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Ana Santos Tavares, Sundeep Sahay, Luiz Antonio Joia, Marcelo Fornazin

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Connecting the Unconnected in the Global South: Bridging the Digital Divide from a Critical Perspective

Ana Paula dos Santos Tavares
Getulio Vargas Foundation, Rio de Janeiro, Brazil
anapaula.dstavares@gmail.com
0000-0001-5524-7359

Sundeep Sahay
University of Oslo, Oslo, Norway
sundeeps@ifi.uio.no
0000-0002-4374-9551

Luiz Antonio Joia
Getulio Vargas Foundation, Rio de Janeiro, Brazil
luiz.joia@fgv.br
0000-0002-5903-5190

Marcelo Fornazin
Oswaldo Cruz Foundation and Fluminense Federal University, Rio de Janeiro, Brazil
fornazin@gmail.com
0000-0002-0379-5801

Abstract: Extant literature on information and communication technology for development (ICT4D) has increased the understanding of specific aspects of digital inclusion and development. However, theoretical questions regarding local social issues discussed by locally based researchers remain underrepresented in the ICT4D realm. Through a narrative review of the digital inclusion studies in IS literature and applying as the theoretical lenses the capability approach, network society and critical consciousness, this study proposes a Digital Inclusion for Emancipation (DI4E) conceptual model. This model recognizes the digital inclusion dimensions, as well as the underlying assumptions and limitations in the context of low- and middle-income countries (LMICs). Grounded on a critical interpretive approach, the main objective of the study is to shed light on the different aspects and viewpoints of digital inclusion from a local perspective to unveil potential challenges and opportunities to promote emancipation for the most marginalized groups.

Keywords: Digital Inclusion, Digital Divide, Development, Network Society, Critical Consciousness, Information and Communication Technology for Development, Emancipation.

1. Introduction

In a hyperconnected society, how to study a truly emancipatory digital inclusion? The Covid-19 pandemic unveiled wicked inequalities in global digital access, with nearly half of the world population – 3,6 billion people – outside the connected world [1] which reveals major challenges associated with the digital society. While digital technologies provided some relief during days of social isolation during the pandemic, enabling the working and studying from home [2] they also carried challenges of cyber threats, misinformation and human rights violations [3]. Indeed, the Covid-19 pandemic "hit hardest those countries which were lagging behind in digital development and, by 2020, had not managed to build a reliable digital infrastructure, provide digital public services (including healthcare and education), build people's digital skills, or introduce digital technologies in the economy" [1] (p. 3).

The World Bank [1] describes the digital divide as the disparity between those who have access and skills to use the Internet and those who do not. These skills are important in engaging with complex social problems, in particular for marginalized communities [4-8]. Miscione et al. [9] (p. 281) writes that "over the last 20 years, practitioners and academics alike are becoming increasingly interested in the area of information technology and development". Consequently, theorizing ICT4D has gained increasing attention of researchers [10] and significant advancements are seen in this arena [7, 11]. Aiming at contributing to theoretical advancement, this paper focuses on the issue of digital inclusion, pursuing implications for research and practice [12].

That way, the specific research question addressed is: how to build a conceptualization of digital inclusion that emphasizes the emancipation of the marginalized groups in LMIC settings? We approach this question primarily through an analysis of existing theoretical frameworks from ICT4D research and build upon that through the incorporation of perspectives of emancipation and critical studies within local contexts. Next, we intend to apply this framework to digital inclusion projects in Brazil.

The rest of the study is organized in the following manner. After this introduction, the second section presents the research method, followed by a review of the scientific literature that has emerged from digital inclusion in the Information Systems field. The fourth section proposes a conceptual framework based on the review and interpretation of the selected theoretical lenses. Finally, in the fifth section, concluding remarks and future research avenues are set forth.

2. Research Method

This research is based on qualitative methodology [13], being designed as a structured narrative literature review [14] and grounded in a critical interpretive approach [15-17]. The critical interpretive method of research in IS is "aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context" [15]. Thus, the study is aimed at advancing the theoretical foundations of ICT4D research on the understanding of digital inclusion, drawing upon a dialectical engagement with key assumptions and beliefs related to this concept discussed in the literature [13]. Hence, review, interpretation and synthesis of a broad range of digital inclusion research is herein developed from three theoretical lenses, namely: the capability approach [18], the network society [19], and the critical consciousness [20], which provides the basis for an expanded framework. The three theoretical lenses emerged from the hermeneutic circle analysis to interpret and map the literature based on the main concept and discourses presented in this study.

