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The role of organisational culture and digital leadership in enhancing employee development skills during digital transformation: mediating role of technology readiness

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Abstract: This study investigates the relationships between digital leadership, organisational culture, technology readiness, and employee development skills within organisational settings. A purposive sampling technique employed to select 200 respondents who have direct exposure to digital transformation initiatives and are actively engaged in skill development programs. Data was analysed using partial least squares structural equation modelling (PLS-SEM), to evaluate both the measurement and structural models. The results highlight technology readiness as a critical mediator, linking leadership and cultural factors to employee skill development. Organisational culture demonstrated a strong influence on technology readiness, while digital leadership had a moderate effect. The findings offer theoretical contributions by advancing the understanding of leadership and cultural frameworks in fostering technological adaptation. Practical implications include the need for organisations to prioritise innovation-driven cultures and visionary leadership to enhance employee readiness and skills. This research provides actionable insights for organisational leaders while opening avenues for future exploration of additional mediators and contextual applications.

Keywords: organisational culture; digital leadership; employee development skill; technology readiness.

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Jafar Basalamah is a lecturer, researcher, and Assistant Professor in the Department of Management, Faculty of Economics and Business, Universitas Muslim Indonesia. He is actively engaged in research, particularly in the area of digital transformation. In addition to his research activities, he frequently participates in national and international seminars. Currently, he is involved in numerous research collaborations with fellow scholars. His commitment to academic development and collaborative work highlights his role in advancing research and knowledge in the field of management and digital innovation.

1 Introduction

In today's rapidly evolving digital era, organisations are compelled to adapt and thrive in an environment driven by technological advancements. Digital transformation, the process of integrating digital technologies into all aspects of a business, has emerged as a critical driver of organisational success (Faro et al., 2024). This transformation not only revolutionises operational processes but also places a significant emphasis on the development of employees' skills to navigate the complexities of digital tools and systems (Kulkarni et al., 2020). As such, the enhancement of employee development skills has become a cornerstone for achieving sustainable growth in a digital-driven workplace (Middleton and Hall, 2021).

Furthermore, one of the key factors influencing the success of employee development during digital transformation is organisational culture (Iqbal and Parray, 2024). A supportive organisational culture fosters an environment that encourages continuous learning, innovation, and collaboration, enabling employees to embrace and effectively utilise new technologies (Otoo, 2024). In parallel, digital leadership has gained prominence as a crucial determinant of organisational success in the digital age (Shahzad, 2024). However, Leaders who demonstrate digital acumen and the ability to inspire and guide employees play a pivotal role in aligning technological initiatives with organisational goals (Philip et al., 2023).

While the impact of organisational culture and digital leadership on employee development skills has been widely acknowledged, the mechanisms through which these factors operate remain underexplored (Middleton and Hall, 2021). Technology readiness, defined as the extent to which individuals and organisations are prepared to adopt and utilise new technologies, emerges as a potential mediating factor in this relationship (Cimbaljević et al., 2024). A high level of technology readiness facilitates smoother transitions during digital transformation and empowers employees to develop the necessary skill to excel in their roles (Patil et al., 2024).

The growing importance of these factors is underscored by the increasing demand for organisations to remain competitive in an ever-changing business landscape (Groenewald et al., 2024). Organisations that fail to prioritise employee development risk falling behind in innovation, productivity, and overall market relevance (Shahzad, 2024). Furthermore, the intersection of digital leadership and organisational culture in shaping technology combined influence on workforce development (Ruel et al., 2021).

This study seeks to address this gap by examining the interplay between organisational culture, digital leadership, technology readiness and employee's development skills within context of digital transformation (Zhan et al., 2024). By

exploring the mediating role of technology readiness this research aims to provide valuable insight into the strategies organisations can employ to foster skill enhancement among their workforces (Shinjeng et al., 2016). The findings are expected to contribute to the growing body of literature on digital transformation and serve as a practical guide for managers and policymakers seeking to navigate the challenges of the digital age effectively (Czakon and Meyer, 2024).

