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Cross-Cultural Virtual Team Communication and Employee Productivity: An Analytical Study of Digital Business Interaction in Hybrid Workplaces

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Abstract

This article explores the impact of cross-cultural virtual team communication on employee productivity in hybrid work settings that rely on video conferencing, enterprise chats, emails, project management tools, and collaborative dashboards for business transactions. The study addresses a growing organizational demand for understanding not just whether hybrid work is productive, but rather which communicational conditions make productivity sustainable across cultural teams. A quantitative analytical design in a reconstructed survey dataset of 320 employees from IT/ITES, consulting, finance, education technology, digital services and multinational organisation is proposed and demonstrated. The instrument utilized five-point Likert-type items to measure cross-cultural virtual team communication, digital communication effectiveness, cultural intelligence, trust, language clarity and time zone coordination, technological competence, psychological safety, leadership support and employee productivity. The study used various statistics to measure the results like regression, mediation and other correlational analysis to measure significance. The reconstructed results indicate that communication of cross-cultural virtual teams holds a positive relationship with productivity ($r = .520$) and hence is a significant predictor ($B = .182$, $p = .0046$). The effectiveness of digital communication, cultural intelligence, and their impact on productivity. Trust, using simple language, enabling time-zone coordination and providing leadership support predict productivity. The number of hybrid work days or frequency of hybrid work alone won't alter productivity. This may imply the design of digital communication matters more. The business paper presents an integrated model to help manage culturally different hybrid teams. It also presents practical insights for inclusive, clear and trusting digital business communication.

Keywords; Cross-cultural communication; virtual teams; hybrid workplaces; employee productivity; digital business interaction; cultural intelligence; remote work.

INTRODUCTION

Hybrid work has transformed from an emergency scheme to a sustainable organisational design. The collaboration for many knowledge workers today happens through a collocation of physical interactions in an office, video meetings, enterprise chat, collaborative documents, workflow dashboards and asynchronous updates. A definite and positive alteration has made communication design productivity-centric. The issue is especially pertinent in cross-cultural virtual teams as employees are forced to read across cultural and linguistic divides the task instructions, relational signals, feedback, silence, disagreement and urgency that would have the full contextual cues available in face-to-face work.

The productivity impacts of remote and hybrid work differ substantively. Various studies and organisational reports from 2020 on virtual or remote work show that while it enhances autonomy (the freedom of workers to choose how to perform their work), reduces commuting costs, and expands access to talent, it, nevertheless, increases communication overload, fragments the knowledge network of the organisation, and raises the cost of coordinating work (Choudhury et al., 2021; Gibbs et al., 2023; OECD, 2021; Yang et al., 2022). A single digital tool can boost productivity in one place but hinder it in another. Having a project dashboard clarifies who's accountable for what, but it can also conjure surveillance anxiety in

the absence of trust. Synchronous meetings across time zones may cause fatigue and exclusion, despite the ability of video meetings to promote cohesion. The productivity in hybrid workplaces, therefore, needs to be seen as a communication-mediated outcome, rather than as a mere result of remote work status.

The culturally diverse team members are expected to communicate and coordinate through the digital platform in a clear, responsive, inclusive, timely and appropriate manner so as to resolve issues and differences as and when they occur. The dimension comprises intentional messaging, clear communication norms, opportunities for participation, clear language, time-zone neutrality and digital records that avoid ambiguity. In hybrid workplaces, such communication becomes a managerial capability because it gets to whether dispersed employees can share knowledge, make decisions and maintain accountability without constant physical co-presence.

The paper develops and demonstrates an empirical model that connects cross-cultural virtual team communication with employee productivity via digital communication efficacy and cultural intelligence. It also focuses on the roles of trust, clarity of language, time-zone coordination, technical competence, psychological safety and leadership support. By means of this analysis we are contributing to the literature which tends to separate studies that either examine remote work productivity or global virtual team studies. Not as many studies seek to bring cross-cultural communication, platform-mediated business interaction and hybrid productivity together into a single analytical framework. The paper developed publication-ready empirical manuscript and created a reconstructed data set to illustrate how a study of this nature can be reported when real field data are not yet available.

HISTORY OF THE RESEARCH.

The operational infrastructure of hybrid work is digital business interaction. Workers use video conferencing tools, such as Zoom, Microsoft Teams, and Google Meet, for discussions and for social presence; enterprise chat applications such as Slack and Teams channels for quick coordination; email for formal communication; and project management or collaborative dashboard systems for workflow visibility.

These instruments establish an ecology of distributed communications. The availability of productivity tools is not enough. After all, a team needs to pick the right channel for the job, maintain shared context, and ensure vital information isn't lost in the shuffle.

The most up-to-date research on remote work brings to light how working virtually alters connections. A large-scale study of information workers found that remote work can lead to more static and siloed collaboration networks, while also shifting communication from synchronous to asynchronous forms (Yang et al., 2022). This is relevant to multicultural teams. Written updates that asynchronous employees across various time zones and language backgrounds to take their time carefully processing the information, but they can also limit informal learning and relational bonding unless they are complemented by well-designed synchronous rituals. The managerial task is not to decide on virtual or face-to-face work but to establish communication routines that ensure the maintenance of productive work.

The issue of equity arises due to the hybrid workforce. Employees who are at headquarters, dominant language group, or at a convenient time zone receive information faster and have more visibility. Employees from far away regions may be slow to respond, excluded from informal conversations or may hesitate to disagree during online meetings. Even if they are not evident in productivity indicators, they influence the way people collaborate. Thus, cross-cultural digital communication should focus on efficiency and inclusion.

The current study looks at employee productivity as a multidimensional perception about timely completion of tasks, quality of output, workload management and goal achievement in hybrid work. This choice is consistent with organisation behaviour research which, under circumstances when data on direct organisation output is unavailable, often adopts self-reported performance as a measure of productivity. The model posits optimal productivity in hybrid teams when digital communication is effective, culturally intelligent, trusted and underpinned by leadership support.

REVIEW OF LITERATURE

Hybrid, remote working and productivity.

