Digital Culture as the Common Driver of Capability Formation: Work Design, Remote-Work Readiness, and Organizational Process Transformation

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Abstract*– This study examined how organizational conditions are converted into digital capabilities that drive process transformation, the model's central outcome, rather than a proxy for remote-work capacity. Using a cross-sectional survey of 814 employees analyzed with maximum likelihood estimation, a structural equation model tested two complementary routes to process transformation. A human-capability route linked digital organizational culture, work autonomy, and schedule flexibility to perceived digital competence, which together with digital culture predicted technology use and process transformation. A structural-readiness route linked organizational openness to remote work to technological and policy readiness, which predicted technology use. The model showed an acceptable fit, Yuan-Bentler scaled $\chi^2(511) = 1{,}419$, $p < .001$, robust CFI = .921, RMSEA = .052, and explained 76.3% of the variance in process transformation. Digital culture was the most consistent predictor across the model. Organizational openness strongly predicted readiness ($\beta = .820$), yet the two constructs remained empirically distinct. Schedule flexibility showed a negative conditional association with competence once autonomy and culture were controlled, a result interpreted cautiously. Findings indicate that declared openness and available technology must be converted into operational readiness, competence, and use before contributing to process transformation, extending dynamic capabilities and work design perspectives on organizational digitalization.

***Keywords*– digital transformation; digital organizational culture; structural equation modeling; remote-work readiness; work design**

I. Introduction

Digital transformation has become one of the most consistent priorities on organizational agendas, yet a considerable share of digitalization initiatives fail to produce the process-level change that is used to justify them [1]. Part of this shortfall stems from a persistent conceptual habit in the literature: treating the presence of digital technology, or an organization's stated openness to new ways of working, as if it were already a capability rather than a resource that still has to be converted into one [2], [3]. From a dynamic capabilities perspective, sustained organizational adaptation depends on distinct microfoundational processes of sensing opportunities, seizing them through resource allocation, and reconfiguring routines and competencies accordingly; digital technology by itself does not automatically yield superior performance unless organizations develop the underlying capacity to sense, seize, and reconfigure around it [4]. Recent evidence reinforces this view: dynamic capabilities have been shown to function as antecedents, rather than consequences, of digital leadership and digital culture in small and medium-sized enterprises [5], suggesting that culture itself is often the product of prior capability-building rather than a free-standing driver.

Within this capability-formation view, digital organizational culture has received growing attention as a condition that translates technological availability into usable organizational value. Martínez-Caro et al. [6] found that digital organisational culture strengthens the relationship between digital technologies and firm performance, and Cardoso et al. [7] reported that digital culture was directly associated with knowledge management, technology adoption, and competitiveness among Portuguese organizations. Comparable evidence indicates that digital culture is linked to employees' innovative work behavior [8] and to organizational efficiency through the joint operation of technology readiness and culture [9]. Systematic reviews of the construct converge on digital communication, proactivity, and digital skills and attitudes as its central dimensions [10], and review-level work continues to frame organizational culture as a necessary, though not sufficient, condition for sustainable digital transformation [11].

A second stream of research locates the mechanism of digital transformation not in culture but in the individual employee, specifically in digital competence and digital literacy. Cetindamar et al. [12] showed that employees' digital literacy positively predicts their utilization of digital technologies at work, van Laar et al. [13] positioned digital skills as a core component of the broader repertoire of competencies required in technology-mediated work, and continuance-based models indicate that employees' digital skills shape workplace-technology adoption and individual performance through perceived ease of use [14]. Evidence from small and medium-sized enterprises in Lima indicates that digital competencies are frequently the principal driver of digital transformation, with organizational culture functioning as a partial rather than exclusive contributing mechanism [15], [16], and comparable work has proposed extending digital competence from an individual to a collective, organizational-level construct [17]. Digital human resource management practices have likewise been shown to shape employees'

perceived digital competence, with the strength of this effect depending on the surrounding organizational culture [18], and systematic reviews confirm that digital literacy significantly influences the success of digital transformation efforts, moderated by organizational learning culture and leadership support [19].

A parallel but conceptually distinct literature addresses organizational conditions for remote and flexible work, frequently without connecting these conditions to digitalization outcomes. Technology-organization-environment research shows that organizational openness and technological readiness jointly determine whether digital resources are deployed effectively [20], and comparative studies confirm that organizational, environmental, and individual factors, more than the mere presence of technology, determine whether remote-work arrangements translate into performance gains [21], [22]. Technology readiness has been documented as a partial mediator between behavioral intention and organizational efficiency [9] and between organizational readiness and innovation outcomes [23], [24], while research on technology affordance shows that flexibility and available technology act jointly rather than in isolation [25], [26], [27]. What remains underspecified is the distinction between an organization's declared willingness to support remote work and its actual technological and policy infrastructure; these are often treated as a single construct despite reflecting, respectively, legitimacy and operational capacity.

