

BRIDGING THE DIGITAL DIVIDE: A GLOBAL COORDINATION CHALLENGE

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INTRODUCTION

Connectivity provides access to information, learning, employment, and participation. Yet it remains unequally distributed across global contexts, with 2.2 billion people still offline in 2025 (ITU, 2025). This persistent digital divide constitutes a major structural barrier to participation in the global economy, especially in low-income, rural, and institutionally under-resourced settings.

Importantly, the digital divide extends beyond access to infrastructure. Meaningful participation in the digital economy depends on the ability to use digital technologies effectively, requiring digital literacy, organizational capabilities, and institutional support. Where these remain weak, individuals and organizations struggle to participate in cross-border markets, locations struggle to attract digital investments, entrepreneurial firms face barriers to international scaling (Aparicio et al., 2021; Appiah et al., 2025; Luo & Bu, 2016), and local actors rarely join global value-creation processes (Fraccastoro et al., 2025; Luo, 2022; Oliveira et al., 2021).

We argue that bridging the digital divide should therefore be understood not merely as an infrastructure challenge, but as a global coordination challenge. Delivering connectivity depends not only on physical networks, but also on regulatory frameworks, financing arrangements, implementation capacity, and the knowledge for its meaningful use. Achieving this requires coordination among governments, regulators, telecom operators,

financiers, international organizations, and local implementation partners across sectors and borders, each contributing interrelated components.

For International Business (IB), this makes connectivity a structural issue (Schmeisser et al., 2026; Teece, 2025): it shapes how cross-border activity is organized, how ecosystems emerge, and how location advantages evolve in the digital economy (Luo, 2021; Meyer et al., 2023). IB scholarship has advanced our understanding of digitalization, internalization choices (Banalieva & Dhanaraj, 2019), global platforms, and ecosystems (Nambisan et al., 2019; Stallkamp & Schotter, 2021), as well as encouraged stronger engagement with grand challenges (Buckley et al., 2017; Cuervo-Cazurra et al., 2026) and organizations operating at the intersection of market activity, institutional change, and public purpose (Ciulli & Kolk, 2023). However, despite these important developments, existing IB research still struggles to capture the full complexity of complex challenges such as the digital divide. In particular, our ability to formulate the most relevant research questions and generate robust empirical insights remains constrained by an incomplete understanding of real-world implementation challenges, as well as by the limitations of our traditional data sources available to researchers.

To explore this challenge, this article draws on insights from the Geneva Research Lab for Digital Impact (GRL), a collaborative initiative between the Geneva School of Economics and Management at the University of Geneva and

the Digital Impact Division of the United Nations Children's Fund (UNICEF). Positioned at the intersection of academia and practice, GRL serves as a platform dedicated to advancing knowledge on sustainable digital impact through collaboration between academia, international organizations, and private and public sector actors engaged in global connectivity initiatives. To date, it has brought together a growing European research network, including collaborations with scholars at academic institutions such as Copenhagen Business School (CBS), INSEAD, University College London (UCL), and the University of Lausanne (UNIL).

GRL's work is anchored in the Giga initiative (<https://giga.global/>), a partnership between UNICEF and the International Telecommunication Union (ITU) that supports governments in connecting every school in the world to the internet. Through this collaboration, GRL has unique access to global implementation processes and data, enabling the study of connectivity as an evolving international phenomenon (Tatarinov & Ambos, 2025). Its research agenda focuses on the enablers, pathways, and outcomes of connectivity, examining, for example, how country engagement facilitates implementation across heterogeneous contexts, how ecosystems for school connectivity are orchestrated to enable scaling pathways, and how connectivity outcomes in remote communities can be assessed to capture broader socioeconomic effects.

Building on this context, we develop a perspective on connectivity as a global coordination challenge. We position connectivity as a central analytical concern for IB by showing that bridging the digital divide is not merely a digital infrastructure challenge alone, but a cross-border coordination challenge that shapes ecosystem formation, implementation processes, and the evolution of location-specific advantages. Building on this broader perspective, we advance IB research in three more specific ways. First, we show how connectivity implementation depends on multi-level coordination across heterogeneous institutional contexts, extending IB discussion on HQ-subsidiary relations, selective attention, and embeddedness to the implementation of global connectivity

initiatives. Second, we extend IB scholarship beyond its traditional focus on firm-centric internationalization and commercially driven ecosystems by examining how heterogeneous actors coordinate across sectors under conditions of institutional complexity, uneven development, and partially conflicting objectives. This shifts attention away from relatively aligned, firm-led ecosystem settings toward forms of orchestration that depend on legitimacy-building, negotiation, and incentive alignment across public, private, and mission-driven actors. Third, we show how the connectivity context opens new empirical and methodological opportunities for IB research by enabling the measurement of localized and long-term developmental effects through geospatial and satellite data. This expands IB's ability to study how connectivity reshapes socioeconomic activity, market formation, and the evolution of location-specific advantages in institutionally under-resourced environments. To structure these contributions, we focus on three interconnected dimensions: (1) implementation enablers, (2) ecosystem scaling pathways, and (3) connectivity outcomes.

