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Article

Unlocking the black box of digital-nomad management: How DRISA is linked to engagement and perceived performance

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Abstract: This study examines whether digital-nomad-oriented management practices are associated with perceived organizational performance through employee psychological and motivational states. Drawing on socio-technical systems theory and motivational work-design research, we conceptualize DRISA as a multidimensional composite management capability system comprising Digital Integration, Remote Collaboration, Individual Autonomy, Spatial Freedom, and Agile Management. The study used an exploratory sequential mixed-method design: 42 semi-structured interviews informed the construct and item pool, a pilot survey refined the measure ($N = 80$), and the main cross-regional survey covered China ($N = 127$), the United States ($N = 125$), and Europe ($N = 120$). Cross-sectional serial indirect-association analyses showed that DRISA was positively associated with psychological empowerment ($\beta = 0.408$, $p < 0.001$) and work-life balance ($\beta = 0.371$, $p < 0.001$), which were in turn associated with employee engagement. Employee engagement was positively associated with perceived organizational performance ($\beta = 0.284$, $p < 0.001$). Bootstrapped indirect associations were consistent with the proposed model: the pathway through psychological empowerment and engagement was stronger ($\beta = 0.22$, 95 % BCa CI [0.15, 0.30]) than the pathway through work-life balance and engagement ($\beta = 0.15$, 95 % BCa CI [0.08, 0.24]). Because the quantitative data are cross-sectional and self-reported, the findings should be interpreted as theoretically guided indirect associations rather than causal evidence. The study contributes to digital-nomad and work-from-anywhere research by clarifying how management practices may be linked to performance-related perceptions through empowerment, balance, and engagement.

Keywords: work from anywhere; socio-technical systems; psychological empowerment; distributed work; work-life balance; perceived organizational performance; serial indirect association

1. Introduction

Work is becoming less dependent on offices, regular working hours, and geographical boundaries. In knowledge-intensive sectors, employees can often perform their work through digital platforms while moving across cities or countries and collaborating across locations. Studies related to telecommuting and work-from-anywhere practices suggest that under favorable circumstances, flexibility can enhance job satisfaction, productivity, and talent acquisition [1–6]; however, the magnitude of positive outcomes from flexibility varies depending on how work is designed and supported by managers. An important yet insufficiently addressed issue concerns why specific management structures function effectively in the context of highly mobile work practices.

The disconnect between practice and theory is particularly apparent when it comes to studying digital nomads. Digital nomads have been traditionally described as knowledge workers using digital technologies for mobile, dispersed labor [7–10]. New research reveals that companies are starting to learn how to attract, employ, and manage this particular workforce despite the increasing prevalence of organizational nomadism, digital-nomad entrepreneurship, and cross-border self-management [11–14]. On the level of the field itself, bibliometric analysis indicates rapid growth in the literature on digital nomads, which is still largely fragmented from a theoretical perspective [15]. In contrast to conventional remote workers, digital nomads face more extreme temporal dispersion, infrastructural dependency, spatial variability, and lifestyle mobility. This creates a unique management challenge. It is not merely about having a laptop, videoconferencing software, or flexible work policies. Instead, organizations require integrated packages of management and technological capabilities that lower coordination costs, promote autonomy, ensure continuity across different locations, and foster agility in the face of uncertainties.

In this study, we define that integrated package as DRISA: Digital Integration, Remote Collaboration, Individual Autonomy, Spatial Freedom, and Agile Management. DRISA is conceptualized as a multidimensional composite socio-technical capability system rather than as a purely reflective higher-order construct in which dimensions are interchangeable manifestations of one latent trait. The five dimensions capture complementary management domains that jointly support work-from-anywhere readiness: interoperable digital infrastructure, distributed coordination routines, autonomy governance, location-independent support, and adaptive decision-making.

Establishing DRISA as a management construct is only the first step. The focal theoretical question is how such practices are linked to employee experience and performance-related perceptions. Socio-technical systems theory suggests that organizational outcomes depend on the joint design of technical and social systems [16–18]. Motivational theories likewise suggest that work designs matter because they shape employees' experience of meaning, competence, self-determination, and resource balance [19–22]. In other words, management practices do not become consequential merely because they exist on paper; they become consequential when employees experience them as enabling, supportive, and worth engaging with.

The present paper therefore tests a theoretically specified association model: DRISA → psychological empowerment and work-life balance → employee engagement → perceived organizational performance. Because the main quantitative data are cross-sectional and self-reported, the analysis is interpreted as evidence of structured associations rather than proof of temporal or causal order. Bootstrapped indirect estimates are used to assess whether the data are consistent with the proposed theory-guided model, not to establish definitive causality.

The study uses a multi-stage cross-regional design. A qualitative phase involving 42 semi-structured interviews generated the DRISA dimensions and item pool. A pilot survey ($N = 80$) refined the measure, and a main survey covered China ($N = 127$), the United States ($N = 125$), and Europe ($N = 120$), yielding a primary validation sample of $N = 372$ and a pooled dataset of $N = 452$ for selected structural analyses. The survey sample is best interpreted as a purposive cross-regional knowledge-worker sample

exposed to digitally mediated and location-flexible work, not as a nationally representative sample of all digital nomads.

This article makes three contributions. First, it advances digital-nomad and work-from-anywhere research by clarifying the association pattern through which DRISA is linked to employee engagement and perceived organizational performance. Second, it strengthens the conceptualization of DRISA as a composite socio-technical capability system derived from qualitative evidence rather than as a post hoc label for flexible work. Third, it offers managers a diagnostic framework for calibrating digital infrastructure, distributed collaboration, autonomy, location support, and agility, while acknowledging that these practices are one relevant contributor among many determinants of performance-related perceptions.

