Performance in Virtual and Hybrid Teams: A Systematic Review using the

Job Demands-Resources Model

Cass Coulston[1], Sukhi Shergill[1,2], Dr Myanna Duncan[1], Dr Ricardo Twumasi[1]

[1]King's College, London. Institute of Psychiatry, Psychology and Neuroscience, London SE5

8AF, United Kingdom

[2]Kent and Medway Medical School, Canterbury, UK

Author Note

Correspondence concerning this article should be addressed to:

Cass Coulston, cass.coulston@kcl.ac.uk

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Abstract

Purpose

This systematic review examines psychological, social, and environmental factors shaping performance in virtual and hybrid teams. Framed through the Job Demands-Resources (JD-R) model, the review identifies which demands hinder and which resources enhance team performance, clarifying how these elements interact in distributed work contexts.

Design and methodology

A systematic search of APA PsycInfo, Scopus, PubMed and YourJournals@Ovid, identified forty-nine peer-reviewed empirical studies published between 2011 and early 2025. Following PRISMA guidelines, studies were coded according to the JD-R framework, categorising team-level constructs as demands, resources, or mediators/moderators across psychological, social, and environmental domains.

Findings

The most frequently studied factors were social resources, particularly communication quality, knowledge sharing, and trust, which accounted for over a third of studies, and were consistently linked to stronger performance. Psychological resources, including team emotional intelligence, were also associated with performance, though no single factor dominated. Demands including coordination strain, conflict, and digital overload were examined less often but when unsupported, proved detrimental. Evidence showed resources and demands rarely operate in isolation: resources can buffer strain, yet when eroded, they amplify risks. Recent studies reflect post-pandemic complexity, emphasizing hybrid inequities, digital fatigue, and the compensatory role of adaptive, context-sensitive leadership.

Originality

This review extends the JD-R model at the team level, integrating fragmented findings and highlighting how resources and demands function systemically across psychological, social, and environmental domains. It advances theory by positioning performance as dependent on the ongoing recalibration of demands and resources, while offering practical insights for designing high-performing virtual and hybrid teams.

Keywords:

Virtual teams; hybrid teams; performance; job demands resources; systematic review

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Introduction

The prevalence of virtual and hybrid teams has expanded dramatically over the past decade, driven by globalization, technological advances, and shifting workforce expectations (Raghuram et al., 2019, Zhang and Chen, 2022). The COVID-19 pandemic intensified this trend, accelerating adoption of digitally enabled team structures and embedding flexible collaboration models into organizational routines (Urien et al., 2021). Recent surveys suggest that hybrid arrangements are now a defining feature of modern work. For example, the Chartered Institute of Personnel Development (CIPD, 2022) reported that 57% of organizations have formalized remote or hybrid policies, reflecting both employee expectations and organizational imperatives for agility. These developments have positioned virtual and hybrid teams not as experimental arrangements, but as enduring pillars of organizational design.

The rise of such teams presents both opportunities and challenges. On the one hand, they can enable access to global talent, enhance flexibility, and facilitate innovation by integrating diverse perspectives across boundaries. Teams can benefit from resources such as interpersonal trust, cultural intelligence, shared leadership, and technology norms, all of which help to counterbalance the risks of dispersion and fragmentation (Balbinot et al., 2024, Muller and Antoni, 2019, Zhang, 2022, Castellano et al., 2021). On the other hand, their dispersed and technologically mediated nature introduces unique demands, including coordination complexity, reduced informal communication, and heightened risks of overload and disengagement (Hill and Bartol, 2016, Presbitero, 2020). Teams must manage persistent

connectivity, potential cultural misalignment, and reliance on digital platforms, which can strain collaboration and undermine performance (Garro Abarca et al., 2020, Garro-Abarca et al., 2021, Banerjee and Gupta, 2024). Managing this balance between enabling resources and constraining demands is central to understanding virtual and hybrid team effectiveness. Ensuring high levels of team performance, spanning effectiveness, innovation, and sustained productivity, remains a central priority for organizations leveraging these work models (Puranova and Kenda, 2018, Purvanova and Kenda, 2022, Balbinot et al., 2024).

Prior reviews have provided valuable but only partial insights into addressing this priority. For example, Breuer et al. (2016) and De Jong et al. (2016) offered meta-analytic evidence on the positive role of trust in team performance, moderated by task interdependence and team composition. Brown et al. (2021) highlighted the importance of relationship-oriented leadership in virtual contexts. Other researchers have focused on specific factors, such as knowledge sharing (Mesmer-Magnus et al., 2011), collaboration practices and technology fit (Shah-Nelson et al., 2020), or bibliometric mapping of virtual team research trends (Garro Abarca et al., 2020). Descriptive syntheses, such as Clark et al. (2019), have mapped broad performance factors but lacked an integrative framework to explain how multiple factors co-occur and interact. Collectively, these contributions underline the need for a synthesis that accounts for the dynamic interplay of demands and resources shaping performance in virtual and hybrid contexts.

To address these gaps, the Job Demands–Resources (JD-R) model (Bakker and Demerouti, 2007, Demerouti and Bakker, 2022) offers a strong theoretical basis for such integration. Originally developed to explain individual-level outcomes such as burnout and engagement, the model distinguishes between job demands; those aspects of work requiring sustained effort that may deplete energy and impair functioning, and job resources, which facilitate goal attainment and buffer against strain (Bakker et al., 2008). The model's

conceptual flexibility makes it particularly effective for capturing performance dynamics across diverse work contexts, and theoretical refinements emphasize its adaptability across multiple levels of analysis (Bakker and Demerouti, 2017).

Compared to more traditional frameworks, such as McGrath's (1964) Input–Process–Outcome (IPO) model (Wang, 2018) or general team effectiveness models (Mathieu et al., 2019), the JD-R provides a dynamic, non-linear lens. IPO-based approaches remain valuable for mapping inputs and outcomes (Ilgen et al., 2005, Mathieu et al., 2019), but they do not explicitly theorize how demands and resources accumulate, interact, and buffer each other in complex contexts. The JD-R model, by contrast, captures how shared resources, such as trust, leadership, and technological infrastructure, can mitigate the effects of high demands, enabling a more nuanced account of team functioning. Recent work further supports its application at the team level, showing how interdependence, distributed authority, and cross-boundary coordination introduce emergent dynamics that extend beyond individual experiences (Bakker et al., 2023, Urien et al., 2021). By adopting this perspective, the current review synthesizes fragmented findings and provides a theoretically grounded explanation of how psychological, social, and environmental factors jointly shape virtual and hybrid team performance.

Conceptualizing Virtual and Hybrid Teams

Definitions of virtual and hybrid teams vary across the literature. Virtual teams are typically defined as groups of geographically or organizationally dispersed employees collaborating primarily through electronic communication, with limited or no face-to-face interaction (Gilson et al., 2021, Dulebohn and Hoch, 2017). Hybrid teams, in contrast, combine in-person and digital interaction, with members working across multiple modes of collaboration (Klonek and Parker, 2021). Recent reviews emphasize that both are best conceptualized along a continuum of 'virtuality,' ranging from fully co-located to fully

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remote, with arrangements that may shift dynamically over time (Handke and Wesche, 2024, Bell et al., 2023).

The studies included in this review reflect this variability. The majority (59%) referred to 'virtual teams,' while 14% referred to 'global virtual teams' and a smaller proportion employed descriptors such as 'global virtual team,' 'distributed team,' or 'hybrid team.' This terminological diversity underlines the need for a flexible, inclusive framework. Grounding the synthesis in a continuum-based perspective enables findings to be applied across diverse team configurations and avoids artificial distinctions that fail to capture the fluidity of contemporary practice (Handke et al., 2024).

Defining Performance Outcomes

Performance in virtual and hybrid teams is inherently multidimensional and lacks a single universally accepted definition (Ebrahim, 2009, Marlow et al., 2017). In this review, team performance is conceptualized as encompassing effectiveness, productivity, and innovation, drawing on both objective indicators (e.g., task completion, output quality) and subjective evaluations (e.g., perceived team effectiveness and satisfaction). This approach acknowledges that performance is not only an externally evaluated outcome but also an internally experienced process, shaped by how team members interpret and evaluate their collective functioning.

Purpose

This review synthesizes empirical studies published between 1 January 2011 and 14 January 2025, drawing on four major academic databases: APA PsycInfo, Scopus, PubMed, and YourJournals@Ovid (an index of all journals our university subscribes to). By applying the JD-R model as a guiding theoretical framework, the review responds to the multifaceted complexity of virtual and hybrid teamwork. Specifically, it demonstrates how team

performance is shaped by diverse psychological, social, and environmental factors across varying configurations of virtuality.

Secondly, this review presents a theory-driven, integrative synthesis of empirical evidence using the framework of the Job Demands-Resources (JD-R) model (Bakker et al., 2008). By organizing findings through the JD-R lens, this review deepens theoretical understanding of how psychological, social, and environmental factors jointly influence performance across varying levels of virtuality. It also identifies key mediators and moderators that buffer the effects of job demands or amplify the impact of job resources, offering more nuanced insight into the mechanisms that promote or inhibit team performance.

Thirdly, the review delivers practically relevant guidance for organizations navigating the evolving landscape of post-pandemic and digitally mediated work. By systematically addressing not only one core factor of interest, the synthesis supports the design of adaptive, resilient team structures and resource strategies required to sustain high performance in today's flexible organizational contexts.

Research Question

This review is guided by the following research question:

What are the most salient psychological, social, and environmental factors that positively or negatively influence the performance outcomes of virtual and hybrid teams?

Method

To address this research question, a systematic literature review (SLR) was conducted to synthesize empirical evidence on the job demands and resources influencing team performance in virtual and hybrid work contexts. The review followed a structured and replicable protocol informed by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Page et al., 2021). The protocol was registered in

advance with PROSPERO (International Prospective Register of Systematic Reviews), ensuring transparency and reducing risk of bias.

Design Protocol

A comprehensive search was performed across four major academic databases: PubMed, Scopus, APA PsycInfo and YourJournals@Ovid (an index of all journals subscribed to by our university). The search was restricted to peer-reviewed, English-language empirical studies reporting quantitative data, published between 1 January 2011 and 14 January 2025. This time frame was selected to capture developments across both pre- and post-pandemic periods, reflecting evolving team dynamics.