The methodological approach involved a survey in relevant scientific libraries and databases (e.g., AIS library, Web of Science) and discussion with experienced research colleagues. As a result, the study comprises a dataset of 30 articles that were analyzed from three dimensions: level of analysis [21, 19, 22], critical approach [23, 24], and focus on marginalized groups [25, 26]. This analysis helped identify five key dimensions: type of digital technology, level of analysis (individual and collective), capabilities (well-being and agency freedom), use of ICTs (practical or strategic), and components of emancipation, as presented later. The five key dimensions emerged from the perusal of principles to conduct critical interpretive studies, namely: social and historical contextualization, critical interaction between the researchers and the subject, abstraction and generalization, and dialogical reasoning [15].

3. Digital Inclusion in Information Systems Research

Historically, Information Systems (IS) research has focused on issues associated with the development and diffusion of systems [27]. However, studies have identified that changes in the human condition and societal disparities together with the evolution of ICT usage have provided intended and unintended consequences, affecting mainly the marginalized groups [28]. Such analysis has highlighted debates around the so-called digital divide phenomena and the impacts of ICTs in LMICs (Low- and Middle-Income Countries) towards a better world "where people from less advantaged backgrounds can be enabled to enhance their capabilities and increase their participation in matters which affect their lives" [7] (p. 37).

The phenomenon of digital divide is not just related to the unavailability of ICT but also to "the social, political, institutional and cultural contexts which shape people's lack of access to ICTs, or their inability to use them effectively" [28] (p.1). This finding shows the need to go beyond simplistic discourses of aligning technological diffusion with economic development and recognizing the differing roles that ICT can play in society [25], with contradictory implications on social exclusion [27].

Beyond issues of access to digital tools, digital inclusion encompasses people's ability to access and make use of those technologies to add value to their relevant social practices [29]. Furthermore, Warschauer [29] asserts that "those who are already marginalized will have fewer opportunities to access and use computers and the Internet" (p. 7). Given the entanglement of technology and society, it becomes important for research to focus on understanding how marginalized groups use ICT not just "to overcome a digital divide but rather to further a process of social inclusion" [28].

Indeed, questions of digital divide are always shaped in local contexts [30, 5], which "feature a wide range of theoretical and methodological perspectives when studying ICTs in LMICs" [31] (p. 2). This understanding is built around the study of processes of participation [32, 33] and how local processes shape development [34]. This was illustrated by Hayes and Westrup [35] in their analysis of M-PESA, now widely recognized as an innovative mobile banking application from Kenya. In the same vein, Avgerou et al. [36] present lessons from electronic voting in Brazil, and Walsham and Sahay [37] investigate the implementation of geographical information systems in India. Additionally, various other studies, for example, have helped highlighting a research agenda to promote sustainability, inclusion and growth [29, 28, 6, 38-41] to name just a few.

In such a context, one summarized the analysis of ICT4D literature identifying three important frameworks around digital inclusion: (i) Zheng and Walsham's [25] social exclusion as capability deprivation; (ii) Joia's [42] dynamic

digital inclusion model; (iii) Madon et al.'s [28] digital inclusion and the dynamics of institutional stability and change. Zheng and Walsham [25] (p. 223) drew on the capability approach as a "theoretical lens to help conceptualise the complexity and multiplicity of social exclusion in e-society". They assert that inequalities encompass material inequalities but also broader issues such as lack of opportunities, freedoms and choices. Joia's [42] digital inclusion model also built upon the logic of capability approach (CA) offering a basic structure for researchers to define the grid of actors that can influence the process of social inclusion through ICT. Finally, Madon et al. [28] analyze four key processes of Institutional Theory, considered relevant to digital inclusion projects: getting symbolic acceptance by the community; stimulating valuable social activity in relevant social groups; generating linkage to viable revenue streams; and enrolling government support.

While these frameworks have contributed to analyze key factors shaping an inclusive digital economy and society, we believe they can be strengthened in three directions: i) building a more critical perspective to understand local social issues and foster processes of freedom and empowerment, ii) understanding emancipation from the citizen's standpoint; and iii) focusing on the most vulnerable population historically left behind by digital transformation (UN, 2021).

In trying to build those extensions, we draw upon three theoretical perspectives: i) Sen's capability approach [18]; Castells network society [19]; and iii) Freire's critical consciousness [20]. Key concepts from these theories are put together to develop an integrated framework which is discussed below. That way, we bring a postcolonial critical approach to extend the current knowledge in the ICT4D field.

