Organizational Drivers of Employee Digital Competence in Digital Banking: Evidence from a Vietnamese Commercial Bank

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Abstract:

- ***Purpose:***

Employee digital competence determines whether investments in platforms, data, and automated processes are translated into operational value. This study examines five organizational conditions associated with employees' self-reported digital competence in a Vietnamese commercial bank. Design/methodology/approach - A cross-sectional survey produced 270 responses. Seventeen cases displayed zero variance across all 25 measurement items and were removed using a pre-specified response-quality rule, yielding 253 valid observations. Reliability analysis, exploratory factor analysis, Pearson correlations, and multiple linear regression were applied. A full-sample sensitivity test assessed the robustness of the findings. Findings - All six scales were reliable (Cronbach's alpha = .822-.877), and exploratory factor analysis supported the intended structure. The five organizational predictors jointly explained 66.1% of the variance in digital competence. Technological infrastructure had the strongest standardized association (beta = .318), followed by the digital work environment (beta = .254), digital culture (beta = .238), organizational support for digital learning (beta = .234), and training and development (beta = .216); all p < .001. The full-sample analysis preserved the signs, significance, and rank order of the predictors. Originality/value - The study integrates human-capital, social-cognitive, organizational-support, information-systems-success, and digital-culture perspectives in a single employee-level model. It shows that formal training is necessary but insufficient: reliable infrastructure and digitally embedded work practices are more strongly associated with competence. The findings offer a transparent, bank-specific evidence base for sequencing digital workforce investments in an emerging-market context.

Keywords: *Digital Competence; Digital Transformation; Bank Employees; Technological Infrastructure; Digital Work Environment; Organizational Support; Vietnam.*

JEL Classification: *J24; M12; M15; O33.*

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I. INTRODUCTION

Digital transformation has moved beyond the digitization of isolated transactions and now reshapes how organizations design value propositions, coordinate work, make decisions, and interact with customers. In banking, the shift is particularly visible because service delivery increasingly depends on mobile channels, integrated data, automated workflows, cybersecurity controls, and digitally mediated collaboration. Technology alone, however, does not create these outcomes. Employees must be able to understand digital information, use platforms accurately, adapt to new systems, solve technology-enabled problems, and continuously update their knowledge. Digital competence is therefore both a human-capital asset and an implementation capability that connects technological investment with day-to-day performance (Carretero et al., 2017; van Laar et al., 2017; Vial, 2019).

This people-side challenge is salient in emerging-market banks, where organizations may modernize infrastructure quickly while employees differ substantially in tenure, educational background, job exposure, and opportunities to practise new digital routines. A bank can deploy sophisticated systems and still underperform if employees experience unstable applications, fragmented

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data access, limited learning support, or work processes that do not require meaningful digital use. Conversely, a work setting that combines reliable tools, digitally embedded tasks, experimentation, peer learning, and role-relevant training can strengthen employees' beliefs that they are able to operate effectively in a changing technological environment. Digital competence should thus be treated as an organizationally enabled outcome, not merely an individual trait.

Prior research offers valuable but fragmented explanations. Human capital theory emphasizes investment in knowledge and skills (Becker, 1964), social cognitive theory highlights learning through practice and self-efficacy (Bandura, 1986), and social exchange theory explains why perceived support can stimulate reciprocal engagement in learning (Blau, 1964; Eisenberger et al., 1986). The information-systems-success literature stresses system quality and usability (DeLone & McLean, 2003), while digital-culture research draws attention to experimentation, openness, knowledge sharing, and adaptability (Dürr et al., 2018; Kocak & Pawlowski, 2023). These streams imply that training, work design, infrastructure, culture, and learning support should be examined together. Yet employee-level evidence that compares their relative importance within one banking setting remains limited.

Vietnam provides a useful context for this inquiry. Banks in the country are expanding digital channels and redesigning internal operations, making workforce readiness a practical constraint on transformation. At Orient Commercial Joint Stock Bank (OCB), for example, the first-quarter 2026 operating report indicated that a large majority of transactions occurred through digital channels and that online customer onboarding had become substantial (OCB, 2026). Such indicators show that digital systems are no longer peripheral to the employee experience. They also raise a managerial question: which organizational conditions are most closely associated with employees' ability to work competently in this environment?

The question also matters because digital transformation changes the distribution of responsibility inside a bank. Front-line employees increasingly explain digital services and resolve channel problems; operations employees monitor automated workflows and exceptions; support functions use shared data and collaboration platforms; and managers interpret dashboards and govern technology-enabled performance. Capability gaps in any one group can migrate across the service chain as rework, delayed decisions, customer friction, or operational risk. An organization-wide model is therefore useful even when particular tasks differ by role. It identifies conditions that can be governed centrally while leaving room for role-specific learning design.

