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DIGITAL EMPLOYEE COMPETENCY AND DIGITAL WORK ENVIRONMENT INFLUENCING JOB PERFORMANCE: A CASE OF HISENSE HOME APPLIANCES GROUP, CHINA

Jingjing Zhao[a], Chitralada Trisakhon[b]*

[a b] Faculty of Business Administration, Thongsook College, Bangkok, Thailand
* Corresponding author's e-mail: ap.chitralada@thongsook.ac.th

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ABSTRACT

Purpose – This study examines the influence of digital employee competency and digital work environment on job performance among employees at Hisense Home Appliances Group, China, a manufacturing enterprise undergoing intensive digital transformation.

Methodology – A quantitative research approach was employed with 400 employees selected through purposive sampling from multiple organizational departments. Data were collected using a structured questionnaire measuring digital employee competency (five dimensions), digital work environment (three dimensions), and job performance. Multiple regression analysis was conducted to test the hypothesized relationships.

Results – Both digital employee competency and digital work environment significantly influence job performance. Among competency dimensions, ethics, technical proficiency, and continuous learning demonstrated significant positive effects, while cybersecurity awareness and troubleshooting showed non-significant relationships. All three digital work environment dimensions—psychological, sociological, and physical environments—significantly predicted job performance, with psychological environment emerging as the strongest predictor.

Implications – Organizations should prioritize creating supportive digital work environments alongside developing employee competencies. Investments in psychological well-being, collaborative relationships, and technological infrastructure complement competency development initiatives in driving performance during digital transformation.

Originality/Value – This study demonstrates that environmental factors exert stronger influences on job performance than individual competencies, challenging traditional human resource development paradigms and providing empirical evidence from the Chinese manufacturing sector.

Keywords: Digital employee competency, Digital work environment, Job performance, Digital transformation, Manufacturing industry

Research Type: Research Article

INTRODUCTION

In the age of the fourth industrial revolution, digital transformation was considered a key approach for any organization around the world, particularly for manufacturers, to be competitive. This transformation is not just about new technologies but requires a radical restructuring of organizational form, work processes, and culture (Butt, 2020). The world's factory, China, has introduced the "Made in China 2025" policy to transform its manufacturing industry toward smart manufacturing, and facing such tremendous pressure, requirements as Hisense Home Appliances Group has been crushed. Investing does not necessarily lead to success and to higher job performance (Hess et al., 2016). The root issue is human capital, the people who

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work for the company. For employees to utilize digital technologies, they need to be digitally competent and have a digital working environment that is supportive and facilitative (van Laar et al., 2017). Hence, the investigation of how these two elements affect employee job performance is crucial in order to ensure organizational success in the digital era.

While there is considerable literature that recognizes the role of digital technology in organizational performance, there are several important research voids in this area. First, many related studies adopt a rather broad perspective; for instance, the focus is on technology or technology acceptance in general, often omitting the micro-level elements of digital competence that individual 'employees should have (e.g., awareness about cybersecurity or technical troubleshooting skills), which are essential in the contemporary workplace (Petruk, & Klescheva, 2021). The idea of the digital work environment also tends to be understood in a very material way, involving the presence of up-to-date tools or software. Studies that investigate sociological and psychological aspects influence employees' cognitions and behaviors concerning technology are scarce (Trittin-Ulbrich et al., 2021; Gfrerer et al., 2021). Finally, few studies have examined relationships among these factors within a unified model, especially in the specific context of the home appliance industry in China (Liu et al., 2014).

Given this importance, this study aims to examine how digital employee competence and the digital workplace impact job performance, using Hisense Home Appliances Group of China as a case study. The purpose of the current study is to advance the understanding of the linkage between employee competence and digital work environment influencing job performance. The results would be practical in Hisense Group and other similar companies in the management and human resources departments. They can contribute to designing and establishing focused training interventions in which essential digital competencies are further enhanced and establish a real supportive digital work environment. It will also support the improvement of the organization's long-term competitive advantage. Theoretically, the empirical results of this project will further knowledge by supporting an integrated model of digital competency and environment and add to the foundation for other researchers working within different contexts.

Beyond operational efficiency, digital transformation has significant financial implications for manufacturing firms. Enhanced digital employee competency and supportive digital work environments can directly impact key financial metrics, including return on investment (ROI), cost reduction through process optimization, and overall financial performance (Verhoef et al., 2021). For manufacturing companies like Hisense, understanding how digital competencies and work environments influence job performance is crucial not only for operational excellence but also for maintaining financial competitiveness and shareholder value in an increasingly digitalized market.