ENABLING CONNECTIVITY: HOW TO ENGAGE COUNTRIES IN THE QUEST TO BRIDGE THE DIGITAL DIVIDE

A central challenge in global connectivity initiatives lies not in defining global ambition, but in translating broad goals into coordinated implementation across distributed organizational systems. Recent work on maverick organization design highlights how some organizations operate through lean structures and distributed authority rather than a single command center (Tatarinov & Ambos, 2025). Giga exemplifies this logic through a dual-headquarters configuration, with one hub in Barcelona focused on technology and another in Geneva coordinating management and partnerships, both embedded within UNICEF's broader network of regional and country offices. While such distributed structures enable local responsiveness and contextual adaptation, they also introduce fragility, as implementation depends on alignment across multiple

organizational levels. Changes in country-office personnel, for instance, can quickly disrupt headquarters–subsidiary relationships and slow implementation progress.

Within this context, country engagement emerges as a critical implementation enabler. Mobilizing connectivity initiatives is not a straightforward top-down process, but rather a multilevel coordination challenge in which central actors must first align internal priorities before country offices, government counterparts, and delivery partners can be activated effectively. Country engagement therefore shapes where managerial attention is directed, where legitimacy can be established, and where viable implementation coalitions can emerge.

In practice, these decisions involve substantial trade-offs. Giga, for example, may face choices between engaging a country with strong political commitment but weak infrastructure and one with stronger technical capacity but less ministerial momentum. The challenge is therefore not simply identifying where need is greatest or where implementation appears administratively easiest. Rather, it concerns how a complex international organization sequences action across heterogeneous host-country contexts while maintaining sufficient consistency to scale effectively.

This challenge closely resonates with IB research on headquarters–subsidiary relations, selective attention, differentiated embeddedness, and multilevel coordination (Ambos & Birkinshaw, 2010; Kostova et al., 2016; Meyer et al., 2020). However, the connectivity context extends these concerns further because school connectivity is not a short-cycle intervention. Sustained implementation requires coordination around regulation, financing, procurement, maintenance, data governance, and long-term political commitment well beyond initial deployment. Country engagement decisions must therefore assess not only immediate readiness, but also the long-term viability of implementation efforts. The critical question is thus not merely where to begin, but where implementation can be sustained over time.

Once initial implementation traction is achieved, however, a second challenge emerges: how can organizations incentivize diverse stakeholders to support, co-invest in,

and scale connectivity initiatives across contexts? Addressing this question shifts the focus beyond intra-organizational coordination toward the broader ecosystem dynamics and cross-sector pathways through which connectivity can expand sustainably.

SCALING CONNECTIVITY: CROSS-SECTOR VALUE PROPOSITIONS AND ECOSYSTEM ORCHESTRATION

Connectivity is often framed a technical issue, but in practice it constitutes an ecosystem challenge (Jacobides et al., 2019; Li et al., 2019; Nambisan et al., 2019; Tatarinov et al., 2023). Connecting schools at scale requires the coordinated involvement of public authorities, regulators, telecom operators, donors, and implementation partners, each controlling only part of the resources and capabilities necessary for delivery. Unlike many ecosystems traditionally studied in IB, which are often relatively aligned, commercially driven, and organized around inter-firm complementarities, connectivity ecosystems involve heterogeneous public, private, and mission-driven actors pursuing only partially aligned objectives. Governments may prioritize educational inclusion, digital sovereignty, and public sector delivery; telecom operators may focus on commercial viability and infrastructure utilization; international organizations and donors may emphasize equitable development outcomes; while local communities may prioritize affordability and contextual relevance. These ecosystems also frequently operate in institutionally under-resourced environments where market mechanisms alone are insufficient to sustain coordination. As a result, ecosystem governance depends less on hierarchical control or purely market-based incentives and more on orchestration processes centered on legitimacy-building, negotiation, and incentive alignment across heterogeneous actors.