2. Theory and hypotheses

2.1. DRISA as a multidimensional composite socio-technical capability system

The central premise of this paper is that digital-nomad-oriented management is better understood as a capability system than as a single policy or tool. Digital nomadism and work-from-anywhere arrangements generate recurring organizational challenges: Work must continue across time zones and changing locations; collaboration must be possible without constant real-time interaction; leaders must grant discretion while retaining alignment; employees must have location-independent access to resources; and organizations must remain agile despite uncertainty. Recent digital-nomad scholarship has moved from definitional and lifestyle questions toward mobility, policy, work-leisure, and decision-making analyses, but management-capability explanations remain underdeveloped [23–26]. DRISA captures these requirements through five domains: Digital Integration, Remote Collaboration, Individual Autonomy, Spatial Freedom, and Agile Management.

This construct boundary is important. DRISA is not equivalent to remote-work intensity, because employees may work remotely under weak or strong management systems. It is not equivalent to employee preference for flexibility, because it refers to organizational practices rather than individual motives. It is not simply digital HRM or digital transformation, because only one dimension directly concerns digital infrastructure. DRISA is also not a generic high-performance work system, because its dimensions are tailored to the distinctive problems of digital-nomad and work-from-anywhere contexts: tool interdependence, asynchronous coordination, autonomy at a distance, mobility fairness, and rapid adaptation without co-location.

The socio-technical logic of DRISA is consistent with classic and contemporary STS arguments: Organizational effectiveness depends neither on technology alone nor on social arrangements alone, but on their mutual fit [16–18]. Employees can have access to the same collaboration tools yet experience very different work systems depending on documentation norms, time-zone practices, outcome-based evaluation, location policy, mentoring access, and feedback routines. DRISA is therefore theorized as a composite architecture in which dimensions are complementary rather than interchangeable. A weakness in one domain can undermine the functioning of the

broader system (see **Table 1**).

Table 1. DRISA translated into a composite capability-system logic.

DRISA dimension	Management meaning	Why it matters for work-from-anywhere	Illustrative practices
Digital Integration	Interoperable digital infrastructure and data-informed workflow design	Reduces tool fragmentation and supports information visibility across locations	Integrated platforms; shared dashboards; accessible knowledge systems; data-informed feedback
Remote Collaboration	Distributed coordination and social-support routines	Makes collaboration possible without co-location or constant real-time interaction	Asynchronous norms; documentation rules; virtual check-ins; time-zone-sensitive coordination
Individual Autonomy	Outcome-based discretion and self-leadership support	Allows employees to self-manage while remaining accountable for results	Result-based evaluation; schedule discretion; autonomy-supportive coaching; self-leadership resources
Spatial Freedom	Location-flexibility policy and mobility support	Turns location independence into a usable and fair organizational practice	Explicit work-from-anywhere rules; equal resource access; remote mentoring; cross-border support
Agile Management	Adaptive performance management and rapid reconfiguration	Maintains learning and responsiveness when teams are dispersed and uncertain	Short feedback cycles; distributed decision rights; retrospectives; rapid team reconfiguration

Note. The table clarifies why the five DRISA dimensions form a unified but multidimensional management capability system rather than independent practices.

2.2. DRISA and psychological empowerment

Psychological empowerment refers to employees' experience of meaning, competence, self-determination, and impact in their work [21]. It is particularly relevant in digital-nomad and work-from-anywhere contexts because employees must make autonomous decisions, coordinate through digital tools, and manage ambiguity without continuous proximity-based supervision. Empirical research links empowerment to positive employee attitudes and behaviors [22,27], and distributed or hybrid work studies further suggest that empowerment-oriented practices can support adaptability and performance [28].

DRISA should be positively associated with empowerment through several routes. Digital Integration provides information, feedback, and visibility into work processes, supporting competence and impact. Remote Collaboration reduces uncertainty through documentation, coordination transparency, and relationship maintenance. Individual Autonomy directly supports self-determination by giving employees discretion over methods and schedules. Spatial Freedom signals trust by legitimizing work across locations. Agile Management strengthens impact by connecting employee action to rapid feedback and organizational response. Together, these practices should make employees experience work as something they can influence rather than merely comply with. Hence:

Hypothesis 1: *DRISA is positively related to psychological empowerment.*

2.3. DRISA and work-life balance

Work-life balance is theoretically important because location flexibility can either reduce or intensify boundary pressure. Digital nomadism is often framed as freedom, yet the same flexibility can generate overload, time-zone strain, detachment problems, and blurred boundaries when coordination practices are poorly designed

[7,25,29–35]. Balance is therefore not merely an individual preference; it is partly a product of organizational design.

DRISA should be positively associated with work-life balance because its practices reduce frictions between work and nonwork demands. Digital Integration limits administrative burden and tool-switching costs. Remote Collaboration reduces after-hours pressure by establishing asynchronous norms and time-zone-sensitive meetings. Individual Autonomy enables employees to align work rhythms with personal energy and nonwork responsibilities. Spatial Freedom allows employees to select locations compatible with both productivity and life needs. Agile Management can reduce waiting time and bottlenecks that otherwise extend work into nonwork time. Consequently:

Hypothesis 2: *DRISA is positively related to work-life balance.*

2.4. From empowerment and balance to employee engagement

Employee engagement is a positive work-related state characterized by vigor, dedication, and absorption [36]. It is especially important in distributed and mobile work because employees often need to sustain energy and focus without the social reinforcement of a shared office. Engagement has been associated with performance, persistence, and discretionary effort [37], and recent hybrid-work studies also treat engagement as an important execution resource in dynamic work environments [38,39]. Engagement therefore provides the behavioral and motivational bridge between enabling conditions and performance-related evaluations.