LITERATURE REVIEW

Digital Employee Competency

The digital employee competency is a broad multidimensional construct that includes the professional skills, knowledge, and attitudes required by employees to be able to meet challenging demands of specialized work performed in highly technologically driven environments. Huu (2023) has described digital employee competency as the general skill to tap technology effectively for accessing, evaluating, using, and creating information by focusing on lifelong learning or innovation. This interpretation is consistent with Martínez-Bravo et al. (2022), who defined it as the ability to consume and use responsibly technology in a critical manner across different life domains, integrating six dimensions: critical, cognitive, operational, social, emotional, and projective competencies. The fundamental elements of digital employee competence are underpinned by five critical dimensions, which, combined, characterize work effectiveness in a digital environment. Cybersecurity awareness is an elementary part in which employees know about security threats and protective behaviors such as password management, phishing identification, or incident reporting practices (Basilotta-Gómez-Pablos et al., 2022). Technical skills encompass operations, which are the necessary techniques to efficiently operate digital tools, platforms, and software applications (Liu et al., 2022), while troubleshooting

involves problem-solving methods toward systematically recognizing and solving technical issues (Dingelstad et al., 2022). Continuous learning is the adaptive ability to a continuous quest for reading knowledge and acquiring necessary skills in response to technological change (Bansal et al., 2023), and ethics denotes moral values that regulate responsibility when using technology as well as digital citizenship (Martínez-Bravo et al., 2022). The value of digital employee skills has been further emphasized due to the COVID-19 pandemic, which resulted in sped-up tech transformations and revealed major skill gaps across different sectors (Bansal et al., 2023). In line with recent evidence, digital skills have a direct impact on employees' innovation at work and innovative work behavior; Huu's (2023) study, for example, reveals that workers who demonstrate more digital autonomy show commitment in innovative activities leading to performance of jobs and organization empowerment. As a result, digital employee competencies affect job performance.

Digital Work Environment

The digital work environment is a holistic technology environment that includes all emerging technologies, communication tools, and intelligent processes to provide flexible, collaborative, and productive experiences for employees. Shen et al. (2022) describes it as a process of integration of digital technology and systems into traditional organizational practices that change them at their core, thus strategically challenging the organization through its structure and other resources in order to increase performance. This model is extended to Martin et al. (2022), who focused on technical and social hardware of remote working, such as groupware, workflow systems, web-based conferencing, or instant messaging. There are three important interrelated components of the digital workplace and how these impact employee experiences and organizational outcomes. The physical aspect includes technological infrastructure, ergonomic workstation design, quality of internet connectivity, and the environmental conditions that facilitate useful digital work (Russo et al., 2021). The sociological context is comprised of collaboration and socio-cultural ties as well as communication practices in the digitally mediated places of work, where knowledge sharing and employee mobility explained 75% of variance in engagement among employees (Hizam et al., 2023). Psychological environment refers to mental health, stress coping, work-life balance, and psychological safety elements that have a direct effect on the satisfaction levels of the digital workforce and their productivity (Abdul Hamid, 2022). The attention to well-designed digital work environments has become even more pronounced in the wake of COVID-19, with increased demands on organizations to quickly adjust to remote and hybrid work arrangements (Shen et al., 2022). Thus, the digital work environment impacts job performance.

Job Performance

Job performance is a multidimensional concept that encompasses how effective and efficient employees are in their roles while contributing to the organization's objectives. Afrin et al. (2023) defined job performance as quality, productivity, and teamwork efficiency tasks that are influenced by compensation; satisfaction at work; leadership style; motivation; and work environment. This view is congruent with Chen et al.'s (2019) description of job performance as behaviors supportive of an organization's goals assessed in four dimensions, including task performance, contextual performance such as paying attention to norms and rules, adaptive or innovative work activity, and extra-role behavior, and the fact that different patterns of motivation predict variance in employees' prediction-bearing. Current models acknowledge that effective work performance is not only limited to the completion of job tasks but also comprises contextual and innovative behavior. Miao et al. (2022) defined job performance in terms of two major dimensions: task performance, reflecting the achievement of formally assigned tasks effectively and timely, and contextual performance, which includes extra behaviors promoting organizational effectiveness beyond one's formality. Ramdhan et al. (2022) elaborated on this conceptualization by adding adaptive, innovative, and contextual performance dimensions, reflecting employees' ability to respond to uncertain circumstances in the environment and to