The following Boolean string was used across all databases:

((remote team OR remote work OR virtual team* OR virtual office* OR virtual work* OR virtual group OR distributed team* OR hybrid team* OR hybrid work*) AND (performance OR productivity OR efficiency OR effectiveness))

Screening and eligibility

Screening was conducted in two stages by two independent reviewers using the Rayyan web-based platform, which facilitated blinded coding, exclusion tagging, and reviewer consensus. In the first stage, titles and abstracts were screened for relevance. In the second stage, full-text articles were reviewed against pre-defined eligibility criteria. Disagreements between reviewers were resolved by consensus discussion. Backward citation tracking of two foundational systematic reviews was also undertaken to capture additional eligible studies. Eligibility was guided by the structured PICOSS framework (Population, Intervention, Comparator, Outcome, Study design, Setting) as summarized in Table I.

Table I. PICOSS framework for eligibility assessment in accordance with Richardson et al. (1995).

Population (s)	Employees aged 18+ in any industry, working in virtual and hybrid teams at least two days per week.
Intervention (s)	Empirical studies analyzing team-level or team-member data on performance.
Comparators	Co-located teams or studies with a relevant quantitative comparator.
Outcomes	Objective or subjective measures of team performance.
Study design	Quantitative, co-hort, case-control, cross-sectional, longitudinal, or mixed methods with a quantitative focus.
Setting	Real-world, team-based organizational contexts.

Inclusion and exclusion criteria

Studies were included if they reported quantitative data on performance outcomes in virtual and hybrid teams, with teams defined as groups of individuals working interdependently toward shared goals in organizational contexts. Eligible studies measured either objective performance indicators, (e.g., productivity, efficiency) or subjective evaluations of performance, (e.g., team effectiveness) as rated by team members or leaders. Both team-level and individual-reported outcomes were included, provided the analysis explicitly focused on team performance.

Studies were excluded if they focused solely on individual-level remote work without a team component, relied on student samples or laboratory simulations, or consisted only of qualitative, conceptual, or non–peer-reviewed sources. This exclusion strategy reflected a deliberate emphasis on methodological rigor and applied relevance. Although these criteria narrowed the scope of eligible studies, they strengthened the overall quality and comparability of the synthesis. The final sample of 49 studies provided a robust evidence base of empirically validated performance drivers in virtual and hybrid teamwork.

Thematic Coding and JD-R Classification

To guide synthesis, all included studies were coded using the Job Demands-Resources (JD-R) model as the overarching framework. While the JD-R typically distinguishes between 'job demands' and 'job resources,' this review adopted a team-level perspective, referring instead to 'team demands' and 'team resources' to capture collective constructs. Team demands were defined as stressors requiring sustained cognitive, emotional, or operational effort that could impair team performance or contribute to strain. Team resources were defined as factors that supported team functioning, mitigated the impact of demands, or promoted motivation, learning, and goal attainment. JD-R classification was applied at the study level, based on the full set of constructs examined in each performance model. Studies

were coded as demand-focused, resource-focused, or mixed (i.e., including both categories). This classification included not only direct predictors but also mediators and moderators where they were integrated into the study.

Each construct was then assigned to one of three conceptual domains: psychological, social, or environmental. Operational definitions were developed by the research team with reference to foundational team science (Mathieu et al., 2008, Mathieu et al., 2017, Bell, 2002) and more recent studies in virtual and hybrid teamwork e.g. Bell et al. (2023), Handke (2024). Constructs were classified as psychological if they reflected team-level or team member cognitive states or emotional responses; as social if they encompassed interpersonal dynamics and group-level interactions such as trust, cohesion, or conflict; and as environmental if they represented structural, technological, or contextual features shaping team operation. Where constructs spanned domains, assignment was based on the dominant relevance determined by reviewer consensus.

All studies were independently coded by two reviewers for both JD-R category (demand, resource, or mixed) and domain (psychological, social, or environmental, or a mixture of factors). Inter-rater reliability was assessed throughout the coding process. Initial agreement between reviewers exceeded 85%, with discrepancies resolved through discussion until full consensus was reached. Full coding details for each study investigated are provided in Appendix 1. Operational definitions that guided domain-level classification are summarized in Table II.

This dual-stage process was followed by a third stage in which constructs within each domain were inductively clustered into distinctive subcategories (e.g., emotional, cognitive, in the psychological domain; leadership, communication in the social domain; temporal and technological in the environmental domain). This three-step approach (JD-R category - domain - subcategory) ensured that the synthesis was both theoretically anchored and

sufficiently granular to capture the diversity of factors examined in virtual and hybrid team settings.

Table II. J D-R Domain Definitions

Domain	Definition
Psychological	Team member or team-level perceptions or experiences related to cognition, motivation, or emotional state.
Social	Interpersonal dynamics and group-level interactions affecting coordination, cohesion, or conflict.
Environmental	Structural, technological, and contextual features that influence how teams operate.

Findings

A systematic search across four academic databases (APA PsycInfo, Scopus, PubMed, and YourJournals@Ovid: an index of all journals subscribed to by university) initially returned 1,706 records. After removing 100 duplicates, 1,606 unique records remained for screening. Title and abstract screening led to the exclusion of 1,318 articles, the majority excluded for one or more of the following reasons: (1) content not relevant to the research question (n = 698); (2) study population not meeting inclusion criteria, such as individual workers or student samples (n = 290); or (3) ineligible design, such as qualitative-only, conceptual or review-based methods (n = 183).

Full texts were retrieved for 288 studies and assessed against the same stringent criteria pertaining to setting, design, and outcome relevance. This process is summarized in

the PRISMA 2020 flow diagram (Page et al., 2021), presented in Figure 1. Backward citation

tracking on two foundational reviews yielded four additional eligible studies. In total, 49

peer-reviewed empirical studies were included in the synthesis. The selectivity of the final

sample reflected the deliberate emphasis on methodological rigor, particularly the focus on

real-world teams and performance outcomes tied to organizational contexts.

Figure 1. PRISMA Steps of the Citation Inclusion Process, adapted from Page et al. (2021).

Research Profile

The 49 studies included in this review spanned diverse disciplines and sectors. The

majority appeared in business journals (73%, n = 36), with additional publications from

human resources (n = 5), technology (n = 5), and psychology (n = 3). Geographically, 39% of

studies focused on international or globally distributed teams. Others were situated in Asia

(22%), multinational corporate contexts (14%), and regions such as North America, Europe,

or the Middle East (12%). Six studies did not clearly report location. In terms of sectoral

representation, one-third (33%) involved teams operating across multiple industries,

including finance, consumer goods, hospitality, and manufacturing. The IT sector (14%),

R&D (14%), and software engineering (10%) were also prominent, with smaller numbers

addressing telecommunications, supply chain, and financial services. Methodologically, most

studies adopted cross-sectional survey designs, although multi-source and multi-level data

were also represented. Team performance was predominantly assessed via subjective ratings

(e.g., perceived effectiveness), with objective outcomes less common. Detailed study and

team characteristics are provided in Appendix 2.

Thematic Synthesis

The thematic synthesis was guided by the Job Demands–Resources (JD-R) model

(Bakker and Demerouti, 2007, Demerouti and Bakker, 2022). Among the 49 studies

reviewed, a clear majority (59% n = 29), focused on job resources such as trust, knowledge

sharing and communication. Only one study examined demands in isolation, while 19 (39%)

investigated both demands and resources This imbalance reflects the field's prevailing

emphasis on enablers rather than constraints. It also shows that while resources are often

assumed to enhance performance, less attention has been given to how rising demands may

undermine outcomes or alter the effectiveness of those same resources.

Mapping the findings within the JD-R framework enabled systematic comparison

across psychological, social, and environmental domains. What emerged was not a simple

catalogue of factors, but a pattern of interdependencies and tensions. Some constructs such as

cultural diversity or technology use, operated as both resources and demands depending on

context. This reinforces that demands and resources are not independent but dynamically

entwined: resources can buffer strain, but when demands are poorly managed, they quickly

erode trust, cohesion, and performance. A summary matrix (Table III) shows how studies

frequently spanned multiple domains, with 59% of studies spanning at least 2 domains

(n=29), illustrating the overlap and mutual influence that characterise virtual and hybrid

teamwork. For detailed definitions and factor classifications by psychological, social and

environmental domain, see Appendix 3.

Table III: Mapping of studies against psychological, social and environmental domains

Authors	Year	Title	Psychological	Social	Environmental
Abousweilem, F.	2024	Driving remote team success through knowledge management practices in the Jordanian high-tech industry		X	X
Al Kaabi, H. M. A. and Sidek, S., & Mosali, N. A.	2022	Mediation Model of Factors Affecting Virtual Team Performance in UAE Organisations		X	
Alsharo, M., Gregg, D., & Ramirez, R.	2017	Virtual team effectiveness: The role of knowledge sharing and trust		X	
Alves, M. P., Dimas, I. D., Lourenço, P. R., Rebelo, T., Peñarroja, V., & Gamero, N.	2022	Can virtuality be protective of team trust? Conflict and effectiveness in hybrid teams		X	X
Balbinot, Z., Farrell, W., Johnson, W. H. A., Pissaris, S., Cohen, E. D., Chun, J., & Taras, V.	2024	Creating enhanced work environments for global virtual teams: Using CQ as the strongest link in the team		X	
Y. Baruch; C. P. Lin.	2012	All for one, one for all: Coopetition and virtual team performance	X	X	
Ben Sedrine, S., Bouderbala, A., & Nasraoui, H.	2021	Leadership style effect on virtual team efficiency: Trust, operational cohesion and media richness roles		X	X

Authors	Year	Title	Psychological	Social	Environmental
Boyraz, M.	2019	Faultlines as the "Earth's crust": The role of team identification, communication climate, and subjective perceptions of subgroups for global team satisfaction and innovation	X	X	
Brahm, T., & Kunze, F.	2012	The role of trust climate in virtual teams	X	X	
Castellano, S., Chandavimol, K., Khelladi, I., & Orhan, M. A.	2021	Impact of self-leadership and shared leadership on the performance of virtual R&D teams	X	X	
Chang, H.H., Hung, C.J., & Hsieh, H.W.	2014	Virtual teams: cultural adaptation, communication quality, and interpersonal trust		X	
Cummings, J.N., & Haas, M.R.	2012	So many teams, so little time: Time allocation matters in geographically dispersed teams			X
Depoo, L., & Hyrslova, J.	2024	The role of employer branding and work-life balance on virtual teams' commitment and performance	X		X
Eisenberg, J., Post, C., & DiTomaso, N.	2019	Team dispersion and performance: The role of team communication and transformational leadership		X	X
El-Kassrawy, Y. A.	2014	The impact of trust on virtual team effectiveness	X	X	

