Digital Development: Reimagining Research Beyond ICT4D

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Abstract: This editorial introduces a conceptual framework that reimagines research on Information Communication for Development (ICT4D) as "digital development," recognising the inseparable intertwining of digital and development trajectories. This framing is aimed at the broader Information Systems (IS) research community, which includes ICT4D researchers, based both in the Global South and the Global North. Digital development encompasses three dimensions: *digital in development* (institutional use), *digital for development* (conscious design for outcomes), and *development in a digital world* digital entanglement in development practice.). We argue that this reimagination is necessary for three reasons. First, digital technologies are becoming increasingly entangled with many development initiatives, implying the need to be studied as a duality, not dualism. Second, we are witnessing the rising complexity of contemporary and emergent development challenges, which are not just limited to the Global South, but to the world at large. Third, the IS and ICT4D research fields have long worked in relative isolation from each other, but they need to synergistically create new theories and methods to address the rising complexities inherent in "the digital" and development. We provide a brief overview of the existing ICT4D field to identify critical areas for reconceptualization and expansion. This is then illustrated by examples from four empirical domains, namely – humanitarian governance, global health, financial inclusion, and digital nomadism – which are representative of contemporary and emerging digital development challenges. This leads to the development of theoretical, policy and practice, and methodological implications, which provides a basis to formulate a research agenda for digital development.

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1. Introduction

1.1. From ICT4D to Digital Development

Since the 1980s, the field of Information and Communication Technology for Development (ICT4D, or Information and Communication Technology and Development, ICTD), has served as the primary conceptual home for studying the role of information and communication technologies (ICT) in development, traditionally understood as information technology (IT) enabled progress in the Global South. The field has examined a range of development challenges in the Global South, demonstrating how digital technologies can both alleviate and exacerbate these issues. However, as digital platforms become more central, data infrastructures and datafication processes intensify, and algorithmic systems become deeply entangled in global development, a broader and more inclusive lens is critical to understand and engage with these changing realities.

In this editorial, we address the emerging need for a more holistic program through the lens of "digital development", which we believe can help expand the existing, yet arguably narrow, conceptual boundaries of the ICT4D field. With this framing of digital development, we aim to engage a broader community of information systems (IS) scholars and practitioners in advancing new theories and frameworks that can help make sense of and respond to emerging societal and developmental challenges globally. This framing is based on two key assumptions. First, development challenges, such as climate change, healthcare, and financial inclusion, have moved beyond the traditional geographical focus of the Global South to influence the entire world. For example, the growth in refugee movement from conflict-affected countries in the South, such as Afghanistan and Libya, to the relatively rich and perceived more secure shores of Italy, France, and UK, generate significant development challenges, such as those related to housing, immigration, and the creation of stark political divides. Indeed, the term "development" encompasses all 17 United Nations Sustainable Development Goals (UN-SDGs), reflecting the quest to develop humanity, not limited to the Global South. Second, the "digital" is now deeply implicated in the development phenomenon, for example, in enhancing access to healthcare, improving agriculture, tracking the movement of refugees and monitoring the process of their asylum applications. Clearly, the digital and development trajectories are increasingly becoming inseparably intertwined.

This editorial aims to move beyond traditional ICT4D studies on where IS/IT is used, primarily in the Global South, towards a more pragmatic examination of the "developmental" impacts of "digital" technologies globally, specifically what changes, how, why, when, and for whom. Such a shift necessitates reflection on the conceptual boundaries of development as they are reshaped by increasing digitalisation globally. Towards this goal, the editorial aims to reframe and propose new ideas from across IS and ICT4D scholarship, which we believe have much to offer each other in developing an integrated lens of digital development.

1.2. Conceptualizing Digital Development

The use of the term "digital development" is not entirely new. Heeks (2016) traces its origins to the 2000s, when it emerged to address concerns around the digital divide, before eventually being overtaken by the term "ICT4D". However, the last decade has seen a return of and increasing use of the term, digital development. For example, the Digital Development Working Paper Series of the Global Development Institute at Manchester focuses on a broad range of issues surrounding digital data, information, knowledge, IS and ICT in socio-economic development, in diverse domains such as the informal economy, upland (mountainous) regions, artificial intelligence (AI), smart cities, gig economy, digital divide and political economy. Outside of academia, the United Nations commissioned a report on digital development in 2015 (UNCTAD 2015), the United States Agency for International Development (USAID) set up a Digital Development team as part of its Global Development Lab, and the World Bank used the term in its 2016 World Development Report (World Bank 2016).

Digital development can be conceptualised as comprising three aspects associated with the relationship between digital and development, that we endorse: (1) *digital in development*, (2) *digital for development*, and (3) *development in a digital world* (Roberts 2025). *Digital in development* refers to the use of digital technologies in the routine work of development institutions, such as for coordinating programmes, managing finances, and strengthening monitoring and evaluation processes. While this might appear on the surface to be similar to terms such as digitalisation or digital transformation, the point of difference is that it is specifically understood in the context of development processes, which come with their own particularities, such as the geopolitics of funding priorities of donors. *Digital for development* refers to the conscious design and application of digital tools explicitly for development-related outcomes in different contexts, such as m-health, e-health and fintech initiatives. *Development in a digital world* refers to the engagement in international development work to improve the lives of people, communities and geographical regions living in compromised socio-economic and political conditions, now experienced in an increasingly digitalised context. As our social, economic and political lives become increasingly datafied, the effects on international development are substantial. Indeed, Sahay et al. (2024) invoke this concept in their recent book to emphasise the need to shift focus away from narrow conceptualisations of ICTs' success or failures (primarily, the latter) with respect to an examination of the invisible and contextualised development-related learnings.

Our conceptualisation of digital development aims to bring under the purview of research the more complex and interconnected problems faced globally, such as climate change, pandemics, antimicrobial resistance, financial inclusion, and humanitarian crises, in which the digital is increasingly deeply implicated. Roberts' (2025) three interconnected themes enable researchers from a variety of disciplines to engage with emergent developmental challenges, which are complex, locally situated yet global in scale, real-time in nature, and interconnected. Addressing them demands that digital technologies and innovations, such as Internet of Things (IoT), blockchain, AI and machine learning (ML), do not merely support

development but actively shape its form and determine whom they ultimately serve. Digital technologies are not merely a support for development; rather, they are constitutive of how development is imagined, organised, and challenged. This requires the development of novel conceptual approaches and vocabulary that recognise digital and development as a duality, across each of Robert's three dimensions, to guard against deterministic arguments that privilege one side over the other. Often, in existing ICT4D research and policy statements, the digital is treated as a "silver bullet" that will make developmental challenges disappear; yet history points to the fallacy of such deterministic assumptions (Sahay et al. 2022). Further, there is a growing need to reflect on the growing pervasiveness, performativity, and empowerment potential of the digital in shaping and mitigating development as a global challenge (Khanra and Shirish 2025). To this end, we call for a more widespread adoption of the concept of digital development and offer an operational definition of it as "*a process in which there is increasing entanglement of digital technologies and development practices, aimed towards addressing complex developmental challenges, including those related to power and information asymmetries, within historically embedded situated contexts*". We revisit and expand upon this definition, based on concrete empirical examples of the digital development phenomenon in the domains of humanitarian governance, global health, financial inclusion and digital nomadism, later in the paper.

This conceptualisation of digital development marks a significant departure from the traditional ICT4D framework in at least four ways: (1) it shifts from a primarily geographic lens to engage with globally relevant development issues, (2) it redefines the role of digital technologies as not merely instrumental tools for development but as ontologically intertwined with and constitutive of development processes, (3) it promotes an epistemological and methodological shift towards interdisciplinary research that critically examines power dynamics, infrastructure, competing interests and information asymmetries, and (4) it creates room for explicitly futures-oriented explorations, including digital imaginaries, and an engaged shaping of future possibilities (Davison and Schwabe 2025; Schlagwein et al. 2025; Handunge, Oborn, Barrett 2025; Mager and Katzenbach 2021).

Digital development emphasises the intrinsically entangled and ontologically fused processes in which digital and development are unified and co-constitutive. It helps imagine and address a multitude of complex global challenges and foregrounds how development is imagined, theorized, organised, and pursued via digital means. Digital development recognises the unevenly distributed nature of the digital revolution, ongoing digital divides and their implications for inclusive access to rights, opportunities, justice and services. This conceptualisation is consistent with sociotechnical thinking associated with the IS discipline (e.g., Sarker et al. 2019) and explicitly extends it into the development domain. Rather than simply viewing social and technical elements as working in tandem, digital development centres on their mutual entanglement and constitutive nature, as mutually shaping and reshaping one another, thereby creating new avenues for value creation and development (Seetharaman et al. 2024; Shirish et al. 2025). This framing also emphasises the role of digital technologies as generative platforms that potentially mediate and transform development and innovation processes (e.g., Baiyere et al. 2023; Srivastava and Shainesh 2015; Yoo et al.

2024). Digital interventions also come with potential for unintended consequences, including raising risks of expanding the "dark side" of ICT impacts (Cheung et al. 2024). Heeks describes an unintended consequence of 'adverse digital incorporation', where people may be averse to being digitally represented due to risks of enhanced surveillance and potential social stigma (Heeks 2022).

These points of departure in understanding digital development are crucial for broadening the engagement of a wider and multidisciplinary community of scholars, representing both the mainstream IS and the ICT4D communities, by breaking down long-standing theoretical, methodological and sometimes ideological silos. In this editorial, we illustrate the need for such a shift through a series of selected empirical areas, building upon and extending the foundational contributions of the ICT4D community, including the longstanding contributions of dedicated journals such as the *Electronic Journal for Information Systems in Developing Countries (EJISDC)* and *Information Technology for Development (IT4D)*, which have played a crucial role in advancing and bringing visibility to this important field of research. Before examining these empirical areas, we briefly revisit the history of ICT4D.

2. A Brief History of ICT4D

The fast-evolving, intervention-driven nature of digital technologies has made ICT4D a field which has been shaped through an interplay of research, policy and practice. In this section, we examine the assumptions underlying policy narratives on ICT's role in development and review scholarly contributions across the three periods identified by Walsham (2017), while also extending the analysis to a fourth period.