4. An Extended Theoretical Framework for Studying Digital Inclusion

Theorizing digital inclusion for development encompasses the understanding of political dimensions, cultural aspects and normative worldviews [44], situated within local social contexts. Current research in ICT4D suggests an inadequate "engagement in a plural dialogue between different systems of knowledge and between different epistemologies, without pre-established hierarchies" [44] (p. 184). These epistemologies underline the importance of individuals as part of a collective, the logic of shared interests (common well-being), the relevance of diversity and intercultural understanding from a critical lens [44].

The current study intends to advance the knowledge on ICT4D literature shedding light on the importance of citizens' perspective, the critical consciousness and the focus on the marginalized groups to foster digital inclusion and, by consequence, emancipation. As such, we concentrate on the role of humans, informational capabilities and power relations to promote technological projects for inclusion.

4.1. Capability Approach: The Human Development Perspective

According to Sen [18], development is a process of expansion of real freedoms that people appreciate, associated with freedom of choice in personal, social, political, and economic extent. The Capability Approach (CA) is, thus, defined as "a process of expanding the real freedoms of individuals" [18] (p. 3) to "lead the lives they have reason to value" [18] (p. 293). This theoretical view has been recognized and applied among scholars in diverse research fields, encouraging debates on inequality, digital inclusion, capital and savings, and non-market institutions [7].

In fact, the framework proposed by Sen on development improve the aspects of interaction and articulation among social actors towards a more cooperative action logic, underlining the importance of building social networks [45]. In this regard, existing conceptualizations of digital inclusion in IS field applied Sen's framework [25, 46, 24, 32, 42], considering the social context, relations and interactions among actors sharing resources and obligations built on trust. Despite the relevance, some critics have been raised: lack of methodological clarity on how to apply the main concepts; too individualistic approach; absence of attention to power relations; overreliance on the ability of human beings to make reasoned choices; and lack of attention on how to overcome adaptive preferences and their constraining effects on the individual's development [24, 32, 47-50].

Notwithstanding, Sen's approach provides a non-utilitarian perspective to investigate development concerns bringing forth important analytical and philosophical foundations to be explored [18]. Besides, Sen focuses on the deprivation of capabilities such as access to healthcare and education [18]. Such a viewpoint is scrutinized by the present study, which intends to investigate the contribution that technologies may have to increase freedoms and opportunities of individuals in societies. Thus, we intend to understand individual critical agency while addressing collective mobilization that will be explored from the Network Society lens [19] presented below. Table 1 summarize the key concepts drawn upon for building the expanded framework presented later.

Table 1. Capability approach key concepts to understand digital inclusion

Concepts	Components	Description
Commodities	Digital Technology	The type of technology used and its main characteristics at the local level.
Capabilities	Well-being freedom	Assess what capabilities are provided from a well-being perspective (e.g., health, internet access, education)

Capabilities	Agency freedom	Assess what capabilities are provided from an agency freedom perspective (e.g., social and political participation, religious freedom)
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4.2. Network Society: Globalization, and Social Development Perspective

Throughout history, technology has been deeply implicated in the development process [51]. From industrialization and colonization to modernization and neoliberal paradigms, technology has played different roles in fostering development and economic growth [52]. The spread of Internet services in the 1990s provoked a transition from technology as a tool to a more holistic force to promote economic, social and cultural development [53]. According to Castells [19], the ongoing transformation of ICT in the digital age extends the reach to all domains of social life in a network that is simultaneously local and global. As such, power relations have become increasingly shaped by digital technologies and networks that are also influenced by a historical process of domination and counter-domination which frames the social interactions within the networking logic.

The power is thereby located in the networks and if one is not present/represented (s)he might be excluded and systematically marginalized. To contrast with such a viewpoint, Castells presents the counter-power movement consisting of the social actor's capacity to challenge and eventually change the power relations institutionalized in society (e.g., Black Lives Matter). Therefore, the network logic both connects and disconnects. It exacerbates the unintended effects of the new information-technology paradigm putting a lens on the double sword aspect of ICT [54, 55].