Authors	Year	Title	Psychological	Social	Environmental
Endriulaitienė, A., & Cirtautienė, L.	2021	Team effectiveness in software development: The role of personality and work factors	X		X
Garro-Abarca, V, Palos-Sanchez, P., & Aguayo-Camacho, M.	2021	Virtual teams in times of pandemic: Factors that influence performance		X	
Guedes-Gondim, S. M., Puente-Palacio, K., & Borges-Andrade, J. E.	2011	Performance and learning in virtual work teams: Comparing brazilians and argentineans		X	X
Han, S. J., Kim, M., Beyerlein, M., & DeRosa, D.	2020	Leadership role effectiveness as a mediator of team performance in new product development virtual teams		X	X
Henderson, L. S., Stackman, R. W., & Lindekilde, R.	2016	The centrality of communication norm alignment, role clarity, and trust in global project teams	X	X	
Hill, N. S., & Bartol, K. M.	2016	Empowering leadership and effective collaboration in geographically dispersed teams	X	X	
Hoch, J. E., & Kozlowski, S. W. J.	2014	Leading virtual teams: Hierarchical leadership, structural supports, and shared team leadership		X	X

Authors	Year	Title	Psychological	Social	Environmental
Hung, S. W., Cheng, M. J., Hou, C. E., & Chen, N. R.	2021	Inclusion in global virtual teams: Exploring non-spatial proximity and knowledge sharing on innovation	X	X	
Joe, S. W., Tsai, Y. H., Lin, C. P., & Liu, W. T.	2014	Modeling team performance and its determinants in high-tech industries: Future trends of virtual teaming	X		X
Kashive, N., Khanna, V. T., & Powale, L.	2022	Virtual team performance: E-leadership roles in the era of COVID-19		X	
Kock, N., & Lynn, G. S.	2012	Electronic media variety and virtual team performance: The mediating role of task complexity coping mechanisms	X		
Krumm, S., Terwiel, K., & Hertel, G.	2013	Challenges in norm formation and adherence: The knowledge, skills, and ability requirements of virtual and traditional cross-cultural teams		X	
Lauring, J., Drogendijk, R., & Kubovcikova, A.	2022	The role of context in overcoming distance-related problems in global virtual teams: An organizational discontinuity theory perspective		X	X
Lee, J. Y., Taras, V., Jiménez, A., Choi, B., & Pattnaik, C.	2020	Ambidextrous Knowledge Sharing within R&D Teams and Multinational Enterprise Performance: The Moderating Effects of Cultural Distance in Uncertainty Avoidance		X	

Authors	Year	Title	Psychological	Social	Environmental
Lin, C.P., He, H., Baruch, Y., & Ashforth, B. E.	2017	The effect of team affective tone on team performance: The roles of team identification and team cooperation	X	X	
Lin, C. P., Chiu, C. K., & Liu, N. T.	2019	Developing virtual team performance: an integrated perspective of social exchange and social cognitive theories	X	X	X
Lippert, H., & Dulewicz, V.	2018	A profile of high-performing global virtual teams	X	X	
Lu, L.	2015	Building trust and cohesion in virtual teams: the developmental approach	X	X	
Malhotra, A., & Majchrzak, A.	2014	Enhancing performance of geographically distributed teams through targeted use of information and communication technologies	X	X	
Mangla, N.	2021	Working in a pandemic and post-pandemic period-Cultural intelligence is the key		X	
Maynard, M. T., Mathieu, J. E., Rapp, T. L., & Gilson, L. L.	2012	Something(s) old and something(s) new: Modeling drivers of global virtual team effectiveness		X	
Muethel, M., Gehrlein, S., & Hoegl, M.	2012	Socio-demographic factors and shared leadership behaviors in dispersed teams:		X	

Authors	Year	Title	Psychological	Social	Environmental
		Implications for human resource management			
Muller, R., & Antoni, C. H.	2020	Individual perceptions of shared mental models of information and communication technology (ICT) and virtual team coordination and performance-The moderating role of flexibility in ICT use		X	X
Op 't Roodt, H., Krug, H., & Otto, K.	2021	Subgroup formation in diverse virtual teams: The moderating role of identity leadership		X	
Orhan, M. A., Rijsman, J. B., & van Dijk, G. M.	2016	Invisible, therefore isolated: Comparative effects of team virtuality with task virtuality on workplace isolation and work outcomes	X	X	X
Pangil, F., & Chan, J. M.	2013	The mediating effect of knowledge sharing on the relationship between trust and virtual team effectiveness		X	
Pinjani, P., & Palvia, P.	2013	Trust and knowledge sharing in diverse global virtual teams		X	X
Plotnick, L., Hiltz, S. R., & Privman, R.	2016	Ingroup dynamics and perceived effectiveness of partially distributed teams		X	

Authors	Year	Title	Psychological	Social	Environmental
Prasad, A., DeRosa, D., & Beyerlein, M.	2017	Dispersion beyond miles: configuration and performance in virtual teams		X	X
Presbitero, A.	2020	Task performance in global virtual team: Examining the roles of perceived cultural dissimilarity and cultural intelligence of member and leader		X	
Schepers, J., de Jong, A., de Ruyter, K., & Wetzels, M.	2011	Fields of gold: Perceived efficacy in virtual teams of field service employees	X		
Wei, L. H., Thurasamy, R., & Popa, S.	2018	Managing virtual teams for open innovation in Global Business Services industry	X	X	
Wickramasinghe, V., & Dolamulla, S.	2017	The Effects of HRM Practices on Teamwork and Career Growth in Offshore Outsourcing Firms			X
Wickramasinghe, V., & Nandula, S.	2015	Diversity in team composition, relationship conflict and team leader support on globally distributed virtual software development team performance		X	
Total Studies by Domain			*20*	*42*	*18*
of which					
Studies including 1 Domain			*20*		

Authors	Year	Title	Psychological	Social	Environmental
Studies including 2 Domains			27		
Studies including 3 Domains			2		

Psychological Resources and Demands

Psychological factors play a critical role in shaping virtual and hybrid team performance, yet the literature remains fragmented in its conceptualization. Around one-fifth of studies (n=10) examined emotional and motivational resources, such as team emotional intelligence, identification, commitment, and positive affective tone (Lin et al., 2017, Baruch and Lin, 2012, Castellano et al., 2021, Lippert and Dulewicz, 2018). A similar proportion addressed cognitive and regulatory resources, including efficacy, role clarity, and goal-setting processes, which enhanced coordination and performance under conditions of distance and uncertainty (Joe et al., 2014, Kock and Lynn, 2012, Henderson et al., 2016). Importantly, no single construct dominated the psychological domain. However, these findings highlighted that affective and cognitive resources often functioned in complementary ways: while affective climates sustained energy and cohesion, cognitive clarity anchored structure and direction.

By contrast, only two studies investigated psychological demands directly. The limited evidence that does exist suggests that these demands can disrupt team processes and outcomes. For instance, negative affective tone weakened identification and cooperation, undermining performance (Lin et al., 2017), while informational isolation in dispersed teams reduced satisfaction and effectiveness (Orhan et al., 2016). These findings suggest that psychological demands are underexplored yet consequential, as when resources such as emotional intelligence climate or clarity are absent, uncertainty and isolation can shift into active demands that impair team functioning.

Social Resources and Demands

The social domain was the most frequently examined in the review, with 42 studies (85.7%) addressing at least one relational factor. Across these studies, performance in virtual

and hybrid teams consistently depended on the quality of social processes, though resources were studied more extensively than demands.

Communication and knowledge sharing formed the largest cluster, reported in 20 studies (40.8%). Effectiveness was more often associated with the quality and alignment of exchanges rather than their frequency. Structured updates, assumption checking, and planning routines enhanced coordination and reduced the likelihood of misunderstandings and conflict (Muller and Antoni, 2020, Abousweilem, 2024, Chang et al., 2014, Henderson et al., 2016). Both formal mechanisms, such as transactive memory systems, and informal practices, such as collaborative problem-solving, supported coordination and performance (Maynard et al., 2012, Al Kaabi et al., 2022, Joe et al., 2014). Several studies further identified communication quality and timeliness as mediators, helping to sustain cohesion and psychological safety, while mitigating conflict (Pinjani and Palvia, 2013, Lin et al., 2019, Boyraz, 2019). Relatedly, smaller clusters indicated that collaboration and cohesion practices, expressed through shared activities and coordinated routines, maintained psychological connection and team performance, when in-person interaction was limited (Ben Sedrine et al., 2021, Lu, 2015, Lin et al., 2017).

Trust was examined in 17 studies (34.7%) and consistently emerged as a foundational social resource. Interpersonal, cognitive, institutional, and climate-based trust were all linked to stronger knowledge sharing, satisfaction, and performance (Pangil and Chan, 2014, Lippert and Dulewicz, 2018). While no single form of trust dominated, several studies highlighted its mediating role, with knowledge sharing partially explaining the trust-effectiveness link (Pangil and Chan, 2014). Other studies identified a moderating function: high trust climates reduced conflict risks in diverse teams (Brahm and Kunze, 2012). In hybrid contexts, trust was not always diminished by dispersion; under certain conditions, virtuality preserved trust and mitigated conflict (Alves et al., 2022). Across contexts, intentional trust-building,

through consistent communication, shared expectations, and early responsiveness, was associated with stronger cohesion and collaboration (Brahm and Kunze, 2012, Lu, 2015, Henderson et al., 2016). Conversely, the absence of trust amplified subgroup risks and conflict (Lu, 2015, Pinjani and Palvia, 2013).

