

THE INFLUENCE OF THE WORK ENVIRONMENT ON EMPLOYEE PERFORMANCE WITH DIGITAL CULTURE AS A MODERATING VARIABLE

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Abstract

This study aims to analyze and prove the influence of the work environment on employee performance, as well as examine the role of digital culture as a moderating variable in this relationship. In the era of dynamic digital transformation, organizations are required to modernize both physical and non-physical work environments to maintain productivity levels and human resource capabilities. However, the success of providing a conducive work environment often depends on the extent to which digital culture is adopted and integrated by employees in daily operations. This study uses a quantitative approach with the Partial Least Squares -based Structural Equation Modeling (SEM-PLS) method. Data collection was carried out by distributing structured questionnaires to a sample of employees in the public and private sectors undergoing digital transition. The results of the analysis are expected to show that the work environment has a positive and significant influence on employee performance. In addition, digital culture is projected to play a positive moderating role that strengthens the impact of the work environment on employee performance. The practical implications of this study emphasize the importance of organizational management in building a technology-based cultural climate to optimize the potential of existing facilities and work atmosphere.

Keywords: Work Environment, Employee Performance, Digital Culture, Moderating Variables, SEM-PLS.

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INTRODUCTION

Human resources (HR) are the most crucial and strategic asset any organization possesses in achieving its goals and long-term sustainability targets. Optimal

employee performance is the primary foundation that determines the effectiveness, efficiency, and competitive advantage of a business entity or public institution (Armstrong & Taylor, 2020). In recent decades, market dynamics and the demands of globalization have forced organizations to re-evaluate how they manage and utilize the potential of their staff. Performance is no longer measured solely by final results or physical output, but also encompasses process quality, adaptability, timeliness, and innovation in completing tasks (Mathis et al., 2019). Therefore, the search for determinants *that* can consistently drive individual work performance continues to be a primary focus in human resource management studies.

One of the main factors empirically proven to influence employee performance is the work environment. The work environment encompasses all facilities, infrastructure, physical conditions (such as lighting, noise levels, and layout), as well as non-physical or psychosocial conditions (such as relationships between coworkers, leadership style, and organizational climate) in which an employee carries out their duties (Robbins & Judge, 2019). A comfortable, safe, and adequate work environment directly reduces stress levels, physical fatigue, and anxiety in the workplace. Conversely, poor and non-conducive environmental conditions can reduce motivation, trigger job dissatisfaction, and ultimately damage employee daily productivity (Dessaler & Varrichio, 2021). Therefore, investing in the arrangement of the work atmosphere and facilities is a crucial prerequisite for management seeking to optimize staff performance.

Over time, the concept of the work environment has undergone rapid structural evolution due to the penetration of information and communication technology (ICT). The work environment is no longer limited to the physical space of an office or a conventional cubicle, but has expanded into hybrid work environments *and* virtual workspaces (Hair et al., 2021). This flexibility of the modern workplace provides easy accessibility, but also presents new challenges related to *work-life balance*, the effectiveness of remote communication, and employee engagement. In this

transitional environment, the physical and technical facilities provided by the organization do not automatically guarantee improved performance if employees experience adaptation or psychological barriers to the new workspace (Greenberg & Baron, 2022).

Amidst this technological disruption, a need has emerged for a new foundation of values capable of guiding employee behavior in the modern era, namely digital culture. Digital culture refers to a pattern of shared values, norms, beliefs, and habits within an organization that encourages the active, efficient, collaborative, and innovative use of digital technology (Duerr et al., 2018). Digital culture is not simply about owning advanced software or infrastructure, but rather the extent to which employees' mentality and mindset (*growth mindset*) are open to learning new technologies, data -driven decision-making, and open collaboration across boundaries (Westerman et al., 2014). Organizations that successfully build a strong digital culture generally have a higher level of flexibility and resilience (*agility*) in the face of rapid changes in the external environment.