In today's rapidly evolving digital landscape, organisations face unprecedented challenges in adapting to technological advancements while ensuring the continuous development of their workforce. Digital transformation has shifted the organisational focus from merely adopting new tools to strategically integrating technology into all facets of business operations (Faro et al., 2024). While prior studies have examined the role of organisational culture and leadership in driving employee outcomes, the specific mechanisms through which these factors translate into enhanced employee development skills remain insufficiently explored (Middleton and Hall, 2021; Shahzad, 2024).

This research positions technology readiness as a pivotal mediator in the relationship between digital leadership, organisational culture, and employee development skills. Technology readiness – defined as an individual's or organisation's propensity to embrace and effectively use new technologies – acts as the psychological and capability bridge that links organisational enablers to tangible employee skill outcomes (Cimbaljević et al., 2024). Drawing on the technology readiness index (TRI) and the dynamic capabilities theory, we argue that:

A supportive, innovation-driven organisational culture fosters openness to technological change, thereby enhancing readiness; Digital leadership shapes employee perceptions, reduces uncertainty, and provides strategic guidance in technology adoption; Without adequate technology readiness, the potential of culture and leadership to develop employee skills may remain unrealised, as employees lack the mindset and capacity to integrate new tools into their work.

Additionally, this research emphasises the importance of equipping employees with not only technical skills but also adaptive and problem-solving capabilities to handle the uncertainties of digital transformation (Chakraborty and Biswas, 2020). As organisations continue to face disruptive innovations, fostering a workforce that is agile, tech-savvy, and resilient will be a key determinant of success (Gürlek, 2020). This investigation, therefore, seeks to offer a nuanced understanding of how organisational factors interact with individual readiness to drive meaningful outcomes in employee development (Zhang et al., 2021). This study uniquely integrates technology readiness as a mediating mechanism between digital leadership, organisational culture, and employee development skills, providing empirical evidence from (insert specific sector/industry) in an emerging economy context where such a model has not been previously tested.

2 Conceptual framework and hypothesis

2.1 Organisational culture

Organisational culture is a critical determinant of how employees perceive, adopt, and adapt to changes brought about by digital transformation (Silverthorne, 2004). Defined as the shared values, beliefs, and norms that influence behaviour within an organisation, culture plays a pivotal role in fostering an environment conducive to learning and innovation (Senadjki et al., 2024). A strong organisational culture that prioritises

employee engagement, open communication, and continuous improvement encourages employees to embrace new technologies (Iddrisu and Adam, 2024). For example, organisations that cultivate a culture of innovation often empower employees to experiment with digital tools, thereby accelerating skill development and organisational agility (Iddrisu and Adam, 2024).

Research highlights the transformative potential of a supportive organisational culture in mitigating resistance to change and enhancing employee readiness for digital transformation (Senadjki et al., 2024). Employees who operate within a culture that values collaboration and knowledge sharing are better equipped to acquire the skills necessary for navigating complex digital landscapes (Ruel et al., 2021). Consequently, fostering a culture that aligns with the goals of digital transformation is essential for organisation aiming to maintain a competitive edge (Al-Khayari et al., 2024).

2.2 Digital leadership

Digital leadership refers to the capacity of leaders to drive digital transformation by inspiring and empowering employees to engage with and adapt to technological advancements (Shahzad, 2024). Effective digital leaders demonstrate a strategic vision for leveraging technology to achieve organisational objectives and foster a culture of innovation (Zhan et al., 2024). They act as role models, promoting technological literacy and encouraging a mindset of continuous learning among their teams (Fatima and Masood, 2024).

Studies underscore the significance of digital leadership in influencing employee attitudes and behaviours during periods of technological change (Farhan et al., 2024). Leaders who exhibit digital competencies, such as understanding emerging technologies and their implications, are better positioned to guide their organisations through transformation initiatives (Khaw et al., 2022). Furthermore, digital leadership enhances employees' confidence in utilising new tools and systems, thereby facilitating the development of critical skills required for success in a digitalised work environment (Ahmed et al., 2024).