In the first period, spanning the mid-1980s to the late 1990s, before the productivity paradox was resolved, global institutions like the World Bank, United Nations Development Program (UNDP) and International Telecommunication Union (ITU) promoted the narrative that ICTs could contribute to transforming or "leapfrogging" development in the Global South. This assumption, rooted largely in modernisation theory, was marked by historical analogies across contexts towards a universal path to progress through technology and knowledge diffusion. Scholars in research networks, such as the International Federation for Information Processing's (IFIP) Working Group 9.4, were motivated to undertake micro-level and primarily descriptive case studies to document the experiences of ICT implementation in the Global South. For example, Jarvenpaa and Leidner (1998) studied how one local firm in Mexico was able to shape its external environment by creating a native information industry. This period saw the growth of foundational work in framing technology as a sociotechnical system, emphasising that successful technology adoption in the Global South required analysis of the context including prevailing social, cultural, political and institutional factors (Walsham et al. 1988).

The second period, from the late 1990s to the mid-2000s, was characterised by a major transition in the ICT4D landscape closely tied to neoliberalism together with global diffusion of the Internet and the rise of mobile technologies. The policy narrative of bridging the digital divide served as a key agenda item in major global forums such as the World Summit on

Information Society (WSIS). A new wave of more targeted ICT4D applications in areas such as telecentres, e-government and e-health resulted in promoting and challenging assumptions about how digital connectivity can enhance inclusion (and exclusion), particularly for marginalised and underserved populations. A complex and diverse ecosystem of actors became involved in ICT4D, each with different roles, interests and power positions. Sponsors and funders could be development agencies, philanthropic foundations, non-governmental organisations (NGOs), national/subnational government agencies in the Global South and tech companies. These organisations often outsourced ICT projects, for example, to social enterprises such as Ushahidi, and consulting organisations such as Accenture. As the infrastructure situation improved, ICT4D research began to shift from purely technical or access-based concerns to more critical analytical themes, such as processes of institutionalisation that enhanced benefits for local communities (Madon et al. 2007), critiques to traditional "technology transfer" models, through the theorisation of the role of time, space and culture, as exemplified by Sahay's research on Geographical Information Systems (GIS) (Sahay 1998).

In the third period, from the mid-2000s to the mid-2010s, scholars engaged more critically with unpacking fundamental theoretical assumptions behind discourses on ICT innovation and the meaning of development. For example, Avgerou (2010) compared the underlying rationale behind transfer and diffusion of innovation versus socially embedded perspectives on ICT innovation, with progressive versus disruptive interpretations of development. Several scholars, such as Lin et al. (2015) and Srivastava et al. (2016), took a critical political economy perspective to examine how power, politics, institutions and economic structures shape the use and impact of ICT for development. These discussions demonstrated how pre-existing socio-political networks provide the structure into which digital technologies are integrated. The participatory turn in development thinking and in the social sciences during this period had a profound influence on research in the field. The "participation" of low-income communities in processes of development had historically drawn upon a neoliberal lens aligned with the Bottom-of-the-Pyramid paradigm of market-led growth. The idea was that low-income communities could be integrated into development processes as consumers of global products such as household goods and mobile phones. However, this perspective was criticised as subscribing to the notion of "trickle-down economics," implying as the rich become richer, some benefits will also accrue to those lower in the social strata. This economic model became largely discredited both in policy and research (Walsham 2010) based on evidence that the benefits of ICT-based market access depended on the ability of low-income populations to harness new resources and social networks for productive gain in their local livelihoods (Ilahiane and Sherry 2012). Furthermore, ICT4D scholars critically evaluated ICT as an empowering tool in different countries and application contexts. Davison and Martinsons' (2002) study in Hong Kong demonstrated that empowerment through ICT design and implementation needed to be compatible with the prevailing culture, aligning with local norms and practice. Inspired by Amartya Sen's Capabilities Approach (Sen 1993), Zheng and Stahl's (2011) novel methodological contribution was to demonstrate the value of triangulating a critical theory interpretation of ICT4D interventions with insights into the real

freedom that ICTs may present to individuals on the ground. Along similar lines, Mukherjee (2017) conceptualised empowerment as a positive and often invisible component of ICT4D initiatives to help counter dominant failure narratives in the field.

The fourth period, ongoing since 2017, is characterised by ICT4D scholars increasingly focusing on the developmental consequences of emerging technologies, alongside advancements in infrastructure and greater access to affordable smartphones. Digital platforms are being increasingly implemented in the Global South across multiple domains, including health, public service delivery, agriculture, ride-hailing, e-commerce, the gig economy and humanitarian aid as part of a broader push towards digitisation and efficiency. Bonina et al.'s (2021) meta-review demonstrates how sociopolitical contexts influence both the usage and evolution of platform functionality encouraging research that takes a political economy or critical development perspectives.

By drawing on examples from different domains, Heeks (2022) introduced the concept of adverse digital incorporation to refer to how marginalised individuals or groups may be included into platform economies in ways that reproduce or deepen inequality. One line of inquiry focused on how digital platforms are implemented within given institutional settings and their implications for building state capacity for long-term transformation. For example, although M-PESA is widely recognised as bridging an institutional gap by providing financial services to the unbanked in Kenya, Onsongo (2019) argued that relying on private sector innovation instead of strengthening the country's financial ecosystem has led to long-term structural consequences. With a focus on structural transformation, Carmody (2024) argued that the implementation of digital platforms needs to be aligned with industrial policies of import substitution and export promotion. Other studies showed that algorithmic techniques underlying the gig economy platforms come at the expense of eroding historically existing labour-protecting institutions such as those for basic social protection (Graham and Anwar 2019). In recent years, Digital Public Infrastructure (DPI) has been gaining attention in many countries in the Global South based on the assumption that platforms, technologies and policies can interoperate to simultaneously improve developmental and business outcomes at scale, for example in sectors such as health, education and commerce. However, research has been rather silent on issues such as who controls the DPI ecosystem and the dependencies and systemic risks it creates through the advent of global tech firms (Parsheera 2024). Today, the digital, such as AI and ML, is increasingly implicated in advancing the global sustainability agenda and in the achievement of the UN 17 SDGs. Iazzolino and Stremlau (2024) present a critical analysis of how big tech has attempted to depoliticise development by presenting data as an object of power and knowledge, and Marabelli and Davison (2025) highlight that the potential for environmental damage, particularly in the Global South, is enormous. Table 1 presents a summary of the key phases of evolution of ICT4D.

Table 1: Summary of Phases of ICT4D

Era	Technology	Dominant Policy Discourse	Example of Research Contribution	Research focus
Mid-1980s to Mid-1990s	Internetworking; emergence of the Internet (Hirschheim and Klein, 2012)	"Leapfrogging" development in Global South through modern ICTs	Socio-technical system view of ICT4D	Micro-level, descriptive case studies
Mid-1990s to 2000s	Internet diffusion, ubiquitous computing (e.g. mobile phone) (Hirschheim and Klein, 2012)	Digital divide, telecentres, e-health, e-government	Critical analytical themes such as processes of institutionalisation for community benefit	Technological determinism, failure narratives
2000s to Mid-2010s	Social media, mobile apps, analytics, cloud, IoT	Participation of communities in processes of development	Alternative discourses on development, such as empowerment	Social determinism, human focused development
Mid-2010s to present	Digital platforms; blockchain, AI and ML, big data	Digital transformation, SDGs	Developmental consequences, intended and unintended	Context neutrality, increasing trend towards technology and data determinism

Who are the researchers participating in ICT4D research? We meet them at conferences like IFIP WG9.4 and the AIS SIG GlobDev, and they are also visible in the journals that focus on this niche. For instance, Davison (2021) reports that in the 2017–2020 period, the *Electronic Journal of Information Systems in Developing Countries* received 638 submissions from first authors located in 72 countries, with 106 papers accepted from first authors located in 32 countries. Taking a longer perspective, from 2001 to 2024, 807 papers were published in the *Electronic Journal of Information Systems in Developing Countries* with first authors in 85 countries. Twenty-seven of these countries saw just one paper published over this 24-year period, but a few of those in the Global South had much higher totals: Thailand (16), Nigeria (18), Brazil (19), India (22), Malaysia (33), Tanzania (27), South Africa (127). The other premier ICT4D journal, *Information Technology for Development*, had listed on Scopus 559 research articles between 2008 and 2025, with first authors from 64 different countries. Many countries just had one paper represented (16), with well-represented countries from the Global South including: India (40), South Africa (35), Ghana (10), Brazil (10), Nigeria (8), Malaysia (8) and Jamaica (8). Over the years, there have also been special issues on themes related to ICT4D in several of the "AIS List of 11 premier journals", e.g. Walsham et al. (2007) on IS in developing countries, Miscione et al. (2013) on ICT4D, Sahay et al. (2017) on ICT4D, Davison and Diaz Andrade (2018) on indigenous theory, Diaz Andrade et al. (2019) on ICT4D, Nicholson et al. (2021) on digital platforms for development, Osei-Bryson et al. (2022) on ICT4D, and Tan and Nielsen (2025) on IS and sustainable development, etc.

Over the past few years, the vast expansion in the number of ICT4D researchers located in the Global South has prompted scholarly inquiry into alternative and indigenous meanings of development. As Masiero (2023) observes, theories in IS derive largely from authors based in high-income countries. She positions subaltern theory to gain an understanding of alternative perspectives on development and innovation, which have so far been largely silenced and marginalised in the mainstream academic and policy discourses (Jimenez et al. 2022).

Meanwhile, Chughtai and Young (2025) introduce a special issue of the *Information Systems Journal* devoted to decolonization and information systems, indicating that decolonial approaches are now better accepted in the mainstream.