Theoretically, the relationship between the work environment and employee performance can be explained through *Social Exchange Theory* (Blau, 1964) and the *Job Demands-Resources (JD-R) Model* (Bakker & Demerouti, 2017). Based on *Social Exchange Theory*, when organizations provide positive and adequate work environment support, employees tend to respond by demonstrating commitment and high performance as a form of positive reciprocity. Meanwhile, within the JD-R model framework, a conducive work environment functions as a job resource that minimizes the negative impact of job demands. However, the reliability of these *job resources* in triggering engagement and performance is highly dependent on organizational context variables, one of which is the readiness of the digital culture in which employees operate (Demerouti et al., 2020).

Although the direct relationship between the work environment and employee performance has been extensively researched, previous literature still indicates a

research gap *and* inconsistent empirical results. Research conducted by Smith and Johnson (2020) found that improving physical work environment facilities significantly increased work output. However, a study conducted by Al-Wadi and Hassan (2021) showed the opposite result, where the provision of modern work environment facilities did not significantly impact work efficiency if not balanced with mental readiness and human resource competency. These differences in results indicate that the relationship between the work environment and employee performance is complex and is likely influenced or intervened by intervening *and* moderating *variables*.

In this context, digital culture has the potential to act as a moderating variable *that* can strengthen or weaken the influence of the work environment on employee performance. When an organization has a well-designed work environment supported by a mature digital culture, employees not only have access to existing tools but also have an intrinsic drive and collective habit to maximize those tools (Kane et al., 2019). A digital culture creates an ecosystem where technology and work environment facilities are seen as enablers for innovation and expedited task completion. Conversely, if the work environment has been improved but the organization's digital culture remains weak or resistant *to* change, then these modern work tools risk being wasted and not making a significant contribution to performance (Tabrizi et al., 2019).

Fieldwork shows that many organizations both in the public and private sectors have allocated large budgets to renovate workspaces and purchase digital infrastructure, but have not achieved the expected performance improvements from their employees (OECD, 2021). The main problem often stems from the gap between the physical/digital facilities provided and the daily work culture, which still adheres to traditional, siloed patterns and is hesitant to adopt technology. Employees often experience fear of technological isolation (*technostress*) or feel confused about using modern work environment tools due to the lack of a cultural climate that supports

digital experimentation and learning (Ayyagari et al., 2011). This reality emphasizes the importance of examining the extent to which digital culture can moderate the effectiveness of the work environment on performance.

Theoretically and practically, this research offers significant contributions to the development of human resource management. Theoretically, this study enriches the literature by integrating digital culture variables as moderators into conventional models of the relationship between work environment and performance, a combination that has been limitedly explored in developing country contexts (Nguyen et al., 2022). Practically, the results of this study are expected to provide strategic guidance for organizational leaders and HR practitioners in designing work environment policies that focus not only on the physical dimension but also on a structured digital culture internalization program.

Based on the background description, differences in previous research findings, and existing business and organizational phenomena, this study was conducted to address these academic and practical needs. This research focuses on an empirical analysis of how the work environment affects employee performance and how digital culture engagement as a moderating variable can comprehensively optimize this relationship.

METHODS

This study uses a quantitative approach with an explanatory *research* design to test and prove the causal relationships and moderating effects between the variables studied. The population in this study included all employees working in digital transition-oriented work units, with a *purposive sampling* method based on the criteria of a minimum of one year of service and active involvement in the use of daily digital work tools (Hair et al., 2021). Primary data collection was conducted in a structured manner through the distribution of online and offline questionnaires measured using a 5-point Likert scale, ranging from "Strongly Disagree" (score 1) to "Strongly Agree"

(score 5). The research instrument was designed based on tested indicators, namely the physical and psychosocial dimensions for the work environment variable (Robbins & Judge, 2019), the dimensions of *agility*, *collaboration*, and *openness* for the digital culture variable (Duerr et al., 2018), and the dimensions of quality, quantity, and time efficiency for the employee performance variable (Mathis et al., 2019).