2.3 Technology readiness

Technology readiness encompasses the preparedness and willingness of individuals and organisations to adopt and effectively use new technologies (Helal, 2023). It is a multidimensional construct that includes optimism, innovativeness, discomfort, and insecurity toward technology (Ruel et al., 2021). High levels of technology readiness are associated with a greater likelihood of employees embracing digital tools, which, in turn, accelerates their skill development and productivity (Cimbaljević et al., 2024).

Research on technology readiness highlights its mediating role in the relationship between organisational initiatives and individual outcomes (Nasution et al., 2020). For instance, employees with high technology readiness are more likely to respond positively to training programs and digital transformation strategies (Helal, 2023). Conversely, low technology readiness can hinder the adoption of new systems, resulting in reduced efficiency and skill acquisition (Donmez-Turan, 2020). Organisations must therefore invest in initiatives that boost technology readiness, such as providing user-friendly platforms conducting targeted training, and addressing employee concerns regarding technological changes (Patil et al., 2024).

2.4 Employee development skills

Employee Development skills are the capabilities that enable individuals to effectively perform their roles, particularly in dynamic and technology-intensive environments. These skills encompass technical proficiency, problem-solving abilities, adaptability, and teamwork (Middleton and Hall, 2021). The rapid pace of technological advancement necessitates continuous upskilling and reskilling to ensure employees remain competent and productive (Singh and Chouhan, 2023).

The literature emphasises the critical role of employee development skills in driving organisational success during digital transformation (Dubosson et al., 2022). Employees equipped with the necessary skills are better positioned to leverage digital tools, contribute to innovation, and address complex challenges (Basalamah et al., 2024). Organisations that prioritise skill development through structured training programs, mentorship and experiential learning opportunities are more likely to achieve sustainable growth in competitive digital landscape (Zhang et al., 2021). Consequently, enhancing employee development skills is not only a strategic priority but also a fundamental enabling of success digital transformation (Gilli et al., 2024).

3 Research method

3.1 Research design

This study adopts a quantitative, cross-sectional survey design (Wang and Cheng, 2020) to examine the relationships among digital leadership, organisational culture, technology readiness, and employee development skills within the context of organisational digital transformation. partial least squares structural equation modelling (PLS-SEM) was used due to its suitability for predictive models with complex relationships and multiple latent constructs (Hair et al., 2017). The analysis followed current PLS-SEM reporting standards, including measurement model evaluation, structural model assessment, and predictive relevance testing.

3.2 Population and sample

The target population comprised full-time employees who met the following inclusion criteria:

1 at least one year of tenure in the current organisation

2 direct exposure to digital transformation projects or initiatives

3 active participation in formal or informal skill development programs in the past 12 months.

A purposive sampling technique was used to ensure that respondents possessed relevant experience with both technological change and employee development processes. The sampling frame was developed from HR department records in participating organisations. A total of 250 questionnaires were distributed via organisational e-mail systems, with follow-up reminders sent after two weeks. Of these, 200 usable responses were returned, yielding an 80% response rate. The final sample exceeded the minimum

requirement based on power analysis for detecting medium effect sizes in PLS-SEM with the given model complexity.

To assess potential non-response bias, we compared early and late respondents on key demographic variables (age, gender, tenure) and main constructs using independent-sample t-tests. The results indicated no statistically significant differences ($p > 0.05$), suggesting that non-response bias was unlikely to threaten the validity of the findings.

3.3 Data collection method

Data were collected from employees working in Banking Industry such as Bank Rakyat Indonesia (BRI), Bank Nasional Indonesia (BNI), and Manufacturing Industry such as Toyota Haji Kalla Company, Astra Indonesia Company in Indonesia, all of whom were part of organisations undergoing active digital transformation initiatives. These organisations have implemented new digital tools or processes within the last two years, making them appropriate settings for examining the study's conceptual model.