Psychological empowerment should be positively related to engagement because employees who perceive work as meaningful, feel competent, experience self-determination, and believe they can influence outcomes are more likely to invest energy and attention in work; contemporary research likewise links empowering leadership or psychological empowerment with engagement, innovation, and job performance [40–43]. Work-life balance should also be positively related to engagement, but through a different resource-preservation route: from the job demands-resources perspective, balance reduces strain and preserves resources required for vigor and dedication [44], while recent work highlights links among relational energy, remote-work well-being, balance, and engagement [45,46]. In this model, empowerment is expected to be the stronger upstream pathway, while balance remains an important supplementary channel.

Hypothesis 3: *Psychological empowerment is positively related to employee engagement.*

Hypothesis 4: *Work-life balance is positively related to employee engagement.*

2.5. Employee engagement and perceived organizational performance

The outcome is labeled perceived organizational performance because the measure is based on employees' perceptions rather than objective financial, productivity, or supervisor-rated data. This terminology makes the empirical boundary of the study explicit. The study therefore examines whether engagement is associated with performance-related evaluations, not whether DRISA improves objective organizational performance.

Engagement is the most proximal construct to perceived organizational performance in the proposed model because it reflects enacted work investment. Empowerment and balance describe enabling psychological or resource states, whereas engagement reflects how those states are expressed through energy, dedication, and involvement. Meta-analytic and recent evidence links engagement with task, contextual, public-value, and performance-related outcomes [37,47,48]. Thus, employees who are more engaged should be more likely to evaluate their organization as responsive, innovative, productive, and effective.

Hypothesis 5: *Employee engagement is positively related to perceived organizational performance.*

2.6. A serial indirect association pattern for digital-nomad management

Collectively, the above hypotheses imply two serial indirect association pathways: DRISA → psychological empowerment → employee engagement → perceived organizational performance, and DRISA → work-life balance → employee engagement → perceived organizational performance (see **Figure 1**). The serial ordering is theoretically grounded in socio-technical and motivational work-design perspectives: DRISA represents more distal organizational practices, empowerment and balance represent proximal employee states, engagement represents enacted work investment, and perceived organizational performance represents a downstream evaluation.

However, the model is not presented as causal proof. Cross-sectional data cannot establish temporal order, and alternative explanations remain possible. For example, high-performing organizations may be more likely to adopt DRISA-like practices, or engaged employees may evaluate both their work system and performance-related outcomes more favorably. The empirical goal is therefore to test whether the observed data are consistent with the theoretically proposed indirect association pattern.

Hypothesis 6a: *DRISA is indirectly associated with perceived organizational performance through psychological empowerment and employee engagement.*

Hypothesis 6b: *DRISA is indirectly associated with perceived organizational performance through work-life balance and employee engagement.*

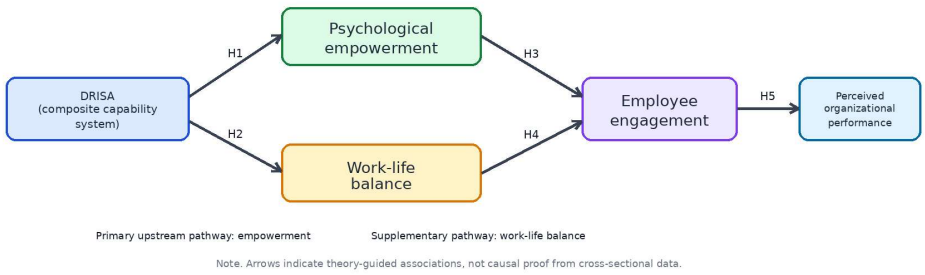

Figure 1. Conceptual model of the focal indirect association pattern (DRISA→PE/WLB→EE→perceived OP).

3. Materials and methods

3.1. Research design and boundary of inference

This study followed an exploratory sequential mixed-method design. The first phase comprised 42 semi-structured interviews conducted between March and July 2025 to identify common management practices in highly mobile and digitally mediated work settings. The second phase involved a pilot survey in October 2025 (N = 80) to refine the initial item pool and test dimensionality. The third phase involved a cross-regional survey across China, the United States, and Europe between November and December 2025.

The qualitative and pilot phases support construct development, whereas the main survey tests the proposed association model. Because the main structural evidence is cross-sectional, the manuscript avoids causal claims.

3.2. Qualitative phase: Interview sampling, protocol, coding, and validity

This qualitative phase used purposive sampling to identify participants with direct experience managing or working in digital-nomad, remote, hybrid, or highly mobile knowledge-work settings. The sample was designed to capture variation across enterprise size, role, industry, and region. Interviewees included digital nomads, remote or hybrid knowledge workers, managers, founders/executives, HR personnel, and senior/junior staff. The qualitative sample covered small, medium, and large enterprises across China, Europe, and the United States, with industries including software technology, online education, digital trade, IT, online services, consulting, marketing, and other professional services.

Interviews were conducted online using video-conferencing tools because participants were geographically dispersed. Each interview lasted approximately 60-90 minutes. The semi-structured interview protocol asked managers about challenges in supervising mobile or remote employees, tools and practices used to facilitate work, policy changes, communication routines, autonomy, time-zone coordination, location support, and perceived outcomes. Digital nomad or remote-work participants were asked about expectations of management, helpful and unhelpful practices, technology use, autonomy, travel logistics, team integration, and contrasts between nomadic and co-located work.

With participant consent, interviews were recorded and transcribed. Coding proceeded in three stages (see **Table 2**). First, open coding identified first-order ideas in the participants' own language, such as "AI-based task allocation," "Slack/Jira/GitHub integration," "self-managed scheduling," "follow-the-sun handovers," and "work from anywhere." Second, axial coding grouped related open codes into higher-order categories such as tool integration, cross-zone coordination, self-management, geographic independence, and decentralized decision-making. Third, selective coding integrated these categories into the five DRISA dimensions. The coding process followed qualitative rigor principles associated with iterative inductive analysis [49].

Table 2. Examples of qualitative coding from interview evidence to DRISA dimensions.