Existing studies frequently examine technology acceptance, readiness for change, digital leadership, or job performance as outcomes. Fewer studies treat employee digital competence itself as the dependent capability and directly compare infrastructure, work design, culture, support, and training in one model. This distinction matters. Acceptance indicates willingness to use a system, whereas competence indicates whether employees believe they can use digital resources effectively and adapt as requirements change. By focusing on competence, the present study examines an intermediate workforce capability through which broader transformation initiatives may eventually influence service, productivity, and innovation.

This study addresses that question by testing a model of five organizational drivers of employees' self-reported digital competence: training and development, the digital work environment, technological infrastructure, digital culture, and organizational support for digital learning. Survey data from 253 valid employee responses are used to assess the reliability and factor structure of the measures and to estimate the relative association of each driver with digital competence. Response-quality screening and a full-sample sensitivity analysis are reported explicitly to strengthen transparency.

The study makes three contributions. First, it integrates five complementary theoretical mechanisms in one parsimonious model rather than treating training or technology as a stand-alone explanation. Second, it provides employee-level evidence from a Vietnamese commercial bank, a context that is underrepresented in the international digital-workforce literature. Third, it distinguishes between the statistical contribution of formal training and the stronger contribution of the technological and work environments in which learning is applied. The resulting evidence supports a sequenced managerial approach: stabilize and integrate the digital foundation, embed digital use in everyday work, reinforce learning norms and support, and then tailor training to role-specific capability gaps.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

➢ *Employee Digital Competence*

Digital competence is a multidimensional capacity to use digital technologies confidently, critically, responsibly, and effectively. The DigComp framework organizes this capacity around information and data literacy, communication and collaboration, digital content creation, safety, and problem solving (Carretero et al., 2017; Vuorikari et al., 2022). In work settings, the construct also involves the ability to select and operate job-relevant tools, interpret digital information, collaborate through platforms, adapt to system changes, and apply technology to achieve task outcomes (van Laar et al., 2017). These elements distinguish competence from simple access to technology or frequency of use.

For bank employees, digital competence has a strong task-specific dimension. Employees must navigate regulated processes, protect customer information, use interconnected applications, interpret data, and respond to rapidly changing service and compliance requirements. Competence therefore combines knowledge, operational skill, adaptive capacity, proactive learning, and effective application. In this study it

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is measured as employees' self-assessed ability to meet current digital job requirements, use tools proficiently, adapt to new systems, update their knowledge, and apply digital capability to complete work effectively. Because the measure is perceptual, it captures confidence and experienced capability rather than an externally administered performance test; this boundary is considered when interpreting the results.

➢ *An Integrated Organizational-Enablement Perspective*

No single theory fully explains how organizations develop digital competence. Human capital theory predicts that investments in training increase employees' productive knowledge and skills (Becker, 1964). Social cognitive theory adds that mastery develops through practice, feedback, observation, and efficacy beliefs rather than passive exposure alone (Bandura, 1986). Social exchange theory and perceived organizational support suggest that employees who receive resources and encouragement from their organization are more willing to invest effort in learning and adaptation (Blau, 1964; Eisenberger et al., 1986). Information-systems-success research argues that reliable, accessible, and useful systems enable productive use (DeLone & McLean, 2003). Finally, digital-culture research emphasizes shared norms that legitimize experimentation, knowledge exchange, and rapid adjustment (Dürr et al., 2018; Kocak & Pawlowski, 2023).

Together, these perspectives support an organizational-enablement model. Training supplies structured knowledge; the work environment creates recurring practice; infrastructure makes effective use feasible; culture shapes shared expectations; and organizational support supplies time, resources, and assistance for continued learning. The five mechanisms are conceptually distinct but mutually reinforcing. Estimating them simultaneously clarifies which condition retains an association with digital competence after the others are controlled.

➢ *Training and Development*

Training and development provide planned opportunities to acquire knowledge, practise new procedures, receive feedback, and transfer learning to work. Human capital theory predicts that relevant training raises employees' productive capability, while social cognitive theory indicates that guided practice can strengthen self-efficacy and persistence. Digital-oriented training is most useful when content is current, role-specific, and followed by opportunities to apply the new skill (Noe, 2017). Evidence from digitally mediated work also suggests that training can improve employee outcomes when it is supported by leadership and aligned with actual work demands (Pham et al., 2023).

In banking, generic technology awareness is unlikely to be sufficient. Employees need training connected to the platforms, data responsibilities, customer journeys, and exception-handling routines of their roles. Regularly updated programs and application opportunities should therefore be associated with stronger self-reported competence.

- *H1. Training and development are positively associated with employees' digital competence.*

➢ *Digital Work Environment*

A digital work environment exists when platforms, communication channels, workflows, and collaboration routines make digital activity an ordinary part of work. It is not equivalent to owning technology. The critical issue is whether processes are digitally embedded and whether employees repeatedly use systems to coordinate, solve problems, and make decisions. Digital workplace transformation is more likely to gain employee support when technologies fit work practices and employees experience meaningful involvement in the change (Meske & Junglas, 2021).