The ICT4D community has been shaped by a dynamic interplay between policy optimism and academic scepticism. As digital technologies are reshaping entire systems of economies, societies and governance, it will be even more important for digital innovation to remain grounded in the lived reality and historical patterns of social life. While over the last 30 years ICT4D research has benefitted from trends in the broader IS community, it can also contribute to return. A special issue in the *Journal of the Association for Information Systems* (Sahay et al. 2017), appropriately titled "Flipping the Context", highlighted various studies of "reverse innovation" that originated in the Global South and were adopted in the North. Researchers argued for the merits of indigenous theorisation, which has been championed in the ICTD community but much less practised in the broader IS community, where Western-originated theories are seldom challenged. Examples include Abubakre et al. (2021), who identified digital Ubuntu as an indigenous value system that underpins digital entrepreneurship in South Africa, and Elbanna and Idowu (2022) drew on the theory of liminality to challenge the conventional wisdom that crowdwork is by nature precarious. They theorised the process by which Nigerian crowdworkers draw on a toolkit of local culture, norms and traditions to transform liminal digital work into long-term employment. Clearly, such challenges to dominant research perspective are essential to scientific progress and advancing diversity beyond Western theories.

In a similar vein, studies of guanxi (a Chinese word approximately translated as 'relationship') have seen wider attention in the literature (Ou et al. 2014). But guanxi is no more an exclusively Chinese phenomenon than trust is an English phenomenon. In other words, as scholars, we should learn from diverse cultures to extend research findings from one culture to another. If trust can be studied in China, then guanxi can be studied in Ghana and the UK. Hence, we encourage digital development scholars to theorise their contexts more carefully, rather than simply testing well-established theoretical positions that miss the nuance needed to address contextual specificities.

The field of ICT4D, since its early beginnings in the 1980s, has made significant strides forward theoretically, methodologically and in raising the visibility and profile of the field. Given the emerging challenges the field is now experiencing, it becomes important to understand their nature, type and how the current research field needs to be further expanded.

Box 1: Evolving ICT4D to Digital Development

Over the last 40 years, the field which we now propose to be called Digital Development, has experienced multiple mutations, starting from a focus exclusively referred to as "Developing Countries" or "Global South". Much of this early work was descriptive in nature as we sought to build up awareness of how ICT was being used and their potential for advancing development. While theoretical perspectives started to be introduced into this research field, it was often Western dominated, with little in the way of an appreciation of indigenous values. Over time and increasing research engagement, there is a growing

recognition that "development" is by no means exclusively limited to "developing countries" and is being experienced in all parts of the world. At the same time, there is a recognition that theory need not be exclusively Western. We now see instances of researchers theorising their own local contexts, introducing new theoretical ideas and validating them. These constitute a potent source of information/ideas for researchers beyond the digital development space, which represents yet another contribution of this field: of not only borrowing theory, but also giving it back. We strive to expand this mutuality of learning between the experiences in developed and developing countries through the vehicle of digital development.

3. Digital Development: Empirical Areas and Emerging Challenges

In this section, we examine four empirical domains of digital development to illustrate some of the challenges envisaged going forward. These domains are by no means comprehensive but rather are reflective of areas of engagement of the authors of this editorial, which we agreed can help understanding the broader field of digital development.

3.1. Digital Development and Humanitarian Governance

There is growing recognition that the digitalisation of response to crises and disasters can potentially transform the humanitarian sector. This recognition has led to huge investments in the sector to integrate new and emerging technologies such as digital platforms, biometrics, blockchain and AI into processes of humanitarian response and governance (Bruder and Baar 2024). Despite this, the implications of this digital transformation for humanitarian governance have been insufficiently examined.

Global responses to humanitarian emergencies are complex processes involving multiple actors of varying sizes and positions of power, capacities and resources, operating across multiple levels of scale and coordinated by largely voluntary mechanisms and without a single point of decision-making authority. There is a complex and delicate arrangement of UN bodies, international non-profit organisations and local agencies that have evolved over the decades, while, at the same time, the humanitarian 'sector' is undergoing a huge structural readjustment following significant funding cuts and the involvement of private sector actors. The adoption of digital technologies is commonly assumed to be an important mechanism for making humanitarian response faster, more efficient, transparent and accessible. Critical questions have been raised by scholars about the assumptions that underpin the humanitarian sector's theory of change, specifically in terms of how digital innovations are shaping the direction of humanitarian governance (Duffield 2016; Sandvik 2017). This raises critical governance-related issues that call for future research concerning digital identity platforms, predictive analytics, digital cash, and, most importantly, ensuring that assistance reaches the people who most need it.

First, as the demands for humanitarian services have grown, the sector has been exploring transforming IS applications into digital identity platforms for tasks such as the registration of refugees and vulnerable communities providing them with essential services. While initially access to, and the use of data from the platform was limited to actors within this sector,

identification platforms have gradually opened to offer a range of new innovative services to refugees, such as mobile, internet and financial services within and outside of the humanitarian ecosystem. However, the platformatization of humanitarian services, and specifically the opening of identification platforms from transactional processes towards innovation, has led to the use of the same data by multiple entities, creating tensions between organisational aspirations to increase value in terms of efficiency gains and wider humanitarian principles of protecting refugees and systems of justice. For instance, Madon and Schoemaker (2021), in their study of the United Nations High Commissioner for Refugees' PRIMES digital identity platform, highlight how efforts to streamline processes of refugee management and service delivery also lead to categorisation of refugees which eventually creates risks, for example for female-headed households and those from certain tribal affiliations. More generally, further research is needed to study the extent to which refugee protection is prioritised and inscribed in system design and governance in three directions.

First, we need to keep in mind that the implications of digital identity for refugee management extend beyond the immediate technology platform; for example, they are also shaped by the existing regulatory frameworks for accessing mobile and financial services aimed at improving the lives and well-being of refugees. This necessitates further study of the ecosystem in which identification systems exist (Weitzberg et al. 2021) and the need for more localised approaches to platform design that foreground the needs and aspirations of vulnerable populations and partner organisations that work with them in local contexts (Jimenez and Roberts 2019).

Second, humanitarian organisations have been experimenting with AI solutions, moving from a response to an anticipatory mode of operation, working with data from a variety of sources (Madianou 2021). A case in point is the International Federation of Red Cross and Red Crescent Societies' forecast-based financing piloted in 2019 in the aftermath of Typhoon Kamuri in the Philippines, where the release of emergency funds was conditional upon anticipatory action being triggered from the AI system. The algorithm was trained on historical data from 27 typhoons in the Philippines, classified based on whether less than or more than 10% of houses were destroyed in earlier typhoons in different municipalities within the country (Van den Homberg 2020). The AI tool provided a disaster risk reduction mechanism to help save lives, minimise disaster response costs, promote community preparedness and build increasing trust in forecast models. However, as the system needs to be scaled, where several challenges are anticipated, requiring more research. Most notably, the inner workings of the AI model are currently opaque, which needs to be better understood and made transparent to actors involved with emergency disaster response. Such systems have been known to promote the danger of false triggers leading to the exclusion of vulnerable groups who may not have a digital footprint, leading to an erosion of trust in the system, and its potential for successful adoption. From a digital development research perspective, attention needs to be devoted to the considerable organisational transformation required within government departments to ensure that existing legacy systems and organizational processes are better aligned with the adoption of AI models.

Third, the digitalisation of historically physical cash and in-kind benefits such as paper vouchers into digital forms is currently being rapidly promoted to enable cost-effective and transparent ways of targeting beneficiaries (Development Initiatives 2024). The provision of aid by mobile phone directly to the account of beneficiaries is seen to help realise the policy goal of 'localising' aid delivery closer to beneficiaries (Cash Hub 2021). This delivery mechanism relies on its affordance for interoperability, i.e. enabling different actors to interoperate through technology systems, standards, and regulations to deliver effective cash assistance (IFRC 2024). Such interoperability is not just a technical data sharing exercise but is subject to multiple contextual challenges such as a lack of digital literacy, and risks of further centralisation, research areas which are currently understudied. While the current tendency within humanitarian organisations and the sector at large is to is to centralise the provision of digital cash, it is important to consider specific negative consequences this may have, particularly the erosion of agency and flexibility that local humanitarian organisations need to respond to ground level priorities. Research is needed to investigate whether these arrangements may amplify existing trends around the consolidation and monopolisation of the sector by dominant organisations and technologies favouring large, well-resourced humanitarian and even private organisations over local organisations embedded within the communities they serve. This raises the need for studies that critically examine the political economy of humanitarian assistance in which digital technologies are inseparably entangled.

Box 2: Humanitarian Governance and Digital Development

Humanitarian governance highlights two pressing challenges for digital development.

One, while digital development challenges transcend geographical boundaries, humanitarian crises are polycentric, affecting the entire world. This requires a simultaneous interpretation of locally situated unfolding of crises within the scope of geopolitical global forces. While digital technologies used in humanitarian governance are largely designed, implemented, and controlled by global tech actors, the impact of these technologies on the ground requires a careful analysis of local legacy systems.

Two, digital development highlights the increasing entanglement of digital technologies and development practices. Studying digital identity platforms for refugee management, requires an understanding of how perspectives of local refugee councils can be included in platform design and management. Globally designed cash transfer systems are entangled as a result of independent National Societies putting in place processes and practices to address local priorities. The theoretical challenge is to understand processes through which global practices are localized and local practices are globalized for achieving humanitarian governance-related objectives. These issues can be related to Roberts' (2025) challenge of the entanglement of the *digital for development* and *development in a digital world.*.

3.2. Digital Development and Global Health

Global health is experiencing multiple polycrises, constituted by a cluster of simultaneously acting crises such as arising from the Anthropocene, climate change, redefining of planetary

health boundaries and more (Jørgensen et al. 2023). These challenges affect people in both rich and not-so-rich countries, although the latter are often disproportionately affected. Antimicrobial Resistance (AMR) exemplifies such a crisis that is global in scope, expanded by simultaneously acting crises of rising infectious diseases, heightened levels of environmental pollution, drying up of the antimicrobials production pipeline, indiscriminate use of antimicrobials, compromised governance systems where economics is prioritised over health issues (Hulmes et al. 2014), and rising social and health inequities which adversely affect access and utilisation of care services. These interconnected forces elevate global AMR to the status of a "grand challenge", where "specific critical barrier(s) that, if removed, would help solve an important societal problem with a high likelihood of global impact through widespread implementation" (George 2016, p. 1880). The absence of relevant information on the nature, scope and scale of such a crisis is a critical but a largely unrecognised barrier to building mitigating strategies. The application of digital technologies to alleviate some of these informational constraints has definite potential, but their design, implementation and use need to contend with these multiple and intersecting contextual conditions, which represents a central quest in digital development research.