Despite the relevance of Castells' work to digital inclusion studies, some criticism has been raised [56]. The author's view of the power and identity of social movements have been already explored by other scholars [54] and networks are treated on a high level of abstraction. However, this approach is unique as it takes a historical and local perspective. Castells unveils the way formal network structures float to the surface and how such structures turn into vital causal powers [52]. Indeed, the network society is interconnected, which raises some important concerns about surveillance, regulation and free speech to name a few. Table 2 presents the main concepts of power and counter-power at both individual and collective levels derived from the abovementioned theoretical lens.

Table 2. Network society key concepts to understand digital inclusion

Concepts	Components	Description
Agents	Individual	Identify what agent has/doesn't have access to capabilities at an individual level (e.g., users, students)
Agents	Collective	Identify what group of agents have/ don't have access to capabilities at a collective level (e.g., local community, school, hospital)

In order to take a step further and advance the critical understanding of the dynamics of power, politics and inequalities that impact human development in poor countries [50, 57], we present below the literature on critical consciousness [20].

4.3. Emancipatory Pedagogy: Postcolonial Critical Consciousness Perspective

Emancipation is a central concept in critical theories yet underresearched by IS scholars [23]. It is a complex and multidimensional concept, including the freedoms to act, express, belong and think [23]. Critical theory asserts that dominant narratives confer "structural disadvantage as justified, normal and immutable, and that, as a result, people who are persistently subject to dominant narratives often internalize those values uncritically as if they represented their reasoned interests" [50] (p. 4). Such an argument complements both the CA and the network society as it yields guidance on how to overcome adaptive preferences and power relations [50].

Paulo Freire's theory of emancipatory pedagogy [20] introduces a critical perspective [23, 58] to understand how oppressed groups can achieve emancipation by promoting awareness of their reality and taking ownership of their struggle [59]. Critical consciousness provides the ability to read the world critically and agency makes possible to act for changing the world [20]. Freire articulates an epistemology to empower marginalized people to read critically about their world in a method called 'conscientization'. This approach allows members to critically investigate their own conditions, moving from passive objects to active and critical agents of their self-development [60]. Thus, questions such as why does this inequality exist? or who benefits from it? "challenge agents to reflect on the root causes of the disadvantage that they experience" [50] (p. 5). In IS, some studies have drawn upon Freire's tenets, such as Poveda and Roberts [50], who analyzed critical agency and development in Zambia and Brazil and Tygel and Kirsh [33], who investigated critical data literacy inspired by Freire's method.

Some critics highlight the absence of androcentric bias and gender inequalities in Freire's work [60], as well as an inadequate consideration of the dark side of empowerment and emancipation. First, if the implementation of emancipation requires political power and resources that the oppressed do not possess, can they achieve their

emancipation on their own? Secondly, how does digital inclusion and emancipation at the individual level affect collective outcomes? Freire [20] suggests that when education is not liberating, the dream of the oppressed is to become the oppressor. The proposed framework examines the role of digital technologies to foster inclusion taking the Freire’s key concepts presented in Table 3.

Table 3. Critical Consciousness key concepts to understand digital inclusion

Concepts	Components	Description
Pedagogical Approach	Practical	Identify if technology is being reproduced by those in power, choosing to use ICTs in ways that benefit the individual in a practical way.
Pedagogical Approach	Strategic	Identify if the use of technology reveals critical thinking abilities, which recognize the root causes of their problems, using ICT in more strategic ways.
Emancipation	Freedom to act, express, belong, and think	Assess agents’ freedom to act (e.g., surveillance, control, trust), freedom to express (e.g., voice-giving), freedom to belong (e.g., inclusion) and freedom to think (e.g., manipulation, bias).

4.4. The Proposed Theoretical Framework

Against this backdrop and based on the review and interpretation of the selected theoretical lenses, this paper proposed a framework to understand more deeply the phenomenon of digital inclusion. Through this framework, the study intends to deepen the extant conceptualizations of digital inclusion, as summarized in the Figure 1 below.

The conceptual model is proposed by articulating five main dimensions: type of digital technology, level of analysis (individual and collective), capabilities (well-being and agency freedom), use of ICT (practical or strategic), and components of emancipation.

The component ‘digital technology’ addresses the use and the main characteristics of digital technologies applied at the local level. The ‘agents’ are those with or without access to capabilities at both the individual level (e.g., students, patients, consumers, etc.) and collective level (e.g., local community, hospital, school, etc.). The ‘capability’ is the ability to achieve your purpose and it has two main perspectives: the well-being freedom and the agency freedom. The agency freedom is the freedom to set and pursue your goals and interests (e.g., social participation, religious freedom), and the well-being freedom is one of the goals you wish to pursue as an individual (e.g., internet access, healthcare access) – “what real opportunities you have regarding the life you may lead” [18]. The ‘use of ICT’, in contrast, set forth a critical lens to identify if the digital technology is reproduced by those in power to benefit the individual (practical approach) or if the use of technology reveals critical thinking abilities, which recognize the root causes of their problems, using digital technologies in more strategic ways (a strategic approach).