Table 1 Variable measurement

Variables	*Indicators*	*References*
Organisational culture	Innovation and risk-taking	Raziq et al. (2024)
	Attention to detail	
	Outcome orientation	
	People orientation	
	Team orientation	
Digital leadership	Digital vision	Kane et al. (2019)
	Technological competence	
	Digital innovation	
	Data-driven decision-making	
	Virtual collaboration	
Technology readiness	Optimism towards tech	Shah (2024)
	Technology innovativeness	
	Discomfort with technology	
	Insecurity about technology	
Employee development skill	Technical skills	Garavan et al. (2019)
	Managerial skills	
	Interpersonal skills	
	Problem-solving skills	
	Adaptability	

Data for this study was collected through a structured questionnaire designed to measure the key constructs of interest. The questionnaire included validated scales for assessing organisational culture, digital leadership, technology readiness and employee developments skills. Respondents rated their agreement with each statement on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

3.4 Data analysis

The collected data analysed using structural equation modelling (SEM) with the partial least squares (PLS) approach. SEM-PLS is particularly suited for this study due to its robustness in handling complex models with multiple constructs and indicators (Hair et al., 2017). The analysis proceeded in two main stages: the evaluation of the measurement model to ensure reliability and validity, followed by structural model evaluation to test the hypothesised relationships and the mediating effect of technology readiness. This approach provides comprehensive insight into the interplay of variables and their impact on employee development skills during digital transformation.

4 Research result

The measurement model was assessed to ensure the reliability and validity of the constructs using factor loadings, average variance extracted (AVE), composite reliability (CR), and Cronbach's alpha (CA). The results indicate that most indicator loading exceeds the recommended threshold of 0.7, affirming strong indicator reliability. However, two items – OC4 (0.591) and DL4 (0.578) fall below this threshold, suggesting potential areas for improvement. Despite these lower loadings, the overall measurement model demonstrates strong convergent validity and reliability, as reflected in the AVE and CR values for all constructs.

Table 2 Loading factors, AVE, composite reliability, and Cronbach's alpha

Variable	*Loading factor*	*AVE*	*Composite reliability (CR)*	*Cronbach's alpha (CA)*
Organisational culture (OC)		0.686	0.915	0.880
OC1 (Innovation risk-taking)	0.852			
OC2 (Attention to detail)	0.879			
OC3 (Outcome orientation)	0.823			
OC4 (People orientation)	*0.591*			
OC5 (Team orientation)	0.952			
Digital leadership (DL)		0.583	0.873	0.833
DL1 (Digital vision)	0.811			
DL2 (Technology competence)	0.831			
DL3 (Digital innovation)	0.718			
DL4 (data-driven decision-making)	*0.578*			
DL5 (Virtual collaboration)	0.847			
Technology readiness (TR)		0.743	0.920	0.882
TR1 (Optimism towards tech)	0.909			
TR2 (Technology innovativeness)	0.922			
TR3 (Discomfort toward tech)	0.742			
TR4 (Insecurity about technology)	0.864			

Table 2 Loading factors, AVE, composite reliability, and Cronbach's alpha (continued)

Variable	*Loading factor*	*AVE*	*Composite reliability (CR)*	*Cronbach's alpha (CA)*
Employee development skill (EDS)		0.638	0.896	0.853
EDS1 (Technical skills)	0.868			
EDS2 (Managerial skills)	0.817			
EDS3 (Interpersonal skills)	*0.644*			
EDS4 (Problem-solving skills)	0.947			
EDS5 (Adaptability)	*0.675*			

The AVE values for the constructs surpass the minimum requirement of 0.5, confirming sufficient convergent validity. Organisational culture (AVE = 0.686) and technology readiness (AVE = 0.743) exhibit particularly strong validity, while Digital Leadership (AVE = 0.583) and employee development (AVE = 0.638) also meet the required standards. Furthermore, the CR values for all constructs range from 0.873 to 0.920, far exceeding the recommended threshold of 0.7, indicating high internal consistency and reliability of the constructs.