School connectivity, therefore, depends on constructing a sufficiently compelling shared value proposition that motivates sustained participation despite divergent priorities. In some contexts, these priorities may conflict directly, particularly when commercially unattractive rural areas are simultaneously those with the greatest developmental need. Scaling connectivity thus requires translating

heterogeneous and sometimes competing interests into shared incentives that enable actors to co-invest in and support long-term implementation.

This places ecosystem orchestration at the center of connectivity expansion. While tools such as ecosystem mapping can help identify key actors, roles, and goals, effective orchestration extends beyond simple actor identification. It requires understanding the interdependencies, complementarities, and power dynamics that shape how ecosystems function and evolve (Casprini & Palumbo, 2022). However, scaling alone is insufficient to ensure lasting impact. For connectivity to create durable value, the surrounding ecosystem must also support the broader enabling environment necessary for meaningful and sustained use. School connectivity is unlikely to be transformative if electricity is unreliable, maintenance arrangements are absent, devices are unusable, or schools lack the organizational capabilities needed to integrate connectivity effectively into everyday practices. Demand-side anchoring - particularly through ministries of education and other government actors – therefore becomes critical in embedding connectivity into teaching, administration, and local service delivery. The challenge is thus not merely to increase the number of connected schools, but to ensure that connectivity becomes durable, functional, and integrated into broader systems of use.

This shifts the analysis beyond scaling toward the broader question of ecosystem viability (Nambisan et al., 2019). A viable ecosystem is one that can sustain itself over time without relying on continuous external mobilization (Savaget et al., 2025). Achieving such viability requires governance arrangements, incentive structures, and stakeholder commitments that render connectivity operationally, financially, and politically sustainable. In practice, this may involve recurring maintenance routines, clarifying public-private role allocations, coordination across ministries, or embedding connectivity within long-term public budgeting structures.

When these conditions are established, connectivity initiatives may generate self-reinforcing socioeconomic effects, including improved access to information, services, and

market opportunities that strengthen the rationale for continued investment. This, however, raises a further question: how can organizations assess whether connectivity initiatives generate meaningful and lasting impact across diverse contexts? Addressing this question shifts the focus beyond ecosystem design and scaling toward the broader challenge of understanding, measuring, and evaluating connectivity outcomes.

CONNECTIVITY OUTCOMES: SYSTEMIC PERSPECTIVES AND NEW WAYS OF MEASURING

Ultimately, the value of school connectivity depends not only on how effectively it is organized and scaled, but also on the outcomes it generates. The most immediate and visible of these are educational outcomes. Connectivity can improve access to digital learning materials, facilitate communication between schools and education authorities, support teacher training, and strengthen the administrative coordination. In doing so, it has the potential to enhance both the quality and reach of education by linking remote schools to broader educational resources and systems.

Yet empirical findings on the educational effects of school connectivity remain mixed (see, for example, Belo et al., 2013; Derksen et al. 2019; Malamud et al., 2019; Vigdor et al., 2014). This highlights an important challenge: connectivity alone does not automatically generate positive outcomes. Its impact depends on how deeply it is embedded within organizational practices and whether complementary capabilities and support structures are in place. Robust empirical evidence is therefore essential for initiatives like Giga to understand the conditions under which connectivity translates into meaningful impact.

Importantly, the effects of connectivity often extend beyond educational settings alone. In many remote areas, connected schools function as broader community hubs, providing access to information, enabling communication beyond the local context, and stimulating wider socioeconomic activity (Caldarola et al., 2023). Connectivity, therefore, has ripple effects across surrounding domains and sectors, shaping

information flows, human capital development, and local market dynamics. This broadens the lens through which connectivity should be understood; not as a technical issue, but as a broader systemic development mechanism (Bansal & Birkinshaw, 2025).

The broader developmental implications of connectivity make impact measurement essential. However, assessing such outcomes remains methodologically challenging. While prior research has explored the effects of connectivity on online trade (Hjort & Tian, 2025), measuring offline socioeconomic outcomes has proven considerably more difficult. Traditional data sources are often incomplete or unavailable, particularly in rural and institutionally under-resourced contexts, while on-site data collection is inherently difficult.

These constraints create a compelling case for the use of geospatial data and related methods as timely, objective, and globally comparable for impact assessment. Rather than relying solely on lagged or incomplete administrative indicators, geospatial approaches can help track changes in the surroundings of connected schools over time (Agrawal & Gupta, 2026). Satellite imagery and related spatial data, for example, may provide insights into whether school connectivity is associated with observable signs of socioeconomic activity, such as the emergence, density, or evolution of local marketplaces. Building on Giga's data on school location and connectivity, GRL is combining such information with temporal and visual signatures of offline market activity (von Carnap, 2023) to examine whether connectivity through schools as communal hubs contributes to broader physical market development. This provides a novel opportunity to assess whether, where, and under what conditions connectivity generates broader developmental effects.