Cultural diversity and inclusion were addressed in 15 studies (30.6%). Findings indicated that cultural intelligence (CQ) inclusive norms, and leadership practices that bridged language and perspective gaps supported collaboration and reduced subgroup risks (Presbitero, 2020, Mangla, 2021, Wei et al., 2018). Such practices were associated with less conflict, stronger cohesion, and greater capacity to leverage diversity as an asset. Conversely, unmanaged cultural distance and team faultlines functioned as relational demands, linked to misunderstanding, subgroup formation, and reduced cohesion (Krumm et al., 2013). In some cases, leadership and trust processes interacted with cultural dynamics, shaping whether diversity was experienced as a resource or a liability (Lippert and Dulewicz, 2018).

Leadership was examined in 10 studies (20.4%), primarily as a resource intersecting with other psychological and social factors. Empowering, adaptive, and shared leadership styles were consistently associated with trust, role clarity, and psychological safety (Hill and Bartol, 2016, Castellano et al., 2021, Muethel et al., 2012, Ben Sedrine et al., 2021). Shared and identity leadership proved particularly effective in diverse or complex environments (Wei et al., 2018, Op't Roodt et al., 2021). Evidence also suggested that while traditional vertical leadership provided coordination, shared leadership was more strongly linked with effectiveness as team virtuality increased (Hoch and Kozlowski, 2014).

Finally, a smaller subset of studies (14.3%, n = 7) examined explicit social demands, including relationship conflict, team politics, and subgroup formation. Although less frequently studied than relational resources, these factors were consistently associated with reduced performance, satisfaction, and stability (Boyraz, 2019, Plotnick et al., 2016,

Presbitero, 2020). While most studies did not model interactions explicitly, their negative effects were often associated with the absence of social resources such as trust, cohesion, or shared leadership. In diverse or geographically dispersed contexts, unmanaged subgrouping and conflict further undermined knowledge sharing and weakened psychological safety, underlining how relational demands emerge when social resources are insufficient.

Environmental Resources and Demands

Environmental factors were reported in 36.7% of studies (n=18).The most prominent cluster concerned dispersion and temporal structures. Studies showed that dispersion was multi-dimensional, spanning geography, time zones, and subgroup configuration, and that higher dispersion heightened coordination complexity, isolation, and risks of knowledge silos (Orhan et al., 2016, Prasad et al., 2017). Asynchronous work patterns and time zone gaps further reduced clarity around task timelines and accountability (Endriulaitienė and Cirtautienė, 2021).

Stabilizing resources included shared routines, structured feedback loops, and temporal practices, which helped distributed teams coordinate effectively and sustain performance (Cummings and Haas, 2012, Lauring et al., 2022). Purposeful synchronous interaction or periodic co-location also mitigated dispersion effects by reinforcing trust and cohesion. Overall, environmental conditions were examined less often than psychological or social processes, yet when studied, they emerged as critical enablers or constraints. Misaligned temporal, technological, or organizational supports reliably increased coordination strain and well-being risks, whereas well-designed structures and time practices enabled resilience and sustained performance.

Discussion

This systematic review synthesized findings from forty-nine empirical studies published between January 2011 and January 2025, offering a theoretically grounded analysis

of the psychological, social, and environmental factors shaping performance in virtual and hybrid teams. It extends understanding beyond previous reviews by applying the JD-R model at the team level and systematically integrating factors often examined in isolation. By explicitly mapping resources and demands across psychological, social, and environmental domains, the review underlines that sustainable performance rests not on the presence of resources alone but on their balance with demands. This aligns with the JD-R principle that strain arises from imbalance (Bakker and Demerouti, 2017). Conservation of Resources theory (Hobfoll et al., 2018) provides a complementary lens, suggesting that performance and resilience are sustained when resources cluster into mutually reinforcing 'caravans.' Together, these perspectives position performance as the product of deliberate team design, where resources are cultivated, and demands are anticipated and buffered, in ways that fit the ecology of each team.

Across the literature, high-performing teams were frequently supported by interrelated resources spanning psychological, social, and environmental domains. The social resources of trust, communication quality, knowledge sharing, and inclusive practices were most consistently reported, underpinning effectiveness, cohesion, and innovation (Abousweilem, 2024, Alsharo et al., 2017, Henderson et al., 2016). Importantly, effectiveness was linked more to the quality, alignment and responsiveness of communication, than to its frequency. These resources buffered subgroup risks and moderated cultural and geographic diversity (Kashive et al., 2022, Lauring et al., 2022).

Psychological resources such as team efficacy, emotional intelligence, identification, role clarity, and goal setting were associated with performance and engagement (Henderson et al., 2016, Joe et al., 2014, Lin et al., 2017, Schepers et al., 2011). Their significance lies less in isolated effects and more in how they collectively buffer distance and uncertainty, enabling teams to sustain momentum when structural supports are limited. Conversely,

psychological demands, including negative affective tone and isolation, undermined

performance (Lin et al., 2017, Orhan et al., 2016). Yet no single construct dominated across

studies. This fragmentation suggests that future research should move beyond isolated

variables toward integrative models clarifying how affective and cognitive factors combine to

sustain distributed functioning.

Notably, the cross-sectional designs of most studies mean that little is known about

how these processes evolve over time; for instance, whether initial trust and identification can

be maintained under prolonged dispersion, or whether digital fatigue accumulates as a strain.

This limits explanatory power and highlights the need for longitudinal, multi-level and

interactionally focused research to deepen understanding of how resources and demands

shape team resilience and performance over time.

Leadership was predominantly framed as a resource. Empowering, adaptive, and

shared leadership approaches were linked to trust, role clarity, and psychological safety (Ben

Sedrine et al., 2021, Muethel et al., 2012, Hoch and Kozlowski, 2014, Hill and Bartol, 2016).

Shared and distributed forms appeared particularly beneficial in diverse or complex contexts

(Wei et al., 2018) and reveal an evolving conceptualisation of leadership as a situational and

embedded resource. This reflected a growing maturity in how influence and authority were

optimised in virtual and hybrid teams. However, evidence was limited on when leadership

itself becomes a strain, and findings did not establish whether centralised or fragmented

approaches consistently function as demands. This indicates that leadership remains under-

examined as a potential dual factor, both enabling and constraining, in virtual and hybrid

contexts.

Environmental factors, though examined less often, were consistently consequential.

Reliable Information and Communication Technology (ICT), structured feedback loops, and

shared routines reinforced coordination and buffered dispersion (Malhotra and Majchrzak,

2014, Pinjani and Palvia, 2013, Alves et al., 2022). The key insight is that these conditions often remain invisible until they fail: when temporal alignment, technology, or organizational supports broke down, teams faced coordination strain, stress, and overload (Prasad et al., 2017). Despite their foundational role, environmental conditions remain underexplored, leaving gaps in understanding how digital infrastructure, temporal design, and co-location opportunities interact with resilience and performance.

A distinctive strength of this review was its temporal scope, capturing pre- and post-pandemic developments in virtual and hybrid arrangements. Earlier studies consistently identified trust, cultural intelligence, knowledge sharing, and communication clarity as foundational enablers across technologies and team structures, and their importance has remained enduring over time. More recent work, however, revealed additional complexity introduced by hybridization and digital intensity, highlighting novel resources (such as inclusive team rituals and deliberate bridging practices) and emerging demands (including digital overload, inequities between co-located and remote members, and subgroup tensions). Rather than a neutral backdrop, virtuality itself was shown to both generate and alleviate strain depending on how work was structured and supported (Alves et al., 2022, Müller and Antoni, 2020). In this perspective, digital infrastructure and ICT norms were not peripheral variables but co-determinants of team functioning. This systems orientation was echoed in work on adaptive leadership, digital knowledge-sharing systems and cohesion- and balance-enabling routines (Abousweilem, 2024, Depoo and Hyrslova, 2024, Ben Sedrine et al., 2021), all of which illustrated how environmental design actively shaped the space in which psychological and social processes could thrive.

The review therefore suggests that teams should not be seen as simply 'virtual' or 'non-virtual,' but as occupying shifting positions along a continuum of virtuality, with corresponding variations in the resources and demands most salient to performance. This

review points to a future research agenda that examines how resource–demand bundles evolve dynamically and how interventions can deliberately foster resource caravans in teams. For practitioners, the findings highlight the importance of team-level design: co-creating structures and practices with teams, tailoring them to context-specific challenges, and cultivating bundles of resources that buffer demands and enable sustained performance across psychological, social and environmental domains. Optimization in virtual and hybrid teams cannot be achieved through one-size-fits-all prescriptions, but requires adaptive, systemic design attentive to the distinctive ecology of different team contexts.

Practical Implications

This review provides actionable guidance for leaders, HR practitioners, and organizational designers navigating the evolving challenges of virtual and hybrid teams. Across the 49 studies synthesised, one clear theme emerged: high performing virtual and hybrid teams are not solely the product of technological access, but of intentional psychological, social and environmentally-sensitive design, where resources reinforce one another and demands are deliberately managed. In practice, this requires shifting from ad hoc adjustments to deliberate team design.

In the psychological domain, teams performed when climates of emotional intelligence, constructive affective tone, and shared cognition were cultivated rather than assumed. These resources buffered uncertainty and sustained engagement. In practice, this can be supported through team rituals, such as check-ins to surface energy, periodic goal re-contracting, or reflective pauses to align on tone and learning.

In the social domain, trust, inclusion, and participatory, adaptive leadership consistently underpinned performance. Resources such as trust, team identification and cultural intelligence (Boyraz, 2019, Lauring et al., 2022) were vital in mitigating coordination and cohesion challenges, especially across time zones and cultural boundaries. Evidence

points to the importance of building these relational resources early, through clear

onboarding, shared purpose development, and inclusive team norms. In practice, relational

design can be reinforced through mechanisms such as rotating voice roles to increase

visibility, buddy systems to support hybrid equity, and structured peer feedback exchanges to

build trust (Presbitero, 2020). These practices help turn inclusion from aspiration into

repeatable routines that sustain collaboration, even when face-to-face contact is limited.

Furthermore, teams with shared leadership structures and clear decision norms were more

effective, while leaders who adapted their style to the communication context and mitigated

inequities between remote and co-located members enhanced cohesion (Terrucha et al., 2024,

Ben Sedrine et al., 2021).This points to the need for leadership development that is

contextually sensitive and future-fit.