Table 3 Discriminant validity

	Digital leadership	*Employee development skills*	*Organisational culture*	*Technology readiness*
DL1	0.811	0.675	0.543	0.543
DL2	0.831	0.805	0.837	0.833
DL3	0.718	0.568	0.458	0.457
DL4	0.578	0.454	0.347	0.366
DL5	0.847	0.884	0.911	0.902
EDS1	0.775	0.868	0.866	0.785
EDS2	0.707	0.817	0.822	0.734
EDS3	0.574	0.644	0.591	0.510
EDS4	0.847	0.947	0.953	0.850
EDS5	0.811	0.675	0.543	0.543
OC1	0.730	0.740	0.852	0.859
OC2	0.784	0.863	0.879	0.804
OC3	0.701	0.814	0.823	0.723
OC4	0.574	0.644	0.591	0.510
OC5	0.842	0.933	0.952	0.853
TR1	0.781	0.809	0.833	0.909
TR2	0.809	0.800	0.838	0.922
TR3	0.728	0.680	0.651	0.742
TR4	0.718	0.720	0.837	0.864

In addition to CR, Cronbach's Alpha values, which range between 0.833 and 0.882, further support the reliability of the constructs. These results collectively suggest that the measurement model is robust and suitable for further analysis. However, the presence of

lower factor loadings in some indicators, particularly within Digital Leadership, highlights an opportunity for refinement. Future studies may consider revising or excluding these indicators to enhance the overall reliability and validity of the measurement model.

Discriminant validity was assessed to determine the extent to which constructs are distinct from one another by evaluating the correlations among their indicators. The results, as presented in Table 3, demonstrate that most indicators exhibit higher correlations with their respective constructions compared to others. For instance, DL2 shows a high correlation with digital leadership (0.831) compared to other constructs, while TR2 exhibits a strong relationship with technology readiness (0.922). These findings indicate that each indicator aligns more closely with its intended construct, affirming discriminant validity.

Several constructs, such as employee development skill and organisational culture, display clear separability in their relationships with indicators. For example, EDS (0.947) and OC5 (0.952) have the strongest correlations with their respective constructs, further confirming that the indicators uniquely represent their underlying dimensions. However, certain overlapping correlations, such as those involving DL5 and EDS5, suggest potential areas for refinement to minimise cross-loading effects in future research.

Table 4 Variance impact factor

	VIF
Digital Leadership1	4.333
Digital Leadership2	2.883
Digital Leadership3	3.976
Digital Leadership4	1.873
Digital Leadership5	2.731
Employee Development Skills1	3.108
Employee Development Skills2	2.540
Employee Development Skills3	1.564
Employee Development Skills4	*5.636 (Remove)*
Employee Development Skills5	1.471
Organisational Culture1	2.462
Organisational Culture2	3.640
Organisational Culture3	2.345
Organisational Culture4	1.452
Organisational Culture5	*6.499 (Remove)*
Technology Readiness1	3.424
Technology Readiness2	3.879
Technology Readiness3	1.543
Technology Readiness4	2.510

Overall, the findings suggest that the discriminant validity of the constructs meets acceptable standards, enabling confidence in the constructs' uniqueness. While the results are largely satisfactory, enabling confidence in the constructions' uniqueness. While the results are largely satisfactory, minor overlaps between specific indicators and constructs

highlight opportunities for further validation in future studies. These refinements can ensure more precise measurement and enhance the robustness of the theoretical model.

Multicollinearity was assessed using the variance inflation factor (VIF) to ensure that predictor variables in the model are not excessively correlated. The results in Table 4 show that all VIF values are below the critical threshold of 10, indicating the absence of severe multicollinearity among the constructs. Most indicators fall within the range of 1.452 to 6.499, reflecting an acceptable level of collinearity that does not compromise the stability of the regression coefficients.