Work design theory offers a further, largely separate line of evidence relevant to how organizational conditions shape employees' capacity to engage with digital tools. The job characteristics model identifies autonomy over how, when, and to some extent where work is performed as a central determinant of internal motivation and skill development [28], and meta-analytic evidence indicates that autonomy is one of the principal mechanisms through which flexible work arrangements produce beneficial outcomes [29]. More recent work extends this reasoning to digital contexts, showing that perceived organizational digital empowerment operates through work autonomy to shape employee performance [30] and that distinct forms of autonomy, including scheduling and work-method discretion, relate differentially to adaptive performance under changing conditions [31]. A parallel body of evidence cautions against treating all forms of discretion as uniformly beneficial: excessive or narrowly temporal autonomy can show diminishing or reversed associations with well-being and performance once broader discretion is accounted for, a pattern documented as a too-much-of-a-good-thing effect [32] and discussed in terms of the bright and dark sides of worktime autonomy [33]. Temporal flexibility in particular can function less as genuine discretion than as an implicit obligation to remain available [34], [35], especially where always-on organizational norms blur the boundary between work and personal life [36], and classic work-family theorizing suggests that its effects depend on the permeability of that boundary and on whether flexibility operates as an enriching or a boundary-eroding resource [37], [38], [39]. This literature raises the possibility that work autonomy and schedule flexibility, although conceptually related, relate differently to digital capability outcomes when considered jointly, a distinction that recent psychometric work has also emphasized in validating autonomy as a multidimensional rather than unitary construct [40].

Across these separate literatures, digitalization is frequently treated as a general antecedent condition external to the workforce, assumed to translate more or less automatically into remote-work capacity once technology is available and organizations declare themselves open to flexible arrangements. The present study departs from this framing in three respects. First, it specifies organizational process transformation, rather than a generic index of digitalization or remote-work capacity, as the central outcome, treating transformed work processes as the downstream product of capability formation. Second, it examines two complementary and empirically distinguishable routes to that outcome: a human-capability route, in which digital culture and work design conditions (work autonomy and schedule flexibility) are associated with perceived digital competence and, through it, with technology use; and a structural-readiness route, in which organizational openness to remote work is associated with technological and policy readiness, which likewise contributes to technology use. Third, it treats openness and readiness, and autonomy and flexibility, as conceptually related but empirically separable conditions rather than interchangeable indicators of the same construct, following recent calls to disaggregate related organizational-level conditions rather than collapsing them into general omnibus factors [17], [40].

Building on this integration of dynamic capabilities, work design, and technology-readiness perspectives, the present study tests a structural model in which digital culture, work autonomy, and schedule flexibility predict perceived digital competence; organizational openness to remote work predicts technological and policy readiness; digital competence and readiness, together with digital culture, predict technology use; and technology use, digital competence, and digital culture predict organizational process transformation. This specification allows the study to examine not only whether these organizational conditions are associated with process transformation, but whether their association operates directly, indirectly through intervening capabilities, or both, providing a more granular account of how organizational conditions become effective capabilities for digital transformation than models that treat digitalization as a single, undifferentiated antecedent.

II. Methods

A. Study Design and Participants

This study used a quantitative, cross-sectional design based on a self-administered survey. Data were collected through a structured questionnaire addressing employees' digital capabilities and the organizational conditions associated with digitalization and flexible or remote work. The unit of analysis was the individual employee, who reported on their own perceived digital competence and technology use, as well as on their organization's practices regarding digital culture, process

transformation, work design, and remote-work openness and readiness. Participants provided informed consent through a dedicated consent item embedded in the questionnaire; respondents who declined to participate or did not answer this item were excluded from subsequent analyses (see Section II-B).

B. Data Screening and Analytical Sample

The initial dataset comprised 1,000 records. Fifty-one records were removed because respondents did not consent to participate or did not answer the consent item, yielding 949 records. Response time was then examined as an indicator of data quality. The median completion time was 507 seconds (8.4 minutes), with a first quartile (Q1) of 354 seconds, a third quartile (Q3) of 735 seconds, and an interquartile range (IQR) of 381 seconds. Two duration-based criteria were applied a priori. Records with completion times below one third of the median (169 seconds) were flagged as excessively fast, a threshold intended to identify responses unlikely to reflect attentive reading of the items; this criterion removed 38 records. Records with completion times above Q3 + 1.5 × IQR (1,306.5 seconds) were flagged as temporal outliers in the upper tail of the distribution and removed under this predefined criterion; this criterion removed 64 records. These long-duration cases were treated as statistical outliers rather than as indicators of fraudulent responding. After the response-time screening, 847 records remained.