Finally, the multidimensional framework presents the components of emancipation derived from the literature which encompasses the freedom to act, express, belong, and think. Around the system, we identify the context and its historical, cultural, social, and political dimensions. According to Avgerou [5] it is important to consider the social embeddedness perspective of ICT innovation to contribute toward improving living conditions through locally situated action.

The DI4E model is an integrated approach to studying digital inclusion for emancipation. The framework has been developed to advance the understanding of the dynamics of digital inclusion and untangle the paradox of inequalities from a critical consciousness perspective. Thereby, we intend to ascertain if:

- (i) technology reinforces domination or promotes transformation mediated by emancipation for the most marginalized groups;
- (ii) inclusion at the individual level affects collective outcomes;

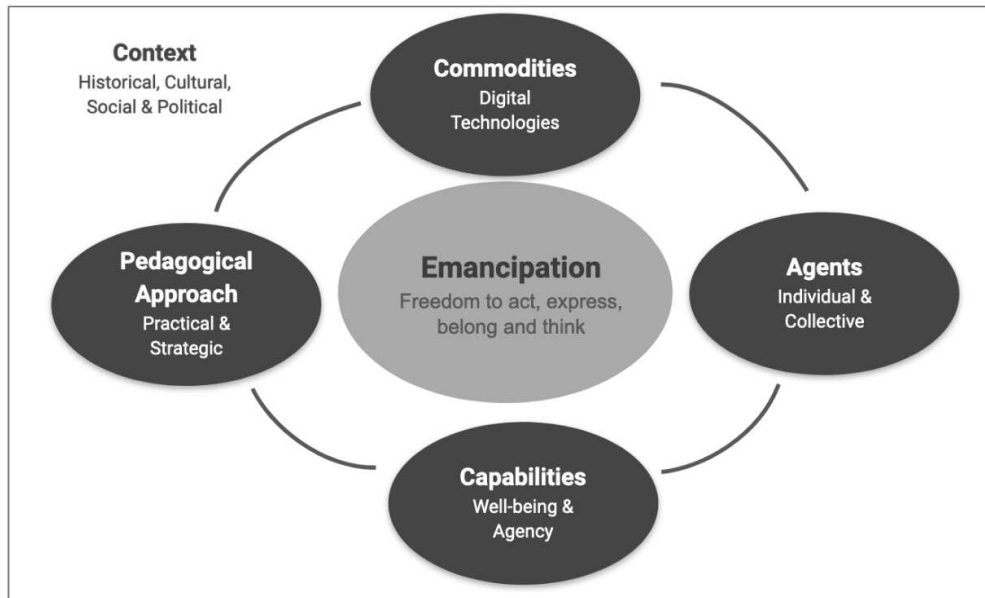


Figure 1. The Framework of Digital Inclusion for Emancipation (DI4E)

The framework illuminates the debate on digital inclusion by proposing a new approach that combines different yet complementary strands of literature. Building on Sen's capability approach [18], Castells' network society [19] and Freire's critical consciousness [20], we seek to understand the boundaries between participation, collaboration and negotiation among different agencies and communities of practices to promote digital inclusion in ICT4D projects. Thereby, the model intends to advance the extant knowledge addressing a critical viewpoint while focusing on the most marginalized groups. The combination of the three theoretical lenses allowed the unique perusal of the dynamics of digital inclusion combining an interdisciplinary perspective with a critical reflection. It intends to investigate (i) the contribution that technologies may have to increase the freedoms and opportunities of individuals in societies [18], (ii) combined with the analysis of power and counter-power at both individual and collective levels [19], aligned with (iii) the context of dynamics of power, politics, and inequalities that impact human development in poor countries [20, 68].

Furthermore, ICT4D research addresses crucial issues intricately tied up to practice, which supports the challenges for IS research in building a social agenda such as poverty alleviation and climate change [26]. In such a context, the ubiquity of digital technologies intertwined in human life raised important concerns about the unintended effects of ICT initiatives in LMICs (Low- and Middle-Income Countries). As suggested by some scholars [21, 26, 61], little is known about the dark side of digital technologies, so that a framework for digital inclusion for emancipation (DI4E) can be definitely proposed. In fact, the unintended effects of digital inclusion initiatives driven by economic and commercial interests have been little addressed by academia so far [55], which sheds light on the importance of addressing these gaps.