First-order evidence / interview examples	Second-order theme	DRISA dimension
Use of Slack, Jira, GitHub, shared dashboards, AI-based task allocation, and data analytics for remote work	Tool integration; AI-driven management; data-driven decision support	Digital Integration
Follow-the-sun handovers, standardized documentation, asynchronous updates, and virtual team-building routines	Cross-zone coordination; asynchronous communication; virtual trust-building	Remote Collaboration
Self-managed schedules, flexible hours, trust-based supervision, OKR/KPI-focused appraisal rather than time tracking	Self-management; flexible scheduling; goal-based evaluation	Individual Autonomy
Work-from-anywhere policies, global VPN/cloud access, coworking or equipment support, location-neutral career access	Location independence; resource accessibility; mobility support	Spatial Freedom
Flat teams, decentralized decisions, quick course correction, rapid feedback loops, and retrospectives	Flexible structure; rapid response; continuous improvement	Agile Management

Note. This table summarizes the qualitative derivation logic linking first-order interview evidence, second-order themes, and aggregate DRISA dimensions.

Qualitative validity was strengthened through an audit trail of memos and coding iterations, repeated comparison of emerging categories against the raw data, and theoretical-saturation checks. To assess coding reliability, two researchers independently coded a random subset of 10 interview transcripts, representing 23.8 % of the qualitative sample. The initial inter-coder agreement was high (Cohen's κ = 0.81). Minor coding disagreements were discussed until full consensus was reached, and the refined codebook was then applied to the remaining transcripts. The final six interviews generated no additional first-order codes or aggregate categories, indicating that thematic saturation had been achieved by the 36th interview.

3.3. Pilot survey and DRISA scale summary

A pilot survey (N = 80) was administered in October 2025. The item-refinement stage followed established guidance for questionnaire development [50]. Exploratory factor analysis supported factorability (KMO = 0.819; Bartlett's chi-square = 2706.219, $p < 0.001$) and produced a five-factor solution explaining 81.47 % of total variance. The final DRISA-20 scale retained four items for each dimension.

The validation stage confirmed the five-dimensional structure and cross-regional comparability of the DRISA instrument. These earlier stages matter because the present analysis relies on DRISA as an empirically grounded management construct rather than on ad hoc items. The current manuscript summarizes the scale-development procedures only to establish construct validity; its distinct focus is the indirect association pattern linking DRISA to engagement and perceived organizational performance.

3.4. Main survey sample, recruitment, inclusion criteria, and regional rationale

The focal quantitative evidence comes from three regional validation samples collected in late 2025: China (N = 127), the United States (N = 125), and Europe (N = 120), yielding a main validation sample of N = 372 (see **Table 3**). To avoid potential non-independence and capitalization on chance from reusing scale-refinement data, the pilot sample (N = 80) was strictly excluded from all hypothesis testing. Therefore, all descriptive statistics, controlled regressions, and bootstrapped indirect association

estimates are based uniformly and solely on this main validation sample ($N = 372$).

Table 3. Sample profile (main validation sample, $N = 372$).

Characteristic	China (N = 127)	USA (N = 125)	Europe (N = 120)	Total (N = 372)
Gender				
Female	52 (40.9 %)	60 (48.0 %)	51 (42.5 %)	163 (43.8 %)
Male	75 (59.1 %)	65 (52.0 %)	69 (57.5 %)	209 (56.2 %)
Age				
20-29	53 (41.7 %)	45 (36.0 %)	41 (34.2 %)	139 (37.4 %)
30-39	50 (39.4 %)	56 (44.8 %)	51 (42.5 %)	157 (42.2 %)
40-49	19 (15.0 %)	19 (15.2 %)	22 (18.3 %)	60 (16.1 %)
50+	5 (3.9 %)	5 (4.0 %)	6 (5.0 %)	16 (4.3 %)
Education				
High School	4 (3.1 %)	6 (4.8 %)	6 (5.0 %)	16 (4.3 %)
Associate	23 (18.1 %)	24 (19.2 %)	24 (20.0 %)	71 (19.1 %)
Bachelor	62 (48.8 %)	61 (48.8 %)	60 (50.0 %)	183 (49.2 %)
Master+	38 (29.9 %)	34 (27.2 %)	30 (25.0 %)	102 (27.4 %)
Company size				
Large	39 (30.7 %)	45 (36.0 %)	34 (28.3 %)	118 (31.7 %)
Medium	48 (37.8 %)	43 (34.4 %)	48 (40.0 %)	139 (37.4 %)
Small	40 (31.5 %)	37 (29.6 %)	38 (31.7 %)	115 (30.9 %)
Work arrangement				
Hybrid	61 (48.0 %)	58 (46.4 %)	61 (50.8 %)	180 (48.4 %)
On-site	35 (27.6 %)	35 (28.0 %)	26 (21.7 %)	96 (25.8 %)
Remote	31 (24.4 %)	32 (25.6 %)	33 (27.5 %)	96 (25.8 %)
Role				
Employee	95 (74.8 %)	98 (78.4 %)	79 (65.8 %)	272 (73.1 %)
Founder/Exec	13 (10.2 %)	6 (4.8 %)	15 (12.5 %)	34 (9.1 %)
Manager	19 (15.0 %)	21 (16.8 %)	26 (21.7 %)	66 (17.7 %)
Digital nomad experience				
< 1 year	34 (26.8 %)	38 (30.4 %)	40 (33.3 %)	112 (30.1 %)
1–3 years	73 (57.5 %)	70 (56.0 %)	62 (51.7 %)	205 (55.1 %)
> 3 years	20 (15.7 %)	17 (13.6 %)	18 (15.0 %)	55 (14.8 %)

Note. Percentages may not sum to 100 because of rounding. The table reports the three regional validation samples used as the core empirical base of the manuscript.