Response patterns were then examined for straight-lining, defined as selecting the same response option in at least 80% of the Likert-type items. Thirteen records met this criterion and were removed, leaving 834 records. Finally, age was screened for plausibility; records with age below 18 years, above 70 years, missing, or otherwise implausible were excluded (n = 20), resulting in a final analytical sample of 814 participants. Table I summarizes this sequential screening process.

TABLE I
Sequential Data-Screening Process

Screening step	n removed	n remaining
Initial dataset	—	1,000
Non-consent or missing consent response	51	949
Response time screening (excessively fast and excessively long responses)	102	847
Straight-lining (≥ 80% identical Likert responses)	13	834
Implausible age (< 18, > 70, missing, or erroneous)	20	814

Note. Response time screening applied a lower bound equal to one third of the median completion time (169 s, corresponding to 38 removed records) and an upper bound equal to Q3 + 1.5 × IQR (1,306.5 s, corresponding to 64 removed records), based on a median completion time of 507 s (Q1 = 354 s, Q3 = 735 s, IQR = 381 s).

C. Measures

All items used a five-point Likert-type response format (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree). The instrument comprised two sets of theory-informed measures developed deductively for this study: for each construct, a conceptual definition was derived from the corresponding framework, and items were then written to represent the content domain implied by that definition, using behaviorally specific, non-technical wording so that respondents in different occupational roles could interpret them consistently. The digitalization items drew on the Technology Acceptance Model, the Unified Theory of Acceptance and Use of Technology, and the digital transformation framework proposed by Westerman, Bonnet, and McAfee, anchoring technology use in the behavioral-use component, perceived digital competence in the perceived-ability component, process transformation in process-level outcomes, and digital culture in the organizational values and facilitating conditions those models identify. The flexible and remote-work items drew on the Job Characteristics Model, Self-Determination Theory, flexible-work frameworks, and remote-work research, anchoring autonomy and schedule flexibility in the discretion dimensions of job design, and openness and readiness in the organizational and infrastructural conditions described in that literature. The initial pool was then refined empirically during measurement-model estimation (Section II-D). These instruments are accordingly described as theory-based measures rather than previously validated international scales; their reliability and validity evidence is reported in full in Section III-B, and independent validation in other samples remains necessary.

The final measurement model retained eight first-order factors. Four factors captured digitalization-related constructs: Technology Use and Integration (items D1, D2, D4, and D5), reflecting the extent to which employees incorporated digital tools and platforms into daily work; Perceived Digital Competence (items D6 to D9), reflecting employees' self-perceived ability to use digital technologies effectively; Organizational Process Transformation (items D10 to D13), reflecting the degree to which work processes had been digitalized, automated, or improved through technology; and Digital Organizational Culture (items D14 to D17), reflecting organizational attitudes, values, and practices supporting technological adoption and innovation.

Four additional factors captured flexible and remote-work organizational conditions: Work Autonomy (items T1 to T5), reflecting the degree of employee discretion over how, when, and where work is performed; Schedule Flexibility (items T6 to T10), reflecting the capacity to adapt working hours to personal needs; Organizational Openness to Remote Work (items T11 to T14); and Technological and Policy Readiness for Remote Work (items T15 to T18).

The labels for the latter two dimensions were adjusted to align with the substantive content of their items; item wording was not modified. Items T11 to T14 assess organizational willingness, trust, acceptance, and the perceived possibility of working remotely, and were accordingly labeled Organizational Openness to Remote Work rather than a label referring primarily to digital connectivity and availability. Items T15 to T18 assess the availability of technology, equipment, remote system access, and formal organizational policies for remote work, and were accordingly labeled Technological and Policy Readiness for Remote Work rather than a label referring primarily to home working conditions.

Item D3 was not retained in the final measurement model; it was excluded during the measurement model refinement process. Items T19 to T22, which addressed remote management and supervision, were not included in the analytic model of this study. The analysis concentrated on the four flexible and remote-work dimensions representing work design, organizational openness, and structural readiness within the capability-formation model examined here; results for items T19 to T22 are not reported.