From a social cognitive perspective, recurring use produces mastery experiences. A digitally rich work environment exposes employees to authentic tasks and encourages learning-by-doing, which should strengthen both skill and confidence. When platforms improve information exchange and workflows are integrated, employees can practise digital routines continuously rather than waiting for formal training events.

- *H2. The digital work environment is positively associated with employees' digital competence.*

➢ *Technological Infrastructure*

Technological infrastructure includes the reliability, accessibility, integration, and adequacy of information systems, software, platforms, data, and connectivity. The DeLone and McLean (2003) model identifies system quality as a key antecedent of use and benefits. When systems are stable, accessible, and responsive, employees can focus cognitive resources on completing tasks and developing advanced routines. When systems are unreliable or fragmented, effort is diverted to workarounds and troubleshooting, and opportunities for successful practice decline.

Infrastructure may be especially influential in banking because employees interact with multiple systems under time, accuracy, and security constraints. Easy access to data and dependable platforms provide the conditions for repeated successful use, while continued investment signals that digital work is strategically important. Infrastructure should therefore have a direct positive association with perceived digital competence even after training and work-environment effects are considered.

- *H3. Technological infrastructure is positively associated with employees' digital competence.*

➢ *Digital Culture*

Digital culture refers to shared norms and practices that support openness, experimentation, collaboration, innovation, learning, and adaptation in technology-enabled work. Exploratory research portrays digital organizational culture as a social context that shapes how employees interpret and respond to digital change (Dürr et al., 2018;

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Kocak & Pawlowski, 2023). A culture that treats errors as learning opportunities and rewards knowledge sharing can lower the psychological cost of trying unfamiliar tools.

Culture affects competence through social cues and collective learning. Employees observe whether colleagues and managers share digital knowledge, whether adaptation is valued, and whether innovative uses of technology are recognized. These signals influence the willingness to explore, ask for help, and update routines. A stronger digital culture should therefore correspond to higher self-reported competence.

- *H4. Digital culture is positively associated with employees' digital competence.*

➢ *Organizational Support for Digital Learning*

Organizational support for digital learning concerns access to learning resources, permission and time to participate, encouragement to self-learn, and assistance when difficulties arise. Perceived organizational support develops when employees believe that the organization values their contribution and cares about their well-being (Eisenberger et al., 1986). In a digital context, visible support reduces the personal cost of learning and signals that capability development is valued rather than treated as an individual burden.

Support complements formal training by sustaining learning at the moment of need. Accessible digital materials, help from experts or peers, protected learning time, and managerial encouragement enable employees to resolve problems and continue practising. Recent research also links supportive learning environments to individual readiness and outcomes during organizational digital transformation (Kim & Park, 2025). Employees who experience stronger support should therefore report stronger digital competence.

- *H5. Organizational support for digital learning is positively associated with employees' digital competence.*

➢ *Conceptual Model*

Figure 1 summarizes the proposed model. The hypotheses concern partial associations: each predictor is expected to explain unique variance in employees' digital competence while the other organizational conditions are held constant.