Respondents were recruited through three channels: online remote-work and digital-nomad communities, professional networks, and collaborating organizations with distributed or hybrid work arrangements. Eligible respondents were knowledge workers, managers, founders/executives, or professionals whose work involved digitally mediated collaboration, remote coordination, or mobility-relevant management practices. The target population is therefore better described as remote-capable and digitally mediated knowledge workers exposed to digital-nomad-oriented management practices, not exclusively full-time digital nomads.

China, the United States, and Europe were selected because they represent large

but institutionally distinct digital-work environments. This cross-regional design allows the study to examine whether the proposed association pattern is observable across different digital-work contexts rather than limited to one national setting. The sample is not nationally representative and should not be interpreted as population-level evidence for all digital nomads.

On-site respondents were retained only when their work involved distributed digital collaboration, remote coordination, or relevant digital-nomad/remote-work experience. Their inclusion reflects the organizational-level nature of DRISA: DRISA measures work-from-anywhere readiness and digital-nomad-oriented management practices, not merely an individual's current workplace location on the survey date. To evaluate this sampling boundary empirically, a robustness check excluding on-site respondents is reported in Section 4.5.

3.5. Measures

All focal variables were measured using seven-point agreement scales unless otherwise noted. DRISA was operationalized as the mean of its five dimension scores: Digital Integration, Remote Collaboration, Individual Autonomy, Spatial Freedom, and Agile Management. Sample items included: "We have achieved deep integration and data interoperability across platforms," "We operate using an advanced asynchronous communication culture," "Performance appraisal is focused on achievement rather than presence online," "Our policy encourages location independence worldwide," and "Short decision chains help us respond quickly."

Psychological empowerment was measured with five items adapted to reflect meaning, competence, self-determination, and impact, including "My work is personally meaningful" and "I feel empowered rather than controlled in this organization." Work-life balance was measured using items that captured perceived compatibility between work responsibilities and personal life demands. Employee engagement was measured through items reflecting vigor, dedication, and absorption.

Perceived organizational performance was measured using five self-reported comparative items asking respondents to evaluate their organization relative to competitors in innovation speed, decision efficiency, productivity, quality, and overall effectiveness. The construct is therefore labeled perceived organizational performance because it captures respondents' evaluations rather than objective organizational records. This limitation is explicitly acknowledged in the Discussion and Limitations sections.

3.6. Common method bias remedies

Because all focal constructs, including the predictor, mediators, and outcome variable, were self-reported by the same respondents within a single survey instrument, common method bias posed a potential threat to structural validity [51]. To minimize this risk, several procedural remedies were implemented during the design phase: participation was anonymous and voluntary; respondents were reassured that there were no right or wrong answers; predictor, mediator, and outcome items were placed in distinct sections of the questionnaire; item wording focused on concrete workplace practices; and responses were screened for straight-lining and unusually short

completion times.

In addition, a series of post-hoc statistical diagnostics was used to evaluate method contamination empirically. Harman's single-factor test was conducted using all 40 focal measurement items. A confirmatory factor analysis (CFA) comparison examined whether a one-factor model fit the data worse than the proposed multi-factor structure. Finally, an unmeasured common latent method factor was added to the measurement model to determine whether the substantive standardized paths materially changed. The full results are reported in Section 4.2.

3.7. Analytical strategy

The quantitative evaluation was conducted in four stages. First, descriptive statistics, Cronbach's alpha reliabilities, and zero-order Pearson correlations were calculated to establish the baseline properties of the validation sample. Second, measurement model comparisons and common method bias diagnostics were performed. Third, ordinary least squares (OLS) regression models with robust HC3 standard errors were estimated to evaluate the direct paths in the conceptual framework while adjusting for region, gender, age, education, company size, work arrangement, and role. Fourth, nonparametric bootstrapping with 5000 resamples and 95 % bias-corrected and accelerated (BCa) confidence intervals was used within a structural equation modeling framework to test total, direct, and specific serial indirect associations.

To address the sampling-boundary issue raised by the presence of on-site respondents, a post-hoc robustness analysis systematically excluded all on-site employees and re-estimated the focal structural paths among remote and hybrid workers only. Statistical significance was interpreted together with coefficient magnitude, model fit, and theoretical consistency rather than as evidence of causal order.

4. Results

4.1. Descriptive statistics, correlations, and regional DRISA profiles

Table 4 presents the means, standard deviations, internal consistency reliabilities, and zero-order Pearson correlation coefficients for all focal variables in the primary validation sample (N = 372). The internal consistency scores ranged from 0.799 to 0.937, exceeding the commonly accepted threshold of 0.70. DRISA showed a mean score of 4.760 (SD = 0.450), suggesting that respondents generally perceived a moderately positive level of digital-nomad-oriented management practices. Psychological empowerment was also rated positively (M = 4.826, SD = 0.834), while work-life balance showed a moderately positive level (M = 4.522, SD = 0.983). Employee engagement was comparatively lower (M = 3.546, SD = 0.817), indicating that energetic work investment cannot be assumed even when supportive management practices are present. Perceived organizational performance was rated positively overall (M = 4.953, SD = 1.129).

Table 4. Descriptive statistics, reliability, and correlations among focal variables (main validation sample).

Construct	M	SD	α	1	2	3	4	5
1.DRISA	4.760	0.450	0.799	—				
2.PE	4.826	0.834	0.860	0.419***	—			
3.WLB	4.522	0.983	0.903	0.377***	0.066	—		
4.EE	3.546	0.817	0.862	0.434***	0.510***	0.438***	—	
5.POP	4.953	1.129	0.937	0.481***	0.309***	0.139**	0.290***	—

Note. α = Cronbach's alpha. Correlations are Pearson coefficients. *** $p < 0.001$; ** $p < 0.01$. DRISA = digital-nomad-oriented management practices; PE = psychological empowerment; WLB = work-life balance; EE = employee engagement; POP = perceived organizational performance.