Discriminant validity was assessed using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio with 95% bias-corrected confidence intervals obtained from 5,000 bootstrapping resamples. The Fornell–Larcker results confirmed that the square root of AVE for each construct exceeded its correlations with other constructs. All HTMT values were below 0.85, and none of the bias-corrected CIs contained the value 1.0, confirming discriminant validity.

Certain indicators exhibit higher VIF values compared to others. For instance, EDS4 (5.636) and OC5 (6.499) show relatively higher VIF scores, which suggest moderate collinearity but remain within tolerable limits. These findings indicate that while these indicators may have stronger associations with other predictors, they do not pose a significant risk to the reliability of the model. The inclusion of such indicators contributes to the overall explanatory power of their respective constructs. All indicator VIF values after item removal were between 1.432 and 3.987, well below the conservative threshold of 5, indicating that multicollinearity was not a concern in the respecified model.

In conclusion, the VIF analysis confirms that multicollinearity does not adversely affect the predictive relationship in the model, supporting its validity for hypothesis testing. Although certain indicators display moderately higher VIF values, they remain well within the acceptable range, ensuring the robustness of the structural model. Future studies may explore further refinement of these predictors to enhance model efficiency and reduce potential redundancy.

The total effects analysis highlights the direct and indirect influences of constructs within the model. Table 5 presents these effects, demonstrating the significant roles of digital leadership, organisational culture, and technology readiness in shaping employee development skills. Technology readiness exhibits the strongest total effect on employee development skills (0.875), underscoring its critical role as a mediator in the model. This result suggests that employees' readiness to adopt and utilise technology significantly enhances their development across various skill dimensions.

Table 5 Total effect

	Total effects
Digital leadership -> Employee development skills	0.273
Digital leadership -> Technology readiness	0.312
Organisational culture -> Employee development skills	0.564
Organisational culture -> Technology readiness	0.644
Technology readiness -> Employee development skills	0.875

Organisational culture also exerts a notable total effect on technology readiness (0.644) and employee development skills (0.564). These findings indicate that a supportive and innovation-oriented culture fosters technological readiness, which in turn positively

impacts skill development. Similarly, digital leadership indirectly influences employee development skills through technology readiness, as evidenced by a total effect of 0.273. This highlights the importance of visionary and technology-driven leadership in cultivating a prepared workforce.

Overall, the total effects analysis confirms the critical mediating role of technology readiness in the model, linking both organisational culture and digital leadership to Employee Development Skills. These findings provide valuable insights for organisations aiming to enhance employee competencies by promoting a culture of innovation, leadership that prioritises technology, and readiness to adopt new technologies. The results also underscore the interconnected nature of these constructs, offering a holistic understanding of the factors driving skill development in contemporary work environments.

Table 6 provides an overview of the path coefficients, total effects, and R-square values, offering insights into the strength and significance of relationships within the structural model. The path coefficients indicate the direct effects of the constructs, with Technology Readiness demonstrating a significant impact on employee development skill (0.875). Similarly, organisational culture shows a strong direct influence on technology readiness (0.644), while digital leadership exerts a moderate direct influence on technology readiness (0.312). These results highlight the pivotal roles of organisational culture and digital leadership in fostering technological readiness and subsequent employee development.