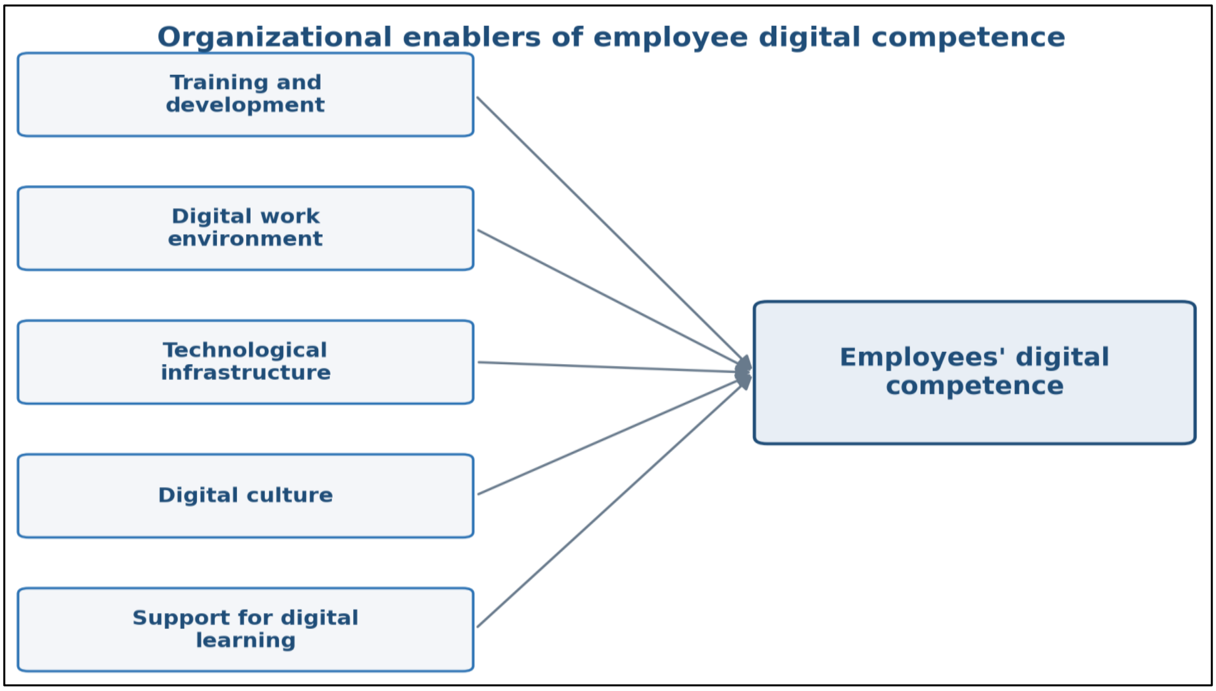

Fig 1 Proposed Organizational-Enablement Mode

- *Note. All Hypothesized Paths are Positive.*

III. METHODOLOGY

➢ *Research Design and Setting*

The empirical component used a quantitative, cross-sectional survey design. The setting was OCB, a Vietnamese commercial bank in which employees work with digital channels, internal platforms, and increasingly digitized processes. The unit of analysis was the individual employee. The design was appropriate for estimating associations among organizational perceptions and self-reported competence at a defined point in the bank's transformation. It does not, however, establish temporal or causal effects.

The questionnaire was administered online from 7 to 10 August 2026. Participation was voluntary, responses were anonymous, and the survey introduction stated that data would be used for academic research. No names or direct personal identifiers were collected. The instrument contained demographic questions followed by 25 measurement items rated on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

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Measures

The measures were adapted from established conceptual and empirical sources and contextualized for digital banking work. Training and development (four items) assessed program frequency, job relevance, application opportunities, and content updating (Noe, 2017; Pham et al., 2023). The digital work environment (four items) assessed whether work enabled technology use, platforms supported coordination, processes were digitized, and digital tools were embedded in daily routines (Meske & Junglas, 2021). Technological infrastructure (four items) covered system adequacy, reliability, access to systems and data, and continued investment (DeLone & McLean, 2003). Digital culture (four items) assessed encouragement to learn, share knowledge, adapt, and innovate (Dürr et al., 2018; Kocak & Pawlowski, 2023). Organizational support for digital learning (four items) covered participation opportunities, access to learning resources, assistance with technology problems, and encouragement of self-directed updating (Eisenberger et al., 1986; Kim & Park, 2025). Digital competence (five items) measured knowledge sufficiency, tool proficiency, adaptability, proactive learning, and effective application (van Laar et al., 2017; Vuorikari et al., 2022). Composite scores were calculated as the mean of the items belonging to each construct.

The wording emphasized employees' current experience at OCB rather than abstract attitudes toward technology. This contextualization improves face relevance but means that the constructs represent perceived organizational conditions in one setting. The instrument was designed to maintain conceptual separation: infrastructure items concerned the quality and accessibility of technical resources; work-environment items concerned how those resources were embedded in processes and coordination; culture items concerned shared encouragement and norms; and support items concerned resources and assistance for learning. The distinction is important because an employee may, for example, work with a reliable platform but receive little time or help to learn advanced functions.

Table 1 Construct Measurement and Descriptive Summary

Construct	Items	Alpha	Mean
Training and development (DT)	4	0.875	3.587
Digital work environment (MT)	4	0.866	3.587
Technological infrastructure (HT)	4	0.877	3.556
Digital culture (VH)	4	0.860	3.603
Support for digital learning (HTHT)	4	0.873	3.564
Employee digital competence (NL)	5	0.822	3.579

- *Note. n = 253. All items used a five-point agreement scale.*

Sample and Response-Quality Screening

The survey generated 270 complete responses. There were no missing values and all Likert responses were within the permitted range. Response-pattern screening identified 17 cases with zero within-person variance across all 25 measurement items; in other words, each respondent selected the same category for every item. These cases were treated as low-information straight-line responses and excluded before the main analysis. The final analytic sample was 253. The criterion was objective and independent of the direction of the hypothesized relationships.

Women represented 60.1% of the analytic sample and men 39.9%. Most respondents were aged 25 to under 35 (47.8%), followed by those under 25 (32.0%), aged 35 to under 45 (18.2%), and aged 45 or older (2.0%). University graduates accounted for 71.9%, college graduates 20.2%, and postgraduate respondents 7.9%. Tenure was below one year for 39.9%, one to under three years for 32.0%, three to under five years for 20.2%, and five years or more for 7.9%. Business units contributed 60.1% of responses, operations 20.2%, management 7.9%, support functions 4.0%, and other units 7.9%. The composition provides meaningful variation in work exposure but is not a probability sample of the entire Vietnamese banking workforce.