Figure 2 provides a descriptive visualization of regional DRISA profiles across the five dimensions in the main validation sample. This figure is not intended as a formal test of cross-regional differences. Rather, it offers contextual information showing how the five DRISA dimensions appear across China, the United States, and Europe. Descriptively, the profile suggests that the DRISA system is not driven by a single uniform practice; instead, different regions show somewhat different relative strengths across Digital Integration, Remote Collaboration, Individual Autonomy, Spatial Freedom, and Agile Management. This descriptive pattern supports the treatment of DRISA as a multidimensional composite capability system and justifies the inclusion of region as a control variable in the subsequent regression and indirect-association analyses.

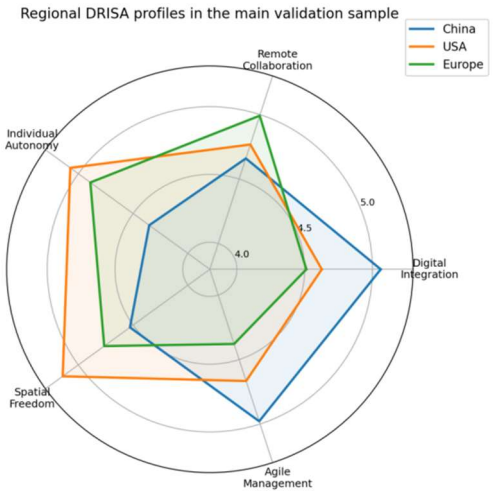

Figure 2. Regional DRISA profiles in the main validation sample.

Note. The figure visualizes dimension-level mean scores by region for descriptive purposes only; no formal cross-regional significance test is implied.

The zero-order correlations are consistent with the theoretical model. DRISA was positively associated with psychological empowerment ($r = 0.419$, $p < 0.001$), work-life balance ($r = 0.377$, $p < 0.001$), employee engagement ($r = 0.434$, $p < 0.001$), and perceived organizational performance ($r = 0.481$, $p < 0.001$). Psychological empowerment ($r = 0.510$, $p < 0.001$) and work-life balance ($r = 0.438$, $p < 0.001$) were also positively associated with employee engagement, while employee engagement

was positively associated with perceived organizational performance ($r = 0.290$, $p < 0.001$). These zero-order relationships provide initial, theory-consistent support for the proposed alignment of variables, although they do not establish causal or temporal order.

4.2. Measurement model validation and common method bias diagnostics

To evaluate construct distinctiveness and test for common method contamination, a series of confirmatory factor analyses was performed. As summarized in **Table 5**, the single-factor model, in which all 40 measurement items were forced to load on one common latent variable, exhibited poor fit ($\chi^2/df = 4.25$, CFI = 0.582, TLI = 0.560, RMSEA = 0.124, SRMR = 0.118). In contrast, the proposed multi-factor measurement model separating DRISA, psychological empowerment, work-life balance, employee engagement, and perceived organizational performance demonstrated good fit ($\chi^2/df = 1.57$, CFI = 0.941, TLI = 0.936, RMSEA = 0.046, SRMR = 0.051).

Harman's single-factor test showed that the first unrotated factor accounted for 26.42 % of the total variance, below the conventional 50 % threshold. Finally, adding an unmeasured common latent factor produced no substantive change in the structural paths; all absolute standardized coefficient adjustments were smaller than 0.04. These diagnostics cannot completely eliminate common method concerns because the study remains self-reported and cross-sectional, but they suggest that the observed associations are unlikely to be fully driven by common method variance.

Table 5. Measurement model fit and common method bias diagnostics.

Model specification	χ^2	*df*	χ^2/df	CFI	TLI	RMSEA	SRMR	Interpretation
One-factor CFA model	3145.62	740	4.25	0.582	0.560	0.124	0.118	Extremely poor fit
Proposed measurement model	1128.40	720	1.57	0.941	0.936	0.046	0.051	Good fit
Common latent factor model	1082.15	680	1.59	0.948	0.940	0.044	0.049	No substantive change

Note. N = 372. The proposed multi-factor model fits the data substantially better than the one-factor model. In the common latent factor model, changes in substantive standardized coefficients were all below .04.

4.3. Direct association paths

Before analyzing serial indirect associations, **Table 6** presents controlled OLS robust regressions used to evaluate the direct structural links in the conceptual network. All models were adjusted for region, gender, age, education, company size, work arrangement, and role.

DRISA was positively linked to psychological empowerment (β = .408, robust SE = 0.047, $p < 0.001$) and work-life balance ($\beta = 0.371$, robust SE = 0.041, $p < 0.001$). Notably, although the standardized focal coefficients for DRISA are comparable across these two paths, the work-life balance model explains a substantially higher proportion of total variance (R2 = 0.499) than the psychological empowerment model (R2 = 0.214). This difference indicates that the demographic and organizational control variables (such as age, gender, and work arrangement) naturally account for a large share of the baseline variance in personal work-life compatibility. Furthermore, psychological empowerment ($\beta = 0.477$, $p < 0.001$) and work-life balance ($\beta = 0.403$, $p < 0.001$) were both positively linked to employee engagement. Finally, employee

engagement was positively associated with perceived organizational performance ($\beta = 0.284$, $p < 0.001$). These results support Hypotheses 1–5 as direct associations within the proposed model.

Table 6. Direct association paths from controlled robust regressions (main validation sample).

Structural path linkage	β	Robust SE	p	Model R^2
DRISA → Psychological empowerment (PE)	0.408	0.047	< 0.001	0.214
DRISA → Work-life balance (WLB)	0.371	0.041	< 0.001	0.499
Psychological empowerment → Employee engagement (EE)	0.477	0.041	< 0.001	0.443
Work-life balance → Employee engagement (EE)	0.403	0.054	< 0.001	0.443
Employee engagement → Perceived Organizational performance (POP)	0.284	0.053	< 00.001	0.157

Note. Standardized OLS coefficients with robust HC3 standard errors. Controls included region, gender, age, education, company size, work arrangement, and role.