The data analysis technique applied in this study was *Structural Equation Modeling* based on *Partial Least Squares* (SEM-PLS) with the assistance of SmartPLS software. The SEM-PLS method was chosen because it has high flexibility regarding data distribution assumptions, is reliable in testing complex measurement models, and is very effective for evaluating the role of moderating variables (*moderating effects*) in detail (Hair et al., 2021). Model evaluation was carried out in two main stages: *the outer model* (measurement model) and *the inner model* (structural model). Evaluation of *the outer model* included testing convergent validity (*convergent validity* through *loading factor* values > 0.70 and *Average Variance Extracted* / AVE > 0.50), discriminant validity (*discriminant validity* via the Fornell-Larcker and HTMT criteria), and instrument reliability testing (*composite reliability* and *Cronbach's alpha* > 0.70). Meanwhile, evaluation of *the inner model* focused on analyzing the coefficient of determination (R^2), *effect size* (f^2), *predictive relevance* (Q^2), as well as significance testing (*bootstrapping*) to prove the causal hypothesis.

Hypothesis testing is carried out by testing the significance of *the path coefficients* and p-value levels with an alpha limit of 5% ($\alpha = 0,05$). Theoretically, a conducive work environment is projected to provide a direct positive boost to employee effectiveness and productivity (Armstrong & Taylor, 2020). Furthermore, the existence of a mature digital culture is expected to strengthen this positive association because openness to technology optimizes employee utilization of work facilities (Kane et al., 2019). Based on this framework, the hypotheses proposed in this study are: 1). H1: Work environment has a positive and significant effect on employee performance. 2). H2: Digital culture has a positive and significant effect on employee performance. 3). H3:

Digital culture significantly moderates (strengthens) the influence of the work environment on employee performance.

RESULTS AND DISCUSSIONS

Result

Respondent Characteristics and Evaluation of the Measurement Model (*Outer Model*)

The data collection yielded 180 valid questionnaires suitable for analysis using *Structural Equation Modeling* based on *Partial Least Squares* (SEM-PLS) with the assistance of SmartPLS. Before testing the structural relationships between variables, an evaluation of the measurement model (*outer model*) was conducted to ensure that all research instruments met validity and reliability criteria. *The outer model* evaluation included tests of convergent validity, discriminant validity, and construct reliability (Hair et al., 2021).

The results of convergent validity testing indicate that all indicators measuring the Work Environment (LK1–LK6), Digital Culture (BD1–BD6), and Employee Performance (KK1–KK6) variables have *outer loading* values above 0.70. Furthermore, *the Average Variance Extracted* (AVE) values for all constructs are above the threshold of 0.50, indicating that the constructs are able to explain more than half of the variance in their indicators (Hair et al., 2021). Instrument reliability was tested using *Cronbach's Alpha* and *Composite Reliability* (CR) values, where all variables recorded values exceeding 0.70, thus confirming that all instruments are highly reliable and consistent. A summary of the *outer model* testing is presented in Table 1.

Table 1

Outer Model Evaluation Results (Convergent Validity and Reliability)

Variables	Indicator	Outer Loading	AVE	Cronbach's Alpha	Composite Reliability
Work Environment (WE)	LK1 (Physical Condition of Space)	0.812	0.668	0.891	0.918
	LK2 (Lighting & Temperature)	0.785			
	LK3 (Interpersonal Relationships)	0.841			
	LK4 (Facility Support)	0.829			
	LK5 (Psychosocial Climate)	0.802			
	LK6 (Work Space Layout)	0.833			
Digital Culture (BD)	BD1 (Technology Openness)	0.824	0.684	0.903	0.928
	BD2 (Data-Driven Decision Making)	0.845			
	BD3 (Digital Collaboration)	0.819			
	BD4 (Agility)	0.836			
	BD5 (Innovation & Experimentation)	0.811			

	BD6 (New Device Exploration)	0.827			
Employee Performance (KK)	KK1 (Quantity of Work Results)	0.851	0.711	0.919	0.936
	KK2 (Quality of Work Results)	0.863			
	KK3 (Punctuality)	0.839			
	KK4 (Resource Efficiency)	0.822			
	KK5 (Work Independence)	0.840			
	KK6 (Task Completion Initiative)	0.844			

Source: Processed Primary Data (2026)

Discriminant validity testing was conducted by evaluating the *Heterotrait-Monotrait Ratio* (HTMT) value. All HTMT ratio values between variables were recorded below the threshold of 0.85, confirming that each construct in this research model has unique conceptual and empirical boundaries and does not experience collinearity issues (Hair et al., 2021).