Antimicrobial resistance (AMR) serves as a critical case for digital development research, given its global scale and impact. It was associated with close to 5 million deaths in 2019 (Antimicrobial Resistance Collaborators 2022), surpassing the mortality attributed to HIV/AIDS or malaria, making it the world's third leading cause of death. The impact of AMR is not limited to human health, and it has been estimated that by 2050, unchecked AMR could wipe away 3.8 percent of global gross domestic product each year and push 28 million people into poverty (Rupasinghe et al. 2024). AMR disproportionately affects the Global South (Mendelson et al. 2024), as highlighted by the recent Lancet series, which underscores its multifaceted drivers, including water, hygiene, sanitation, infection prevention, and vaccination, all situated within broader health and social inequities (Lewnard et al. 2024). The drivers and consequences of AMR are both medically and socially manifested, needing to account for both the structural and social determinants of health, including their financial implications (Lv et al. 2024). This is reflected in the recently released priority agenda of the World Health Organization (WHO) and various other policy documents (WHO 2022, 2023a).

The challenge for digital development research is therefore twofold. One, to develop theories and methods that conceptualise the health and digital components of global health in unison, as two sides of the same coin. Two, to expand the boundaries of the relevant theories and methods developed, to incorporate the biomedical and social components of the global health challenge in unison, and their joint shaping of health trajectories. In building these novel pathways, three critical interconnected barriers will need to be addressed in future scholarship, policy, and practice.

Firstly, to mitigate the knowledge separation between the biomedical, social and IS disciplines, as contemporary AMR research is dominated by a biomedical gaze largely entrenched in Western science and rationality (Charani et al. 2021). Technology-related studies in the IS discipline often suffer from overly deterministic and technocentric

solutionist perspectives, which position technology as a silver bullet to address social challenges (Dafoe 2015). While such deterministic perspectives historically have been countered by calls for sociotechnical (e.g. Sarker et al. 2019) and sociomaterial (e.g. Orlikowski and Scott 2008) concepts, the current swing towards AI and machine learning technologies threatens to undermine these approaches. Such thinking, whether originating from biomedical, social or technology-based disciplines, compromises the analysis of intersectional socio-cultural contextual conditions such as health inequities arising from income, illiteracy, malnutrition and class disparities, the enabling and constraining role of digital technologies, and the unintended and dark consequences they often generate (Holmes et al. 2016, Goodwin 1994).

A predominant biomedical representation of global health problems influences what evidence is called for and acted upon to develop treatment trajectories. The bio, social, and digital paradigms are each driven by different research communities, such as the clinicians, anthropologists and informaticians, respectively, who adopt different ontological and epistemological assumptions, pursue starkly divergent research questions and construct discipline relevant contributions. Historically existing divides between these different knowledge paradigms will not be easy to dislodge and require interdisciplinary knowledge and narratives based on intimate empirical insights. For example, there is a need to understand how poor literacy and health awareness prevent people from understanding the consequences of the indiscriminate use of antimicrobials, and how financial constraints limit their ability to access diagnostic tests ; such gaps in knowledge are magnified by the lack of information about the problem (Charani et al. 2021). Novel theoretical concepts in digital development will need to drive a substantial de-separation paradigm shift not by merely tagging the social to the biomedical, or by unproblematically adding the digital to this mix, but by building new knowledge and perspectives, inspired, for example, by Science and Technology Studies (STS), which have developed concepts such as “actor-networks” to de-separate the social and technical and embrace multiplicity. The historical tradition coming from ICT4D research to understand the role of context, such as existing health and social inequities, can help provide further nuance and intimacy in understanding the inherent challenges in achieving this de-separation.

Secondly, to strengthen understanding of how social and health inequities reinforce the invisibility of the disease condition, including its drivers and consequences, and the potential role of digital technologies in its mitigation. While health inequalities reflect differences in health across population groups (genetic, biological, etc.), inequities represent human-made systematic patterns of disadvantage or advantage across groups and racial divisions (Steuernagel et al. 2024, Farmer 1999). Ignoring the influence of health inequities reinforces the dominance of the biomedical or digital perspectives, constraining holistic understanding of the problem. Health inequities are often difficult to discern as they result from deeply embedded social processes and are maintained through unjust social arrangements, including knowledge, information and power asymmetries. Promoting health equity is a top priority for global health and is reflected in several of the UN-SDGs, ignoring which results in an inadequate understanding of the problem, and a focus on inappropriate research questions and

answers. The effects of many health challenges remain largely invisible, even though their threat is omnipresent, such as climate change effects on health. Novel concepts are needed to investigate this invisibility, such as of "slow violence" to discern the invisible yet pervasive drivers of environmental degradation (Nixon 2011). Digital development research can examine how "silence" of AMR undermines our response to its threat and also in itself creates a form of slow violence. Expanding participatory design research from IS (Koenig 2024) and co-construction studies from STS (Jasanoff 2004) can provide relevant insights on how to break this vicious cycle of silence.

Prior ICT4D research has been pioneering in engaging with issues of social inequities and exclusion, through long-standing studies of the digital divide (Walsham 2017), across at least three levels: i) access to technology and internet connectivity; ii) ability to use and understand technology, including digital literacy and skills; iii) the benefits and impact of technology use, including social, economic and cultural outcomes. Digital technologies applied in global health demand a rethinking and expanding of the scope of the digital divide, its drivers and consequences, given the complexity of the phenomenon and polycentric conditions in which they are shaped and the scale and unintended nature of their consequences.

Thirdly, to harness the potential of data and digital technologies in enabling the de-separation of the bio, social, and technology-based knowledge domains. Data and digital technologies are now central in the management of global health challenges, reflected in Giddens' (2020) characterisation of COVID-19 as a "digidemic." Proliferation of data and convergence of digital technologies has led Leonelli (2016) to posit the thesis of a "data-centred biology," tracing the reshuffling of priorities towards data and technologies as constituting scientific knowledge and evidence, and how this is accessed, legitimated and used. Current arguments in IS research around ontological reversal (Baskerville et al. 2020) emphasise how the digital is crucial in constructing a new reality, quite different from the past where the digital sought to automate an existing reality, as explicated drawing upon Representation Theory (Burton-Jones and Grange 2013). The recently published paper on Digital "X" (Baiyere et al. 2023) argues the need to develop a new lexicon to represent contemporary digital-themed research, as qualitatively different from earlier ICT research. Arguably, our call for the theorisation of digital development reinforces this argument, with the "X" representing a new theme of development, revitalising existing ICT4D research. Foregrounding the digital, however, comes with its own challenges, with a dominant focus on the digital potentially taking attention away from the phenomenon itself (Ribes, 2024). Further, the digital can mean multiple things, as Hoyer cautions about the paradoxes that health data carry, telling different stories from the same data, and challenging the quest for a singular "truth" (Hoyer 2023).

The seminal work of Zuboff (1988) on the twin and dualistic consequences of computerisation in the workplace, i.e. automating and informating, arguably has deep relevance in shaping thinking about enabling de-separation. Zuboff has argued that IT should be applied to both automate operations, with the aim of replacing human effort and skill while enabling efficiencies, and to informate, which implies generating (and making visible) information about the underlying processes through which an organisation accomplishes its

work. In the context of global health, a primary focus on automation of either the biomedical or social, and trigger informating processes by highlighting the relationship between the biomedical and social to generate new form of information and action potential. Existing ICT4D research highlights contextual challenges to informating, arising from social inequities, illiteracy, infrastructure, systems of governance and more. Incorporating these understandings of constraints into conceptualising digital development becomes crucial in assessing the potential (or lack thereof) of the digital to both automate and informate.

Addressing these three critical scientific challenges will help contribute towards building a paradigm shift in digital development research related to global health by conceptualising complex health challenges as a complex "bioinfosocial" ensemble. Conceptualized as an assemblage (Davis et al. 2022), global health knowledge is emphasized as being multidisciplinary spanning biomedicine, social sciences and informatics. Dissolving boundaries of knowledge separation will help build acknowledgement of their combined influences on shaping the trajectory of global health challenges in society. The boundaries of analysis will necessarily need to be expanded beyond purely clinical encounters to also incorporate issues of political economy, such as the role of the pharma industry, the geopolitics of pollution redistribution, effects of climate and refugee movements and more.

Box 3: Global Health and Digital Development

Two challenges for digital development research are highlighted through the global health example. One, how can knowledge regimes representing different academic disciplines that constitute global health come together to interrogate the phenomenon of digital development. Two primary disciplines constituting global healthcare are medicine and informatics. Building unified disciplinary perspectives is a non-trivial challenge, given the deep-rooted disciplinary traditions, and respective methods and approaches. Creating unified approaches that embrace multidisciplinarity, represents a challenge both in their conceptualization and application in practice, which is a central quest for digital development. Two, the empirical example of AMR highlights the need to consider "information first" prior to or alongside the digital. Every phenomenon is characterized by certain properties and principles, which need to be first understood before considering their digital representation. Global healthcare, as exemplified by AMR, is constituted by entangled biomedical and social conditions, each possessing different informational characteristics. Jumping to the digital solution, without understanding these characteristics runs the danger of creating solutions that are barking under the wrong tree. Breaking out of this deterministic mode of thinking represents another important challenge in pursuing digital development.