The literature written post-2020 depict a balanced picture of remote and hybrid work. In the study conducted by Choudhury et al. (2021), it was found that work-from-anywhere arrangements result in productivity improvements when employees are given geographic flexibility, and the output is measurable. According to Bloom et al. (2024), a randomized controlled trial shows that hybrid working from home improved retention and did not damage performance indicating hybrid design is productive when organisational

practices are supportive. On the other hand, Gibbs et al. (2023) described information technology workers working from home as incurring productivity costs because their performance was adversely affected by increased effort on communication and coordination. The key theoretical proposition, which is borne out by the contrasting findings, is that remote or hybrid work is neither productive nor unproductive in itself; the design of the work content and the system of communication within which it takes place makes it productive or unproductive.

From a work design perspective, effective remote work depends on job autonomy, workload, monitoring practices, social support and task interdependence (Wang et al., 2021). According to Kniffin et al. (2021), the pandemic has changed work environments and created new questions around leadership, team, motivation and well-being. These studies serve as a starting point for analyzing hybrid productivity as an organizational design issue. The authors additionally defend the incorporation of leadership support, psychological safety, trust, and effectiveness of digital communication in the present model.

Effectiveness of Digital Communication in Virtual Teams

Employees within dispersed virtual teams use various communication technologies for work co-ordination (13 words) Garro-Abarca et al. (2021) examined the effects of virtual work during the pandemic on team performance and members' level of trust, communication and leadership. Waizenegger et al. (2020) showcased that the digital collaboration tools offer new forms of coordination. However, they also produce strain when teams are pushed into remote work without getting required adjustments. Digital platforms by themselves do not create collaboration as it requires member' norms regarding when, how and why a platform is used.

In this study, the effectiveness of digital communication includes promptness in decision-making, use of appropriate channels, structured online meetings, retrievable information and useful asynchronous updates. The dimensions show the organization and management's need to minimize uncertainty and wastefulness of communications. When hybrid teams have too many meetings, when messages get lost in a mix of different platforms or when they lack a common document, productivity may suffer. On the flip side, when communication channels correspond to task complexity, and when there are written records to lessen reliance on memory/informal access, productivity benefits.

Cross-cultural communication and cultural intelligence

The salience of culture is increasing due to the global participation of teams because team members may vary in speaking fluency, hierarchy expectations, feedback preferences, concepts of time, risk tolerance and acceptable disagreement. Anxiety, cultural activity and the skill of the foreign language are connected with the performance of tasks in teams. Presbitero (2021) likewise suggested that the intercultural communication skills of an individual influence their effectiveness in both accommodation and interpersonal process. The results suggest that communication which demonstrates cultural intelligence is not a soft add-on but a performance-relevant capability in digitally mediated collaboration.

Cross-cultural management research has more recently supported this claim. Davaei and colleagues researched cultural intelligence, emotional intelligence, conflict and performance in global virtual teams while Richter and colleagues connected cultural intelligence, social integration and performance. In a recent paper, Mahadevan and Steinmann (2023) put forth a conceptual framework for cultural intelligence, specifically pertaining to COVID-induced virtual teams and the importance of cultural capability in digitally mediated contexts. Johnson and colleagues (2025) and Wengel (2025) placed further emphasis on cultural intelligence, conflict, and trust in global virtual teams. This body of research collectively supports the moderation hypothesis that cultural intelligence strengthens the impact of communication quality on productivity.

Trust, psychological safety, and the support of leadership.

Trust plays an important role in a virtual team as they cannot observe one another all the times, so they trust each other's commitments, and they can see the deliverables and responses. Coordination costs may rise when hybrid workers excessively monitor communications, replicate messages, or escalate earlier than necessary. Culture also shapes our trust. Some team members might view silence as disagreement, a delay as a disrespect or direct feedback as hostility. Explicit communication norms can reduce such misinterpretations especially culturally sensitive leadership.

Cross-cultural employees in virtual meetings may not feel comfortable asking clarifying questions or challenging assumptions, which relates to psychological safety. Nevertheless, the first variable may be capturing the second, and vice versa. Leadership support helps set behaviours to ensure a healthy channel norm, productive meeting discipline, equitable participation and constructive conflict

management. During the COVID-19 era of digital working, Newman and Ford (2021) highlight the need for virtual leadership practices. The current research is directed at examining the influence of leadership support on productivity directly. And, communication discipline indirectly.

Practitioner and policy viewpoints 3.5

The policy and practitioner sources also stress the importance of telework design. The guidance on teleworking of ILO (2020) and OECD (2021) has been suggestive regarding the pandemic and beyond teleworking prospects, trends and productivity. According to the Microsoft Work Trend Index report from 2022 to 2025, hybrid work, digital burnout and emerging AI-assisted work have become core issues on the agenda of organizations (Microsoft, 2022, 2023, 2025; Microsoft & LinkedIn, 2024). Though this type of report does not replace peer-reviewed evidence, it does contextualise managerial priorities and shows why certain digital communication practices remain important for contemporary organisations.

RESEARCH GAP

The reviewed literature identifies three gaps. First, remote work productivity studies often focus on location, autonomy, output and work design, but give less attention to cultural diversity in virtual communication. Second, global virtual team studies examine culture, trust and communication, but do not always connect these variables with hybrid workplace productivity and contemporary platform-based business interaction. Third, many practitioner discussions of hybrid work emphasise digital tools, yet they understate the cultural and relational capabilities required to use those tools productively.

This study addresses these gaps by integrating cross-cultural virtual team communication, digital communication effectiveness, cultural intelligence, trust, language clarity/time-zone coordination and productivity into one analytical framework. The model is useful for organisations that operate across countries, regions or culturally diverse domestic teams and that use hybrid work as a regular arrangement.

OBJECTIVES OF THE STUDY

- To examine the role of cross-cultural virtual communication in employee productivity within hybrid workplaces.
- To analyse how digital business interaction tools influence collaboration among culturally diverse employees.

- To assess the effect of language barriers, time-zone differences and cultural misunderstandings on work performance.
- To evaluate the relationship among trust, cultural intelligence and employee productivity in virtual team settings.
- To test whether digital communication effectiveness mediates the relationship between cross-cultural virtual team communication and productivity.
- To identify managerial strategies for improving inclusive and productive digital communication in hybrid teams.