    In the environmental domain, technology and workflows functioned as both enablers

and risks. Reliable infrastructure, shared routines, and structured feedback loops supported

performance, while misaligned systems contributed to overload and fragmentation (Prasad et

al., 2017, Malhotra and Majchrzak, 2014). In practice, teams may benefit from a more

human-centred approach to technology, simplifying tool use, creating meeting-free focus

windows, and setting digital switch-off norms to reduce friction and mitigate saturation.

    To support translation into practice, Table IV summarizes key demands, resources,

and intervention suggestions across domains, alongside reflective questions teams can use to

evaluate and redesign their own practices.

Table IV. Evidence-based Practical Implications for Virtual and Hybrid teams

Domain	Demands	Resources	Intervention Suggestions	Reflective Questions
Psychological	Negative affective tone; Informational isolation; Uncertainty	Team efficacy; Emotional intelligence; Shared cognition; Role clarity	Introduce brief 'pulse checks' at meetings Quarterly re-contracting of goals Team reflection routines	How do we check and align our team's climate? When did we last revisit and re-clarify our goals?
Social	Subgrouping; Conflict; Inequity in hybrid settings	Trust; Inclusion; Cohesion; Participatory leadership	Rotate 'voice' roles in meetings Set up buddy systems to connect remote and on-site members. Create structured peer feedback exchanges	What routines ensure all voices are heard? How do we make inclusion visible after membership or context changes?
Environmental	Temporal distance; Digital overload; Fragmented workflows	Reliable ICT systems; Structured feedback loops; Shared routines	Conduct regular technology audits Create meeting-free focus windows Agree team 'switch-off' windows to manage digital intensity	Which tools add value, and which create noise? How do our routines support, not strain, our energy and coordination?

Limitations

While this review provided a theory-informed synthesis of performance-related demands and resources in virtual and hybrid teams, several limitations should be acknowledged. First, despite expanding the search across four major databases and using backward citation chaining, some relevant studies, particularly unpublished or practitioner-oriented work, may have been missed, raising the possibility of publication bias. The choice to include only peer-reviewed empirical studies ensured quality but excluded emerging insights from non-traditional sources.

Secondly, most of the included studies did not measure or report the degree of virtuality, dispersion, or media richness as continuous variables. This limited the ability to assess how contextual factors such as extent of hybridization or temporal distance modulated the effects of demands and resources. As a result, recommendations are grounded in general patterns rather than calibrated comparisons across different levels of virtuality.

Finally, the evidence base was dominated by cross-sectional, self-reported designs, restricting causal inference and increasing the risk of common-method bias. Longitudinal and multi-source designs remain underrepresented in the evidence base, constraining understanding of how demands and resources interact dynamically over time.

Future Research Directions

Building on the synthesis of 49 studies, this review highlights several priority areas for advancing understanding of virtual and hybrid team performance. Firstly, future work should give greater attention to the dynamic interplay between demands and resources. To

date, most studies have focused on resources in isolation, leaving unanswered questions about how they buffer, or fail to buffer, the effects of overload, ambiguity, or conflict over time. Longitudinal and multi-level designs would enable a more explanatory account of when, for example, trust, communication, or leadership sustain performance and when they erode under pressure (Bakker et al., 2023, Hobfoll et al., 2018).

Secondly, conceptual and methodological clarity in defining and measuring virtuality is required. The reviewed studies often relied on inconsistent or binary classifications, limiting comparability. Developing multidimensional measures that capture dispersion, media richness, and technological integration would allow more precise modelling of virtual and hybrid dynamics (Handke et al., 2024). Such clarity would also make it possible to tailor interventions to degrees of virtuality, recognizing that fully virtual teams often depend most heavily on ICT infrastructure, while hybrid teams face additional risks of inequity and subgroup formation if design is neglected (Bloom et al., 2024).

Furthermore, leadership represents a critical priority. Although empowering and shared leadership models were generally linked to stronger outcomes, few studies examined how these approaches operate under varying conditions of dispersion, diversity, or media richness. Future work should explore leadership as an adaptive, embedded process, clarifying how influence shifts within technologically mediated environments (da Silva et al., 2022, Castellano et al., 2021). This would support leadership development that equips managers to recalibrate practices as conditions evolve, rather than rely on fixed style prescriptions.

In addition, technology itself warrants more explicit theorization as both an enabler and a source of strain. While ICTs facilitate connectivity and coordination, they can also create overload, fragmented attention, and stress. Future research should examine this duality, drawing on concepts such as technostress, techno-eustress, and ICT norm alignment (Tarafdar et al., 2019, Banerjee and Gupta, 2024). With the rapid growth of asynchronous

platforms and AI-enabled systems, there is an urgent need to assess how digital ecosystems shape autonomy, cohesion, and sustained performance.

Finally, there is scope to integrate well-being more centrally into performance models. Few studies treated well-being as a primary outcome, yet the risks of burnout, fatigue and disconnection are highly salient in virtual and hybrid contexts. Research that explores how resources protect against these risks, and how dispersed teams can thrive rather than simply function, would support more human-centered and sustainable models of teamwork (Grobelny, 2023, Coulston et al., 2025).

Taken together, these priorities surface the importance of adopting dynamic, context-sensitive approaches that recognize the interdependencies between demands, resources, performance, and well-being. Addressing these gaps would not only strengthen theoretical coherence but also generate actionable insights for organizations seeking to design resilient, adaptive, and high-performing virtual and hybrid teams.

Conclusion

This systematic review provided a theory-informed synthesis of 49 empirical studies published between 01 January 2011 and 14 January 2025. By applying the Job Demands–Resources (JD-R) model at the team level, it extended the framework beyond individual outcomes and offered a novel lens for understanding how psychological, social, and environmental factors jointly shape performance in virtual and hybrid contexts. The findings demonstrate that demands and resources should not be understood in isolation but as dynamically interdependent conditions that influence one another, often amplifying or buffering their effects in ways that determine team effectiveness.

The review highlights that sustainable virtual and hybrid teamwork is not discovered by chance but is built through intentional design and ongoing adaptation. Success depends on continuously aligning psychological climates, social structures, and organizational systems

with evolving demands. This review therefore offers both direction and challenge: for scholars, to advance explanatory models that capture the dynamic interaction of demands and resources in virtual and hybrid teams over time; and for practitioners, to design team systems that are resilient, adaptive, and human-centered.

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Appendix 1: JD-R Classification of Included Studies

Authors	Year	Independent Variable (s)	Domain (s) of Independent Variables (s)	JD-R Classification of study	Mediator(s)	Moderator(s)	Primary outcome(s) investigated
Abousweilem, F.	2024	Remote work setting (+)	Environmental	1. Resource	Knowledge Management practices (+)		Team Performance
Al Kaabi, H. M. A. and Sidek, S. and Mosali, N. A.	2022	Communication competence (+), Cultural Intelligence (+)	Social	1. Resource	Collaboration (+), Knowledge sharing (+)		Team Performance
Alsharo, M., Gregg, D., & Ramirez, R.	2017	Knowledge sharing (+), Trust (+)	Social	1. Resource	Collaboration (+)		Team Effectiveness (Team Performance and Team Member's Satisfaction)
Alves, M. P., Dimas, I. D., Lourenço, P. R., Rebelo, T., Peñarroja, V., & Gamero, N.	2022	Team Conflict (-), Team Trust (+)	Social	3. Resource and Demand		Virtuality (+)	Team Effectiveness (Team Peformance and Team Innovation)
Balbinot, Z., Farrell, W., Johnson, W. H. A., Pissaris, S., Cohen, E. D., Chun, J., & Taras, V.	2024	Maximum Cultural Intelligence (+), Communication frequency (+), Conflict frequency (-)	Social	3. Resource and Demand			Team Satisfaction and Performance
Baruch, Y., & Lin, C. P.	2012	Team politics (-), Social capital (+) (trust, social interaction, shared vision)	Social	3. Resource and Demand	Cooperation (+), Team emotional intelligence (+), Team competence (+)		Team Performance

Appendix 1. JD-R Classification of Included Studies

Authors	Year	Independent Variable (s)	Domain (s) of Independent Variables (s)	JD-R Classification of study	Mediator(s)	Moderator(s)	Primary outcome(s) investigated
Ben Sedrine, S., Bouderbala, A., & Nasraoui, H.	**2021**	Leadership styles (+)	Social	1. Resource	Trust (+) Operational Cohesion (+)	Media Richness (+)	Virtual Team Efficiency (Team Performance and Satisfaction)
Boyraz, M.	**2019**	Team Faultlines (-), Sub groups (-)	Social	3. Resource and Demand		Team Identification (+), Psychological Safe Communication Climate (PSCC) (+)	Team Satisfaction and Innovation
Brahm, T., & Kunze, F.	**2012**	Team goal setting (+)	Psychological	1. Resource	Task cohesion (+)	Trust (+)	Team Performance
Castellano, S., Chandavimol, K., Khelladi, I., & Orhan, M. A.	**2021**	Self-leadership (+), Shared leadership (+)	Psychological, Social	1. Resource	Trust (+) Potency (+), Commitment (+)		Team Performance
Chang, H. H., Hung, C. J., & Hsieh, H. W.	**2014**	Cultural adaptation (+) Interpersonal trust (+), Communication quality (-)	Social	1. Resource			Team Performance
Cummings, J. N., & Haas, M. R.	**2012**	Member time allocation to focal team (+)	Environmental	1. Resource		Geographic dispersion (+)	Team Performance
Depoo, L., & Hyrslova, J.	**2024**	Work-life balance (+), Employer branding (+)	Psychological, Environmental	1. Resource			Team Performance and Commitment