overcome barriers of their own work environment as well as to generate feasible ideas for improvement. Adaptive performance was considered particularly important for employees working in a technology-rich environment, as employees' ability to adapt performance to managing new situations or problems within their job through creative problem-solving and stress management is crucial. Job performance is being measured using not only the quantitative results but also qualitative behavior indicators, as in the studies of Kumar et al. (2022) on task performance versus creativity. performance differentiated by them and showing high internal consistency for the two dimensions, they point out that modern work calls for the fulfillment of tasks as well as creative output. For instance, related studies show nuanced associations between the factors of a digital workplace and performance outcomes and Hackney et al. (2022) that show work at home producing overwhelmingly positive performance effects prior to the pandemic but considerably less robust results during COVID-19, indicating mandatory versus voluntary remote work contexts to be a strong moderator of performance outcomes. Additionally, Hizam et al. (2023) found that knowledge sharing, and employee mobility are the most powerful predictors of engagement, which has a positive effect on performance in e-work.

Conceptual Framework

Drawing from the literature reviewed above, this study develops an integrated conceptual framework examining how digital employee competency and digital work environment influence job performance in the context of digital transformation at Hisense Home Appliances Group. The framework proposes two primary hypotheses: H1 posits that digital employee competency—comprising technical proficiency, cybersecurity awareness, continuous learning, digital ethics, and troubleshooting skills—positively influences job performance. Employees with higher digital competencies can more effectively utilize technologies and adapt to digital changes, leading to improved performance outcomes (van Laar et al., 2017). H2 proposes that the digital work environment—encompassing psychological, sociological, and physical dimensions—positively influences job performance. A supportive digital environment provides the necessary infrastructure, culture, and conditions that enable employees to perform optimally in digitalized workplaces (Gfrerer et al., 2021). This framework uniquely integrates individual and organizational factors to provide a comprehensive understanding of performance determinants in digital transformation contexts. The conceptual model is presented in Figure 1.