D. Measurement Model

The factor structure of the eight latent dimensions was examined in two separate confirmatory factor analysis (CFA) models prior to the estimation of the integrated structural model: one comprising the four flexible and remote-work dimensions, and one comprising the four digitalization dimensions.

Model fit for each CFA was evaluated with the robust comparative fit index, the robust Tucker-Lewis index, the robust root mean square error of approximation, and the standardized root mean square residual. Internal consistency was assessed with Cronbach's alpha and McDonald's omega, convergent validity with the average variance extracted (AVE), and discriminant validity with the heterotrait-monotrait ratio of correlations (HTMT). Both models showed an acceptable fit; the corresponding fit statistics, reliability coefficients, AVE values, and maximum HTMT values for the eight retained factors are reported in Table II and in Section III-B.

Average variance extracted (AVE) values for several factors, including Technology Use and Integration, Organizational Process Transformation, Work Autonomy, and Schedule Flexibility, fell slightly below the conventional .50 benchmark. Factor loadings were statistically significant and supported the retention of each factor, and reliability was acceptable throughout, but convergent validity should be considered marginal for these dimensions. Table II summarizes the reliability and convergent validity indices for the eight retained factors.

TABLE II
Measurement Model, Reliability, and Convergent Validity

Dimension	α	ω	AVE
Flexible and remote-work dimensions			
Work Autonomy	.816	.823	.478
Schedule Flexibility	.807	.820	.471
Organizational Openness to Remote Work	.873	.882	.650
Technological and Policy Readiness for Remote Work	.859	.866	.613
Digitalization dimensions			
Technology Use and Integration	.798	.793	.498
Perceived Digital Competence	.843	.838	.574
Organizational Process Transformation	.771	.793	.474
Digital Organizational Culture	.845	.841	.575

Note. α = Cronbach's alpha; ω = McDonald's omega; AVE = average variance extracted. Flexible and remote-work CFA: robust CFI = .944, robust TLI = .934, robust RMSEA = .061, 95% CI [.055, .068], SRMR = .049; maximum HTMT = .829 (Organizational Openness to Remote Work and Technological and Policy Readiness for Remote Work). Digitalization CFA: robust CFI = .934, robust TLI = .919, robust RMSEA = .073, 95% CI [.065, .081], SRMR = .050; maximum HTMT = .846 (Organizational Process Transformation and Digital Organizational Culture).

E. Structural Model and Statistical Analysis

The structural model specified two complementary routes leading to organizational process transformation, the central outcome of the study. A human-capability route linked digital organizational culture, work autonomy, and schedule flexibility to perceived digital competence, which in turn was specified as a predictor of technology use and, together with digital culture, of process transformation. A structural-readiness route linked organizational openness to remote work to technological and policy readiness for remote work, which in turn was specified as a predictor of technology use. Specifically, the model included direct paths from digital culture, work autonomy, and schedule flexibility to digital competence; from organizational openness to technological and policy readiness; from digital competence, digital culture, and technological and policy readiness to technology use; and from technology use, digital competence, and digital culture to organizational process transformation. Covariances were estimated among work autonomy, schedule flexibility, organizational openness, and digital culture, reflecting their conceptual status as related organizational-level conditions rather than as a single underlying factor.

Analyses were conducted in jamovi (version 2.7) using the SEMLj module, which implements structural equation modeling through the lavaan package. Model parameters were

estimated using maximum likelihood estimation with robust standard errors and the Yuan-Bentler T2 scaled test statistic. The estimated model included 118 free parameters and converged after 46 iterations on a sample of 814 participants. Model fit was evaluated using the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR); these indices were interpreted as indicators of overall fit rather than as fixed pass or fail thresholds. Indirect associations were computed from the defined structural parameters using their associated robust standard errors; these estimates were not derived from bootstrap resampling.

III. Results

A. Data Screening and Final Sample

Data screening followed the sequential procedure described in Section II-B. Of the 1,000 records initially collected, 51 were removed for non-consent or a missing consent response, 102 for excessively fast or excessively long response times, 13 for straight-lining, and 20 for implausible age values, resulting in a final analytical sample of 814 participants (Table I).

B. Measurement Model

Confirmatory factor analyses conducted separately for the flexible and remote-work dimensions and the digitalization dimensions supported the retention of the eight-factor structure used in the integrated structural model; both models showed an acceptable fit to the data, and the corresponding fit statistics are reported in the note to Table II. Reliability coefficients were in an acceptable range across the eight factors, and AVE values were adequate for most dimensions, although Technology Use and Integration, Organizational Process Transformation, Work Autonomy, and Schedule Flexibility showed AVE values slightly below .50, indicating marginal convergent validity for these constructs despite acceptable reliability and statistically significant loadings. Maximum HTMT values (.829 for Organizational Openness and Technological and Policy Readiness; .846 for Organizational Process Transformation and Digital Organizational Culture) approached conventional discriminant-validity thresholds but remained compatible with treating these pairs as conceptually distinct factors. Table II summarizes these results.