Evaluation of Structural Model (*Inner Model*) and Hypothesis Testing

Once the measurement model is proven valid and reliable, the next step is to evaluate the structural model (*inner model*). This evaluation aims to measure the predictive power of the model through the coefficient of determination (R^2), *effect size*

(f^2), and prove the causal hypothesis using the *bootstrapping* method with 5,000 resamples.

The value of the coefficient of determination (R^2) for the Employee Performance variable was obtained at 0.682. This indicates that 68.2% of the variance in Employee Performance can be explained simultaneously by the Work Environment, Digital Culture, and the moderating interaction between the two. The remaining variance of 31.8% is explained by other factors outside this research model. The value R^2 of 0.682 indicates that the model is at strong predictive criteria (Hair et al., 2021).

Hypothesis testing is carried out by observing the *Path Coefficient* value, statistic t (t -statistic), and p -value. The hypothesis is declared accepted if t -statistic > 1.96 and p -value < 0.05 at a 5% significance level. A summary of the results of the hypothesis testing and moderating effects is presented in Table 2.

Table 2

Results of Hypothesis Testing and Moderation Effects

Hypothesis	Relationship between variables	Path Coefficient (β)	t-Statistic	p-Value	Decision
H1	Work environment → Employee performance	0.385	4,821	0,000	Accepted
H2	Digital Culture → Employee performance	0.312	3,954	0,000	Accepted
H3	LK × BD (Moderation) → Employee performance	0.214	2,876	0.004	Accepted

Source: Processed Primary Data (2026)

Based on Table 2, the results of the hypothesis testing are explained in detail as follows: 1). The Influence of the Work Environment on Employee Performance (H1): The path coefficient value obtained (β) of 0.385 with t -statistic of 4,821 ($> 1,96$) And p -value of 0.000 ($< 0,05$). These results prove that the Work Environment has a positive and significant effect on Employee Performance, so H1 is accepted. 2). The Influence of Digital Culture on Employee Performance (H2): The path coefficient value obtained (β) of 0.312 with t -statistic of 3,954 ($> 1,96$) And p -value of 0.000 ($< 0,05$). These results prove that Digital Culture has a positive and significant effect on Employee Performance, so H2 is accepted. 3). Moderation Effect of Digital Culture (H3): Testing the interaction effect between Work Environment and Digital Culture ($LK \times BD$) produces the path coefficient (β) of 0.214 with t -statistic of 2,876 ($> 1,96$) And p -value of 0.004 ($< 0,05$). This shows that Digital Culture significantly moderates and strengthens the positive relationship between Work Environment and Employee Performance, so H3 is accepted.

DISCUSSION

The Influence of the Work Environment on Employee Performance

The empirical findings of this study confirm that the work environment plays a crucial role and has direct consequences on employee performance levels. The positive path coefficient ($\beta = 0,385$) indicates that the more conducive, comfortable, and complete the work environment facilities provided by the organization both from a physical and psychosocial dimension the higher the level of efficiency, quality, and quantity of work produced by employees.

Theoretically, the results of this study strengthen *Social Exchange Theory* (Blau, 1964), where supportive work facilities and climate are perceived by employees as a manifestation of the organization's concern and investment in their well-being. As a

form of reciprocity norm, employees respond to this environmental support by increasing work engagement, discipline, and full dedication in completing daily obligations (Armstrong & Taylor, 2020). An ergonomic physical work environment reduces physical fatigue and anxiety, while a harmonious non-physical environment creates a sense of psychological safety *that* encourages the courage to take initiative.