3.3. Digital Development and Financial Inclusion

Despite rapid global wealth accumulation, its distribution remains starkly unequal, not only in the Global South but across nearly all regions of the world. In almost every country, the

richest 10% hold more than 50% of personal wealth while the bottom 50% hold at most 10.4% (Buchholz 2025). This alarming concentration of global wealth at the top tends to thwart development opportunities for the majority, often exacerbating widespread dissatisfaction and social unrest. For example, the recent immigrant unrest in Los Angeles (The Economist 2025) or the Yellow Vest movement in France (Jetten et al. 2020; Shirish et al. 2020) can be attributed to structural financial inequalities among different segments of populations. This global pattern of structural exclusion requires that financial inclusion be reimagined not as a regional challenge of the Global South, but as a globally relevant imperative.

Furthermore, according to a 2023 World Bank Report, about 24% of the world population is currently unbanked or underbanked (World Bank 2023). As a result, people can neither build wealth nor invest in businesses, which leads to enhanced risk vulnerability. This lack of access to financial services undermines the abilities of nations to achieve the 17 UN-SDGs, seven of which relate to financial inclusion. The key question for digital development researchers is whether digital technologies can help better foster financial inclusion by bridging the inequalities between the 'haves' and 'have-nots' of financial products and services. Using a service-centric perspective, Srivastava and Shainesh (2015) describe how digital technologies can be mindfully combined with institutional and knowledge resources to address the paucity of basic services (such as healthcare, education or finance) for different segments of the population. Governments can initiate such ambitious entrepreneurial initiatives through their different formal and informal agencies. However, such digitally driven service inclusion initiatives can also be kick-started by agile and adaptable companies developing innovative business models that are economically sustainable. We next discuss one example of an economically sustainable financial inclusion model initiated by Orange Telecom in Africa.

In their study, Srivastava et al. (2021) described how Orange Telecom created financial inclusion solutions in Africa by building long-term adaptability in a dynamic environment. With its core competency and expertise in the telecommunications industry, Orange entered the Ivory Coast market to enhance its footprint in Africa by addressing the unmet communication needs of a huge customer base. Initially, in 1996, Orange began landline telephone operations in Africa but shortly switched its focus to the emergent mobile phone technology, primarily because of the lower levels of fixed infrastructure requirements than needed in landline telephones. The switch was also accelerated by the understanding that the African population conducts millions of financial transactions every day and that the majority of these are done in cash. Moreover, these transactions typically involve low-value items, such as purchasing basic goods and paying utility bills. There was limited interest in banks to support such small-value transactions involving unfeasible overhead costs (Enders et al. 2006). Hence, despite the apparent need for low-value retail financial services, most of the rural African population continued to remain unbanked.

Banks were primarily present in large African cities, where they provided financial services to the wealthy population, charging high transaction fees for high-value, low-volume

transactions. Orange seized this existing service gap as an opportunity through their mobile money initiative which was premised on a diametrically opposite —low-value, high-volume business model. Subsequently, Orange diversified into the retail financial services sector by expanding its collaborations and partnerships. Mobile money has now emerged as Orange's key business in Africa, helping the company to initiate banking operations also in other parts of the world, including France, where Orange's story as a telecom operator began, exemplifying the concept of reverse innovation (Govindrajan & Euchner, 2012; Srivastava et al., 2013). Orange was able to tap into the financial inclusion opportunities in Africa by creating win-win situations for the company and its different stakeholders. In a similar vein, companies included new segments of previously unserved populations through innovative uses of digital technologies. For example, Nehme et al. (2023) describe how Zerodha, an Indian startup, could achieve its aspirations of making online stock trading accessible to a low-value customer segment through an innovative business model enabled by a state-of-the-art platform-based technology. The meaning of digital development for financial inclusion is intricately linked to the context. While in the case of Orange it is about leveraging a previously developed backbone socio-technical resource (mobile connectivity in the population) to innovatively think about a new mobile money service, in the case of Zerodha, it was about making an existing service (online stock trading capability) accessible to a new unserved segment (middle-income group) of the population.

From a digital development perspective, while digital technology plays a central role in driving financial inclusion initiatives, a thoughtful integration of other contextual elements, such as institutional frameworks and knowledge resources, is essential for crafting effective and sustainable solutions. In today's landscape, shaped by emerging technologies like AI, fintech and blockchain —financial inclusion efforts are necessarily evolving socio-technical systems, constituted by a complex interplay of various environmental and contextual factors. Unpacking these entanglements promises to become an impactful direction for digital development research.

The case of M-PESA (Oborn et al. 2019; Barrett et al. 2024) provide further insights into digital development research. The M-PESA empirical work draws on a historical reconstruction from 2003 and longitudinal case studies from the late 2010s to the mid-2020s. Like the Orange case highlighted above, M-PESA provided access and inclusion through mobile money to disadvantaged users of the financial market. M-PESA is today recognised as a poster child for digital development, offering financial and social inclusion on an unprecedented scale across Kenya —from mobile money transfer (Oborn et al. 2019) to clean energy (Barrett et al. 2024) and in supporting climate inclusion (Barrett et al. 2025). However, the difficulty of replicating the success of ICT4D projects like MPESA, and to export the models to different countries (McBride and Liyala 2023) calls attention to an understanding of context as a dynamic outcome constructed through processes of development (Hayes and Westrup 2012). Furthermore, Bateman, Duvendack, and Loubere (2019) point to unintended dystopian futures. Expected benefits of M-PESA to improve livelihoods in moving from subsistence agriculture to more profitable microenterprises are not always achieved.

The development and transformation of M-PESA as a mobile payment service for money transfer in Kenya demonstrated different dynamics as the digital innovation evolved and interacted with local conditions of migration, banking and local entrepreneurship (Oborn, Barrett, Orlikowski, and Kim 2019). For example, it emphasised the importance of local user practices and improvisation in shaping innovation outcomes, as the mobile money platform was being reconfigured in unexpected ways. For example, users began storing money in M-PESA accounts not just for transactions, but for saving money locally, which was not part of the original design. Further, unexpected reconfiguration of M-PESA was meaningfully linked to trajectories around local entrepreneurship, particularly through how informal practices gave rise to new business models and growth in local developmental processes. These developments exemplifying the mutual entanglement are central to digital development by showing how digital platforms and local contexts co-evolve and are co-constituted.

Subsequent research on M-PESA (Barrett et al. 2024) as a digital (mobile) platform highlights that mobile money creates room for explicitly futures-oriented explorations, including digital imaginaries, futures thinking, and the active shaping of future possibilities (Handunge et al. 2025). For example, MPESA as a payment platform now offers social inclusion through solar (clean) energy services, which can promote digital entrepreneurship for many, including women. M-PESA as a payment platform enables pay-as-you-go solar solutions, where households use mobile money to make daily payments for access to solar power, and in so doing links digital payments to sustainable clean energy services. Drawing on recent work (Sahay et al. 2022) which highlights the importance of building narratives or stories of hope for ICT4D, the application of mobile money services as a loan for clean energy shows how digital services are entangled in the everyday processes of building, sustaining and losing hope (Barrett et al. 2024). Through these processes, the concept of realistic hope is proposed as a dynamic and human-centred lens to understand how digital mobile money platforms can mediate aspirations over time, and that this is shaped by prior experiences and resources which can together lead to a sustaining of , or an atrophy of hope.

Relatedly, research on the use of M-PESA as a mobile payment service for clean energy also raises questions about sustainability, exclusion, and voice, especially for the very poor, when service models are changed or bundled, which go beyond their affordability. The initial hope offered by such mobile services for the very poor may be lost as sustaining their access becomes difficult and unintentionally reinforces the poverty trap. Digital innovations can become out of reach and lose relevance for this fragile group of very poor users. These insights highlight that the design and scaling of digital services is not neutral and call for ethical design based on principles of inclusion and long-term accountability. When hopes tied to digital technologies are dashed, digital imaginaries and digital futures can take on dystopian dimensions. The darker side of digital development becomes evident in cases like M-PESA, which, while celebrated for advancing financial inclusion, has also facilitated the rise of mobile gambling. The mobile gambling industry has developed vested interests in M-PESA's success, in converting mere users into consumers. These developments underscore the need for digital development research to critically examine not only the

intended benefits of digital initiatives but also their unintended consequences. Ethical practices of digital initiatives require transparency concerning the motives for its development and rollout, particularly in where the users are very poor and marginalised (McBride and Liyala 2023). Especially where vulnerable populations are targeted, digital innovations risk perpetuating exploitation under the guise of empowerment.

Finally, recent work has extended the application of M-PESA mobile money applications to the domain of climate action. Barrett et al. (2025) illustrate how such platforms are increasingly implicated in organising climate risk and facilitating farmer participation in afforestation and reforestation projects tied to carbon markets. In this context, mobile money becomes part of a broader digital infrastructure used to manage verification, ensure accountability, and disburse payments across the long-time horizons typical of environmental initiatives.. Barrett et al. introduce the concept of *climate riskwork*, which captures the situated and relational practices through which climate risks are rendered actionable. M-PESA is not merely a tool for financial inclusion, but a relational infrastructure developed over the years that aligns diverse stakeholders, including farmers on the ground facing immediate needs to global auditors assessing carbon credits. Digital technologies need to be seen not just as enablers of inclusion but representing a relational infrastructure that redistributes visibility, responsibility and risk. Yet, alongside these enabling roles, these digital technologies also bring new ethical and political challenges. As Arora et al. (2023) caution there is a dark side that comes with the rise of AI and the risks it creates. Specifically, the rise of AI in digital development is entangled with forms of data colonialism (Couldry & Mejias, 2019), where invisible labour in the Global South is exploited to clean data and train algorithms that ultimately serve commercial interests in the Global North. These developments highlight that as digital platforms scale, their trajectory dynamics must be examined not only for their transformative potential but also for dystopian dimensions such as new forms of power, dependency, and inequality, albeit as (often) unintended consequences. .

Box 4: Financial Inclusion and Digital Development

The empirical examples discussed above, drawn from the domain of financial inclusion, highlight three key aspects that enrich our understanding, through the proposed lens of *digital development*.