In the integrated structural equation model, standardized factor loadings for the eight latent factors ranged from .585 to .799 for Technology Use, .695 to .814 for Digital Competence, .501 to .807 for Process Transformation, .719 to .792 for Digital Culture, .618 to .757 for Work Autonomy, .538 to .808 for Schedule Flexibility, .639 to .850 for Organizational Openness, and .719 to .837 for Technological and Policy Readiness. All loadings were statistically significant ($p < .001$).

C. Structural Model Fit and Explained Variance

The hypothesized structural model showed an acceptable to good fit to the data, Yuan-Bentler scaled $\chi^2(511) = 1{,}419$, $p < .001$, robust CFI = .921, robust TLI = .913, robust RMSEA = .052, 95% CI [.048, .055], SRMR = .058.

The model accounted for a substantial proportion of variance in the endogenous constructs. Perceived Digital Competence had an R^2 of .355, Technological and Policy Readiness for Remote Work had an R^2 of .673, Technology Use and Integration had an R^2 of .669, and Organizational Process Transformation had an R^2 of .763. The model thus explained 76.3% of the variance in organizational process transformation, the study's central outcome; this proportion reflects the explanatory adequacy of the specified model within a cross-sectional design and should not be interpreted as evidence of a causal effect.

D. Direct Structural Associations

Table III presents the standardized structural coefficients, robust confidence intervals, and p values for the ten direct paths specified in the model. All associations are reported as cross-sectional predictions within the specified model rather than as causal effects.

TABLE III
Standardized Structural Associations

Structural path	β	95% CI	p
Digital Culture → Digital Competence	.563	[.481, .645]	< .001
Work Autonomy → Digital Competence	.221	[.120, .321]	< .001
Schedule Flexibility → Digital Competence	−.203	[−.294, −.112]	< .001
Organizational Openness → Technological and Policy Readiness	.820	[.782, .859]	< .001
Digital Competence → Technology Use	.648	[.562, .735]	< .001
Digital Culture → Technology Use	.178	[.089, .268]	< .001
Technological and Policy Readiness → Technology Use	.154	[.089, .220]	< .001
Technology Use → Process Transformation	.232	[.085, .379]	.003
Digital Competence → Process Transformation	.293	[.142, .444]	< .001
Digital Culture → Process Transformation	.477	[.382, .572]	< .001

Note. CI = confidence interval based on robust standard errors. N = 814.

Digital organizational culture showed the most consistent pattern of association across the model, being positively associated with digital competence (β = .563, 95% CI [.481, .645], p < .001), with technology use (β = .178, 95% CI [.089, .268], p < .001), and directly with process transformation (β = .477, 95% CI [.382, .572], p < .001). Perceived digital competence was positively associated with both technology use (β = .648, 95% CI [.562, .735], p < .001) and process transformation (β = .293, 95% CI [.142, .444], p < .001), and technology use was positively associated with process transformation (β = .232, 95% CI [.085, .379], p = .003).

Within the structural-readiness route, organizational openness to remote work was strongly and positively associated with technological and policy readiness (β = .820, 95% CI [.782, .859], p < .001), and readiness was positively associated with technology use (β = .154, 95% CI [.089, .220], p < .001). Openness to remote work reflects organizational legitimacy, trust, willingness, and acceptance of remote-work arrangements, whereas readiness reflects the operational availability of equipment, remote system access, and formal policies; although closely related, these constructs were retained as conceptually distinct dimensions (see Section III-B). The magnitude of this association and the variance explained in readiness (R^2 = .673) suggest that declared organizational openness needs to be translated into operational technological and policy readiness before contributing to technology use. Given the cross-sectional design, this sequence should be understood as a theoretically specified structure compatible with the observed data rather than as evidence of temporal precedence.

Work autonomy was positively associated with digital competence (β = .221, 95% CI [.120, .321], p < .001). Schedule flexibility showed a negative conditional association with digital competence (β = −.203, 95% CI [−.294, −.112], p < .001). Work autonomy and schedule flexibility were substantially correlated (r = .570), and this coefficient was estimated with digital culture, autonomy, and the covariances among the flexible-work dimensions held constant. After accounting for digital culture, work autonomy, and the covariance between the flexible-work dimensions, schedule flexibility showed a negative conditional association with perceived digital competence. This coefficient should not be interpreted as evidence that flexibility is intrinsically detrimental, because its sign may partly reflect shared variance with autonomy and the conditional nature of the multivariable specification. This result is reported as a secondary finding within the broader pattern of associations linking organizational conditions to digital competence.