Analytical Strategy

The analysis proceeded in four stages. First, descriptive statistics and Cronbach's alpha were used to assess scale consistency. Corrected item-total correlations were also inspected. Second, exploratory factor analysis (EFA) evaluated the empirical structure. The 20 predictor items were analyzed together, and the five competence items were analyzed separately. Sampling adequacy was assessed with the Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's test; factors with eigenvalues above 1 and loadings above .50 were considered substantively acceptable (Hair et al., 2019).

Third, Pearson correlations described bivariate relationships, and multiple ordinary least squares regression estimated the unique association of the five organizational predictors with digital competence. Standardized coefficients were used to compare relative strength. Model diagnostics included the adjusted coefficient of determination, the F test, variance inflation factors (VIFs), and the Durbin-Watson statistic. Residual ranges and Cook's distance were reviewed to identify extreme observations. Fourth, the regression was re-estimated with all 270 responses. This sensitivity analysis was not used to replace the screened model; it assessed whether the signs, significance, and rank order of the coefficients depended on the exclusion decision.

Because all focal variables were collected from the same respondents at one time, procedural and statistical attention was given to common-method risk. The

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questionnaire separated constructs into clearly labelled blocks and maintained anonymity. Harman's single-factor diagnostic was calculated as a limited post hoc check. This diagnostic cannot rule out common-method bias, but a first factor below 50% indicates that one general factor does not dominate the item covariance (Podsakoff et al., 2003).

IV. RESULTS

Reliability and Exploratory Factor Analysis

Cronbach's alpha ranged from .822 for employee digital competence to .877 for technological infrastructure, exceeding the conventional .70 threshold. Corrected item-total correlations ranged from .564 to .767, so no item was removed on reliability grounds. The scale means were moderately positive, ranging from 3.556 to 3.603 for the organizational predictors and 3.579 for digital competence. These values suggest that respondents generally perceived the bank's digital conditions and their own competence favorably, while leaving room for improvement.

For the 20 predictor items, the KMO statistic was .868 and Bartlett's test was significant, chi-square(190) = 2,597.57, $p < .001$. Five factors had eigenvalues greater than 1 and together explained 72.436% of the variance. Primary loadings ranged from .777 to .866 and the rotated pattern corresponded to the five proposed constructs. For the five digital-competence items, KMO was .851 and Bartlett's test was significant, chi-square(10) = 395.65, $p < .001$. A single factor explained 58.590% of the variance, with absolute loadings from .720 to .804. The measurement results therefore supported use of the composite variables in the regression analysis.

Table 2 Reliability and Exploratory Factor Analysis Summary

Block	Items	KMO	Bartlett chi-square (df)	p	Factors	Variance	Loadings
Predictor block	20	.868	2,597.57 (190)	<.001	5	72.436%	.777-.866
Digital competence	5	.851	395.65 (10)	<.001	1	58.590%	.720-.804

- *Note. Predictor extraction retained factors with eigenvalues greater than 1. Reported loadings are absolute primary loadings.*

Correlations and Common-Method Diagnostic

All five organizational predictors were positively correlated with digital competence, with coefficients ranging from .502 to .543. Intercorrelations among the predictors ranged from .223 to .357, indicating that the constructs were related but not redundant. The moderate predictor correlations also reduced concern that the regression coefficients would be destabilized by multicollinearity. Harman's first unrotated factor explained 32.91% of total item variance, below the commonly used 50% warning threshold. This result does not prove the absence of common-method bias, but it suggests that a single common factor was not the dominant explanation of the responses.

Table 3 Pearson Correlations Among the Study Variables

Variable	1	2	3	4	5	6
1. DT	1.000					
2. MT	0.357	1.000				
3. HT	0.241	0.223	1.000			
4. VH	0.301	0.268	0.244	1.000		
5. HTHT	0.328	0.275	0.250	0.229	1.000	
6. NL	0.532	0.530	0.543	0.502	0.509	1.000

- *Note. n = 253. DT = training and development; MT = digital work environment; HT = technological infrastructure; VH = digital culture; HTHT = support for digital learning; NL = digital competence. All off-diagonal coefficients are significant at p < .001 (two-tailed).*

Hypothesis Testing

The five-predictor regression was statistically significant, $F(5, 247) = 96.268$, $p < .001$. The model explained 66.1% of the variance in digital competence (R-squared = .661; adjusted R-squared = .654). The Durbin-Watson statistic was 1.839. VIFs ranged from 1.141 to 1.289, well below conservative thresholds, indicating no material multicollinearity. Standardized residuals ranged from -2.419 to 2.443 and the maximum Cook's distance was .038, providing no evidence that a single observation dominated the estimates.