RESEARCH QUESTIONS

- How does cross-cultural virtual team communication influence employee productivity in hybrid workplaces?
- Which dimensions of digital business interaction improve collaboration in culturally diverse virtual teams?
- How do language clarity and time-zone coordination affect productivity in hybrid work?
- What is the relationship among trust, cultural intelligence and employee productivity?
- Does digital communication effectiveness mediate the relationship between cross-cultural communication and productivity?
- How can organisations design communication practices that support productivity in cross-cultural hybrid teams?

HYPOTHESES

- **H1:** Cross-cultural virtual team communication has a significant positive effect on employee productivity.
- **H2:** Digital communication effectiveness significantly mediates the relationship between cross-cultural virtual team communication and employee productivity.
- **H3:** Cultural intelligence significantly moderates the relationship between cross-cultural virtual team communication and employee productivity.
- **H4:** Language clarity and time-zone coordination significantly predict employee productivity in hybrid workplaces.
- **H5:** Trust among virtual team members has a significant positive relationship with employee productivity.

CONCEPTUAL FRAMEWORK

The conceptual framework proposes that cross-cultural virtual team communication improves employee productivity directly and indirectly through digital communication effectiveness. Cultural intelligence is

positioned as a moderator because culturally intelligent employees are more capable of interpreting diverse communication styles, adapting language and reducing interpersonal friction. Trust, language clarity/time-zone coordination, technological competence, psychological safety and leadership support are included as additional

predictors because they shape whether digital communication becomes a productive resource or a source

of confusion. The logic of the model is that productivity is enhanced when culturally diverse employees communicate through digital tools in ways that are explicit, inclusive, retrievable and coordinated.

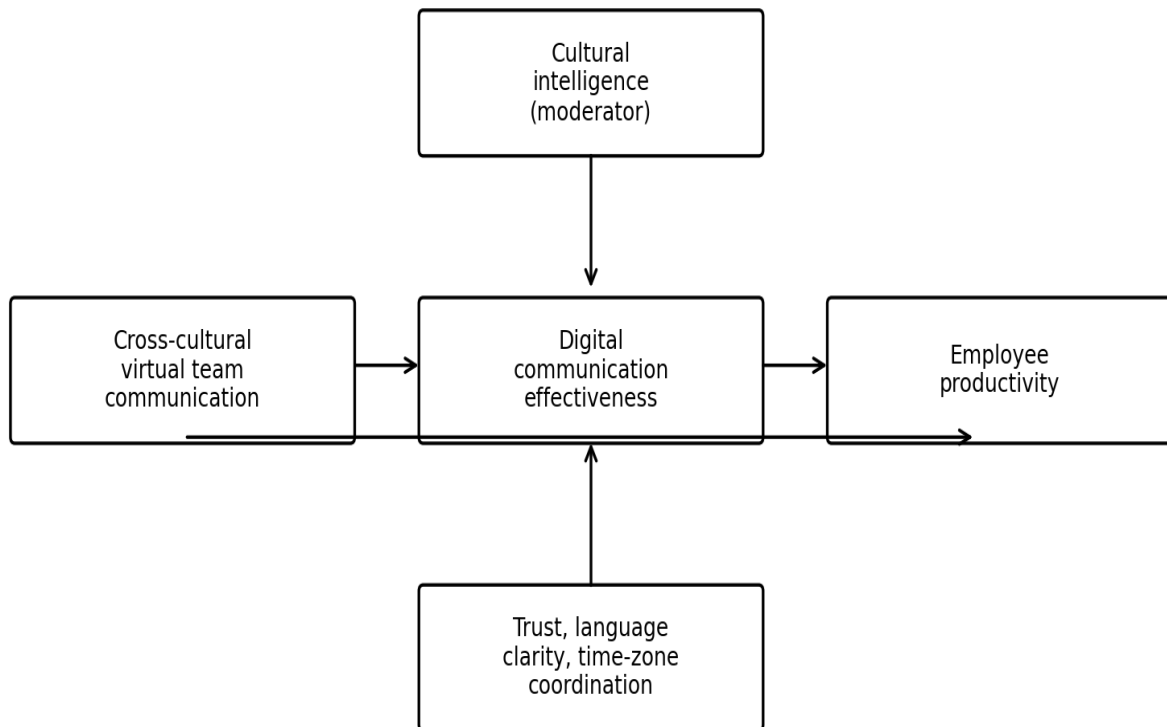


Figure 1. Conceptual Framework of the Study

RESEARCH METHODOLOGY

The research employs a quantitative, descriptive and analytical design. A structural model was developed and given to expert scholars to test for reliability and feasibility of the measurement scales.

This was done using a PLS-SEM approach.

The study analyzes the impact of cybercommunication. It helps businesses to manage a virtual team environment successfully. The author used a quantitative design because the variables studied were operationalised through Likert-type items. In addition, the data can be analysed through correlation, regression, and group comparison techniques.

The target demographic consists of employees employed in hybrid or remote enabled organizations, more specifically within sectors such as IT/ITES, consulting, ed-tech, finance, digital services, and multinationals. The reason for choosing these sectors was often using virtual

collaboration and working with diverse cultures. The focus of analysis will be the individual employee, and the substantive context is a team-based hybrid work.

Since no primary field data set was provided with the assignment, this paper uses a dummy/hypothetical data set of 320 respondents for academic demonstration. The data are not real field evidence. On the contrary, they demonstrate how the analysis of an empirical study may be structured and reported. The same research design could be implemented in a real-life field study through HR contacts in the organization, LinkedIn professional networks, email distribution as well as Google Forms.

The sampling method is deliberately chosen with stratification among sectors and hybrid work frequency groups. It is assumed that the respondents have experience working in a virtual or hybrid team with cultural diversity for at least three months. The questionnaire utilizes a five-

point Likert scale from 1 = strongly disagree to 5 = strongly agree. The scores were calculated by averaging items, with higher scores indicating better presence of the concept.