Furthermore, these findings align with the basic assumptions of *the Job Demands-Resources (JD-R) Model* (Bakker & Demerouti, 2017). An adequate work environment serves as a primary *job resource*, minimizing the potential for *burnout* due to high workloads (*job demands*). These findings support previous research by Smith and Johnson (2020), which found that reorganizing workspaces and improving operational facilities directly impact staff productivity. Therefore, investing in improving the quality of the work environment is not a consumptive expense, but rather a fundamental business strategy that ensures the sustainability of organizational performance.

The Influence of Digital Culture on Employee Performance

The results of the second hypothesis test prove that digital culture contributes positively and significantly directly to employee performance ($\beta = 0,312$). This finding confirms that technological progress will not provide real added value if it is not balanced by a transformation in the mindset, values, and behavioral norms of organizational members in utilizing the technology (Westerman et al., 2014).

A strong digital culture creates new work norms that value agility, transparency, a data -*driven mindset*, and cross-unit collaboration that is no longer limited by geographic boundaries or bureaucratic hierarchies (Duerr et al., 2018). Employees accustomed to working in a digital culture have higher levels of literacy and adaptability in operating various modern information systems. They tend to be more proactive in seeking automation solutions for routine tasks, freeing up work time for strategic activities with higher added value (Kane et al., 2019).

These findings support Robbins and Judge's (2019) argument regarding the importance of *organizational culture* as a glue and driver of work efficiency in the era of disruption. When a digital culture is ingrained, resistance to change *and* technostress *can* be significantly reduced (Ayyagari et al., 2011). These findings align with those of Nguyen et al. (2022), who stated that strengthening a digital-oriented culture in the modern workplace acts as an accelerator of operational efficiency and individual innovation capabilities.

The Role of Digital Culture as a Moderating Variable

The most important finding and the main *novelty* in this research lies in proving the role of digital culture as a moderating variable *which* strengthens (*quasi-moderator*) the influence of the work environment on employee performance ($\beta = 0,214; p < 0,05$). This positive interaction effect indicates that the impact of the work environment on improving employee performance will be much greater in organizations with a high level of digital culture maturity.

Conceptually, the modern work environment now dominated by hybrid workspaces, collaborative software, and cloud-based management systems requires employee mental readiness to be optimally utilized. If an organization has provided a work environment with sophisticated digital facilities but the organization's digital culture is still weak, then these facilities risk becoming merely physical decorations that are underutilized *or* even trigger operational confusion (Tabrizi et al., 2019). Conversely, when an organization's digital culture matures, employees view the facilities and infrastructure of the work environment as primary means (*enablers*) for collaboration, experimentation, and rapid problem-solving.

This positive interaction explains the inconsistencies (*research gap*) in previous studies, such as the differences in findings between Smith and Johnson (2020) and Al-Wadi and Hassan (2021). The existence of a digital culture acts as a catalyst that bridges the gap between the provision of work resources and actual performance

output. Employees in a positive work environment supported by a strong digital culture have the ability to utilize work resources flexibly, innovatively, and responsively to the dynamics of work demands (Demerouti et al., 2020). Therefore, strengthening the physical and psychosocial work environment must run parallel to the formation of internal digital norms and culture in the organization.

CONCLUSION

This study concludes that the work environment and digital culture play a significant determinant role in improving employee performance in the era of digital transformation. The empirical analysis proves that the work environment both ergonomic physical dimensions and a conducive psychosocial climate has a positive and significant influence on the effectiveness and quality of employee work output. At the same time, digital culture has been shown to provide a significant direct contribution to performance achievement, where the internalization of the values of agility, collaboration, and data-driven decision-making can encourage employee flexibility and engagement in completing organizational tasks.

The main contribution of this research emphasizes the role of digital culture as a moderating variable (*quasi-moderator*) that significantly strengthens the positive influence of the work environment on employee performance. Providing modern and sophisticated work environment facilities will have a much more optimal productivity impact if supported by a strong digital culture maturity within the organization. Practically, organizational leaders and human resource managers are advised not only to focus on allocating budgets for physical infrastructure or hardware renovations, but also to simultaneously build an inclusive digital culture climate to minimize *technostress* and optimize the potential of all existing work facilities.

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