Table 4 Multiple Regression Predicting Employee Digital Competence

Predictor	B	SE	Beta	t	p	VIF	Decision
Training and development	0.110	0.021	0.216	5.127	<.001	1.289	H1 supported
Digital work environment	0.134	0.022	0.254	6.189	<.001	1.226	H2 supported
Technological infrastructure	0.166	0.021	0.318	8.029	<.001	1.141	H3 supported
Digital culture	0.123	0.021	0.238	5.929	<.001	1.177	H4 supported
Support for digital learning	0.122	0.021	0.234	5.776	<.001	1.200	H5 supported

- *Note. n = 253. Unstandardized constant B = 1.239 (SE = .108), t = 11.496, p < .001. R-squared = .661; adjusted R-squared = .654; F(5, 247) = 96.268, p < .001; Durbin-Watson = 1.839.*

Every predictor had a positive and statistically significant coefficient. Technological infrastructure had the strongest standardized association with digital competence (beta = .318), supporting H3. The digital work environment ranked second (beta = .254), supporting H2. Digital culture (beta = .238) and organizational support for digital learning (beta = .234) had similar positive contributions, supporting H4 and H5. Training and development remained significant but had the smallest standardized coefficient (beta = .216), supporting H1. The relative ordering indicates that competence is associated not only with what employees are taught but also, and more strongly, with the reliability of the systems and the digitally embedded work in which knowledge is applied.

➢ *Sensitivity Analysis*

Re-estimating the model with all 270 responses increased R-squared to .754 and adjusted R-squared to .750. This increase is consistent with the possibility that straight-line response patterns inflate shared covariance across similarly scaled variables. Importantly, the five coefficients remained positive and significant at p < .001, and their rank order was unchanged: technological infrastructure, digital work environment, digital culture, organizational support for digital learning, and training and development. The substantive interpretation is therefore robust to inclusion of the screened cases, although the more conservative 253-case model is retained as the primary result.

Table 5 Response-Screening Sensitivity Analysis

Model	n	R-squared	Adj. R-squared	F	DW	Standardized-effect order
Screened primary model	253	.661	.654	96.268	1.839	HT > MT > VH > HTHT > DT
All complete responses	270	.754	.750	162.165	1.941	HT > MT > VH > HTHT > DT

- *Note. All five predictors were positive and significant at p < .001 in both specifications.*

V. DISCUSSION

➢ *Interpretation of the Findings*

The study shows that employee digital competence is embedded in a system of organizational conditions. All five hypotheses were supported, and the model explained a substantial share of the variance in self-reported competence. The finding is consistent with the integrated framework: knowledge investment, opportunities for practice, system quality, shared norms, and perceived support each contribute unique explanatory value. The modest intercorrelations among the predictors indicate that they should not be collapsed into a single generic perception of digitalization.

Technological infrastructure was the strongest predictor. This result reinforces the information-systems-success view that reliable, accessible, and adequate systems are foundational to productive use (DeLone & McLean, 2003). In a bank, employees' competence is exercised through operational systems rather than in the abstract. Stable platforms, timely data access, and integrated tools create successful use experiences; fragmented or unreliable systems instead teach employees to rely on workarounds. Infrastructure therefore operates as a learning environment as well as a technical resource. The result does not mean that technology automatically produces competence, but it suggests that competence-development initiatives will have limited returns if the underlying digital experience is unstable.

The digital work environment ranked second. This supports the argument that competence develops through repeated application in authentic tasks. Digital workflows, platform-based coordination, and daily tool integration give employees frequent mastery experiences, a mechanism emphasized by social cognitive theory (Bandura, 1986). The result also aligns with digital-workplace research showing that technology adoption is tied to how work is redesigned and experienced, not simply to the availability of tools (Meske & Junglas, 2021). A digitally intensive work environment converts formal knowledge into routines and makes gaps visible at the moment when support can be provided.

Digital culture and organizational support for digital learning had similar standardized coefficients. Culture supplies collective permission to experiment, share knowledge, and adapt, whereas support supplies practical resources and assistance. Their simultaneous significance indicates that symbolic encouragement and concrete enablement are complementary. A bank may communicate an innovation-oriented culture, but employees will hesitate to learn if they lack time, resources, or help. Conversely, learning resources may be underused if norms punish mistakes or discourage questions. The findings are consistent with research on digital organizational culture and supportive learning climates (Kocak & Pawlowski, 2023; Kim & Park, 2025).

Training and development remained significant, confirming its importance, but its standardized coefficient was the smallest of the five. This finding is theoretically meaningful rather than evidence that training is unimportant. Human capital investment is more likely to translate into competence when employees can apply learning through reliable tools, digitized workflows, supportive norms, and accessible assistance. Formal courses that are generic, episodic, or disconnected from actual systems may increase awareness without changing performance. The result therefore qualifies a training-first approach and supports a transfer-oriented design in which learning content is tightly linked to role requirements and post-training practice.

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➢ *Theoretical Contributions*

First, the study connects theoretical perspectives that are often examined separately. Human capital theory explains why training matters; social cognitive theory explains why repeated practice and mastery matter; social exchange theory explains why support stimulates learning effort; information-systems-success theory explains the enabling role of system quality; and digital-culture research explains the shared norms surrounding adaptation. Their joint significance suggests that digital competence is best understood as an organization-enabled employee capability. This framing moves beyond accounts that locate the responsibility for upskilling solely with the individual.