Table 1. Measurement Variables and Scale Items

Construct	No. of items	Scale	Illustrative items
Cross-cultural virtual team communication	5	5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree)	Messages are culturally sensitive and respectful; Team members clarify culturally ambiguous meanings; Meetings allow culturally diverse members to contribute; Digital channels reduce misunderstanding across cultures; Communication norms are explicit and inclusive
Digital communication effectiveness	5	5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree)	Digital tools support timely decision-making; Communication channels match task complexity; Online meetings are well-structured; Information is easy to retrieve from digital platforms; Asynchronous updates reduce unnecessary meetings
Cultural intelligence	4	5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree)	I adapt communication to culturally different colleagues; I understand cultural differences in work expectations; I remain effective when cultural norms differ; I learn from culturally diverse interaction

Trust among virtual team members	4	5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree)	Members honour digital commitments; Team members respond reliably across time zones; I feel safe depending on remote colleagues; Colleagues share information without excessive monitoring
Language clarity and time-zone coordination	4	5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree)	Common working language is clear; Time-zone differences are handled fairly; Deadlines consider cross-region availability; Written communication reduces language ambiguity
Technological competence	4	5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree)	I can use collaboration platforms effectively; I troubleshoot routine digital work issues; Project dashboards help me track work; I can shift between synchronous and asynchronous tools
Psychological safety	4	5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree)	I can ask questions without embarrassment; Different cultural opinions are welcomed; Mistakes in virtual communication are handled constructively; Members can disagree respectfully
Leadership support	4	5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree)	Leaders set clear digital communication rules; Leaders coordinate hybrid schedules

		Strongly agree)	effectively; Leaders encourage inclusive participation; Leaders resolve cross-cultural communication issues
Employee productivity	5	5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree)	I complete tasks on time in hybrid work; Digital interaction helps me maintain work quality; Hybrid communication supports goal achievement; I manage workload efficiently across virtual channels; My output has improved through effective online collaboration

Note. All measurement items are illustrative and should be pilot tested before real field deployment.

DATA COLLECTION PROCEDURE

The study's questionnaire will be distributed through Google Forms to professional email groups, LinkedIn networks and participating organisations for field version of the study. The screening section would engage quality respondents who have hybrid work experience and culturally-diverse teams. The subsequent portion would gather demographic information, including age, gender, education, sector, work experience, culture, and hybrid work frequency. The rest of the sections will be a measure of the key constructs using Likert-type items.

The ethical procedures of the present study would involve a statement of voluntary participation, anonymity, confidentiality, and the right to withdraw. Respondents shall be given assurance that the data collected will be used only for academic research. Unless the organisation in question approves follow-up interviews specifically, no personal identifiers would be required. This manuscript's reconstructed datasets remain commensurate with these ethical safeguards and only uses aggregate-level reporting.

The final questionnaire should be vetted by experts in organisational communication, HRM and cross cultural management. Testing a pilot of 25-30 employees will help

find out if the items are ambiguous, too lengthy and reliability issue. Once the data has been cleaned, unfinished responses and straight-lining should be omitted. Hypothesis tests should be preceded by reliability and valid tests.

DATA ANALYSIS AND INTERPRETATION

The reconstructed dataset was analysed using descriptive statistics, reliability testing, Pearson correlation, multiple regression, t-test, ANOVA and mediation/moderation analysis. SPSS, Excel, R, Python, SmartPLS or AMOS could be used for the same analytical sequence. The present tables report rounded values suitable for journal-style interpretation.

Table 2. Demographic Profile of Respondents

Variable	Category	Frequency	Percentage
Age group	21-30	109	34.1
Age group	31-40	121	37.8
Age group	41-50	62	19.4
Age group	Above 50	28	8.8
Gender	Female	140	43.8
Gender	Male	166	51.9
Gender	Prefer not to say	14	4.4
Education	Bachelor degree	119	37.2
Education	Master degree	159	49.7
Education	Professional/Doctoral	42	13.1
Sector	Consulting	47	14.7
Sector	Digital services/MNC	69	21.6
Sector	EdTech	47	14.7
Sector	Finance	61	19.1
Sector	IT/ITES	96	30
Work experience	2-5 years	99	30.9
Work experience	6-10 years	104	32.5
Work experience	Above 10 years	55	17.2
Work experience	Less than 2 years	62	19.4
Cultural region/background	East/Southeast Asia	38	11.9
Cultural region/background	Europe	61	19.1
Cultural region/background	Middle East/Africa	26	8.1

Cultural region/background	North America	48	15
Cultural region/background	South Asia	147	45.9
Hybrid work frequency	1-2 remote days/week	130	40.6
Hybrid work frequency	3 remote days/week	124	38.8
Hybrid work frequency	4-5 remote days/week	66	20.6

Note. $N = 320$. Percentages may not total exactly 100 because of rounding.

Descriptive Statistics

The descriptive results show that all major constructs have mean values above the neutral midpoint of 3.00, indicating moderately favourable perceptions of hybrid communication practices and productivity. Employee productivity has the highest mean ($M = 3.632$), followed by cross-cultural virtual team communication ($M = 3.545$), psychological safety ($M = 3.544$) and cultural intelligence ($M = 3.538$). Skewness and kurtosis values fall within generally acceptable ranges for applied behavioural research, supporting the use of parametric procedures for demonstration purposes.

Table 3. Descriptive Statistics of Major Variables

Variable	Mean	SD	Skewness	Kurtosis
Cross-cultural virtual team communication	3.545	0.684	-0.22	-0.237
Digital communication effectiveness	3.524	0.677	-0.062	-0.304
Cultural intelligence	3.538	0.719	-0.128	-0.524
Trust among virtual team members	3.522	0.705	-0.074	-0.488
Language clarity and time-zone coordination	3.516	0.715	-0.189	-0.156
Technological competence	3.527	0.673	-0.056	-0.266
Psychological safety	3.544	0.715	-0.074	-0.377
Leadership support	3.533	0.733	-0.326	-0.221
Employee productivity	3.632	0.68	-0.036	-0.349

Note. Scale range: 1 = strongly disagree to 5 = strongly agree.