5. The Way Forward: A Research Agenda

The present study intends to explore the interplay between digital inclusion, emancipation and development providing evidence from the academic literature on how to strengthen human social capacity to achieve freedom, inclusiveness and growth [63]. To do that, the study discusses the main challenges and opportunities for future research related to the components of emancipation accrued from the theoretical lenses.

From a critical perspective, Escobar [64] argues that development is a contradictory process that might generate intended and unintended effects, giving rise to the postcolonial and post-development theories [24]. In order to unveil "the power structure and the ideological biases" behind development discourses [65], it is important to apply critical theories to expand critical awareness and sensitivity to the assumptions, discourses and power structures beneath ICT4D endeavors. Furthermore, it is fundamental to develop a plural dialogue between distinct systems of knowledge and epistemologies without hierarchies "understanding that reality is constituted not only by many worlds, but by many kinds of worlds, many ontologies, many ways of being in the world, many ways of knowing reality, and experimenting those many worlds" [44] (p. 185).

That way, we propose to investigate the emancipation dimensions of digital inclusion by analyzing two longitudinal case studies in Brazil. The first case study will analyze the project developed by "Lab Coko" - a training and development laboratory that operates in Recife, being one of the national references in digital inclusion. The project has been sponsored by Porto Digital, a major initiative in Recife, which aims to foster technological innovation in the Northeast region of Brazil. During the Covid-19 pandemic, Porto Digital provided free internet access to poor communities in the

region to encourage social and economic activities. The second case study aims to investigate an initiative entitled "Vai na Web", a high-tech and human values program located in Rio de Janeiro that prepares talent from favelas for the new digital economy. The program democratizes access to technology, encourages autonomy and strengthens the plurality of labor in the IT market. The main challenge is, however, to teach programming languages combined with socio-emotional skills to digitally excluded young people.

Thus, by applying the theoretical framework grounded on the emancipatory critical view, the research aims at providing a critical analysis of digital inclusion initiatives, explaining the unintended consequences of the digital divide from a local social context. Essentially, one intends to provide normative guidance for how to promote inclusion and emancipation, by answering relevant questions such as:

- How does inclusion at the individual level affect collective outcomes?
- What roles should government, NGOs and platforms play in promoting inclusion and emancipation?
- Can ICT oppress?
- How does the digital divide hinder women's and girls' empowerment?

6. Conclusion

The digital technology has become increasingly embedded in the lives of individuals, communities and countries, being more critical than ever to ensure universal access and digital skills to promote development and emancipation [50]. In this context, digital inclusion has a key role to play by addressing the readiness and the critical consciousness of communities to fully embrace the digital age.

The current study offers several contributions to the ICT4D field. First, it contributes to the academic research on the discussion about ICT in LMICs [30, 66]. As already mentioned, it is paramount to address critical perspectives to understand development from a local social context and Freire's approach can fill this gap. According to Davison and Martinsons [67], ICT4D research requires deliberate attention to the conditions in the field. Thus, context cannot be ignored. Furthermore, contextual conditions combined with a close examination of socio-technical dimensions are conducive to understanding the local meaning of development [26].

Besides, the study proposes a strong ethical agenda stating that ICT is a necessary but not sufficient condition to empower vulnerable people [29]. Therefore, a local perspective can improve the understanding of successes and failures in ICT endeavours vis-à-vis the evolution of the digital society. Also, from a managerial perspective, this study aims to present a set of reflections that can help managers and policymakers to identify the consequences accrued from the digital divide, which can be a learning opportunity for them to be better prepared for the digital society. As stated by the United Nations [43], governments, in cooperation with relevant stakeholders, need to develop a commonly agreed framework for closing the digital divide. In fact, "rapid technological change without an inclusive and sustainable development strategic orientation risks entrenching existing inequalities while introducing new ones" [43] (p. 5).

Arguably, understanding the relevance of technologies along with individual's critical skills to improve human capacity and foster digital inclusion is paramount to improving the lives of vulnerable people in LMICs. As stated by Zheng et al. [55], perceiving ICT4D as part of a wider process combining social transformation, policies and development initiatives is needed to foster a more sustainable and less unequal world.

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