One, the context of digital development is forever dynamic. Digital development efforts ought to be assessed based on their capacity to serve the evolving needs of specific communities, stakeholder groups, or individuals. Moreover, the context is dynamically constructed through and during the process of digital development. Digital development efforts thus need to be continuously adapted to the evolving environment and stakeholders' needs.

Two, the discussion on financial inclusion raises the need for redefining criteria to assess the benefits of digital development. One of the discussed initiatives illustrates the importance of meeting the unmet needs of the middle-class segment in accessing stock

market investment opportunities or in promoting access for the poor and marginalized to the financial system through mobile money transfer. This brings forth the need for context-specific digital development efforts where the meaning of digital development might itself change. The discussed mobile money and online stock trading access initiatives exemplify Robert's (2025) notion of *digital for development.*

Three, financial inclusion initiatives through digital technologies may have various unintended consequences such as the discussed mobile money cases highlight the impact on climate action and gambling. 'Users' may be transformed into 'consumers', of the technological tools to cater to the vested interests of few. As such, digital development efforts must be evaluated not only in terms of their intended benefits but also their unintended consequences—on human well-being, environmental sustainability, and broader development outcomes. Such an approach aligns with Robert's (2025) framing of *development in a digital world*, emphasizing the need for holistic evaluation and accompanying policy interventions.

3.4. Digital Development and Digital Nomadism

Digital nomadism is a form of internationally mobile remote digital work in which, enabled by the Internet, typically Western employees and freelancers work long-term or permanently from the Global South, seeking to maximise travel experiences while minimising costs (Schlagwein 2017). From a digital development perspective, digital nomadism represents a form of digitally-enabled economic mobility that redistributes value creation across global North–South boundaries, creating both opportunities and challenges for sustainable development in host communities.

Digital nomadism is conceptually similar to McLuhan's vision of a "global village" (McLuhan 1962), Toffler's "electronic cottage" (Toffler 1980), and Deleuze's invocation of "the nomad" as a metaphorical contrast to "the polis", the nation state (Deleuze et al. 1986). Real-life digital nomadism, as a recognised sociotechnical practice and worker identity (Prester et al. 2023), emerged in the 2010s, originally as a niche phenomenon, estimated to be in the hundreds of thousands (Schlagwein 2017). Following the COVID-19 pandemic, the number of digital nomads has surged, with estimates predicting over 90 million by 2030 (WEF 2024), putting their number at about the same magnitude as all conventional (mostly pastoral) nomads combined (Wild et al. 2019). Other types of digital remote work have been studied for decades, such as telecommuting (Nilles 1988) and telework (Boell et al. 2016), mostly referring to what many call "work from home" today. However, these studies regard the effects of remote digital work primarily from the perspective of managers and owners.

Digital nomadism has implications beyond these traditional manager–worker dyads, to encompass the local communities impacted. Digital nomadism is not like, but rather the opposite of, work-from-home telework. Digital nomadism involves people working remotely while constantly moving across countries, with significant "passive smoke" effects, such as on the environment of local communities worldwide across countries like Colombia, Indonesia, Portugal, and Thailand (Jiwasiddi et al. 2024). This refers to unintended, often negative consequences experienced by local communities who are not themselves digital

nomads but are affected by their presence. Digital nomadism represents a fundamental shift in how value from digital work is created locally and distributed globally, representing the dynamics of Urry's global mobile society (Urry 2000). This shift suggests that prior work on the nature and effects of digitalisation of work may have overlooked important stakeholders, such as local communities and the environment, as an important phenomenon of study related to digital development.

The rapid expansion of digital nomadism presents both significant promise and notable challenges for digital development. There are clearly positive aspects (Jiwasiddi et al. 2024), such as heightened economic activity, increased spending power, additional tax income, and often-overlooked business and technology development expertise and work, as well as entrepreneurial opportunities. Equally clearly, there is a "dark side" – negative effects (McElroy 2019): digital nomadism can exacerbate socio-economic inequality and gentrification, reshape local businesses to cater to foreign tastes, marginalise traditional livelihoods, and create social bubbles. They may further the "race to the bottom" effect regarding the ability to tax digital nomads anywhere, where ultimately value may accrue to the mobile elites, while costs are localised (Wang et al. 2020, 2024). Yet, existing low birth rates in the Global North are set to further increase the problems around "brain drain/brain and gain", which result in competition for young, educated workers, who are now increasingly globally mobile digital nomads. Perhaps, digital nomadism is best considered as a type of "digital provide": a digital reorganisation of the global geography of not only consumption but production (Carmody 2025), with implications for global "impact sourcing" (Nicholson et al. 2018).

Digital nomadism raises the need to incorporate relational ethics. Indeed, since Orientalism (Said 1978), anthropology and cultural studies have increasingly recognised academia's (i.e., their own) inherent Western centrism, such as the superiority of moral philosophy (Habermas 1993). This bias is reflected in ICT4D and IS scholarship today, for instance, in the form of calls for postcolonialist and decolonialist approaches (Chughtai and Young 2025; Masiero 2023). Hence, the study of relational, contextual ethics at the intersection of technologies, cultures and values appears crucial for understanding digital nomadism, which takes the site of digital work into various global communities clashing with cultural value systems. Jiwasiddi et al. (2024), for instance, documented pushback by Western scholars against Thai arguments that frame digital nomadism as beneficial development, revealing problematic (Western-centric) power dynamics in knowledge production itself, with limited concerns for local development needs (Lopes 2024). This raises the intellectual concern of how to judge the ethicality of digital nomadism, by whom, and on which grounds. A starting point to develop such relational ethics can be found in Jarrett Zigon's work on relational ethics and care for the world (Zigon 2024), which argues for placing relationality and ontology at the centre of ethical discussion. Concepts such as "attunement" in rethinking justice provide a basis for thinking about the material and technological, going beyond the discursive approach offered by Habermas.

Commented [MB1]: While this is true..this paragraph is hard to follow and doesn't give enough substance to justify the claim..the material in the Box is better. Two options: 1) Improve this paragraph on relational ethics (even a bit) to better correspond and develop further what is in the Box….alternatively could remove and mention in Discussion and then include only 2 points in the Box.The point on Futures is important and a central plank of how we position Digital Development and so would include this ….

Considering future(s) in a 'post-Westphalian' world is an important research need. IS research is often "a-historical" (Porra et al. 2014) in that it focuses on the "eternal now" (unchanging cause and effect mechanisms) of the natural sciences, rather than Verstehen of the cultural-historical forward progress of society, history, and the human condition (Schlagwein 2021). Digital nomadism, along with other phenomena, from cryptocurrencies to social media influencers, represents a shift away from the Westphalian system of the "sovereign nation state" as the frame of reference for economic, political and social activities. Instead, we may consider the emergence of a post-Westphalian system: a global, digital socio-economic space no longer ordered within or controlled by the frame of the sovereign nation state. The runaway successes (in economic terms) of Bitcoin and of Big Tech can be seen as reflecting digital transformation of societies, while populism, nationalism, and anti-globalisation can be seen as counter-reactions. Digital nomads, with their multiple passports and global business registrations, must be understood as citizens of such a digitally created post-Westphalian world. Does this represent a desirable future? Or which possible future(s) do we want? Digital development research must actively engage in shaping desired digital futures, drawing on novel methods from future studies (Davison and Schwabe 2025; Schlagwein et al. 2025), such as digital "imaginaries", backcasting, or future-making (Schlagwein et al. 2025). The ubiquity of digital transformation creates both opportunities and responsibilities for scholars to contribute to more equitable and sustainable development pathways, assuming those are the desired ones.

Box 5: Digital Nomadism and Digital Development

Three key implications for digital development are highlighted through the digital nomadism empirical example.

One, it highlights how digital technologies actively reshape traditional geographical and socio-economic boundaries, simultaneously creating new forms of value for diverse stakeholders at local and global levels. These can be both positive (increased economic activity, expertise transfer) and negative (gentrification, inequality). Intermingling of time and geography, both shapes the implications of technologies, and helps reconfigure temporal and spatial spaces.

Two, digital nomadism foregrounds the necessity of relational ethics in digital development research, since it involves contestations around whose values and interests define 'development' when digital practices clash with local cultural systems. These contestations are shaped by knowledge asymmetries between the rich and not so rich, and must be addressed not through universal frameworks, but those designed locally based on local context and an ethics which is fundamentally relational and shaped by local voices.

Three, digital nomadism exemplifies a broader shift toward a *post-Westphalian* world, where the traditional framework of the sovereign nation-state no longer fully governs economic, social, or political life. Specifically, digital nomads operate in a global, digitally mediated space that challenges historical boundaries and regulatory structures, which raises important questions for digital development. For example, what kinds of digital futures are being created, and for whom? Digital development research must actively engage with future-making, using approaches like digital imaginaries, backcasting, and scenario planning to help shape more sustainable and desirable digital futures.

4. Implications for Digital Development Research

The editorial's conceptualisation of digital development, illustrated by empirical experiences from four domains representative of the authors' areas of expertise, helps generate several critical implications for the future of this research field. These abstractions depicted in Figure 2, serve as a foundation for framing the implications outlined in this section. They reflect how the authors perceive fundamental shifts underway in the domain, and how they conceptualise, empirically examine, interpret, and even seek to intervene in these transformations.

Drawing from these empirical experiences, we develop more general implications for digital development research, spanning a) theoretical, b) policy and practice, and c) methodological dimensions.

Figure 1: Abstractions from the empirical experiences defining the implications for research on digital development

4.1. Theoretical Implications

In crafting this editorial and reimagining the future of digital development, we have been mindful of both the historical precedent and contemporary practices of this domain, respecting its long and illustrious heritage. This heritage is not always easily traceable to origins and disciplines due to the proliferation of defining terms, disciplinary interests and publications spread across a variety of fields and multiple decades. Such diversity can be both a strength and a weakness as we take up the challenge of pushing the field of digital development towards increasing maturity. On the one hand, diversity fosters strength by inviting multiple perspectives, which are essential for engaging with complex issues. On the other hand, it can lead to fragmentation if there is limited shared understanding of the key challenges to address, their prioritisation, or on appropriate approaches.