E. Indirect Associations

Table IV presents the standardized indirect associations estimated from the defined structural parameters, together with robust confidence intervals and p values.

TABLE IV
Standardized Indirect Associations

Indirect path	β	95% CI	p
Digital Culture → Digital Competence → Technology Use → Process Transformation	.085	[.031, .139]	.003
Digital Culture → Digital Competence → Process Transformation	.165	[.076, .254]	< .001
Digital Culture → Technology Use → Process Transformation	.041	[.006, .077]	.025
Work Autonomy → Digital Competence → Technology Use → Process Transformation	.033	[.008, .058]	.012
Work Autonomy → Digital Competence → Process Transformation	.065	[.018, .111]	.007
Schedule Flexibility → Digital Competence → Technology Use → Process Transformation	−.031	[−.055, −.006]	.015
Schedule Flexibility → Digital Competence → Process Transformation	−.059	[−.100, −.019]	.004
Organizational Openness → Technological and Policy Readiness → Technology Use → Process Transformation	.029	[.005, .054]	.020
Digital Competence → Technology Use → Process Transformation	.151	[.057, .245]	.002
Technological and Policy Readiness → Technology Use → Process Transformation	.036	[.006, .065]	.020

Note. CI = confidence interval based on robust standard errors, not bootstrap resampling. N = 814.

Digital culture showed positive indirect associations with process transformation through digital competence (β = .165, 95% CI [.076, .254], p < .001), through technology use (β = .041, 95% CI [.006, .077], p = .025), and through the sequential path via digital competence and technology use (β = .085, 95% CI [.031, .139], p = .003). Work autonomy showed positive indirect associations with process transformation through digital competence (β = .065, 95% CI [.018, .111], p = .007) and through the sequential path via digital competence and technology use (β = .033, 95% CI [.008, .058], p = .012). Schedule flexibility showed negative indirect associations with process transformation through the same paths (β = −.059, 95% CI [−.100, −.019], p = .004, via digital competence; β = −.031, 95% CI [−.055, −.006], p = .015, via digital competence and technology use), consistent with the conditional negative direct association reported in Section III-D. Organizational openness showed a small positive indirect association with process transformation through readiness and technology use (β = .029, 95% CI [.005, .054], p = .020). Digital competence and technological and policy readiness each showed positive

indirect associations with process transformation through technology use (β = .151, 95% CI [.057, .245], p = .002, and β = .036, 95% CI [.006, .065], p = .020, respectively).

Because the direct paths from digital culture to technology use and to process transformation remained statistically significant alongside these indirect associations, the overall pattern indicates partial mediation through digital competence and technology use rather than full mediation of digital culture's association with process transformation.

IV. Discussion

The structural model supported a capability-formation account of organizational digitalization, in which digital culture, work design conditions, and structural readiness for remote work were converted into digital competence and technology use before contributing to organizational process transformation, the study's central outcome. This pattern is consistent with the dynamic capabilities perspective, which frames sustained organizational adaptation as the outcome of microfoundational processes of sensing, seizing, and reconfiguring resources rather than as an automatic consequence of resource availability [3], [4]. In line with this view, digital transformation research increasingly emphasizes that technology adoption alone does not generate strategic value unless it is embedded in organizational routines, culture, and capability-building processes [1], [2].

A. Digital Culture and Digital Competence as Capability Mechanisms

Digital organizational culture showed the most consistent pattern of association in the present model, predicting digital competence, technology use, and process transformation directly. This is congruent with a growing body of evidence indicating that digital culture functions as a catalytic organizational condition rather than a peripheral attitudinal variable. Martínez-Caro et al. [6] reported that digital organisational culture strengthens the link between digital technologies and firm performance; Cardoso et al. [7] found it directly associated with knowledge management, technology adoption, and competitiveness among Portuguese firms; Liu et al. [8] showed a direct positive effect on employees' innovative work behavior; and Held et al. [5] found dynamic capabilities to be antecedents of digital culture and digital leadership in small and medium-sized enterprises. Kocak and Pawlowski [10] identified digital communication, proactivity, and digital skills and attitudes as core dimensions of digital organizational culture, a characterization broadly consistent with the item content of the culture measure used here. These findings support the interpretation that digital culture operates as an organizational-level capability enabler acting both directly, by shaping process transformation, and indirectly, by strengthening the competencies and technology-use behaviors of employees.