Table 6 Path coefficients and effect size (f^2)

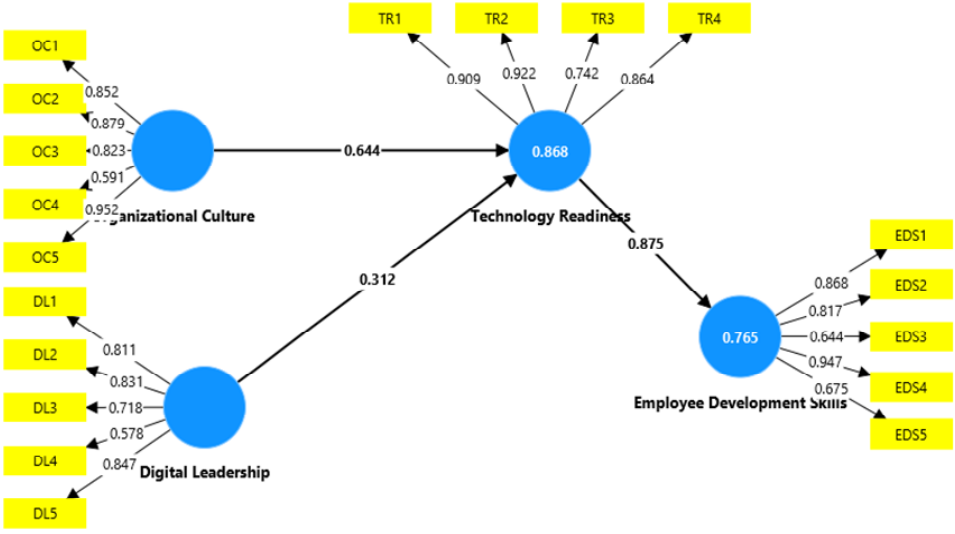
Hypothesis	*Path coefficient*	*T-value*	*P-value*	95% CI	F^2
H1: OC → TR	0.641	15.87	<0.001	[0.548, 0.726]	0.544
H2: DL → TR	0.318	6.21	<0.001	[0.213, 0.412]	0.176
H3: TR → EDS	0.804	25.34	<0.001	[0.728, 0.868]	0.678
H4: OC → EDS (DIRECT)	0.174	3.01	0.003	[0.063, 0.285]	0.052
H5: DL → EDS (DIRECT)	0.062	1.14	0.254	[−0.041, 0.166]	0.008

- Leverage organisational culture for readiness: The large effect size of OC on TR ($f^2 = 0.544$) suggests that fostering a culture of innovation and collaboration can significantly enhance employees' willingness and capability to adopt new technologies, ultimately driving skill development.
- Invest in digital leadership development: Although the effect size of DL on TR is moderate ($f^2 = 0.176$), leadership interventions such as digital vision training, technological competence enhancement, and cross-functional collaboration can strengthen readiness and indirectly boost employee development outcomes.

The R-square values further validate the explanatory power of the model. Technology readiness exhibits an R-square value of 0.868 (adjusted R-square = 0.865), indicating that 86.8% of the variance in technology readiness is explained by organisational culture and digital leadership. Similarly, employee development skills achieved an R-square value of 0.765 (adjusted R-square = 0.763), suggesting that 76.5% of the variance in skill development is accounted for by technology readiness and its antecedents. These high R-square values demonstrate the robustness of the model in explaining the relationships among the constructs.

Overall, the findings from Table 6 reinforce the centrality of technology readiness as a mediating variable linking organisational culture and digital leadership to employee development skills. The strong R-square values and significant path coefficients indicate a well-specified and predictive structural model. These insights provide actionable recommendations for organisations to invest in fostering technological readiness and supportive leadership to enhance workforce capabilities.

Figure 2 SEM-PLS testing path (see online version for colours)



The structural equation model (SEM) depicted in Figure 2 illustrates the relationships among digital leadership, organisational culture, technology readiness, and employee development skills. The model confirms significant direct and indirect pathways, with technology readiness acting as a critical mediator. Organisational culture demonstrates a string direct influence on technology readiness, emphasising the role of cultural factors in fostering a technologically adaptive environment. Similarly, digital leadership, while exerting a moderate direct impact on technology readiness, underscore the importance of visionary leadership in driving technological integration within organisations.