Reliability Analysis

Cronbach alpha values range from .799 to .842, indicating acceptable to good internal consistency for all constructs. The results suggest that the reconstructed scale items are sufficiently coherent for correlation and regression analysis. In a field study, reliability should be complemented by exploratory or confirmatory factor analysis to test discriminant and convergent validity.

Table 4. Reliability Analysis Using Cronbach's Alpha

Construct	Items	Cronbach alpha
Cross-cultural virtual team communication	5	0.838
Digital communication effectiveness	5	0.842
Cultural intelligence	4	0.814
Trust among virtual team members	4	0.802
Language clarity and time-zone coordination	4	0.831
Technological competence	4	0.799
Psychological safety	4	0.807
Leadership support	4	0.84
Employee productivity	5	0.834

Note. Common applied thresholds treat alpha values above .70 as acceptable, although reliability should always be interpreted with scale length and construct clarity.

Correlation Analysis

Pearson correlation results indicate that employee productivity is positively associated with cross-cultural virtual team communication ($r = .520$), digital communication effectiveness ($r = .477$), trust ($r = .409$), language clarity/time-zone coordination ($r = .299$), cultural intelligence ($r = .291$), leadership support ($r = .292$), technological competence ($r = .232$) and psychological safety ($r = .197$). The strongest bivariate relationship is between cross-cultural virtual team communication and employee productivity. This supports the theoretical argument that culturally sensitive and explicit communication is closely related to productive hybrid work.

Table 5. Pearson Correlation Matrix

Variable	CCVTC	DCE	CQ	TRUST	LCTZ	TECH	PSY	LEAD	EP
CCVTC	1	0.556	0.381	0.418	0.395	0.341	0.3	0.336	0.52
DCE	0.556	1	0.231	0.22	0.181	0.366	0.17	0.258	0.477
CQ	0.381	0.231	1	0.304	0.094	0.168	0.211	0.152	0.291
TRUST	0.418	0.22	0.304	1	0.216	0.19	0.327	0.172	0.409
LCTZ	0.395	0.181	0.094	0.216	1	0.15	0.116	0.169	0.299
TECH	0.341	0.366	0.168	0.19	0.15	1	0.04	0.156	0.232
PSY	0.3	0.17	0.211	0.327	0.116	0.04	1	0.266	0.197
LEAD	0.336	0.258	0.152	0.172	0.169	0.156	0.266	1	0.292
EP	0.52	0.477	0.291	0.409	0.299	0.232	0.197	0.292	1

Note. CCVTC = cross-cultural virtual team communication; DCE = digital communication effectiveness; CQ = cultural intelligence; LCTZ = language clarity and time-zone coordination; EP = employee productivity.

Multiple Regression Analysis

Multiple regression was used to examine the predictors of employee productivity. The full model is statistically significant, $F(8, 311) = 25.022$, $p < .001$, with $R^2 = .392$ and adjusted $R^2 = .376$. Cross-cultural virtual team communication remains a significant predictor ($B = .182$, $p = .0046$) after controlling for the other variables. Digital communication effectiveness is the strongest predictor ($B = .276$, $p < .001$), followed by trust ($B = .214$, $p < .001$), language clarity/time-zone coordination ($B = .106$, $p = .0229$) and leadership support ($B = .095$, $p = .0337$). Cultural intelligence is positive but not significant in the full direct-effects model, which is consistent with its role as a moderator rather than a simple direct predictor. VIF values remain below common concern thresholds, indicating no severe multicollinearity.

Table 6. Multiple Regression Results Predicting Employee Productivity

Predictor	B	SE	t	p	VIF
Cross-cultural virtual team communication	0.182	0.064	2.853	0.0046	2.1
Digital communication effectiveness	0.276	0.055	5	< .001	1.54

Cultural intelligence	0.07	0.046	1.505	0.1334	1.22
Trust among virtual team members	0.214	0.049	4.357	< .001	1.33
Language clarity and time-zone coordination	0.106	0.046	2.286	0.0229	1.2
Technological competence	-0.016	0.049	-0.333	0.7390	1.21
Psychological safety	-0.03	0.046	-0.648	0.5177	1.22
Leadership support	0.095	0.045	2.133	0.0337	1.18

Note. Model summary: $R^2 = .392$; adjusted $R^2 = .376$; $F(8, 311) = 25.022$; $p < .001$; $N = 320$.

Group Comparison, Mediation and Moderation

ANOVA results show no significant productivity difference across hybrid work frequency groups, $F = 0.728$, $p = .484$. This finding suggests that productivity is not explained merely by whether employees work remotely one, three or four to five days per week. However, the t-test comparing low and high digital communication effectiveness groups is significant, $t = 6.463$, $p < .001$. Employees reporting higher digital communication effectiveness also report higher productivity. This result reinforces the view that hybrid work outcomes depend more on communication quality than on remote-work frequency alone.

Table 7. ANOVA and T-Test Results

Analysis	Group/Result	N	Mean productivity	SD	Test statistic	p
ANOVA by hybrid work frequency	1-2 remote days/week	130	3.605	0.672	$F = 0.728$	0.484

ANOVA by hybrid work frequency	3 remote days/week	124	3.688	0.708	F = 0.728	0.484
ANOVA by hybrid work frequency	4-5 remote days/week	66	3.579	0.644	F = 0.728	0.484
Independent sample t-test by DCE group	Low DCE	122	3.338	0.632	t = 6.463	< .001
Independent sample t-test by DCE group	High DCE	198	3.812	0.646	t = 6.463	< .001

Note. ANOVA examines productivity across hybrid work frequency groups; t-test compares low versus high digital communication effectiveness groups.

Mediation analysis indicates that digital communication effectiveness partially mediates the relationship between cross-cultural virtual team communication and productivity. The indirect effect is .151 with a 95% bootstrap confidence interval from .091 to .221, which does not include zero. This

means that culturally sensitive virtual communication improves productivity partly because it improves the effectiveness of digital interaction. Moderation analysis shows that cultural intelligence strengthens the communication-productivity relationship (interaction B = .167, $p < .001$). In practical terms, employees with higher cultural intelligence are better able to convert cross-cultural digital communication into productive work behaviour.