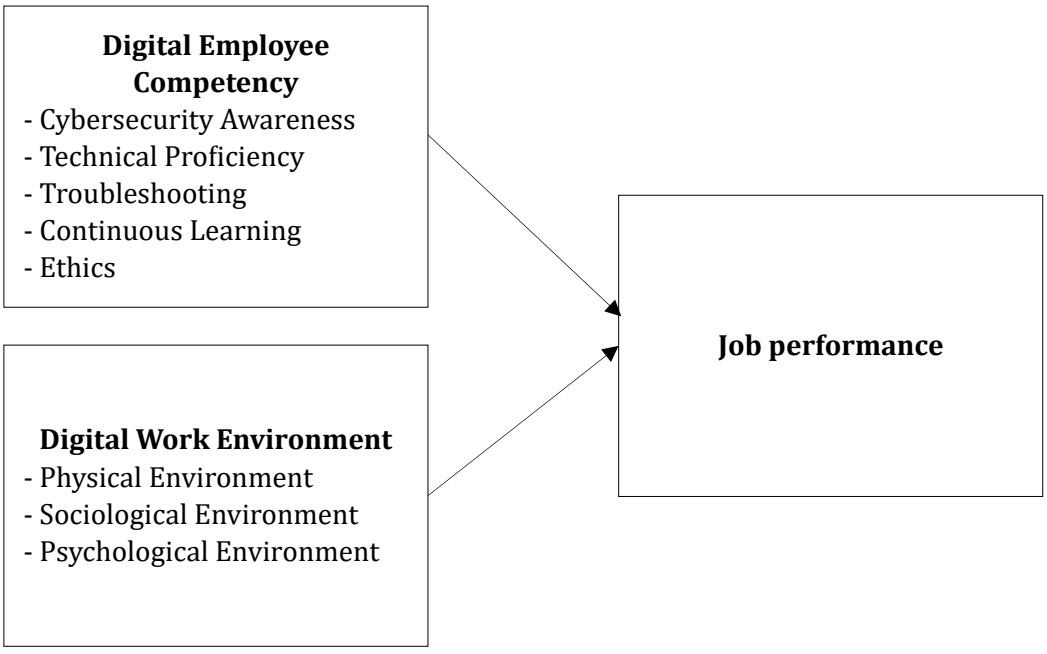

Figure 1. Conceptual Framework

METHODOLOGY

This research used a quantitative approach to examine the impact of digital staff capability and digital workplace on job performance using Hisense Home Appliances Group in China as an empirical model. The quantitative approach was chosen because it afforded the ability to assess variables systematically, evaluate hypotheses through statistical inference procedures, and later transfer the findings to other organizations. The participants in the study were employees from Hisense Home Appliances Group in China, which is a large-scale international enterprise with intensive attempts at digital transformation, and they are thus suitable primary sources for the investigations of digital competencies, digital work environment, and performance consequences. A minimum sample size of 400 employees was considered appropriate for inferential statistics, especially multiple regression analysis that forms the basic statistical tool for hypothesis testing in this research. Such a sample size is large enough to have good statistical power to test the hypothesized relationships among variables and, at the same time, small enough to minimize estimation errors about population parameters. In addition to the variety of respondent backgrounds, this study sought to attain representativeness through recruitment of study participants from different sections within an organization, such as production, marketing, research and development, and human resource, and others, the sample has been diverse enough to represent various digital work context experiences. For sampling method, the research used purposive sampling as a non-probability technique of selection because the researcher needed to select participants who meet particular inclusion criteria for reasons of validity. The eligibility criteria included regular employees at Hisense, company tenure of at least 1 year to get familiar with the organization's culture and workflow, and active use of digital tools or systems in their job practices. The participant recruitment was worked out with the assistance of the company's human resources department; they invited qualified employees who were willing to respond to a self-administered questionnaire.

The research instrument consisted of a structured questionnaire developed through a rigorous six-step process to ensure validity and reliability. Initially, extensive literature review was conducted examining theoretical frameworks and empirical studies related to digital employee competency (Huu, 2023; Martínez-Bravo et al., 2022), digital work environment (Shen et al., 2022; Martin et al., 2022), and job performance (Afrin et al., 2023; Chen et al., 2019) from academic sources including international journals and research reports. The questionnaire comprised four distinct sections: demographic information of respondents, digital employee competency assessment, digital work environment evaluation, and job performance measurement. The demographic section utilized nominal scales for categorical variables such as gender and ordinal scales for hierarchically ordered variables including age, monthly income, work experience, and education level. The second section measured digital employee competency across five dimensions—cybersecurity awareness (Basilotta-Gómez-Pablos et al., 2022), technical proficiency (Liu et al., 2022), troubleshooting (Dingelstad et al., 2022), continuous learning (Bansal et al., 2023), and ethics (Martínez-Bravo et al., 2022)—employing a five-point Likert scale ranging from strongly disagree to strongly agree. The third section assessed digital work environment through three dimensions: physical environment encompassing technological infrastructure and ergonomic conditions (Russo et al., 2021), sociological environment including collaborative relationships and communication patterns (Hizam et al., 2023), and psychological environment comprising mental well-being and work-life balance factors (Abdul Hamid, 2022). The final section evaluated job performance incorporating task performance, contextual performance, and adaptive performance dimensions (Miao et al., 2022; Ramdhan et al., 2022), also utilizing a five-point Likert scale with responses treated as interval data for statistical analysis purposes.

Content validity was addressed by expert judgment of the content, which included three experts that judged item-objective fit with the use of the Index Item-Objective Congruence (IOC). Each expert scored items as consistent with, uncertain, or inconsistent, and only items that had

an IOC score of 0.50 and above were retained in the final instrument. Statements that did not meet this criterion were revised based on expert suggestions or removed to guarantee more optimal content validity. Instrument reliability was then tested with a pilot study conducted among 30 respondents having the same characteristics as the target population except that they were not part of the final sampling frame. The reliability analysis yielded the following Cronbach's Alpha values for each construct and dimension: digital employee competency, comprising technical proficiency (α = 0.836), cybersecurity awareness (α = 0.751), continuous learning (α = 0.823), digital ethics (α = 0.788), and troubleshooting skills (α = 0.742); digital work environment, including psychological dimension (α = 0.857), sociological dimension (α = 0.881), and physical dimension (α = 0.798); and job performance (α = 0.863). All reliability coefficients exceeded the threshold of 0.70, confirming the internal consistency and reliability of the measurement instrument across all constructs.

After successful validation processes, the finalized questionnaire that fulfilled validity and reliability criteria was used for the primary data collection. The data was collected with the help of an online survey tool, in which a survey link was sent to employees of Hisense Company who met the predetermined inclusion criteria, and this respondent recruitment technique was chosen to enable access to sample populations distributed throughout different locations and also to limit the time frame for data collection. Furthermore, secondary data were collected from academic databases, for instance, Google Scholar, Emerald Insight, ScienceDirect and organizational sources, for instance, company websites and annual reports, industry magazines to aid in establishing the conceptual framework and reviewing related literature of the study.