Digital competence's positive association with both technology use and process transformation, together with the mediating role of technology use, aligns with research emphasizing digital competence and digital literacy as proximal drivers of technology utilization. Cetindamar et al. [12] found that employees' digital literacy positively predicted the utilization of digital technologies at work, and van Laar et al. [13] identified digital skills as a core component of the broader repertoire of competencies required in technology-mediated work. Zervas and Triantari [18] reported that digital human resource management practices were associated with employees' perceived digital competence, with the effect varying according to the organizational culture in which those practices were embedded, echoing the joint role of culture and competence observed in the present model. Comparable evidence from Latin American small and medium-sized enterprises indicates that digital competencies are often the principal driver of digital transformation, with organizational culture playing a partial, secondary role [15], [16], a pattern that parallels the partial-mediation structure identified in Section III-E.

B. The Structural-Readiness Route

A complementary account comes from the structural-readiness route, which shows how organizational conditions unrelated to individual competence contribute to technology use and, ultimately, process transformation. Organizational openness to remote work was strongly associated with technological and policy readiness, and readiness in turn with technology use. This sequence is consistent with technology-organization-environment research showing that openness and readiness jointly shape the effective deployment of digital resources [20] and with evidence that technology readiness mediates the relationship between organizational orientations and efficiency or innovation outcomes [9], [23], [24]. Because openness reflects organizational legitimacy, trust, and willingness to consider remote arrangements, whereas readiness reflects the concrete availability of equipment, systems access, and policy, the magnitude of this path and the substantial variance explained in readiness (R^2 = .673) suggest that declared openness is a necessary but not sufficient condition: it must be operationalized into technological and policy infrastructure before it can support technology use. This is consistent with comparative evidence showing that organizational and individual factors, more than raw technological availability, determine whether remote arrangements translate into effective outcomes [21], [22], and with research showing that remote flexibility and technology affordance operate jointly rather than independently [25], [26], [27].

C. Work Autonomy and Schedule Flexibility

Work autonomy and schedule flexibility diverge in the direction of their association with digital competence, a pattern that deserves particular attention. Work autonomy was positively associated with digital competence, consistent with job design research indicating that discretion over how, when, and to some extent where work is performed supports motivation, engagement, and skill development [28], [29]. Schedule flexibility, in contrast, showed a negative conditional association once digital culture, autonomy, and the covariances among the flexible-work dimensions were held constant. This

should not be read as evidence that flexibility undermines digital competence. The two constructs were substantially correlated (r = .570), and work design research has shown that the benefits of autonomy-related constructs are neither uniformly linear nor independent of the dimension examined: narrowly temporal forms of discretion can produce diminishing or reversed associations once broader autonomy is accounted for, a pattern documented as a "too-much-of-a-good-thing" effect [32] and discussed in terms of the bright and dark sides of worktime autonomy [33]. Qualitative and survey evidence indicates that temporal flexibility can function less as discretion than as an implicit obligation to remain available, described as freedom becoming duty [34] and as a constraint on the personal use of time despite nominal flexibility [35]; always-on organizational norms offer a further mechanism through which schedule flexibility can coexist with reduced engagement with digital tools [36]. Work-family theorizing similarly suggests that the effect of flexibility depends on how permeable the boundary between domains becomes and on whether flexibility operates as an enriching or a boundary-eroding resource [37], [38], [39]. The coefficient is therefore better understood as reflecting the specific, temporally defined component of flexibility once its shared variance with broader autonomy and digital culture has been removed.

D. Process Transformation as the Central Outcome

Positioning organizational process transformation, rather than a generic index of remote-work capacity or digitalization, as the central outcome of the model reflects a deliberate departure from research traditions that treat digitalization primarily as a condition external to the workforce. The results instead indicate that process transformation is best understood as the downstream product of a capability-formation sequence, in which organizational-level conditions (culture, openness) must pass through individual and behavioral mechanisms (competence, technology use) before manifesting as transformed processes. This framing is consistent with process-oriented reviews of digital transformation that identify capability development as a distinct stage preceding structural or process-level change [1], [2].

E. Practical Implications

The pattern of associations observed here has direct implications for how managers sequence digital transformation initiatives. Because process transformation was reached only after organizational conditions had been converted into perceived competence and actual technology use, investment in tools alone is unlikely to produce process-level change. Digital culture was the most consistent predictor in the model, which suggests that the most transferable managerial lever is the set of everyday practices that make digital ways of working expected and legitimate: setting digital objectives at team level, recognizing redesigned processes rather than tool adoption alone, protecting time for learning, and ensuring that managers visibly use the platforms they introduce. Because digital culture was also related to process transformation directly, these practices appear to operate both by building individual capability and by legitimizing the redesign of routines.