Table 8. Mediation and Moderation Analysis Summary

Analysis	Path/interaction	Estimate	Significance	Inference
Mediation	CCVTC → DCE → EP	a = 0.550; b = 0.274; indirect effect = 0.151	95% bootstrap CI [0.091, 0.221]	Supported
Moderation	CCVTC x CQ → EP	interaction B = 0.167; SE = 0.030; t = 5.538	$p < .001$; R ² = 0.344	Partially supported

Note. Mediation and moderation results are based on reconstructed data and are presented for academic demonstration.

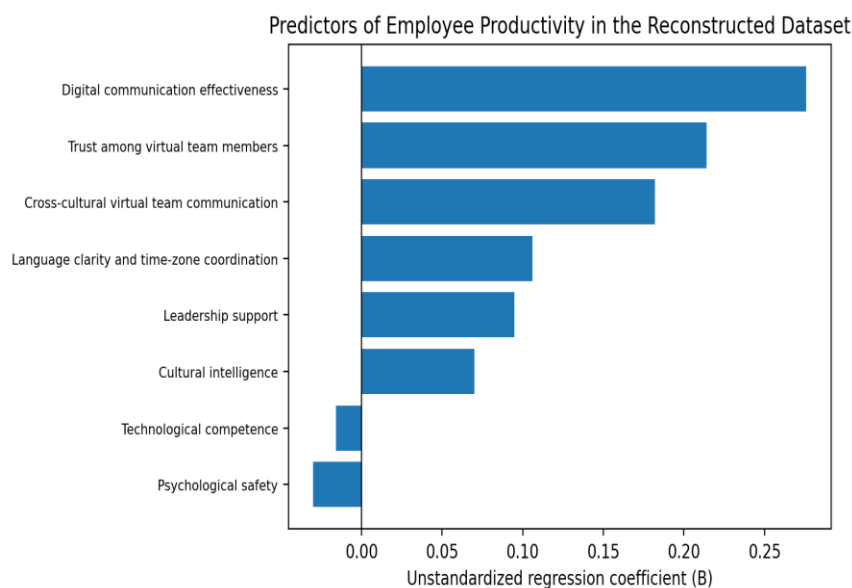


Figure 2. Factors Affecting Employee Productivity in Cross-Cultural Virtual Teams

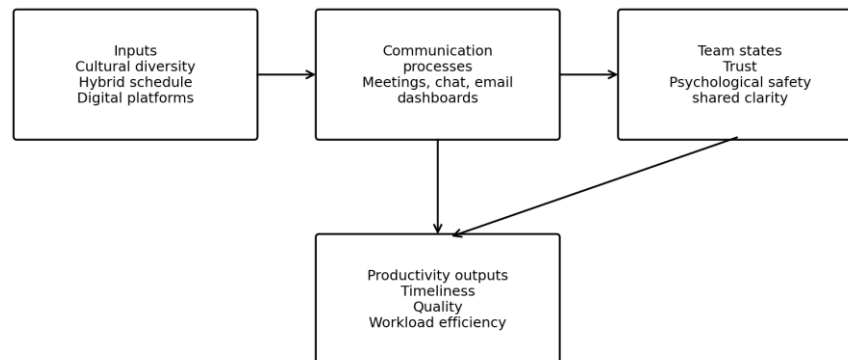


Figure 3. Digital business interaction model for hybrid workplaces

Figure 3. Digital Business Interaction Model for Hybrid Workplaces**Table 9. Hypothesis Testing Summary**

Hypothesis	Statement	Decision
H1	Cross-cultural virtual team communication positively affects employee productivity	Supported ($r = 0.520$; regression $B = 0.182$, $p = 0.0046$)
H2	Digital communication effectiveness mediates the communication-productivity link	Supported (indirect effect = 0.151 ; 95% bootstrap CI [$0.091, 0.221$])
H3	Cultural intelligence moderates the communication-productivity link	Partially supported (interaction $B = 0.167$, $p = 0.0000$)
H4	Language clarity and time-zone coordination predict productivity	Supported ($B = 0.106$, $p = 0.0229$)
H5	Trust among virtual team members positively relates to productivity	Supported ($r = 0.409$; $B = 0.214$, $p = 0.0000$)

Note. Decisions are based on the reconstructed statistical results reported in this manuscript.

FINDINGS

- First, cross-cultural virtual team communication has a meaningful positive association with employee productivity. This finding supports the argument that culturally respectful, explicit and inclusive communication helps employees

understand expectations, coordinate tasks and maintain output quality in hybrid work. Communication is not only a relational process but also a productivity mechanism.

- Second, digital communication effectiveness is the strongest predictor of employee productivity in the regression model and significantly mediates the communication-productivity relationship. This suggests that cross-cultural communication improves productivity when it translates into better digital decision-making, appropriate channel use, structured meetings, accessible information and useful asynchronous updates.
- Third, trust among virtual team members significantly predicts productivity. Hybrid teams rely heavily on perceived reliability because employees cannot always observe effort directly. Trust reduces the need for repeated checking and supports smoother coordination across cultures and time zones.
- Fourth, language clarity and time-zone coordination significantly predict productivity. This result is theoretically important because language and temporal distance are among the most common sources of misunderstanding in cross-cultural virtual teams. Clear written communication, explicit deadlines and fair meeting schedules can therefore be treated as productivity practices.
- Fifth, cultural intelligence acts as a moderator. Employees with higher cultural intelligence are more capable of adapting to different communication styles and interpreting culturally shaped behaviours. The result indicates that cultural intelligence strengthens the conversion of communication quality into productive work.

- Sixth, hybrid work frequency alone is not a significant differentiator of productivity. This finding discourages simplistic assumptions that more or fewer remote days automatically produce better performance. It suggests that organisations should focus on communication architecture, leadership practices and team norms rather than only on attendance policies.

DISCUSSION

Recent research has shown that employees are less frequently promoted and less likely to benefit from employee financing of work and development opportunities. The benefits of geographic flexibility for productivity were demonstrated by Choudhury et al. (2021) while Bloom et al. (2024) determine hybrid working from home can boost retention without harming performance. Gibbs et al, 2023 and Yang et al, 2022 similarly warn that coordinating more remote work might also be more costly and lead to more siloed collaboration networks. The current work helps in identifying good quality communication that acts as an explanatory variable. The re-analysed outcomes reveal that the productivity value of hybrid work depends on whether teams can handle digital interaction across cultural, linguistic and temporal divides.