Data analysis was performed using both descriptive and inferential statistical techniques to address the research objectives comprehensively. Descriptive statistics including frequency distributions and percentages were calculated for demographic variables to characterize the sample profile, while means and standard deviations were computed for the primary research variables—digital employee competency and its five sub-dimensions, digital work environment and its three sub-dimensions, and job performance—to summarize central tendencies and variability within the dataset. For hypothesis testing, inferential statistics were employed to examine relationships between variables and draw population-level inferences. The hypotheses, digital employee competency influences job performance (H1) and digital work environment influences job performance (H2) were tested through multiple regression analysis using the enter method, with job performance specified as the dependent variable and digital work environment and digital employee competency as independent variables.

RESULTS

Profiles of Respondents

The demographic analysis of 400 respondents from Hisense Home Appliances Group revealed the following characteristics. Regarding gender distribution, female employees comprised 58.8% (n=235) of the sample, while male employees accounted for 41.3% (n=165). The age distribution showed that the largest group was employees aged 35-44 years at 43.8% (n=175), followed by those aged 25-34 years at 25.3% (n=101), 45-54 years at 22.3% (n=89), below 25 years at 5.8% (n=23), and 55 years and above at 3.0% (n=12). For monthly income levels, the highest proportion earned 20,001-30,000 CNY at 38.3% (n=153), followed by 30,001-40,000 CNY at 29.5% (n=118), 10,001-20,000 CNY at 17.8% (n=71), below 10,000 CNY at 7.8% (n=31), and 40,001 CNY and above at 6.8% (n=27). Work experience distribution indicated that 35.3% (n=141) had 6-10 years of experience, 25.8% (n=103) had 1-5 years, 21.8% (n=87) had 11-15 years, 9.5% (n=38) had more than 15 years, and 7.8% (n=31) had less than one year. Educational level data showed that 55.0% (n=220) held Bachelor’s degrees, 28.5% (n=114) held Master’s degrees, 10.3% (n=41) had education below Bachelor’s degree, and 6.3% (n=25) held Doctoral degrees.

Digital Employee Competency, Digital Work Environment, and Job Performance

Table 1. Mean, SD, and Level of Opinion on Digital Employee Competency, Digital Work Environment, and Job Performance

Variables	Mean	S.D.	Level of opinion
Digital Employee Competency			
- Cybersecurity Awareness	4.04	0.38	Agree
- Technical Proficiency	4.04	0.37	Agree
- Troubleshooting	3.99	0.44	Agree
- Continuous Learning	3.98	0.40	Agree
- Ethics	3.98	0.45	Agree
Total	4.03	0.29	Agree
Digital Work Environment			
- Physical Environment	3.91	0.48	Agree
- Sociological Environment	4.04	0.41	Agree
- Psychological Environment	3.92	0.43	Agree
Total	3.96	0.33	Agree
Job Performance			
- Job Performance	4.06	.37	Agree

The descriptive analysis of the research variables in Table 1 revealed the following mean scores and standard deviations. For digital employee competency, the overall mean score was 4.03 (S.D.=0.29), indicating an "agree" level of opinion. When ranking the five dimensions from highest to lowest mean scores, technical proficiency recorded the highest mean of 4.04 (S.D.=0.37), followed by cybersecurity awareness with a mean of 4.04 (S.D.=0.38), Troubleshooting obtained a mean of 3.99 (S.D.=0.44), continuous learning demonstrated a mean of 3.98 (S.D.=0.40), and ethics showed a mean of 3.98 (S.D.=0.45), with all dimensions reflecting an "Agree" level of opinion. For digital work environment, the total mean score was 3.96 (S.D.=0.33) at an "Agree" level. The three dimensions ranked by mean scores showed that sociological environment recorded the highest mean of 4.04 (S.D.=0.41), followed by psychological environment with a mean of 3.92 (S.D.=0.43), and physical environment obtained a mean of 3.91 (S.D.=0.48), all indicating an "Agree" level of opinion. Job performance demonstrated a mean score of 4.06 (S.D.=0.37), representing an "Agree" level of opinion among respondents.

Hypothesis Testing

H1: Digital employee competency influences job performance.

