$, $p < 0.001$) and Employee Performance ($\beta = 0.200$, $p < 0.001$). Work Engagement also positively affects Employee Performance ($\beta = 0.306$, $p < 0.001$). Therefore, all proposed hypotheses (H1–H5) are supported.

The coefficient of determination indicates that Digital Leadership and Human Capital Agility explain 38.3% of the variance in Work Engagement ($R^2 = 0.383$). Furthermore, Digital Leadership, Human Capital Agility, and Work Engagement jointly explain 46.1% of the variance in Employee Performance ($R^2 = 0.461$), suggesting a moderate level of predictive power.

Table 9. Structural Model Results.

Hypothesis	Relationship	β	p-value	Result
H1	Digital Leadership → Work Engagement	0.371	<0.001	Supported
H2	Human Capital Agility → Work Engagement	0.399	<0.001	Supported
H3	Digital Leadership → Employee Performance	0.345	<0.001	Supported
H4	Human Capital Agility → Employee Performance	0.200	<0.001	Supported
H5	Work Engagement → Employee Performance	0.306	<0.001	Supported

Mediation Analysis

The mediation analysis confirms that Work Engagement serves as a significant mechanism linking organizational capabilities to employee performance. The indirect effect of Digital Leadership on Employee Performance through Work Engagement is significant ($\beta = 0.114$, $p < 0.001$), while Human Capital Agility also exerts a significant indirect effect through Work Engagement ($\beta = 0.122$, $p < 0.001$). These findings indicate that employee engagement partially mediates the relationships between organizational resources and performance outcomes.

Table 10. Indirect Effects.

Indirect Relationship	β	T-value	p-value	Result
Digital Leadership → Work Engagement → Employee Performance	0.114	4.82	<0.001	Supported
Human Capital Agility → Work Engagement → Employee Performance	0.122	5.13		

Discussion

The findings provide empirical evidence that Digital Leadership and Human Capital Agility are strategic resources that contribute significantly to employee performance within technology-based organizations. The positive influence of Digital Leadership on Work Engagement supports the argument that leaders who effectively leverage digital technologies can create supportive work environments that foster employee commitment and involvement.

Human Capital Agility emerged as the strongest determinant of Work Engagement, emphasizing the importance of adaptability, learning capability, and resilience in sustaining employee motivation amid continuous technological change. Employees who possess agile characteristics are more likely to embrace challenges and maintain positive attitudes toward their work responsibilities.

The significant effect of Work Engagement on Employee Performance further reinforces the notion that engaged employees are more productive, committed, and willing to contribute beyond formal job expectations. This finding highlights the mediating role of engagement as a mechanism through which organizational and individual resources are translated into desirable performance outcomes.

From a theoretical perspective, the results support the propositions of Conservation of Resources Theory and Social Exchange Theory. Organizational resources represented by Digital Leadership and personal resources represented by Human Capital Agility enhance employee engagement, which subsequently contributes to improved performance. These findings underscore the importance of simultaneously developing leadership capability, workforce adaptability, and employee engagement to achieve sustainable organizational success in the digital era.

5. Comparison with Previous Studies

To highlight the contribution of this study, the findings were compared with prior research examining Digital Leadership, Human Capital Agility, Work Engagement, and Employee Performance.

Table 11. Comparison with Previous Studies.

Study	Research Focus	Main Findings	Alignment with Current Study
Eberl & Drews (2021)	Digital Leadership	Digital leadership facilitates organizational adaptation and innovation.	Supports the positive effect of Digital Leadership on Work Engagement and Employee Performance.
Tagscherer & Carbon (2023)	Leadership for Digitalization	Digital leaders enhance organizational responsiveness and employee outcomes.	Consistent with the significant influence of Digital Leadership on Employee Performance.
Schaufeli (2021)	Work Engagement	Engaged employees demonstrate higher motivation and effectiveness.	Supports the positive relationship between Work Engagement and Employee Performance.
Alviani et al. (2024)	Workforce Agility	Workforce agility improves adaptability and organizational effectiveness.	Reinforces the significant role of Human Capital Agility in enhancing Work Engagement and Employee Performance.
Current Study (2026)	Digital Leadership–Human Capital Agility–Work	All hypothesized relationships were supported.	Extends previous studies by integrating leadership capability,

	Engagement–Employee Performance	workforce agility, engagement, and performance within a unified PLS-SEM model.

The results are generally aligned with prior empirical evidence, confirming that Digital Leadership, Human Capital Agility, and Work Engagement are important determinants of Employee Performance. Consistent with earlier studies, Digital Leadership was found to strengthen both employee engagement and performance, while Human Capital Agility contributed positively to employees' ability to remain effective in dynamic work environments.

A key contribution of this study lies in identifying Human Capital Agility as the strongest predictor of Work Engagement. This finding suggests that employees' adaptive capabilities not only enhance performance directly but also strengthen their psychological involvement in work activities. Furthermore, the study extends existing literature by examining the direct and indirect relationships among Digital Leadership, Human Capital Agility, Work Engagement, and Employee Performance within a unified PLS-SEM framework.

The model explains 38.3% of the variance in Work Engagement and 46.1% of the variance in Employee Performance, indicating a moderate level of explanatory power. These findings provide a more comprehensive understanding of employee performance in technology-based organizations and emphasize that sustainable performance improvement requires the combined development of digital leadership capabilities, workforce agility, and employee engagement.

6. Conclusion

This study examined the effects of Digital Leadership and Human Capital Agility on Employee Performance, with Work Engagement serving as a mediating mechanism, in technology-based organizations. The findings confirm that both Digital Leadership and Human Capital Agility significantly enhance Employee Performance, either directly or indirectly through Work Engagement. In addition, Work Engagement was found to positively influence Employee Performance, highlighting its role in translating organizational and individual capabilities into desirable performance outcomes.

Among the examined relationships, Human Capital Agility emerged as the strongest predictor of Work Engagement, whereas Digital Leadership exerted the strongest direct influence on Employee Performance. These results indicate that employee performance in the digital era is shaped not only by effective leadership but also by employees' adaptive capabilities and psychological engagement at work.

This study contributes to the literature by integrating Digital Leadership, Human Capital Agility, Work Engagement, and Employee Performance within a single structural framework. The findings also provide practical implications for organizations by emphasizing the importance of strengthening digital leadership competencies, fostering workforce adaptability, and promoting employee engagement to achieve sustainable performance improvements.

Several limitations should be acknowledged. The study employed a cross-sectional design and relied on self-reported data, which may limit causal interpretation and introduce response bias. Furthermore, the model explains only part of the variance in Employee Performance, suggesting the presence of additional influencing factors.

Future research is encouraged to utilize longitudinal approaches, involve broader organizational contexts, and incorporate additional variables such as digital competence, organizational culture, innovation capability, job satisfaction, or organizational commitment. Further investigation of alternative mediating and moderating mechanisms may also provide a deeper understanding of employee performance in digital transformation settings.

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