4.4. Total, direct, and bootstrapped indirect associations

To test the serial indirect association model, a nonparametric bootstrapping procedure with 5000 resamples was applied. **Table 7** reports the total association, residual direct association, total indirect association, and specific indirect association estimates with bias-corrected and accelerated confidence intervals.

Table 7. Total, direct, and bootstrapped specific indirect association estimates.

Association pathway component	Standardized estimate (β)	Boot SE	95 % BCa CI	Empirical result
Total association: DRISA → POP	0.48	0.05	[0.38, 0.58]	Significant
Direct association: DRISA → POP	0.10	0.04	[0.01, 0.19]	Significant but reduced
Total indirect association	0.38	0.05	[0.29, 0.47]	Significant (VAF = 79.1 %)
Specific path 1: DRISA → PE → EE → POP	0.22	0.04	[0.15, 0.30]	Significant; primary upstream route
Specific path 2: DRISA→WLB→EE → POP	0.15	0.04	[0.08, 0.24]	Significant; supplementary route
Specific path 3: DRISA → EE → POP	0.01	0.02	[-0.03, 0.05]	Non-significant

Note. N = 372.Bootstrap resamples = 5000. VAF = variance accounted for. BCa CI = bias-corrected and accelerated confidence interval. CI excluding zero indicates statistical significance.

As shown in **Table 7**, the total controlled association between DRISA and perceived organizational performance was positive and statistically significant ($\beta = 0.48$, 95 % BCa CI [0.38, 0.58]). After psychological empowerment, work-life balance, and employee engagement were included in the model, the residual direct association between DRISA and perceived organizational performance was substantially reduced but remained slightly significant ($\beta = 0.10$, 95 % BCa CI [0.01, 0.19]). The total indirect association was substantial and significant ($\beta = 0.38$, 95 % BCa CI [0.29, 0.47]), accounting for 79.1 % of the total association. This pattern indicates that the association between DRISA and perceived organizational performance is predominantly indirect.

Figure 3 visualizes the three specific bootstrapped indirect association pathways and their 95 % BCa confidence intervals. The specific serial pathway through psychological empowerment and employee engagement was the strongest route (DRISA → PE → EE → POP: $\beta = 0.22$, 95 % BCa CI [0.15, 0.30]). The pathway

through work-life balance and employee engagement was also significant but comparatively smaller (DRISA → WLB → EE → POP: $\beta = 0.15$, 95 % BCa CI [0.08, 0.24]). By contrast, the direct engagement-only route was not statistically significant (DRISA → EE → POP: $\beta = 0.01$, 95 % BCa CI [-0.03, 0.05]). These results support Hypotheses 6a and 6b as structured indirect associations, with psychological empowerment serving as the stronger upstream pathway.

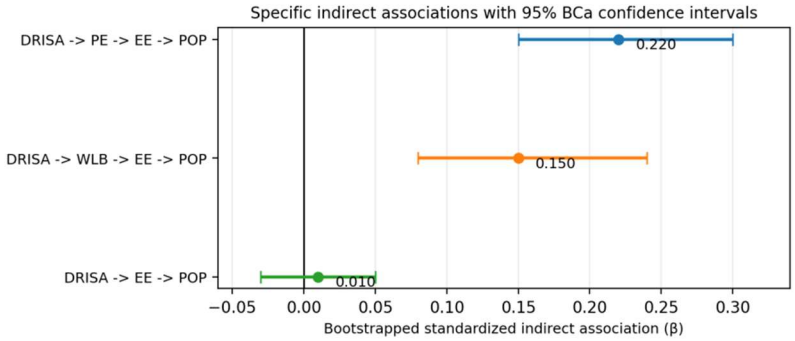

Figure 3. Comparison of bootstrapped indirect associations with 95 % BCa confidence intervals.

Note. PE = psychological empowerment; WLB = work-life balance; EE = employee engagement; POP = perceived organizational performance. BCa CI = bias-corrected and accelerated confidence interval. Confidence intervals excluding zero indicate statistically significant indirect associations.

4.5. Subsample robustness check excluding on-site respondents

To address the concern that retaining traditional office-bound employees might blur the interpretation of digital-nomad-oriented systems, a robustness check was conducted. All 96 on-site employees were omitted from the dataset, and the controlled regression models were re-estimated exclusively on the remote and hybrid knowledge-worker subsample ($N = 276$).

As shown in **Table 8**, the standardized path coefficients remained stable within the flexible-work subsample. The association between DRISA and psychological empowerment shifted marginally from $\beta = 0.408$ to $\beta = 0.421$ ($p < 0.001$), while the downstream link from employee engagement to perceived organizational performance changed from $\beta = 0.284$ to $\beta = 0.301$ ($p < 0.001$). This consistency suggests that the focal empirical pattern is not an artifact of including on-site respondents and is sustained among workers engaged in location-flexible, digitally mediated labour.

Table 8. Robustness check comparing full sample versus remote/hybrid subsample.

Structural path linkage	Full sample β ($N = 372$)	Remote + Hybrid β ($N = 276$)	Subsample p-value
DRISA → Psychological empowerment	0.408	0.421	< 0.001
DRISA → Work-life balance	0.371	0.389	< 0.001
Psychological empowerment → Employee engagement	0.477	0.462	< 0.001
Work-life balance → Employee engagement	0.403	0.386	< 0.001
Employee engagement → Perceived organizational performance	0.284	0.301	< 0.001

Note. Full sample $N = 372$; remote + hybrid subsample $N = 276$, comprising 96 fully remote and 180 hybrid workers.