Table 2. Multiple Regression Analysis of Digital Employee Competency on Job Performance

Digital Employee Competency	Coefficients			t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.680	0.247		6.813	0.000		
- Cybersecurity Awareness	0.026	0.047	0.027	0.554	0.580	0.847	1.180
- Technical Proficiency	0.198	0.051	0.196	3.860	0.000	0.771	1.297
- Troubleshooting	0.068	0.044	0.080	1.552	0.121	0.751	1.331
- Continuous Learning	0.134	0.051	0.143	2.638	0.009	0.675	1.481
- Ethics	0.166	0.043	0.202	3.824	0.000	0.713	1.403
$R = 0.465$; R^2: = 0.217; Adjusted R^2: = 0.207; S.E.E. = 0.332; Durbin-Watson = 2.018; Sig. = 0.000							

The multiple regression analysis with enter method examining the influence of digital employee competency dimensions on job performance revealed significant findings as presented in Table 2. The overall regression model demonstrated statistical significance (Sig. = 0.000) with a multiple correlation coefficient of R = 0.465, indicating a moderate positive relationship between the predictor variables and job performance. The coefficient of determination (R^2 = 0.217) indicated that digital employee competency dimensions collectively explained 21.7% of the variance in job performance, with an adjusted R^2 of 0.207 accounting for the number of predictors in the model. The Durbin-Watson statistic of 2.018 suggested no substantial autocorrelation issues in the residuals. Examining individual predictors, technical proficiency emerged as a significant positive predictor (β = 0.196, t = 3.860, Sig. = 0.000), followed by ethics (β = 0.202, t = 3.824, Sig. = 0.000) and continuous learning (β = 0.143, t = 2.638, Sig. = 0.009), all demonstrating statistically significant positive influences on job performance at the 0.05 significance level. In contrast, cybersecurity awareness (β = 0.027, t = 0.554, Sig. = 0.580) and troubleshooting (β = 0.080, t = 1.552, Sig. = 0.121) did not show statistically significant relationships with job performance. Collinearity diagnostics revealed acceptable levels of multicollinearity, with all tolerance values exceeding 0.10 and variance inflation factor (VIF) values ranging from 1.180 to 1.481, well below the threshold of 10, indicating that multicollinearity did not pose a concern in this analysis. Based on the regression coefficients, the predictive model for job performance can be expressed through the following regression equation:

Job Performance = 1.680 + 0.198(Technical Proficiency) + 0.166(Ethics)
+ 0.134(Continuous Learning)

H2: Digital work environment influences job performance.

Table 3. Multiple Regression Analysis of Digital Work Environment on Job Performance

Digital work environment	Coefficients			t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.771	0.193		9.171	0.000		
- Physical Environment	0.116	0.037	0.151	3.126	0.002	0.800	1.251
- Sociological Environment	0.210	0.046	0.232	4.592	0.000	0.726	1.377
- Psychological Environment	0.250	0.040	0.290	6.188	0.000	0.849	1.178
R = 0.513; R^2: = 0.264; Adjusted R^2: = 0.258; S.E.E. = 0.321; Durbin-Watson = 1.923; Sig. = 0.000							

The multiple regression analysis with enter method examining the influence of digital work environment dimensions on job performance yielded significant results as shown in Table 3. The overall regression model was statistically significant (Sig. = 0.000) with a multiple correlation coefficient of R = 0.513, indicating a moderate to strong positive relationship between digital work environment dimensions and job performance. The coefficient of determination (R^2 = 0.264) revealed that digital work environment dimensions collectively accounted for 26.4% of the variance in job performance, with an adjusted R^2 of 0.258 after adjusting for the number of predictors. The standard error of estimate was 0.321, and the Durbin-Watson statistic of 1.923 indicated no serious autocorrelation concerns in the residuals. Analysis of individual predictors demonstrated that all three dimensions significantly influenced job performance at the 0.05 significance level. Psychological environment emerged as the strongest predictor (β = 0.290, t = 6.188, Sig. = 0.000), followed by sociological environment (β = 0.232, t = 4.592, Sig. = 0.000), and physical environment (β = 0.151, t = 3.126, Sig. = 0.002), all showing statistically significant positive relationships with job performance. Collinearity diagnostics indicated acceptable multicollinearity levels, with Tolerance values ranging from 0.726 to 0.849, all exceeding the 0.10 threshold, and VIF values ranging from 1.178 to 1.377, well below the critical value of 10,

confirming that multicollinearity did not compromise the validity of the regression results. Based on the regression coefficients, the predictive model for job performance can be expressed through the following regression equation:

Job Performance = 1.771 + 0.250(Psychological Environment)
+ 0.210(Sociological Environment)
+ 0.116(Physical Environment)

DISCUSSION AND IMPLICATIONS

The results of the multiple regression analysis on hypothesis 1 show that digital employee competency has a significant impact on job performance at Hisense Home Appliances Group. Ethics proved to be the most powerful predictor when compared with the other dimensions, and it was followed by technical proficiency and continuous learning, as they had all indicated a significant positive relationship with job performance. These results are consistent with Martínez-Bravo et al. (2022), who put continuous learning forward and state that responsible technology use and digital citizenship are important components of digital competence, which is crucial in relation to effective work performance. This may indicate that employees behaving responsibly with data, exhibiting competence, respecting intellectual property, and exhibiting ethical decision-making in digital environments contribute more to organizational performance, which is consistent with the findings of Dingelstad et al. (2022), who considered that essential competences in an environment based on data-driven decision-making were political astuteness and ethical awareness. The substantial effect of technical proficiency performance is consistent with Liu et al. (2022), who found performance and profitability improvement in technologically based organizations, which depend on operational competences with digital tools and platforms. Likewise, continuous learning organizations depend on continuous learning, which has positive effects. a positive effect, which supports Huu (2023), where it was argued that high digital autonomy and commitment to perpetual skills learning enable employees to demonstrate more innovative work behaviors in improving performance outcome. Notably, cybersecurity awareness and cybersecurity awareness and troubleshooting were not statistically significant to job performance despite the growing need to have security skills in the digital workplace (Basilotta-Gómez-Pablos et al., 2022).

The analysis of digital work environment dimensions on hypothesis 2 revealed a stronger overall influence on job performance compared to digital employee competency. All three environmental dimensions showed significant positive correlations with job performance, in which psychological environment was the strongest factor, followed by sociological environment and then physical environment. It is also consistent with Abdul Hamid (2022), who highlighted job meaningfulness, work-life balance, and psychological safety as important factors affecting employee effectiveness in the digital work domain. This is relevant considering the issues raised by Semaan et al. (2023) related to workplace telepressure, information overload, and the intensity of connectivity that negatively influences job engagement, which subsequently influences job performance. Empirical results of Hizam et al. (2023) are consistent with the strong effect of sociological environment on adoption behavior, who found knowledge sharing and coopetition explain significant variance of employee engagement as a predecessor to improved performance. The salience of this dimension underscores the paradigmatic transformation in which digital technologies mediate social interactions, as well as collaborative processes, that require organizational-level interventions in order to support maintaining strong affective ties despite being geographically dispersed (Radu et al., 2023). The relatively lower yet still significant role of physical environment supports Russo et al. (2021), who also identify technological infrastructure quality, ergonomic workstations, and reliable connectivity as key drivers of digital work effectiveness.

This study's results provide important theoretical and practical implications for organizations managing digital transformation projects. Theoretically, this study adds to the knowledge by showing that aspects of digital work environment dimensions have stronger direct

effects on job performance than individual-level digital competencies, which suggests that environmental contextualization theories deserve a space in the emerging field of digital workplace research. Together, the performance-related impacts of specific competency dimensions contradict the idea that digital skills tend to have a balanced effect upon performance, suggesting organizations might demand more detailed competency models that are focused on ethical technology use, technical skills, and ongoing learning activities at the expense of basic expectations regarding security awareness and troubleshooting activity, which may represent hygiene rather than motivational factors according to Herzberg (1966). In practice, Hisense Home Appliances Group and other manufacturing companies that are undergoing digital transformation may strategically invest to improve the psychological environment by creating policies to reduce the workload telepressure, setting up clear definitions for digital connectivity in terms of both time allocation and social meanings, and building up a good company culture where employees are more willing to take risks (psychological safety) by trying machines without worrying about failing. Companies should enforce sociological vibrations, which can be done through formal knowledge-sharing networks, multidisciplinary digital collaboration campaigns, and virtual team-building practices that sustain social bondedness in their distributed state. It is therefore recommended that leadership development programs focus on the articulation of clear digital visions and quality leader-member exchanges, as such two factors were found to greatly increase employee trust in technological transitions, according to Lau and Höyng (2023). The focus of human resource development on training for competency enhancement and learning that has real performance impact, like, for instance, advanced technical skills and continuous learning programs, instead of mere digital literacy programs, would align investment in competency development with its proven performance effects. Elsewhere, organizations must also come to understand that successful digital transformation is not a function of technological infrastructure implemented, or individual skills gained but is predicated on a holistic pursuit that concurrently optimizes physical, sociological, and psychological aspects of the environment while fostering crucial digital competencies shown capable of driving performance results.