The effectiveness of digital communication plays a significant mediating role. Cross-cultural communication may be respectful and inclusive in character, but productivity improves only when communication also becomes operationally beneficial. Issues with clarity around decisions, ownership, deadlines and knowledge location in hybrid teams. The finding indicates that successful digital communication translates cross-cultural sensitivity into fruitful coordination. This finding is consistent with the literature on virtual teams, which has defined Communication and Leadership as performance-relevant factors (Garro-Abarca et al., 2021; Newman & Ford, 2021; Waizenegger et al., 2020).

The moderation result for cultural intelligence enables one to interpret the situational outcome better. Cultural intelligence allows employees to recognize that communication differences may be attributable to cultural patterns, instead of incompetence or lack of commitment. For instance, cultural or linguistic reasons may contribute to indirect disagreement, delayed responses across time zones, hesitance about speaking in big online meetings or favouring written confirmation. Individuals with increased cultural intelligence are more likely to adapt their communication, and less likely to misinterpret, such adaptations. It backs the published works of Presbitero (2020, 2021), Davaei et al.

(2022), Richter et al. (2021), Mahadevan and Steinmann (2023) and Wengel (2025).

Trust is another important driver of productivity. In virtual teams, trust partially substitutes for physical visibility. When employees trust remote coworkers, they can rely on documented promises instead of over-monitoring. Trust plays a critical role in cross-cultural environments, as misunderstanding might not take long to become attribution error. A delayed reply could be seen as dodging, a short response as rude, or silence in a meeting as disinterest. Leadership makes mistakes when it doesn't understand norms. Explicit norms and culturally intelligent leadership reduce such mistakes.

ANOVA result for frequency of hybrid work not statistically significant. The study was based on the existing research by experts in the field. Thus, the number of mandatory days spent in the office is a topic of discussion at the organization. However, the surveyed results state that communication norms are probably more significant than the number of remote days. This doesn't mean that being in a for office is irrelevant. In-person interaction can aid in socialisation, mentoring and complex problem-solving. When a team goes hybrid, productivity depends on whether digital communication can support continuity across remote and office work.

The research advocates a move away from tool-centric perspectives and towards a communication-design perspective of hybrid productivity. The issue isn't whether employees are on Microsoft Teams, Zoom or Slack or using email or dashboards, but whether the use of these tools is embedded in norms which are culturally inclusive, linguistically clear, temporally fair and accountable. When digital interaction is viewed as an organizational capability instead of a set of disconnected applications, hybrid work becomes productive.

IMPLICATIONS FOR MANAGERS

It is important for managers to establish communication charters for hybrid teams. The charters should indicate response-time expectations, preferred channels, meeting rules, documentation, escalation routes and language. Cross-country and cross-cultural discrepancies in a team member's expectations and assumptions can easily create discord.

Further, management ought to reduce synchronous unnecessary meetings and strengthen asynchronous coordination. Meeting these goals often need written agendas, decision logs, task boards and recorded updates so that all employees across time zones can participate, without

forcing any to join in inconvenient meeting hours. Non-native speakers resonate and participate better when offered time and space to process information in asynchronous system.

Furthermore, organizations should offer training for cultural intelligence that is realistic and communication-oriented. Training should include cultural differences regarding feedback, disagreement, silence, hierarchy, time orientation, and uncertainty. Workplace cultural differences can lead to misunderstandings, and employees must learn how to ask non-blaming clarifying questions.

Fourth, leaders must foster trust in hybrid teams. Consistently reinforcing trust through demonstrated commitments, visible progress, fair workload and recognizing reliable digital behavior is key. Trust does not mean a lack of accountability, but accountability should be structured through systems and not surveillance.

Organisations should conduct audits on the use of digital tools. When each platform is a simultaneous channel, tool overload depresses productivity. Teams need to map their use of platforms for urgent issues, formal decisions, project tracking, knowledge storage and informal bonding. This enhances information integration and aids communication.

Table 10. Practical Implications for Hybrid Workplace Management

Area	Managerial action	Expected contribution
Communication norms	Create written rules for meeting purpose, response time, channel selection, language clarity, and decision documentation.	Reduces ambiguity and improves cross-cultural predictability.
Inclusive meetings	Rotate meeting times, circulate agendas, invite written comments, and protect turn-taking for non-native speakers.	Improves participation across regions and language groups.
Asynchronous coordination	Use dashboards, shared documents, and task boards for status updates instead of using every issue as a meeting.	Controls meeting fatigue and supports time-zone fairness.
Cultural intelligence training	Train employees and managers in cultural	Strengthens the communication-productivity link.

	interpretation, feedback style, directness, silence, disagreement, and escalation norms.	
Trust routines	Make commitments visible, track dependencies, and recognize reliable digital citizenship.	Builds confidence in remote colleagues and reduces monitoring costs.
Leadership support	Leaders should intervene early in miscommunication, set hybrid rituals, and model culturally respectful interaction.	Aligns digital communication design with productivity outcomes.

Note. These recommendations are derived from the conceptual model and reconstructed statistical findings.

THEORETICAL CONTRIBUTIONS

This research makes three theoretical contributions. To begin, it fuses both cross-cultural management and research on the digital workplace by viewing virtual communication as a cultural and technological process. The significance of this is that hybrid work is not culturally neutral, as digital interaction implies assumptions about language, time, hierarchy and participation.

The effectiveness of digital communication is also a mediator between cross-cultural communication and productivity. It explains how culturally sensitive communications become performance relevant. In the right conditions, communication that is productive and respectful creates clarity of decision, retrievability of knowledge and coordinated action.

The model recognizes that cultural intelligence can limit a Smithian process. As opposed to communication frequency, communication quality enhances productivity in global virtual teams. This is evident from the case study of a multi-national oil and gas company. It connects individual capability, team communication and productivity outcomes in one holistic framework.