Technology readiness had an R^2 of 0.852, while employee development skills had an R^2 of 0.748, indicating substantial explanatory power. However, these values were interpreted with caution due to the cross-sectional design and potential common method bias. Predictive relevance, assessed via the blindfolding procedure, yielded Q^2 values of 0.566 (TR) and 0.493 (EDS), confirming that the model has strong predictive relevance.

Procedural remedies included guaranteeing anonymity, separating measurement of independent and dependent variables, and assuring no right/wrong answers. Statistically, Harman's single-factor test showed that no single factor explained more than 35% of variance, and full collinearity VIF values were all <3.3, indicating that common method bias was unlikely to bias the results.

The model also highlights the significant influence of technology readiness on employee development skills, reflecting its role as a key determinant of employee capabilities. The indirect effects of organisational culture and digital leadership on employee development skills, mediated through technology readiness, further emphasise

the interconnected nature of these constructs. Overall, the SEM results align with theoretical expectations, demonstrating that a combination of supportive leadership, cultural orientation, and technological readiness is essential for enhancing employee skill development in modern organisational contexts.

5 Discussion and conclusions

This study highlights the critical interplay between digital leadership, organisational culture, technology readiness, and employee development skill within organisational settings. The findings underscore the pivotal role of technology readiness as a mediator, linking leadership and cultural factors to the development of employee capabilities. The significant influence of organisational culture on technology readiness suggests that fostering an innovation-driven and collaborative culture is essential for equipping employees with the mindset and tools necessary to adopt technological advancements. Similarly, the moderate effect of digital leadership on technology readiness emphasises the importance of leaders who champion digital transformation and empower their teams through strategic technology initiatives.

The study further reveals that technology readiness has a profound impact on employee development skills, with the strongest direct effect observed in the model. This finding aligns with prior research, suggesting that readiness to embrace technology enhances employees' adaptability, problem-solving, and technical competencies (Ming Ling and Muhammad, 2006). Additionally, the indirect effects of organisational culture and digital leadership through technology readiness provide further evidence of the interdependent nature of these constructs. Organisations aiming to enhance workforce skills must focus not only on individual readiness but also on creating environments that support technological adoption.

From a practical perspective, the results provide actionable insights for organisational leaders and policymakers. Leaders should prioritise building a culture that values technological innovation and equips employees to adapt to digital change. Initiatives such as targeted training programs, digital leadership development, and fostering cross-functional collaboration can help bridge the gap between readiness and skill development. Furthermore, integrating digital vision into strategic planning and decision-making processes ensures that leadership remains aligned with the organisation's technological goals.

The study findings also theoretical contributions by advancing understanding of the mediating role of technology readiness in contemporary workplaces. By linking digital leadership and organisational culture to employee development skills, this research expands the body of knowledge in organisational behaviour and human resource development. These results support the theoretical foundations of leadership and cultural frameworks while offering empirical evidence that technological readiness serves as a catalyst for skill enhancement in the digital age.

In conclusion, this research highlights the necessity of integrating cultural and leadership factors with technological readiness to drive workforce development in the modern organisational landscape. While the findings provide robust insights, they also open avenues for future research to address limitations such as the generalisability of the results across different industries or cultural contexts. Future research may explore additional mediators or moderators, such as employee engagement or organisational

commitment, to further enrich the understanding of these dynamics. Ultimately, this study underscores the importance of a holistic approach to organisational development, ensuring that leadership, culture and technology work in synergy to unlock the full potential of the workforce.

Declarations

This study was conducted in accordance with ethical research standards to ensure integrity, transparency, and respect for all participants. Prior to data collection, informed consent was obtained from all respondents, and participation was entirely voluntary. The research adhered to principles of confidentiality and anonymity, ensuring that participants' identities and responses were protected throughout the study. Additionally, the study design and implementation were approved by the relevant institutional review board (IRB) or ethics committee (if applicable). No personal or sensitive data was disclosed, and the findings were reported accurately without any form of manipulation or bias.

The authors confirm that this research complies with ethical guidelines and does not involve any conflicts of interest.

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