LIMITATIONS AND FUTURE RESEARCH POSSIBILITIES

There are several limitations to note in the interpretation of findings and generalizability of this study. First, the study was cross-sectional in nature, and all data were collected at one point in time, and therefore causal relationships between digital employee competency, the digital work environment, and job performance cannot be established. However, stronger evidence for causal mechanisms and sequences of interaction could be obtained from longitudinal study designs that track these variables over long timescales. Second, self-reported measures through questionnaires only were used in this study; they could lead to common method bias and social desirability answering styles, such as sensitive constructs (i.e., job performance and ethical behavior) for which characteristics are collected. Potential measures that may improve measurement validity include objective performance factors, supervisor ratings, and triangulation of data sources. Third, the sample is restricted to one company in China (Hisense Home Appliances Group), a large manufacturing enterprise experiencing digital transformation, which may call into question the generalizability of results to different organizational settings, industries, and cultures. The specificity of the Chinese organizational culture, state-owned enterprise governance systems, and characteristics of the manufacturing sector could differ from these relationships in modes not applicable to service sectors, small- and medium-scale firms, or organizations located in other countries. Fourth, though the current study tested five dimensions of digital employee competence and three dimensions of digital work environment, the models only explained 21.7% and 26.4% of variance in job performance, respectively, suggesting that a considerable amount of variance is left unaccounted for by the predictors this study included. Other variables, for example, organizational culture, leadership styles, technological infrastructure quality, and individual difference factors such as personality traits and motivational orientations, may act as key moderators or mediators that were not examined in the current study.

These limitations could be addressed in future work, given several promising directions that would further both theoretical understanding and practical applicability. Longitudinal studies using panel data designs could investigate the temporal development of digital competencies and work settings and of their dynamic interplays with performance trajectories, tested for threshold effects, drivers of decreasing additional effects, or synergistic interactions that cannot be captured in cross-sectional analyses. Researchers could also consider moderating variables to further investigate whether the relationships are reinforced or weakened in the presence of organizational size, industrial sector and technological maturity stage, and cultural dimensions, for instance, individualism-collectivism, power distance, as Wallin et al. (2022) influences how employees perceive digitalization. Mediator analysis would inform the ways digital competencies and environments translate into performance, with potential candidates such as psychological empowerment, work engagement, innovative work behavior, and adaptive performance factors. It would be important to conduct such comparative studies across organizations, industries, and national contexts in order to deepen understanding of boundary conditions as well as how they are embedded within a particular context ("whether") or under what circumstances ("when" and "where") these effects apply most strongly. Furthermore, qualitative studies using interviews, focus groups, and ethnographic observations might yield rich understanding of the subjective experience of employees involved in such transformation initiatives by offering insights on implementation challenges, sources of resistance, and enablers that may inform or complement the quantitative results. Finally, it is recommended for future investigations to further investigate the unexpected non-significant results for cybersecurity awareness and troubleshooting dimensions. exploring if such competencies function as threshold determinants that operate in multiple contingency conditions and/or lead to different outcomes other than individual job performance, such as organizational security posture or team-level problem-solving effectiveness.

CONCLUSION

This study examined the influence of digital employee competency and digital work environment on job performance within Hisense Home Appliances Group, China, employing quantitative methodology with employee respondents from diverse organizational departments. Results suggest that digital employee competence and the digital work environment both play a crucial role in achieving job performance, with environmental dimensions having a greater impact overall than individual competencies. Within the competency model, ethics, technical proficiency, and continuous learning were found to be significant determinants of employee effectiveness; psychological environment, sociological environment, and physical environment are meaningful contributors to performance results. These findings highlight the need for an integrative approach to digital transformation that focuses on developing individual competencies while enhancing organizational environments. The study extends the literature on digital workplaces by suggesting that constructing sophisticated and supportive work environments could generate higher performance benefits than merely focusing on skill development, contrasting traditional human resource models. The results deliver some useful evidence for manufacturing organizations when navigating digital transformation, showing that investments into the psychological health and well-being of plant personnel are generally required to complement efforts aimed at collaborative relations and levels of technology infrastructure to warrant successful organizational outcomes during times of technological change.

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CONFLICTS OF INTEREST

This study has no conflicts of interest.

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