Appendix 1. JD-R Classification of Included Studies

Authors	Year	Independent Variable (s)	Domain (s) of Independent Variables (s)	JD-R Classification of study	Mediator(s)	Moderator(s)	Primary outcome(s) investigated
Eisenberg, J., Post, C., & DiTomaso, N.	2019	Team dispersion (-)	Environmental	3. Resource and Demand	Team Communication (+)	Transformational Leadership (-)	Team Peformance
El-Kassrawy, Y. A.	2014	Trust; cognitive-based trust (+) , institutional-based trust (+) , personality-based trust (+)	Social	1. Resource	Virtual team satisfaction (+)		Team Performance
Endriulaitienė, A., & Cirtautienė, L.	2021	Personality traits (+/-) Work factors (-)	Psychological, Environmental	3. Resource and Demand		Virtualisation level (-)	Team Performance and Satisfaction
Garro-Abarca, V., Palos-Sanchez, P., & Aguayo-Camacho, M.	2021	Trust (+)	Social	1. Resource			Team Performance
Guedes-Gondim, S. M., Puente-Palacio,K., & Borges-Andrade, J. E.	2011	Need for training (+/-), Perceived quality of interactions (+)	Environmental, Social	3. Resource and Demand			Team Performance
Han, S. J., Kim, M., Beyerlein, M., & DeRosa, D.	2020	Number of team training sessions (+/-), Global dispersion (-)	Environmental	3. Resource and Demand	Leadership role effectiveness (+)		Team Performance
Henderson, L. S., Stackman, R. W., & Lindekilde, R.	2016	Communication Norm alignment (+)	Social	1. Resource	Role clarity (+), Trust (+)		Team Performance and Satisfaction
Hill, N. S., & Bartol, K. M.	2016	Virtual team-work situational judgment (+)	Psychological	1. Resource	Collaboration (+)	Empowering team leadership (+)	Team Performance

Appendix 1. JD-R Classification of Included Studies

Authors	Year	Independent Variable (s)	Domain (s) of Independent Variables (s)	JD-R Classification of study	Mediator(s)	Moderator(s)	Primary outcome(s) investigated
Hoch, J. E., & Kozlowski, S. W. J.	2014	Hierarchical leadership (+/-), Shared leadership (+), Structural supports (+)	Social, Environmental	3. Resource and Demand		Team virtuality (+/-)	Team Performance
Hung, S. W., Cheng, M. J., Hou, C. E., & Chen, N. R.	2021	Knowledge contribution (+), Knowledge absorption (+)	Social, Psychological	1. Resource			Innovation
Joe, S. W., Tsai, Y. H., Lin, C. P., & Liu, W. T.	2014	Team efficacy (+), Emotional intelligence climate (+), Procedural justice (+)	Psychological, Environmental	1. Resource	Team planning (+)		Team Performance
Kashive, N., Khanna, V. T., & Powale, L.	2022	Conflict (_), Leadership effectiveness, (+) Trust (+)	Social	1. Resource			Team Performance
Kock, N., & Lynn, G. S.	2012	Task complexity (+)	Psychological	1. Resource			Team Effectiveness
Krumm, S., Terwiel, K., & Hertel, G.	2013	Intercultural competencies (+)	Social	1. Resource			Team Performance
Lauring, J., Drogendijk, R., & Kubovcikova, A.	2022	Time zone adjustment (+),Trust in peers (+)	Environmental, Social	1. Resource		Openness to cultural diversity (+)	Individual Team member Performance
Lee, J. Y., Taras, V., Jiménez, A., Choi, B., & Pattnaik, C.	2020	Explorative and exploitative virtual knowledge sharing (+),	Social	3. Resource and Demand		Cultural distance in uncertainty avoidance (-)	Team Performance

Authors	Year	Independent Variable (s)	Domain (s) of Independent Variables (s)	JD-R Classification of study	Mediator(s)	Moderator(s)	Primary outcome(s) investigated
		Imbalanced ambidexterity in knowledge sharing (-)					
Lin, C.P., He, H., Baruch, Y., & Ashforth, B. E.	**2017**	Team identification (+), Team cooperation (+)	Social	3. Resource and Demand	Positive team affective tone (+), Negative team affective tone (-)		Team Performance
Lin, C. P., Chiu, C. K., & Liu, N. T.	**2019**	Knowledge-orientated leadership (+), IT training fulfilment (+), Transactional fulfilment (+)	Social, Environmental	1. Resource	Collective IT efficacy (+)		Team Performance
Lippert, H., & Dulewicz, V.	**2018**	Commitment (+),Trustworthiness (+),Interpersonal communication characteristics (+),Cross-cultural communication style (+)	Psychological, Social	1. Resource			Team Performance
Lu, L.	**2015**	Psychological similarity (+), Shared social activities (+)	Psychological, Social	1. Resource	Trust (+), Cohesion (+)		Team Performance and Satisfaction
Malhotra, A., & Majchrzak, A.	**2014**	Presence awareness (+), Task knowledge awareness (+)	Psychological, Social	1. Resource			Team Performance

Appendix 1. JD-R Classification of Included Studies

Authors	Year	Independent Variable (s)	Domain (s) of Independent Variables (s)	JD-R Classification of study	Mediator(s)	Moderator(s)	Primary outcome(s) investigated
Mangla, N.	2021	Cultural Intelligence (+)	Social	1. Resource			Team Performance
Maynard, M. T., Mathieu, J. E., Rapp, T. L., & Gilson, L. L.	2012	Preparation activities (+)	Social	3. Resource and Demand	Transactive memory systems (+)	High interdependence (+), Low interdependence (-)	Team Effectiveness
Muethel, M., Gehrlein, S., & Hoegl, M.	2012	Shared leadership (+)	Social	1. Resource		High female-to-male ratio (+), high levels of national diversity (+), high mean age (-)	Team Performance and Satisfaction
Muller, R., & Antoni, C. H.	2020	ICT SMM perceptions (+) (Information and communication technology shared mental models)	Social	1. Resource	Team co-ordination (+)	Flexibility in ICT use (+)	Team Performance
Op 't Roodt, H., Krug, H., & Otto, K.	2021	Perceived diversity (-), Identity Leadership (+)	Social	3. Resource and Demand		Subgroup formation (-), Identity leadership (+)	Team Performance and Satisfaction
Orhan, M. A., Rijsman, J. B., & van Dijk, G. M.	2016	Task virtuality (-), Team virtuality (_)	Environmental	2. Demand	Workplace social isolation (-), Physical Isolation (-), Informational isolation (-)		Team Performance and Satisfaction

Appendix 1. JD-R Classification of Included Studies

Authors	Year	Independent Variable (s)	Domain (s) of Independent Variables (s)	JD-R Classification of study	Mediator(s)	Moderator(s)	Primary outcome(s) investigated
Pangil, F., & Chan, J. M.	2013	Trust (+) ; personal-based trust (+), institutional-based trust (+), cognitive-based trust (+)	Social	1. Resource	Knowledge sharing (+)		Team Effectiveness
Pinjani, P., & Palvia, P.	2013	Deep-level diversity (-), Functional level diversity (_)	Social	3. Resource and Demand	Mutual trust (+), Knowledge sharing (+)	High/low task interdependence (+/-), Collaborative technology (+)	Team Performance and Satisfaction
Plotnick, L., Hiltz, S. R., & Privman, R.	2016	Ingroup dynamics (-)	Social	3. Resource and Demand			Team Effectiveness
Prasad, A., DeRosa, D., & Beyerlein, M.	2017	Spatial and temporal dispersion (_), Configurational dispersion (-)	Environmental	3. Resource and Demand		Effective electronic communication (+)	Team Performance
Presbitero, A.	2020	Cultural intelligence (+), Team member's perceived cultural dissimilarity (-)	Social	3. Resource and Demand		Team leader's cultural intelligence (+), Team member's cultural Intelligence (+)	Task Performance
Schepers, J., de Jong, A., de Ruyter, K., & Wetzels, M.	2011	Perceived virtual team efficacy (+)	Psychological	1. Resource			Team Performance

Appendix 1. JD-R Classification of Included Studies

Authors	Year	Independent Variable (s)	Domain (s) of Independent Variables (s)	JD-R Classification of study	Mediator(s)	Moderator(s)	Primary outcome(s) investigated
Wei, L. H., Thurasamy, R., & Popa, S.	**2018**	Trust (+), Creativity (+)	Social, Psychological	3. Resource and Demand		Team diversity (+/-), Extent of virtuality (_)	Team Performance
Wickramasinghe, V., & Dolamulla, S.	**2017**	Performance management (+), Capability development (+), Human resource management practices (+)	Environmental	1. Resource			Team Effectiveness
Wickramasinghe, V., & Nandula, S.	**2015**	Relationship conflict (-)	Social	3. Resource and Demand		Team leader support (+)	Team Performance

Appendix 2. Study and Participant Characteristics

Authors	Year	Title	Number of participants	Number of teams	Country of participants	Industry of Participants
Abousweilem, F.	2024	Driving remote team success through knowledge management practices in the Jordanian high-tech industry	254	not reported	Jordan	Technology
Al Kaabi, H. M. A., Sidek, S. & Mosali, N. A.	2022	Mediation Model of Factors Affecting Virtual Team Performance in UAE Organisations	318	not reported	UAE, multinational	Mixed
Alsharo, M., Gregg, D., & Ramirez, R.	2017	Virtual team effectiveness: The role of knowledge sharing and trust	193	not reported	USA	Information technology
Alves, M. P., Dimas, I. D., Lourenço, P. R., Rebelo, T., Peñarroja, V., & Gamero, N.	2022	Can virtuality be protective of team trust? Conflict and effectiveness in hybrid teams	487	104	Portugal	Services Sector
Balbinot, Z., Farrell, W., Johnson, W. H. A., Pissaris, S., Cohen, E. D., Chun, J., & Taras, V.	2024	Creating enhanced work environments for global virtual teams: Using CQ as the strongest link in the team	3,385	868	Global	Foreign Markets
Baruch, Y., & Lin, C.P.	2012	All for one, one for all: Coopetition and virtual team performance	759	152	Taiwan	Information technology
Ben Sedrine, S., Bouderbala, A., & Nasraoui, H.	2021	Leadership style effect on virtual team efficiency: Trust, operational cohesion and media richness roles	300	not reported	Middle East and North Africa	Information technology
Boyraz, M.	2019	Faultlines as the "Earth's crust": The role of team identification, communication climate, and subjective perceptions of subgroups for global team satisfaction and innovation	165	27	Bulgaria, US, Japan, Uruguay and UK	Software and Data Management
Brahm, T., & Kunze, F.	2012	The role of trust climate in virtual teams	124	50	Germany	Telecommunications
Castellano, S., Chandavimol, K., Khelladi, I., & Orhan, M. A.	2021	Impact of self-leadership and shared leadership on the performance of virtual R&D teams	154	not reported	USA and Thailand	Research and Development