The digital development framing marks a shift from traditionally understood and practised ICT4D research, policy, and practice, and identifies potential domains of expansion and reconceptualization. This reframing is proposed across the three interconnected domains of

digital development – digital in development, digital for development, and doing development in a digital world. We have illustrated these domains with examples from specific sectors, but note that these are no more than indicative, since the full gamut of application and digital contexts is very wide indeed, to which we cannot do justice in an editorial. We reiterate that our reconceptualization differs from the traditional ICT4D in four ways: (1) shifts from a primarily geographic lens of the Global South to engage with globally relevant development issues, (2) redefines the role of digital technologies, from instrumental enablers of development to being ontologically intertwined with and constitutive of the development process, (3) promotes an epistemological and methodological shift toward interdisciplinary research that critically examines power dynamics, infrastructure, competing interests and information asymmetries, and (4) creates room for explicitly futures-oriented explorations, including digital imaginaries, futures thinking, and the active shaping of future possibilities.

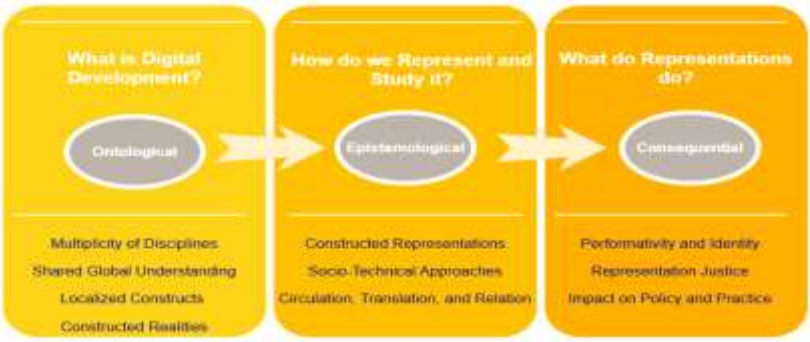
Building such a shift demands that IS researchers develop new theoretical vocabularies that recognise digital and development as a duality, reflecting the intimate co-creations of our physical-social-developmental spaces with digital technologies. Such framing helps to avoid deterministic arguments that privilege one side over the other. This balance is important for researchers to strive for to understand the constitutive elements of the digital in reshaping what development means, for whom, and with what consequences.

While in this editorial we have argued for digital development research to be anchored in traditional sociotechnical thinking, there is an urgent need to embrace even wider and more different ‘entanglements’, such as the biomedical, social, and digital components in global health, incorporating contextual sensitivities emerging from the development imperatives pursued. Dualistic thinking needs to be developed at multiple levels, including disciplinary (biomedical, social, and informatics) and for practice, where the digital and social are conceptualised in unison. Digital development research needs to grapple with the “duality of disciplines” to develop insights and methods of interrogation of the phenomenon, all of which need to be synthesised while embracing diversity and multiplicity.

Building such dualistic concepts is foundational to digital development research and will necessarily require an understanding of the different domains comprising the phenomenon under investigation as being mutually constitutive. This will require the development of novel paradigmatic thinking that recognises these deeply constitutive entanglements, not just as different pieces “stapled” to each other, but through groundbreaking synergistic concepts, such as to understand how information, its absence, biases, and asymmetries are mutually intertwined. Building such understanding, digital development studies will need to draw upon other disciplines, such as Anthropology, Human Geography, and Development Studies, to enhance the theoretical and methodological repertoire and develop multidisciplinary concepts.

Three fundamental theoretical questions, at the ontological, epistemological and consequential levels, are crucial to the construction of this paradigmatic shift, which is first summarised in the figure below and then discussed.

Figure 2: Ontological, Epistemological, and Consequential Questions of Digital Development



The ontological question: This refers to the need to develop theories and concepts to understand and characterise the phenomenon of digital development and develop appropriate means of representing them. As Annemarie Mol (2003) has emphatically argued in the context of health, representations of disease conditions, whether by clinicians, laboratory technicians or others, are shaped by diverse disciplinary gazes, making a singular perspective necessarily insufficient. Embracing multiplicity becomes essential for developing a holistic understanding of the phenomenon, which requires engaging with two sets of challenges: (i) identifying the disciplinary perspectives that shape the nature of the phenomenon under investigation, and (ii) determining the points of interface required to develop integrated, multi-faceted perspectives.

In summary, the ontological challenge can be framed as follows: *How can digital development be understood and characterised as a sociotechnical process that unfolds differently across locally situated contexts, yet (re)shaped by dynamics at the global scale?*

The epistemological question: This refers to the concern of how to develop tools and methods for representing the phenomenon of digital development, recognising that the phenomenon is locally situated with multiple indigenous components. Representation theory remains a central pursuit in the IS research field (e.g., Burton-Jones and Grange 2013), engaging with both ontological and epistemological questions about how and what we know regarding a phenomenon and its effects. These representations are not naive mirrors of reality; rather, they must be critically examined to understand how they are constructed and for whom.

Representations are shaped as symbols, indices and icons (Nöth 2011), and are made intelligible through the socio-material work practices and technologies that produce them. Debates around the science of climate change exemplify how representations and their interpretations are entangled in political and economic networks, such as fossil fuel corporations, political ideologies, and scientific communities advocating both for and against the acknowledgment of climate impacts. Constructing representations of such complex phenomena is, therefore, a significant epistemological undertaking that digital development

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research needs to advance, while incorporating the dynamic nature of representations and their ensuing interpretive flexibilities.

In addressing this epistemological question, another key challenge concerns how to develop the balance between the digital and the representation it generates. Arguments have been made about the increasing incidence of "ontological reversals" (Baskerville et al. 2020), where the digital precedes reality, and Monteiro et al. (2019) bring forth the notion of "synthetic knowing" to emphasise the affording role of instrumentation. These notions tend to privilege the digital over physical reality, shaped by contexts of investigation, such as oil drilling in resource-rich Norway. Leonelli's (2016) concept of "data-centric biology" highlights the argument to reprioritise research towards data and digital technologies over traditional biological inquiry.

While acknowledging the need to rethink research priorities of digital development, it is also important to be sensitive to particular and enduring developmental challenges. Each context has its own idiosyncratic components, whether cultural or ecological, and thus needs sensitive treatment. For instance, the incidence of AMR in the Global South, or the importance of guanxi in China. These contextual features precipitate more fundamental challenges to consider, notably the relative invisibility of the problem, where the digital in its traditional sense may be non-existent. These require the development of alternative methods, such as those based on manual mechanisms, to develop context-specific frugal innovations, implying to build once, modify as needed, and use multiple times (Bhatti et al. 2021).

The epistemological question can be summarised as follows: *How can we develop theoretical pathways and methodological apparatus to analyse the "making" of representations, how they are constructed, their supporting socio-technical practices and technologies in use, which maximises their visibility in processes of construction, circulation, and translation of representations within particular situated contexts?*

The consequential question: This concerns understanding the performativity of the representations generated around the digital development phenomenon, implying what they do in the real world. Representations generated through digital interventions are also performative in defining and maintaining identities. For example, a doctor reaffirms his or her everyday identity as a doctor through their everyday acts of writing a prescription, consulting the patient and writing an order for a patient to take an X-ray. In performing these everyday actions of preparing and acting on representations, they gradually can become generic and reaffirm the identities of those constructing and using the representation.

In understanding the performativity question, a key learning from our empirical examples is that there will always be a multiplicity of actors and stakeholders from diverse disciplinary and other interests involved, and representations will need to perform for them differently. For example, AMR representations will need to perform differently for clinicians, microbiologists, patients, and others by defining reality, entangled in heterogeneous networks of humans, non-humans (such as diagnostic machines and prescription slips), practices and institutions. The truth value of the representations circulates in these networks and is

intricately tied up with questions of how they can contribute to mitigating or aggravating the development challenge.

Another key concern in the context of representations of digital development concerns the idea of "representation justice." Justice, such as through questions of inclusion, accountability and more, can be both strengthened and weakened through the implied performance of representations. Rendering the invisible more visible through meaningful representations can help generate performativity by building a temporally and spatially sensitive evidence base to help stimulate action to mitigate the challenge. Simultaneously, as Heeks (2019) has described in his concept of adverse digital incorporation, many will be fearful of being represented through digital means, such as a refugee immigrant or a person suffering from tuberculosis, for concerns of surveillance and social stigma, respectively. Construction of digital representations in a development context cannot take for granted that digital will always lead to good outcomes: the possibility of it carrying contrary, unintended and dark consequences must be considered and guarded against.

Digital development research comes with significant ethical challenges given the nature of the phenomenon being addressed. These challenges come at multiple levels and forms, ranging from the nature of research partnerships, which necessarily come with power and information asymmetries, that need to be explicitly acknowledged and addressed. Data and digital technologies in themselves are laden with ethical challenges, such as how data is collected, from whom, the ownership of it, who benefits, and how the circulation of data across institutional and geographical boundaries can be adequately protected and not used for purposes not originally intended. While more universal frameworks drawing upon moral philosophy (Habermas 1993) and relational ethics (Zigon 2024) can potentially provide guidance, they need to be translated into forms of contextualised ethics that recognise the cultural specificity of values, the importance of local voices in determining what constitutes beneficial development, and the materiality of digital technologies and data. This is particularly relevant when research involves multiple stakeholders across different cultural contexts, and invoking diverse digital technologies as exemplified through the empirical cases of humanitarian interventions or digital nomadism (Jiwasiddi et al. 2024).

The consequential question can be summarised as follows: *How do representations perform in shaping a multiplicity of developmental, social, and policy practices for different stakeholders, and what are their implications for enhancing representation justice as understood within local and global contexts?*

4.2. Policy and Practice Implications

It is imperative for digital development research to be made relevant for policy and practice, to make a difference in constructing a better world (Walsham 2012). This requires the research target to move beyond academic publications toward work that can meaningfully inform policy and practice, such as the development of Thailand's digital nomad visa launched in 2024. Urgent challenges such as climate change, poverty, and inequality, geopolitical instability and conflict, and humanitarian crises demand research that can

contribute to immediate policy decisions while maintaining scholarly rigour. The long-standing rigour versus relevance debate in IS research (e.g. Lee 1999) needs to be revisited to incorporate dimensions of contextualised development relevance in our analytical consideration.