Second, the relative coefficients distinguish the digital foundation from formal development activities. The stronger associations of infrastructure and the work environment suggest a situated view of competence: employees become capable through interaction with dependable systems and recurring digital tasks. Training contributes within this setting, but it does not substitute for it. This provides an empirical bridge between the digital workplace literature and employee development research.

Third, the study adds evidence from a Vietnamese commercial bank. Much of the digital competence literature is grounded in citizen, education, or broad occupational settings. Banking adds requirements for accuracy, security, compliance, and coordination across interconnected systems. The emerging-market context also illustrates how rapid technological deployment can make organizational enablement a pressing workforce issue. Although the single-bank design limits generalization, it offers a theoretically relevant setting in which digital systems are deeply embedded in service delivery.

Fourth, the response-quality analysis contributes methodological transparency. Straight-line responses are often removed without reporting how exclusion changes results. Here the screened and full-sample models produced the same signs, significance, and coefficient ordering, while the full-sample model showed a notably higher R-squared. Reporting both specifications demonstrates robustness and cautions against interpreting inflated shared covariance as stronger substantive explanation.

➢ *Managerial Implications*

The results imply that digital workforce development should be managed as a portfolio of mutually reinforcing interventions rather than as an annual training calendar. The coefficient order offers a practical sequence, though it should not be interpreted as a mechanical budget formula.

First, the bank should strengthen the digital foundation. Managers can map the systems and data sources used in critical employee journeys, identify instability and duplicate entry, and prioritize integration, access, usability, and support response times. Experience-level indicators such as system availability, task completion without workarounds, time to access required data, and recurring incident categories should be monitored alongside technical uptime. A dependable environment increases both productivity and the frequency of successful learning experiences.

Second, work should be designed to develop competence. Business units can embed digital practice into real tasks through guided simulations, process walkthroughs, peer demonstrations, digital checklists, and short after-action reviews. Managers should identify roles in which employees can avoid or delegate digital activities and redesign those routines so that capability is exercised safely and frequently. Super-users can provide local coaching, but reliance on a few experts should not become a substitute for broad capability.

Third, culture and support should be operationalized. Leaders can create psychologically safe channels for reporting difficulty, recognize employees who share reusable solutions, and provide protected microlearning time. A searchable knowledge base, office hours with system experts, communities of practice, and rapid escalation for recurring problems can make support visible. Management messages should frame questions and mistakes during controlled learning as part of adaptation, while maintaining strict standards for customer data and operational risk.

Fourth, training should become role-based and transfer-focused. A capability matrix can link each role to the digital tasks, data responsibilities, security requirements, and proficiency levels it requires. Pre-assessment should identify gaps, learning should use the actual workflow whenever feasible, and post-training evaluation should measure application after 30, 60, and 90 days. Measures might include observed task proficiency, reduction in avoidable support requests, process accuracy, and supervisor-validated transfer rather than attendance or satisfaction alone.

Finally, the five drivers should be governed as one system. Human-resource, technology, operations, risk, and business leaders can jointly review a digital-competence dashboard. The dashboard should combine competence assessment, learning participation, system-experience indicators, work-practice adoption, and qualitative issue themes. Cross-functional governance reduces the risk that a training problem is used to explain what is actually a system-design or work-process problem.

Implementation can be staged over a twelve-month cycle. During the first quarter, the bank can establish role-based capability baselines and identify the systems and workflows that generate the greatest employee friction. During the second quarter, technology and operations teams can address high-frequency barriers while human-resource teams pilot learning pathways for priority roles. The third quarter can emphasize workplace transfer through coaching, communities of practice, and manager observation. The fourth quarter can compare competence, system experience, and operational indicators against the baseline and adjust the portfolio. This cadence turns the study's cross-sectional

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findings into testable management actions without treating regression coefficients as causal effect sizes.

Evaluation should be segmented by job family and career stage. The sample contained many employees with less than three years of tenure, so organization-wide averages may conceal different needs among newcomers, experienced specialists, managers, and employees in customer-facing versus operational roles. New employees may require foundational navigation and data-security routines, while experienced employees may need support to integrate new tools into established expertise. Managers require additional competence in digital decision-making, coaching, and change communication. Segmenting assessment makes development more precise and helps determine whether infrastructure and work-environment improvements benefit groups equitably.

VI. CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH

This study examined five organizational drivers of employee digital competence in a Vietnamese commercial bank. Using 253 quality-screened responses, it found that technological infrastructure, the digital work environment, digital culture, organizational support for digital learning, and training and development were all positively associated with self-reported competence. Technological infrastructure had the strongest standardized coefficient, followed by the digital work environment. The evidence supports a central conclusion: organizations develop digital competence not only by teaching employees but also by creating reliable systems, digitally embedded work, supportive norms, and accessible learning resources.