Appendix 2. Study and Participant Characteristics

Authors	Year	Title	Number of participants	Number of teams	Country of participants	Industry of Participants
Chang, H.H., Hung, C.J., & Hsieh, H.W.	2014	Virtual teams: cultural adaptation, communication quality, and interpersonal trust	150	not reported	Unknown	Unknown
Cummings, J.N., & Haas, M.R.	2012	So many teams, so little time: Time allocation matters in geographically dispersed teams	2055	285	International	Mixed including Engineering, Finance, Accounting, Sales, Marketing within Food Industry
Depoo, L. and Hyrslova, J.	2024	The role of employer branding and work-life balance on virtual teams' commitment and performance	323	not reported	Global	Mixed
Eisenberg, J., Post, C., & DiTomaso, N.	2019	Team dispersion and performance: The role of team communication and transformational leadership	543	53	International	Research and Development
El-Kassrawy, Y. A.	2014	The impact of trust on virtual team effectiveness	107	not reported	International	Banking
Endriulaitienė, A., & Cirtautienė, L.	2021	Team effectiveness in software development: The role of personality and work factors	142	45	Lithuania	Software development
Garro-Abarca, V., Palos-Sanchez, P., & Aguayo-Camacho, M.	2021	Virtual teams in times of pandemic: Factors that influence performance	317	not reported	Costa Rica, Unknown	Software Engineering
Guedes-Gondim, S. M., Puente-Palacio, K., & Borges-Andrade, J. E.	2011	Performance and learning in virtual work teams: Comparing Brazilians and Argentineans	265	not reported	Brazil and Argentina	Mixed
Han, S. J., Kim, M., Beyerlein, M., & DeRosa, D.	2020	Leadership role effectiveness as a mediator of team performance in new product development virtual teams	294	44	International	Mixed

Appendix 2. Study and Participant Characteristics

Authors	Year	Title	Number of participants	Number of teams	Country of participants	Industry of Participants
Henderson, L. S., Stackman, R. W., & Lindekilde, R.	2016	The centrality of communication norm alignment, role clarity, and trust in global project teams	218	33	International	Research and Development
Hill, N. S., & Bartol, K. M.	2016	Empowering leadership and effective collaboration in geographically dispersed teams	193	29	International	Procurement
Hoch, J. E., & Kozlowski, S. W. J.	2014	Leading virtual teams: Hierarchical leadership, structural supports, and shared team leadership	565	101	Global	Research and Development
Hung, S. W., Cheng, M. J., Hou, C. E., & Chen, N. R.	2021	Inclusion in global virtual teams: Exploring non-spatial proximity and knowledge sharing on innovation	143	28	Taiwan & China	Research and Development
Joe, S. W., Tsai, Y. H., Lin, C. P., & Liu, W. T.	2014	Modeling team performance and its determinants in high-tech industries: Future trends of virtual teaming	330	not reported	Taiwan	Technology
Kashive, N., Khanna, V. T., & Powale, L.	2022	Virtual team performance: E-leadership roles in the era of COVID-19	175	not reported	Unknown	Mixed
Kock, N., & Lynn, G. S.	2012	Electronic media variety and virtual team performance: The mediating role of task complexity coping mechanisms	6960	290	USA	Mixed
Krumm, S., Terwiel, K., & Hertel, G.	2013	Challenges in norm formation and adherence: The knowledge, skills, and ability requirements of virtual and traditional cross-cultural teams	171	171	Global	Mixed
Lauring, J., Drogendijk, R., & Kubovcikova, A.	2022	The role of context in overcoming distance-related problems in global virtual teams: An organizational discontinuity theory perspective	194	23	Global	Research and Development

Appendix 2. Study and Participant Characteristics

Authors	Year	Title	Number of participants	Number of teams	Country of participants	Industry of Participants
Lee, J. Y., Taras, V., Jiménez, A., Choi, B., & Pattnaik, C.	2020	Ambidextrous Knowledge Sharing within R&D Teams and Multinational Enterprise Performance: The Moderating Effects of Cultural Distance in Uncertainty Avoidance	not reported	4037	China	Research and Development
Lin, C.P., He, H., Baruch, Y., & Ashforth, B. E.	2017	The effect of team affective tone on team performance: The roles of team identification and team cooperation	680	141	Taiwan	Mixed
Lin, C. P., Chiu, C. K., & Liu, N. T.	2019	Developing virtual team performance: an integrated perspective of social exchange and social cognitive theories	732	366	Taiwan	Information and Communication Technology
Lippert, H., & Dulewicz, V.	2018	A profile of high-performing global virtual teams	262	108	International	Telecommunications
Lu, L.	2015	Building trust and cohesion in virtual teams: the developmental approach	388	not reported	Taiwan	Mixed
Malhotra, A., & Majchrzak, A.	2014	Enhancing performance of geographically distributed teams through targeted use of information and communication technologies	258	54	Unknown	Mixed
Mangla, N.	2021	Working in a pandemic and post-pandemic period-Cultural intelligence is the key	60	8	India	Unknown
Maynard, M. T., Mathieu, J. E., Rapp, T. L., & Gilson, L. L.	2012	Something(s) old and something(s) new: Modeling drivers of global virtual team effectiveness	201	60	Global	Supply Chain
Muethel, M., Gehrlein, S., & Hoegl, M.	2012	Socio-demographic factors and shared leadership behaviors in dispersed teams: Implications for human resource management	433	96	Global	Software

Appendix 2. Study and Participant Characteristics

Authors	Year	Title	Number of participants	Number of teams	Country of participants	Industry of Participants
Muller, R., & Antoni, C. H.	2020	Individual perceptions of shared mental models of information and communication technology (ICT) and virtual team coordination and performance-The moderating role of flexibility in ICT use	141	31	Unknown	Information technology
Op 't Roodt, H., Krug, H., & Otto, K.	2021	Subgroup formation in diverse virtual teams: The moderating role of identity leadership	102	not reported	Global	Mixed
Orhan, M. A., Rijsman, J. B., & van Dijk, G. M.	2016	Invisible, therefore isolated: Comparative effects of team virtuality with task virtuality on workplace isolation and work outcomes	278	not reported	Global	Mixed
Pangil, F., & Chan, J. M.	2013	The mediating effect of knowledge sharing on the relationship between trust and virtual team effectiveness	106	not reported	Malaysia	Information technology
Pinjani, P., & Palvia, P.	2013	Trust and knowledge sharing in diverse global virtual teams	213	58	Global	IT, Manufacturing, Telecommunications, Banking and Finance
Plotnick, L., Hiltz, S. R., & Privman, R.	2016	Ingroup dynamics and perceived effectiveness of partially distributed teams	243	not reported	Unknown	Mixed
Prasad, A., DeRosa, D., & Beyerlein, M.	2017	Dispersion beyond miles: configuration and performance in virtual teams	494	44	Global	Financial services, pharmaceuticals, consumer services, hospitality, manufacturing, insurance, professional services, not for profit, telecommunications.

Appendix 2. Study and Participant Characteristics

Authors	Year	Title	Number of participants	Number of teams	Country of participants	Industry of Participants
Presbitero, A.	2020	Task performance in global virtual team: Examining the roles of perceived cultural dissimilarity and cultural intelligence of member and leader	210	not reported	Global	Information technology
Schepers, J., de Jong, A., de Ruyter, K., & Wetzels, M.	2011	Fields of gold: Perceived efficacy in virtual teams of field service employees	192	28	Unknown	Technology
Wei, L. H., Thurasamy, R., & Popa, S.	2018	Managing virtual teams for open innovation in Global Business Services industry	263	not reported	Malaysia	Global Business Services
Wickramasinghe, V., & Dolamulla, S.	2017	The Effects of HRM Practices on Teamwork and Career Growth in Offshore Outsourcing Firms	170	not reported	Sri Lanka	Offshore outsourcing
Wickramasinghe, V., & Nandula, S.	2015	Diversity in team composition, relationship conflict and team leader support on globally distributed virtual software development team performance	216	not reported	Sri Lanka	Software development

Appendix 3: JD-R Classification of Included Studies

Domain Constructs and Their Role in Studies: Frequencies and Relative Prevalence by Variable

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
Emotional and motivational	Positive team affective tone	1	2.0	Resource	Mediator	Lin et al., 2017
	Team potency	1	2.0	Resource	Mediator	Castellano et al., 2021
	Team emotional intelligence	1	2.0	Resource	Mediator	Baruch & Lin, 2012
	Emotional Intelligence climate				Independent variable	Joe et al., 2014
	Team identification	2	4.0	Resource	Mediator	Boyraz, 2019
					Independent variable	Lin et al., 2017
	Team commitment	2	4.0	Resource	Independent variable, Mediator	Lippert & Dulewicz, 2018; Castellano et al., 2021
	Virtual team satisfaction	1	2.0	Resource	Mediator	El-Kassrawy, 2014
	Presence awareness	1	2.0	Resource	Independent variable	Malhotra & Majchrzak, 2014
	Work-life balance	1	2.0	Resource	Independent variable	Depoo & Hyrslova, 2024
	Psychological similarity	1	2.0	Resource	Independent variable	Lu, 2015
	Negative team affective tone	1	2.0	Demand	Mediator	Lin et al., 2017
Total frequency		**12**				

Appendix 3: JD-R Classification of Included Studies

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
Number of unique studies		**10**	**20.4**			
Cognitive and Regulation	Task complexity	1	2.0	Resource	Independent variable	Kock & Lynn, 2012
	Knowledge absorption	1	2.0	Resource	Independent variable	Hung et al., 2021
	Creativity	1	2.0	Resource	Independent variable	Wei et al., 2018
	Team competence	1	2.0	Resource	Mediator	Baruch & Lin, 2012
	Team efficacy, Perceived virtual team efficacy	2	4.0	Resource	Independent variable	Joe at al., 2014; Schepers et al., 2011
	Virtual team-work situational judgment	1	2.0	Resource	Independent variable	Hill & Bartol, 2016
	Role clarity	1	2.0	Resource	Mediator	Henderson et al., 2016
	Team goal setting	1	2.0	Resource	Independent variable	Brahm & Kunz, 2012
	Collective IT efficacy	1	2.0	Resource	Mediator	Lin et al., 2019
	Informational isolation	1	2.0	Demand	Mediator	Orhan et al., 2016
Total Frequency		**11**				
Number of unique studies		**10**	**20.4**			