For GRL, this represents a promising research frontier. By examining how accessibility to connectivity shapes socioeconomic indicators in remote communities, the Lab can generate insights that inform more effective strategies for prioritizing connectivity expansion in rural regions. Its unique access to implementation and spatial data creates opportunities to link educational effects within schools to broader community-level outcomes, thereby enabling

methodological innovation in impact measurement. More broadly, this analytical capacity shifts the focus from assessing whether connectivity is merely delivered toward understanding whether it generates durable and meaningful value.

For IB, these outcomes matter because connectivity may reshape the location-specific advantages (Narula & Santangelo, 2012) of previously peripheral regions by improving human capital, strengthening information flows, and facilitating market formation. School connectivity thus has implications not only for developmental outcomes, but also for how remote locations become increasingly viable for future partnerships, sourcing, and market development.

CONTRIBUTION AND CONCLUSION

The preceding sections have argued that connectivity should be understood not as a technical intervention, but as a global coordination challenge. Addressing the digital divide requires more than infrastructure deployment; it depends on how heterogeneous actors align across sectors and borders, how ecosystems scale under conditions of institutional complexity, and how outcomes are generated and sustained over time.

To structure this challenge, we have outlined three interconnected dimensions through which connectivity can be analyzed. First, implementation depends on country engagement and multilevel coordination, as organizations must sequence action across heterogeneous institutional contexts. Second, scaling depends on ecosystem orchestration, whereby actors with diverse objectives must align around shared value propositions to enable sustainable expansion. Third, outcomes depend not only how connectivity is embedded in organizational and societal contexts, but also on the ability to assess its broader developmental effects through new methodological approaches, including geospatial and satellite-based remote sensing data.

Taken together, these dimensions suggest that bridging the digital divide is best understood not as a dynamic and recursive process. Early implementation decisions shape the formation

and structure of connectivity ecosystems, whose configurations subsequently influence the scale, depth, and durability of resulting outcomes. These outcomes, in turn, affect perceptions of legitimacy and effectiveness, thereby reinforcing or weakening stakeholder commitment to future scaling efforts.

For IB, this perspective contributes in four broader ways. First, it positions connectivity as a central analytical concern for IB by showing that the digital divide is not merely an infrastructural challenge, but a cross-border coordination challenge that shapes ecosystem formation, implementation processes, and the evolution of location-specific advantages (Narula & Santangelo, 2012). Second, it extends IB discussions on headquarters–subsidiary relations, selective attention, and embeddedness (Ambos & Birkinshaw, 2010; Kostova et al., 2016; Meyer et al., 2020) by examining how global connectivity initiatives are implemented across heterogeneous institutional contexts through multilevel coordination processes. Third, it extends IB ecosystem research beyond relatively aligned, commercially driven, and firm-led ecosystems (Jacobides et al., 2018; Nambisan et al., 2019) by examining how orchestration depends on legitimacy-building, negotiation, and incentive alignment across public, private, and mission-driven actors operating under conditions of institutional complexity and uneven development. Fourth, connectivity opens new empirical and methodological avenues for IB research by enabling the study of longitudinal, localized developments through geospatial and satellite-based remote sensing data.

More broadly, connectivity provides a valuable empirical setting for theorizing how solutions to complex societal challenges move from initial mobilization to durable and far-reaching societal impact. Because such challenges cannot be solved through isolated investments or one-time interventions, they require sustained coordination, institutional adaptation, and outcomes strong enough to maintain long-term stakeholder commitment. The challenge ahead is therefore not only to connect more places, but to understand how connectivity can generate lasting and inclusive value in an increasingly complex and fragmented world. In this regard, the GRL aims to serve as a platform for advancing research

and collaboration at the intersection of connectivity, cross-sector initiatives, and societal impact. As part of this broader mission, it seeks to foster continued scholarly and practitioner engagement around these themes, including through initiatives such as its forthcoming Academic Forum on Digital Impact in Geneva in August 2026, which will convene researchers and practitioners to further explore questions related to digital connectivity, impact measurement, and cross-sector collaboration.

The call for contributions is currently open, inviting work that engages directly with these challenges across systems and scales: <https://genevaresearchlab.org/en>.

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