The separation between openness and readiness carries a second, more operational implication. Openness was strongly associated with readiness (β = .820) but was related to technology use only through it, indicating that a declared willingness to work flexibly yields little practical effect until it is embodied in equipment provisioning, secure remote access to core systems, and written policies specifying how remote work is authorized and supported; readiness, rather than openness, is therefore the more informative indicator to monitor. The divergence between autonomy and schedule flexibility suggests, in turn, that discretion over how work is performed is not interchangeable with discretion over when it is performed: managers who extend temporal flexibility without addressing availability expectations may not observe the capability gains that broader autonomy appears to support, and explicit norms on connectivity outside working hours may be required for flexibility to function as a resource rather than as an implicit obligation.

F. Limitations and Future Research

Several limitations warrant consideration when interpreting these findings. The cross-sectional design precludes causal inference and does not establish that organizational openness temporally precedes readiness, or that culture temporally precedes competence; the specified sequence should be understood as theoretically motivated and compatible with the data rather than empirically demonstrated. All measures were collected through self-report from a single source at a single time point, which raises the possibility of common method variance inflating some of the observed associations [41]. Convergent validity was marginal for several dimensions, with AVE values slightly below the conventional .50 benchmark for Technology Use and Integration, Organizational Process Transformation, Work Autonomy, and Schedule Flexibility, and the maximum HTMT values for Organizational Openness and Technological and Policy Readiness (.829) and for Organizational Process Transformation and Digital Organizational Culture (.846) approached, without exceeding, conventional discriminant-validity thresholds [42]. Model fit indices were interpreted descriptively rather than as fixed pass or fail criteria, consistent with recommendations that conventional cutoff values be treated as approximate guidance rather than universal standards [43]. A further limitation concerns the measures themselves: they were developed deductively for this study rather than adopted from previously validated international scales, so evidence for their construct validity is confined to the present sample. The analytic model also excluded the remote management and supervision items (T19 to T22), placing the supervisory dimension of remote work outside the scope of these findings, and the data were collected in a single national context.

These limitations point to four directions for future work. First, longitudinal or multi-source designs would allow the temporal ordering implied by the capability-formation sequence to be tested directly: measuring organizational conditions at one point in time and capability and outcome

variables at a later point, or complementing self-reports with supervisor ratings and objective process indicators, would address both causal ambiguity and common method variance [41]. Second, subsequent replications should refine the scales by revising or replacing the lowest-loading items in the dimensions whose AVE fell below .50, strengthening convergent validity and sharpening the separation of the construct pairs whose HTMT values approached conventional thresholds [42]. Third, the negative conditional association between schedule flexibility and digital competence merits dedicated investigation, through qualitative work on how employees experience temporal flexibility or through moderation models testing whether always-on norms condition the relationship, so that the interpretation advanced here can be tested rather than inferred [34], [36]. Fourth, invariance should be assessed across industrial sectors, for example services compared with manufacturing, and across organization sizes, since converting declared openness into operational readiness plausibly depends on available resources; replication in other national and cultural contexts would further establish the generality of the account proposed here.

V. CONCLUSIONS

This study examined how organizational conditions are converted into digital capabilities that support the transformation of work processes, specifying organizational process transformation, rather than remote-work capacity in general, as the model's central outcome. Digital organizational culture functioned as the most consistent driver across the model, operating directly on process transformation and indirectly through digital competence and technology use. A parallel structural-readiness route showed that organizational openness to remote work is strongly associated with technological and policy readiness, yet the two remain conceptually and empirically distinct, with openness requiring operational conversion into readiness before it can support technology use. Work autonomy contributed positively to digital competence, while schedule flexibility showed a negative conditional association that should be interpreted with caution given its shared variance with autonomy. The findings support a capability-formation account of digital transformation in which organizational conditions must be translated into competence and technology use before they are reflected in transformed processes. For practice, the productive sequence of investment begins with the conditions that make digital work expected and feasible, continues with the competence and infrastructure that make it possible, and only then becomes visible as transformed processes. Longitudinal or multi-source designs, refined measurement of the dimensions with marginal convergent validity, and tests of invariance across sectors and contexts would clarify the temporal ordering of these associations and reduce the influence of common method variance inherent in single-source, cross-sectional data.

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