2

Appendix 3: JD-R Classification of Included Studies

Social domain constructs and their role in studies: Frequencies and relative prevalence

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
Trust and Social Capital	Trust including Interpersonal trust, cognitive based trust, institutional based trust, personality-based trust, trust in peers, Trustworthiness, Mutual trust	16	32.7	Resource	Independent variable,	Alsharo et al., 2017; Chang et al., 2014; El-Kassrawy, 2014; Garro-Abarca et al., 2021; Kashive et al., 2022; Lauring et al., 2022; Lippert & Dulewicz, 2018; Pangil & Chan, 2013; Alves at al., 2022; Wei at al., 2018
					Mediator	Ben Sedrine et al., 2021; Castellano et al., 2021; Henderson et al., 2016; Lu, 2015; Pinjani & Palvia, 2013
					Moderator	Brahm & Kunz, 2012
	Social capital (trust, social interaction, shared vision)	1	2%	Resource	Independent variable	Baruch & Lin, 2012
Total frequency		**17**				
Number of unique studies		**17**	**34.7**			
Leadership	Leadership styles (Transactional, Transformational)	1	2.0	Resource	Independent variable	Ben Sedrine et al.,2021

Appendix 3: JD-R Classification of Included Studies

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
	Shared leadership	3	6.0	Resource	Independent variable	Castellano et al., 2021; Muethel et al., 2012; Hoch & Kozlowski, 2014
	Leadership effectiveness	1	2.0	Resource	Independent variable	Kashive et al., 2022
	Empowering team leadership	1	2.0	Resource	Moderator	Hill & Bartol, 2016
	Knowledge-orientated leadership	1	2.0	Resource	Independent Variable	Lin et al., 2019
	Identity leadership	1	2.0	Resource	Independent Variable, Moderator	Op 't Roodt et al., 2021
	Leadership role effectiveness	1	2.0	Resource	Mediator	Han et al., 2020
	Team leader support	1	2.0	Resource	Moderator	Wickramasinghe & Nandula, 2015
	Hierarchical leadership	1	2.0	Resource and Demand	Independent Variable	Hoch & Kozlowski, 2014
	Transformational leadership	1	2.0	Demand	Moderator	Boyraz, 2019
Total frequency		**12**				
Number of unique studies		**10**	**20.4**			

Appendix 3: JD-R Classification of Included Studies

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
Knowledge sharing and Communication	Knowledge Sharing, Knowledge contribution, Task knowledge awareness, Explorative and exploitative virtual knowledge sharing	8	16.3	Resource	Independent Variable	Alsharo et al; 2017; Hung et al., 2021; Malhotra & Majchrzak, 2014; Lee at al., 2020
	Knowledge sharing, Knowledge management practices,				Mediator	Al Kaabi et al., 2022; Pinjani & Palvia, 2013; Abousweilem, 2024; Pangil & Chan, 2013
	Communication Competence, Communication quality, Communication norm alignment, Interpersonal Communication characteristics, Communication frequency, Perceived quality of interactions	10	20.4	Resource	Independent variable	Al Kaabi et al., 2022; Chang et al., 2014; Henderson et al., 2016; Lippert & Dulewicz, 2018; Balbinot et al., 2024; Guedes-Gondim et al., 2011
	Team communication, Team Communication, Psychologically Safe Communication Climate (PSCC)				Mediator	Eisenberg et al., 2019; Boyraz, 2019
	Effective electronic communication				Moderator	Prasad et al., 2017
	ICT SMM perceptions (Information and communication technology shared mental models)	1	2.0	Resource	Independent variable	Muller & Antoni, 2020
	Transactive memory systems	1	2.0	Resource	Mediator	Maynard et al., 2012

Appendix 3: JD-R Classification of Included Studies

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
	Preparation activities	1	2.0	Resource	Independent variable	Maynard et al., 2012
	Transactional fulfilment	1	2.0	Resource	Independent variable	Lin et al., 2019
	Team planning	1	2.0	Resource	Mediator	Joe at al., 2014
	Team co-ordination	1	2.0	Resource	Mediator	Muller & Antoni, 2020
	Imbalanced ambidexterity in knowledge sharing	1	2.0	Demand	Independent variable	Lee at al., 2020
Total frequency		**25**				
Number of unique studies		**20**	**40.8**			
Cultural factors, Diversity and Inclusion	Cultural adaptation	1	2.0	Resource	Independent variable	Chang et al., 2014
	Openness to cultural diversity	1	2.0	Resource	Moderator	Lauring et al., 2022
	Cultural Intelligence, Maximum cultural intelligence	5	10.0	Resource	Independent variable	Al Kaabi et al., 2022; Presbitero,2020; Mangla, 2021; Balbinot et al., 2024
	Team leader's cultural intelligence, Team member's cultural intelligence			Resource	Moderator	Presbitero, 2020
	Intercultural competencies	1	2.0	Resource	Independent variable	Krumm et al., 2013

Appendix 3: JD-R Classification of Included Studies

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
	Cross-cultural communication style	1	2.0	Resource	Independent variable	Lippert & Dulewicz, 2018
	High levels of national diversity	1	2.0	Resource	Moderator	Muethel et al., 2012
	High female-male ratio	1	2.0	Resource	Moderator	Muethel et al., 2012;
	Team diversity	2	4.0	Resource and Demand	Moderator	Wei et al., 2018
	Perceived diversity				Independent variable	Op 't Roodt et al., 2021
	Deep level diversity	1	2.0	Demand	Independent variable	Pinjani & Palvia, 2013
	Team member's perceived cultural dissimilarity	1	2.0	Demand	Independent variable	Presbitero, 2020
	High mean age	1	2.0	Demand	Moderator	Muethel et al., 2012
	Cultural distance in uncertainty avoidance	1	2.0	Demand	Moderator	Lee at al., 2020
	Workplace social isolation	1	2.0	Demand	Mediator	Orhan at el., 2016
Total frequency		**18**				
Number of unique studies		**15**	**30.6**			

Appendix 3: JD-R Classification of Included Studies

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
Collaboration and cohesion	Shared social activities	1	2.0	Resource	Independent variable	Lu, 2015
	Collaboration	3	6.0	Resource	Mediator	Al Kaabi et al., 2022; Alsharo et al., 2017; Hill & Bartol, 2016
	Operational Cohesion, Task Cohesion, Cohesion	3	6.0	Resource	Mediator	Ben Sedrine et al., 2021; Baruch & Lin., 2012; Lu, 2015
	Team cooperation	2	4.0	Resource	Mediator Independent variable	Baruch & Lin., 2012 Lin et al., 2017
Total frequency		**9**				
Number of unique studies		**8**	**16.3**			
Conflict and Politics	Team conflict, conflict frequency, Relationship conflict	3	6.0	Demand	Independent variable	Alves at al., 2022; Balbinot et al., 2024; Wickramasinghe & Nandula, 2015
	Team politics	1	2.0	Demand	Independent variable	Baruch & Lin, 2012
	Team faultlines	1	2.0	Demand	Independent variable	Boyraz, 2019
	Sub groups Subgroup formation	2	4.0	Demand	Independent variable Moderator	Boyraz, 2019 Op 't Roodt et al., 2021
	Ingroup dynamics	1	2.0	Demand	Independent variable	Plotnick et al., 2016

Appendix 3: JD-R Classification of Included Studies

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
Total frequency		**8**				
Number of unique studies		**7**	**14.3**			

Environmental domain constructs and their role in studies: Frequencies and relative prevalence

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
Information and Communication Technology (ICT) resources	Media Richness	1	2.0	Resource	Moderator	Ben Sedrine at al., 2021
	Collaborative technology	1	2.0	Resource	Moderator	Pinjani & Palvia, 2013
	Flexibility in ICT use	1	2.0	Resource	Moderator	Muller & Antoni, 2020
Total frequency		**3**				
Number of unique studies		**3**	**6.0**			
Structural factors	Remote work setting	1	2.0	Resource	Independent variable	Abousweilem, 2024
	Structural supports	1	2.0	Resource	Independent variable	Hoch & Kozlowski, 2014
	Employer branding	1	2.0	Resource	Independent variable	Depoo & Hyrslova, 2024
	Procedural justice	1	2.0	Resource	Independent variable	Joe at al., 2014
Total frequency		**4**				

Appendix 3: JD-R Classification of Included Studies

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
Number of unique studies		**4**	**8.0**			
Temporal and dispersion factors	Geographic dispersion	1	2.0	Resource	Moderator	Cummings & Haas, 2012
	Time zone adjustment	1	2.0	Resource	Independent variable	Lauring et al., 2022
	Member time allocation to focal team	1	2.0	Resource	Independent variable	Cummings & Haas, 2012
	Virtuality			Resource		Alves at al., 2022
	Team virtuality	3	6.0	Resource and Demand	Moderator	Hoch & Kozlowski, 2014
	Virtualisation level			Demand		Endriulaitienė et al., 2021
	Team dispersion, Global dispersion	2	4.0	Demand	Independent variable	Eisenberg et al., 2019; Han et al., 2020
	Task virtuality	1	2.0	Demand	Independent variable	Orhan et al., 2016
	Physical isolation	1	2.0	Demand	Mediator	Orhan et al., 2016
	Configurational dispersion	1	2.0	Demand	Independent variable	Prasad et al., 2017
Total frequency		**11**				
Number of unique studies		**9**	**18.4**			
Learning and development	Capability development	1	2.0	Resource	Independent variable	Wickramasinghe & Dolamulla, 2017
	Human resource management practices	1	2.0	Resource	Independent variable	Wickramasinghe & Dolamulla, 2017

Appendix 3: JD-R Classification of Included Studies

Cluster	Variable	Frequency	% of total (n=49)	JD-R Classification (Resource/Demand)	Function in studies	Authors
	Performance Management	1	2.0	Resource	Independent variable	Wickramasinghe & Dolamulla, 2017
	IT training fulfilment	1	2.0	Resource	Independent variable	Lin et al., 2019
	Number of team training sessions	1	2.0	Resource and Demand	Independent variable	Han et al., 2020
	Need for training	1	2.0	Resource and Demand	Independent variable	Guedes-Gondim et al., 2011
Total frequency		**6**				
Number of unique studies		**4**	**8.0**			