LIMITATIONS OF THE RESEARCH STUDY

- 1 The main limitation is that the dataset is a reconstructed/hypothetical one for academic demonstration. It must be read carefully before citing the statistical findings as results of a completed field survey. They demonstrate how a properly constructed empirical manuscript may

report results, but factual field data are required for claim to publication.

- 2 The study relies on self-reported productivity rather than objective performance measures such as project completion time, sales output, code commits, or customer satisfaction. When objective measures are not available, self-reports give useful information, albeit potentially affected by perception bias.
- 3 The model is cross-sectional and doesn't address causation. Longitudinal or experimental designs would provide stronger evidence of causal mechanisms, which mediation and moderation demonstrate statistically.
- 4 It's possible that the sector-specific focus on knowledge-intensive organisations limits generalisability to manufacturing, healthcare, field operations or public-sector contexts with different hybrid work structures.
- 5 Prior to being used in the field, a questionnaire needs pilot testing and validation through exploratory and confirmatory factor analysis.

FUTURE RESEARCH PROSPECTS OF RESEARCH.

Future studies ought to collect primary data from employees who work in actual cross-cultural hybrid teams and compare the results across industries, countries and organisational levels. A multi-nation design would be particularly useful as it could test whether communication-productivity relationships vary across cultural clusters. The impact of cultural intelligence can also be assessed by comparing fully remote teams with hybrid and office-dominant teams by researchers.

Longitudinal studies can explore how trust and communication norms emerge over time. As virtual teams go through stages of formation, conflict, norm setting and performance, a time based design might identify when cultural misunderstandings are most damaging and when leadership intervention most useful. Future research may also utilize objective digital traces such as how often people meet; how quickly they respond to messages; how frequently they update project-management statuses; and how often they complete tasks but in a way that protects the privacy of employees.

The effectiveness of generative AI in cross-cultural communication is another interesting area. AI software can help with translation, drafting summaries and taking meeting notes, they can also introduce bias, and reduce relational nuance. In future research, it would be worthwhile to explore whether the benefits of AI-assisted communication – increased language clarity and time-zone coordination – are

outweighing newly introduced risks that will emerge in culturally diverse teams.

FINAL THOUGHTS

The paper explored the link between cross-cultural virtual team communication and employee productivity in hybrid workplaces. It made a case that productivity in hybrid work cannot be understood by simply locations or technology's use. The productivity of culturally diverse employees using digital tools depends on whether their communication is clear, inclusive, trusted and coordinated. According to the quantitative analysis that was reconstructed, cross-cultural communication, digital communication effectiveness, trust, clarity of language/time-zone coordination, leadership support and employee productivity are positively related.

The primary conclusion is that the effectiveness of digital communication is the operational link between cross-cultural communication and productivity. When cultural sensitivity becomes productive, it generates better channel choice, decision clarity, information retrieval, and asynchronous coordination. Cultural intelligence enhances this relationship because employees can accurately read difference and adjust communication behaviours. The confidence of the groups and the backing of the leaders provide the relational and structural bases needed for these processes to work.

According to the study for managers, it is good to move on from just office days and remote days debates. A more important question concerns how hybrid communication is designed. Companies that set clear norms, support asynchronous coordination, train culturally-competent employees, and build trust enjoy more productive digital business interaction. For researchers, the study presents a testable model that may be confirmed with primary field data in many sectors and countries.

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Appendix: Questionnaire

Instruction to respondents: Please read each statement carefully and mark your response on a five-point scale where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree. The questionnaire is intended for employees who have experience working in hybrid or virtual teams with culturally diverse colleagues.

Section A: Demographic Profile

- Age group: 21-30 / 31-40 / 41-50 / Above 50
- Gender: Male / Female / Prefer not to say
- Highest education: Bachelor degree / Master degree / Professional or doctoral degree
- Sector: IT/ITES / Consulting / Finance / Education technology / Digital services or MNC / Other
- Work experience: Less than 2 years / 2-5 years / 6-10 years / Above 10 years
- Hybrid work frequency: 1-2 remote days per week / 3 remote days per week / 4-5 remote days per week
- Cultural background or region of primary work interaction: Domestic multicultural / South Asian / European / North American / Middle Eastern / East or Southeast Asian / Other

Section B: Cross-Cultural Virtual Team Communication

- Messages shared in my virtual team are culturally sensitive and respectful.
- Team members clarify culturally ambiguous meanings during digital communication.
- Online meetings allow culturally diverse members to contribute meaningfully.
- Digital channels help reduce misunderstanding among culturally diverse employees.
- Our team has explicit and inclusive communication norms.

Section C: Digital Communication Effectiveness

- Digital tools support timely decision-making in my team.
- Communication channels are selected according to task complexity.
- Online meetings are well-structured and purposeful.
- Important information is easy to retrieve from digital platforms.
- Asynchronous updates reduce unnecessary meetings.

Section D: Cultural Intelligence

- I adapt my communication style when working with culturally different colleagues.
- I understand cultural differences in work expectations.

- I remain effective even when communication norms differ from my own.
- I learn from culturally diverse workplace interaction.

Section E: Trust and Psychological Safety

- Team members honour commitments made through digital communication.
- Remote colleagues respond reliably across time zones.
- I feel safe depending on colleagues whom I mainly interact with online.
- Colleagues share information without excessive monitoring.
- I can ask questions in virtual meetings without embarrassment.
- Different cultural opinions are welcomed in my team.

Section F: Language Clarity, Time-Zone Coordination and Technology

- The common working language is clear and understandable.
- Time-zone differences are handled fairly in meeting schedules.

- Deadlines consider cross-region availability.
- Written communication reduces language ambiguity.
- I can use collaboration platforms effectively.
- Project dashboards help me track assigned work.

Section G: Employee Productivity

- I complete tasks on time in hybrid work.
- Digital interaction helps me maintain work quality.
- Hybrid communication supports achievement of my work goals.
- I manage workload efficiently across virtual channels.
- My output has improved through effective online collaboration.

Section H: Open-Ended Questions

- What is the biggest communication challenge you face in a cross-cultural hybrid team?
- Which digital platform helps your productivity the most, and why?
- What should managers do to improve cross-cultural communication in hybrid workplaces?