In doing so, digital development needs to "decolonise" its research stance and thrust, where the recipients of development benefits are only seen as "passive" providers of data for researchers from the Global North to primarily enhance their academic profiles, including by pushing concepts in vogue, such as decoloniality. The field must continue efforts to enhance and place at the centre voices from the Global South, supporting indigenous theorisation and challenging Western-centric assumptions (Masiero 2023; Chughtai and Young 2025). This includes supporting the building of research capacity in the Global South, developing publication practices that are accessible to non-Western scholars, and creating research collaborations that are genuinely equitable rather than extractive. As Jimenez et al. (2022) demonstrate through their work in the Andes region of Peru, alternative ontological and epistemological perspectives based on reciprocity and solidarity offer more sustainable socioeconomic and environmental approaches in practice.

Digital development raises key implications for practice. To ensure the benefits of such research reach those who most need it, it is important to revisit traditional notions of participatory design, which has been a cornerstone of IS and ICT4D research. Novel concepts such as those related to hope (Sahay et al. 2022) and aspirations (Appadurai 2013) can be invoked, not just as "feel-good" factors, but as those which can be meaningfully incorporated into practices of participatory design, to bring to the fore the voices of those who need to benefit most. Methods of co-production pioneered by STS research (Jasanoff 2004) can help to understand how participants from outside traditional organisational settings can work collaboratively with researchers and practitioners to develop relevant future socio-technical imaginaries.

In addition, digital development researchers need to acknowledge the fact that digital technologies serve as powerful tools for delivering essential services to different socio-economic groups and bridging service gaps in various sectors. For instance, they can extend basic ophthalmological care or banking services to previously unaddressed segments of a population (Srivastava and Shainesh 2015; Srivastava et al. 2021) or can make online trading accessible to the growing middle class (Nehme et al. 2023). The instrumental role of digital technologies further extends to the business context, where they enable innovative service delivery models through the integration of technology with other organisational resources. A notable example is the deployment of AI-powered chatbots, which offer efficient, round-the-clock customer support (Chandra et al. 2022). Thus, digital development, as we construe it, not only enhances service accessibility but also contributes to broader goals of operational efficiency and wealth generation to support local value gain, particularly for those currently deprived populations.

To broaden participation and impact, digital development research should attract scholars who have not traditionally engaged with ICT4D topics to become relevant for more diverse

audiences, including multinational corporations, technology solution providers, governments and policymakers. Enhancing the distinctive character with implications that are recognisable to the broader community, while maintaining methodological alignment and credibility with mainstream IS scholars, could help attract scholars who have not traditionally engaged with the ICT4D community and its topics. This requires attention to methodological rigour, statistical sophistication, theoretical ingenuity and multi-method approaches (Sarker et al. 2025) that can speak to different scholarly communities and communities of practice.

4.3. Methodological Implications

Where is "the site" of digital development inquiry? Our conceptual framing provides leverage to break away from an exclusive focus on primary geographical boundaries to study many of the grand challenges (as defined by the UN-SDGs and elsewhere). Digital development will unfold in sites that are necessarily polycentric in nature, i.e. characterised by multiple centres of power and control, demanding empirical research designs that can account for this multiplicity.

Digital development phenomena increasingly transcend traditional geographical boundaries while simultaneously needing to be directly relevant in local contexts. The case of digital nomadism illustrates how digitally enabled work can simultaneously advance and undermine development objectives through second-order effects that are non-obvious and long-term. Digital nomadism can be seen as an extreme, critical case to build wider understandings beyond concerns limited to local adoption processes (Lopez 2024).

The M-PESA case demonstrates the importance of understanding digital development as historically situated (Oborn et al. 2019; Barrett et al. 2024), which are longitudinal in-depth case studies, not just snapshots. This helps trace the co-evolution of digital technologies and development processes over time, and their unintended consequences. The evolution and ongoing development of M-PESA as a mobile payment platform over the last two decades offers important theoretical insights for such research, including a processual understanding of how mobile money platforms and development challenges are dynamic and sociotechnically entangled. These empirical cases have in common with ICT4D in the development of rich, processual, longitudinal research. For example, the Health Information Systems Programme research hosted by the University of Oslo, Norway, is another classic example of a more than 20-year-old ongoing research programme spanning multiple countries and domains within an action research framework (Braa et al. 2024). Such research provides rich insights on conducting polycentric research approaches, with rich societal and research relevance.

Digital development research highlights the challenge of transcending traditional disciplinary and epistemic boundaries and developing multidisciplinary understandings of the phenomenon. Siloed disciplinary boundaries risks fostering an unhealthy division, while efforts towards their integration also raises significant theoretical and methodologies challenges. To understand the multifaceted nuances of digital nomadism, such as the diverse "passive smoke" effects on the environment, local communities (Jiwasiddi et al. 2024), and

the global redistribution of economic value (Carmody 2025), requires multiple disciplinary perspectives (D'Mello and Sahay 2007). The global health discussion illustrates how diseases are shaped by the interplay of biomedical and social processes, with digital technologies adding further informational layers. Other challenges, such as those related to climate change and conflict, will likewise require distinct disciplinary insights to be incorporated to build holistic and context-sensitive understandings.

Innovations in methodologies need to be developed to engage with the complex challenges of digital development, placing more careful attention on analytical rigour, an appreciation for mixed or multimethod research (e.g., Sarker et al. 2025), and recognition of the value of appropriate problematisation (Chatterjee and Davison 2021). While quantitative research, such as epidemiological modelling dominant in global health, is useful in providing a macro picture of mortality and morbidity profiles of a geographical region, it is far more limited in understanding the how and why questions that underlie these disease profiles. Answering these questions require insights based on medical humanities and medical anthropology. Similarly, climate science research has pioneered modelling approaches, such as the impacts of heat stress on health. However, these models are typically not made relevant for local communities to guide them on their strategies for adapting to such heat stresses, which requires ethnographic research. Development of methodologies that are more pluralistic can help develop more holistic understandings of the phenomenon spanning interconnected micro–macro levels. Recent advances in this area notably include case studies, ethnography, discourse analysis, action research, computational approaches, and the analysis of qualitative and digital trace data more generally. Drawing insights from these areas can enhance the quality of digital development research by strengthening the unique identity of such studies, while producing findings that resonate with the broader academic community and help generate valuable insights for a more diverse range of stakeholders, including multinational corporations.

Digital development, in its forward-oriented stance, requires the adoption of practical "future-oriented" methodological tools that avoid the pitfalls of both the "ivory tower" (impact-free) and the "eternal now" (overly scientistic) approaches that tend to be attributed to "mainstream IS" research. Some methods relevant for digital futures research include backcasting, digital imaginaries, and future-making (Schlagwein et al. 2025). Integrating futures-oriented approaches into digital development can create participatory spaces where diverse stakeholders collaboratively envision and shape equitable digital futures, thereby challenging dominant sociotechnical imaginaries and fostering inclusive innovation (Mager & Katzenbach 2020). These will need to be developed in innovative ways by incorporating concepts such as hope and aspirations, to help achieve the normative ambitions of digital development research.

5. Conclusion

Digital development reveals a deeply polycentric character, enacted and negotiated across multiple centres of power and practice, including academic communities, NGOs, state institutions and local communities. Within this landscape, traditional top-down governance

models prove insufficient. Instead, new frameworks are required that are sensitive to both fragmentation and interconnectivity, as seen in humanitarian relief efforts where multiple actors operate in loosely coordinated, yet interconnected, ways.

To address the complexity of these issues, building a robust theoretical and methodological infrastructure is essential. This includes developing approaches that trace the movement of digital data and representations across diverse contexts, a process that can be understood, for example, through the STS lens of "circulating translation." Equally important is the application of critical performativity as a means of evaluating how digital representations live socially, either reinforcing or disrupting prevailing social hierarchies. As AI becomes increasingly pervasive in sensitive domains, such as health and security, novel ethical challenges will arise, widening the scope of Responsible AI studies to include development considerations.

At the heart of digital development must lie a genuine commitment to visibility and justice. The ethics of representation demand close attention to who is rendered visible through digital systems, how this occurs and who holds the power to represent. Building on concepts such as Heeks' notion of "adverse digital incorporation", researchers and practitioners must actively design systems that support representational justice, ensuring that digital technologies do not unintentionally marginalise or stigmatise vulnerable populations.

In conclusion, digital development calls for a novel research agenda that posits new questions, innovative methods and value-driven inquiry. To meaningfully advance the field, researchers and institutions must engage across multiple levels, from more theoretical debates in academic journals to practical interventions in local communities. Institutional support for methodological pluralism, as reflected in conferences, curricula and funding priorities, is crucial for cultivating the intellectual flexibility necessary to understand and navigate this complex terrain. Furthermore, futures-oriented capabilities need to be developed, which include working with digital imaginaries, employing aspirational design practices and engaging in scenario-based planning that accounts for multiple trajectories and contingencies (Handunge et al. 2025).

Digital development research embraces critical, contextual and interdisciplinary approaches. However, the challenges ahead—from climate change to algorithmic governance, from global health crises to digital divides—require even more fundamental paradigmatic shifts in how we conceptualise and study the relationship between digital technologies and development within diverse contexts. This calls for theoretical innovation, methodological pluralism, empirical rigour and practical and policy engagement. It demands that scholars work across disciplinary boundaries, engage with diverse stakeholders and remain committed to the goal of making the world a better place. Most importantly, it requires recognising that digital development does not represent a direct or technical problem to be solved, but an ongoing negotiation with often indirect and second-order effects associated with social change, in which researchers, practitioners and communities must actively participate and co-create. As we move forward, the success of digital development research will be measured not only by its scholarly contributions but by its capacity to inform more equitable, sustainable and just

digital futures. This requires a research community that is itself inclusive, collaborative and committed to the values it seeks to promote through its work.

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