4.6. Summary of findings

Overall, the results support the proposed association model. DRISA is positively related to psychological empowerment and work-life balance; both states are positively related to employee engagement; and engagement is positively related to perceived organizational performance. The bootstrapped indirect estimates indicate that most of the DRISA-POP association is indirect, with the empowerment-engagement pathway stronger than the work-life balance-engagement pathway. At the same time, these results remain cross-sectional and should be understood as evidence consistent with the theory-guided model rather than proof of causal ordering.

The R^2 values also call for a calibrated interpretation. DRISA explains a meaningful but incomplete share of variance in the focal psychological and performance-related variables. Perceived organizational performance is shaped by many factors beyond digital-nomad-oriented management, including market conditions, leadership quality, firm strategy, reward systems, employee capabilities, workload, and technological maturity. DRISA should therefore be treated as one relevant management capability within a broader performance system rather than as a dominant determinant of organizational outcomes.

5. Discussion

5.1. Theoretical implications

This paper advances digital-nomad and work-from-anywhere research by shifting attention from descriptive accounts of mobility to the management capability system that makes digitally mediated mobility organizationally viable. DRISA is not a single tool, a generic remote-work policy, or an individual preference for flexibility. It is a multidimensional composite socio-technical capability system that combines digital infrastructure, distributed coordination, autonomy governance, location support, and agility.

The findings also refine socio-technical systems theory for contemporary digital work. The technical and organizational architecture of DRISA becomes meaningful only through employees' social and psychological experiences. The results are consistent with the argument that digitally enabled management practices are linked to performance-related perceptions mainly through empowerment, work-life balance, and engagement rather than through a direct technology effect.

The relative strength of the empowerment route is theoretically important. Work-life balance matters, but the stronger path runs through employees' sense of agency, competence, and impact. This suggests that the central challenge of digital-nomad-oriented management is not merely to reduce work-life conflict, but to design systems in which mobile and distributed workers feel trusted, capable, and influential.

5.2. Managerial implications

For managers, the practical implication is that work-from-anywhere policies should be treated as a system-design issue rather than as a benefit or technology purchase. Introducing collaboration tools or remote-work rules is not enough. Managers need to diagnose whether the organization provides integrated digital

infrastructure, explicit asynchronous collaboration routines, meaningful autonomy, fair location-independent access to resources, and rapid feedback loops.

The results suggest that psychological empowerment should be monitored as a leading indicator in digital and mobile work systems. If employees do not feel competent, trusted, and able to influence outcomes, flexibility may not translate into engagement. Similarly, work-life balance should be managed through concrete boundary practices: time-zone-sensitive meeting windows, asynchronous documentation, workload fairness, and explicit norms around after-hours communication.

Table 9 summarizes concrete managerial actions derived from the DRISA framework. The table is intended as a diagnostic guide rather than a one-size-fits-all prescription. Organizations should calibrate the five domains according to task interdependence, security sensitivity, legal environment, and employee subgroup needs.

Table 9. Practical diagnostic actions for digital-nomad-oriented management.

Diagnostic issue	Managerial action	Expected employee experience
Low digital integration	Build interoperable platforms, shared dashboards, and a single source of truth	Higher competence and lower coordination friction
Weak remote collaboration	Create asynchronous norms, documentation rules, and time-zone-sensitive meeting windows	Higher clarity, trust, and lower after-hours pressure
Low individual autonomy	Shift from online presence monitoring to outcome-based evaluation and autonomy-supportive coaching	Higher self-determination and empowerment
Weak spatial freedom	Clarify location-flexibility rules, equal access to resources, and location-neutral mentoring	Higher fairness and reduced mobility penalty
Low agile management	Shorten decision chains, introduce retrospectives, and distribute decision rights	Higher impact and responsiveness
Low engagement despite DRISA	Revisit workload, role clarity, leadership communication, and task meaningfulness	Higher enacted work investment

Note. The actions are diagnostic suggestions derived from the DRISA capability-system logic and the indirect association findings.

5.3. Limitations and future research

Several limitations should be emphasized. First, the quantitative dataset is cross-sectional. Although the theory justifies the proposed ordering and the bootstrap evidence is consistent with the serial indirect model, the data cannot establish temporal order or causality. Alternative explanations remain possible. Future research should use longitudinal, time-lagged, experimental, or quasi-experimental designs.

Second, all focal variables were self-reported, including perceived organizational performance. Employees may not have complete information about objective competitive performance, and their evaluations may partly reflect the same psychological orientation that shapes empowerment and engagement. Future studies should replicate or challenge the model using objective archival financial metrics, supervisor-rated performance, team-level operational output logs, or multi-source data.

Third, the sample is a purposive cross-regional knowledge-worker sample and should not be treated as nationally representative evidence for all digital nomads. Although the robustness check excluding on-site respondents strengthens confidence

in the flexible-work interpretation, future research should examine purer digital-nomad samples, industry-specific samples, and more heavily regulated or lower-infrastructure contexts. Future work should also examine when empowerment versus balance becomes more salient, how AI maturity conditions the DRISA pattern, and whether different categories of mobile knowledge work generate different process patterns.

6. Conclusion

The digital economy has made mobility, flexibility, and digital coordination central to contemporary organizing, but management theory still needs sharper explanations of how those conditions are linked to performance-related perceptions. This study addressed that need by examining DRISA as a multidimensional composite socio-technical capability system for digital-nomad-oriented management.

Across the cross-regional evidence reported here, DRISA was associated with perceived organizational performance mainly through an indirect employee-activation pattern: it was positively related to psychological empowerment and work-life balance, these states were related to employee engagement, and engagement was associated with perceived organizational performance. The empowerment pathway was stronger than the balance pathway. The core conclusion is that digital management does not become valuable simply because tools or flexibility are present. It becomes meaningful when those practices support empowered, balanced, and engaged employees.

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