Several limitations define the scope of the findings. First, the cross-sectional design establishes association rather than causality; employees who feel more competent may also evaluate their environment more positively. Longitudinal studies should measure competence before and after changes in systems, work design, or training. Second, the sample came from one bank and was not randomly drawn from the national workforce. Replication across banks, regions, organizational levels, and job families is needed before broad generalization. Third, digital competence was self-reported. Future research should combine perception measures with knowledge tests, task simulations, system-use data, and supervisor assessments. Fourth, the study relied on EFA and regression. Future multi-organization samples could use confirmatory factor analysis and structural equation modelling, including measurement invariance across employee groups. Fifth, although the Harman diagnostic was below 50%, it is a limited test; temporal separation, multi-source data, or marker-variable techniques would provide stronger protection against common-method bias (Podsakoff et al., 2003).

Future studies could also test mechanisms and boundary conditions. Digital self-efficacy, learning agility, readiness for change, and knowledge sharing may mediate the effects of organizational conditions on competence. Age, tenure, role complexity, managerial responsibility, and prior technology exposure may moderate these relationships. At the organizational level, cybersecurity climate, leadership behavior, data governance, and digital strategy alignment may explain why similar infrastructure produces different workforce outcomes. Such extensions would move the literature from identifying enabling conditions to explaining how, when, and for whom those conditions create measurable capability.

Despite these limitations, the study offers a transparent and actionable model for digital workforce development. Its practical message is straightforward: invest in people, but make the workplace itself capable of teaching. When systems are dependable, work is genuinely digital, experimentation is supported, and learning help is available, formal training has a stronger environment in which to become competence.

DECLARATIONS

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- Conflict of interest: The authors declare no conflict of interest.

- Ethical considerations: Participation was voluntary and anonymous. The questionnaire collected no direct personal identifiers and was used for academic research purposes.
- Data availability: De-identified data may be made available by the authors on reasonable request, subject to organizational confidentiality requirements.

REFERENCES

[1]. Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Prentice-Hall.

[2]. Becker, G. S. (1964). Human capital: A theoretical and empirical analysis, with special reference to education. University of Chicago Press.

[3]. Blau, P. M. (1964). Exchange and power in social life. Wiley.

[4]. Carretero, S., Vuorikari, R., & Punie, Y. (2017). DigComp 2.1: The digital competence framework for citizens with eight proficiency levels and examples of use. Publications Office of the European Union. https://doi.org/10.2760/38842

[5]. DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. Journal of Management Information Systems, 19(4), 9-30. https://doi.org/10.1080/07421222.2003.11045748

[6]. Dürr, S., Holotiuk, F., Wagner, H. T., Beimborn, D., & Weitzel, T. (2018). What is digital organizational culture? Insights from exploratory case studies. Proceedings of the 51st Hawaii International Conference on System Sciences, 5126-5135.

[7]. Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. Journal of Applied Psychology, 71(3), 500-507. https://doi.org/10.1037/0021-9010.71.3.500

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug766

[8]. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate data analysis (8th ed.). Cengage.

[9]. Kim, J., & Park, Y. (2025). Influence of organizational digital transformation competencies on individual job performance: The mediating effects of organizational supportive learning environment and individual readiness for change. Industrial and Commercial Training, 57(1), 53-68. https://doi.org/10.1108/ICT-07-2024-0062

[10]. Kocak, S., & Pawlowski, J. M. (2023). Digital organizational culture: A qualitative study on the identification and impact of the characteristics of a digital culture in the craft sector. SN Computer Science, 4, 819. https://doi.org/10.1007/s42979-023-02302-1

[11]. Meske, C., & Junglas, I. (2021). Investigating the elicitation of employees' support towards digital workplace transformation. Behaviour & Information Technology, 40(11), 1120-1136. https://doi.org/10.1080/0144929X.2020.1742382

[12]. Noe, R. A. (2017). Employee training and development (7th ed.). McGraw-Hill Education.

[13]. Orient Commercial Joint Stock Bank. (2026). Report on operating results for the first quarter of 2026 [Corporate report].

[14]. Pham, N. T., Tuan, T. H., Vo, T. T., Hoang, H. T., & Hoang, G. (2023). Improving employee outcomes in the remote working context: A time-lagged study on digital-oriented training, work-to-family conflict and empowering leadership. Asia Pacific Journal of Human Resources. https://doi.org/10.1111/1744-7941.12374

[15]. Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. Journal of Applied Psychology, 88(5), 879-903. https://doi.org/10.1037/0021-9010.88.5.879

[16]. van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M., & de Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. Computers in Human Behavior, 72, 577-588. https://doi.org/10.1016/j.chb.2017.03.010

[17]. Vial, G. (2019). Understanding digital transformation: A review and a research agenda. The Journal of Strategic Information Systems, 28(2), 118-144. https://doi.org/10.1016/j.jsis.2019.01.003

[18]. Vuorikari, R., Kluzer, S., & Punie, Y. (2022). DigComp 2.2: The digital competence framework for citizens. Publications Office of the European Union. https://doi.org/10.2760/115376