

ICT4D and Critical Data Studies: A Joint Research Agenda

Silvia Masiero

University of Oslo, silvima@ifi.uio.no

The fields of Information and Communication Technologies for Development (ICT4D) and critical data studies have been historically distinct from each other, each bearing different histories and research foci. However, recent evolutions of ICT4D have problematised the focus on “development” that originally characterised the field, and shifted to an approach that openly embraces themes proper of the newer field of critical data studies. In this paper, after outlining the conceptual evolution of ICT4D, we note its new intersection with the themes and problems posed by critical data studies. To detail such an intersection, we offer a joint research agenda – on themes of digital identity, datafication of the Global South and adverse digital incorporation – that groups together researchers from the two fields. By doing so, this paper sets the basis for a conversation between ICT4D and critical data studies, a conversation that can generate epistemological growth for both fields.

CCS CONCEPTS • General conference proceedings • Collaborative and social computing • Surveillance

Additional Keywords and Phrases: ICT4D, critical data studies, research agenda, digital identity, datafication

1 INTRODUCTION

The landscape of Information and Communication Technology for Development (ICT4D) research now looks remarkably different from the aspect it had in the early days of the field. Its very founding terms, such as a long unproblematised idea of “development” and its derived term “developing countries”, have been questioned and exposed as colonial and heterodirected [19, 54]. The field’s research agenda has moved to a gaze that explores the multifaceted aspects of technology, including its involvement in injustice on different vulnerable groups.

The more recent, encompassing ICT4D presents multiple intersections with other fields. Importantly, ICT4D now participates in conversation with fields that emerged more recently: one of these is critical data studies, conceived as the systematic study of data and of its criticisms [14, 15]. Emerged over the last decade, critical data studies focuses on data as immersed in their social contexts, noting also the participation of data in inequality-deepening dynamics across the globe. While it emerged more recently than ICT4D, and is characterised by a focus on data specifically rather than ICTs at large, critical data studies offers an arena in which many debates, historically engaged in ICT4D, can be inscribed.

This note offers a joint research agenda with the purpose of starting a conversation between critical data studies and ICT4D. We start with a brief outline of the conceptual evolution of ICT4D, from the early days in which the talk was about “development” and “developing countries” to the present where these terms are contested and injustice is openly engaged. We then introduce the field of critical data studies and note three themes – digital identity, datafication of the Global South and adverse digital incorporation [23] – that can set the basis for a shared research agenda across the two fields. By doing

so, we seek to establish a dialogue between ICT4D and critical data studies, a dialogue to be substantiated by attending each other's symposia and participating in the debates that each field offers.

The intended audience of this research note are ICTD participants, but also researchers of other fields – critical data studies, as well as cognate disciplines – who may be interested in a conversation between the two domains. The thematic areas identified here are only the beginning of such a conversation, to be continued across conferences and symposia from both disciplines.

2 ICT4D: THE CONCEPTUAL EVOLUTION

The ICTD field was characterised, in its early days, by assumptions that emerge in the older landscape papers of the discipline [2, 3, 4, 6, 50, 51]. First, there was an assumed orthodoxy of development as positive for less wealthy countries, even though few authors defined the term “development” [52]. Second, the term “developing countries” was largely used in research, likely as a consequence of the “development” orthodoxy in point [54]. ICTs were seen as potentially beneficial to development, even though the deterministic ICT-development link was questioned [1, 5]. ICT4D landscape papers suggested the potential of ICTs for development, especially if socially embedded rather than arbitrarily transferred from Western nations [4, 52].

Over time the field experienced, especially in the latest decades, a conceptual evolution that problematised these assumptions. The “development” orthodoxy encountered one of its earliest problematisations in Escobar [19], who noted the disempowering connotation of a colonial, heterodirected “development” on oppressed people. Escobar [19] notes the indivisibility of “development” from assertions of power of wealthier countries on poorer ones: the term, originally unproblematic and infused with a logic of social good, became seen as a creator of further dependency rather than emancipation. Escobar's problematisation, brought forward across multiple research fields, led to questioning of the use of the term “developing countries”, which was close to ubiquitous in older ICT4D research [40].

To be problematised over time was also the assumption of ICTs having an inherent potential of being “good” for development, at least when socially embedded [4] and not superimposed by wealthier countries on poorer ones. The idea that ICTs could actively participate in injustice and power abuse emerged only in a later phase of ICT4D history, that Walsham [50] locates in the years 2000-2010 and that Heeks [23] refers to with the notion of *adverse digital incorporation*. In introducing such a concept, Heeks [23] notes how inclusion in digital systems can be counterproductive for disadvantaged groups, ranging from victims of undue surveillance to undocumented migrants suffering violence and deportation due to data tracing [36, 38]. Predicated on the problematisation of “development”, such a term introduces the intrinsic link ICTs may have with the crystallisation of existing forms of power abuse.

Such a conceptual evolution, from a “development” orthodoxy to a field that problematises the notion of “development” and the potential of ICTs towards it, characterises the landscape of ICT4D today. On the one hand, this evolution reflects a theoretical crisis that puts in doubt, if it does not outright reject, the assumptions on which the field was built. On the other hand, this evolution leads ICT4D to embrace new themes of research, as well as new fields born later and that now offer important arenas for joint research discussion. Critical data studies, introduced here, is one of these fields.

3 CRITICAL DATA STUDIES AND ICT4D: SHARED RESEARCH THEMES

Formally introduced by Dalton and Thatcher [14], critical data studies deals with the study of data and its criticisms. Dalton and Thatcher [14] note how, in response to the overarching promise of “big data”, research needs perspectives that examine criticisms as well as the hype, noting how data can participate in social improvement as well as in the perpetuation of existing injustice. The epistemological roots of the field are ascribed to boyd and Crawford [7], who note the sociotechnical

nature of the phenomenon and the problematic processes it can generate. Following their work, a distinct literature [13, 14, 15, 22, 25] centred on the systematic study of data and its criticisms, raising questions of ethics, power and justice.

As noted by Dalton et al. [13], critical data studies engages subject formation within the regimes of a datafied world, where *datafication* is meant as the rendering of existing processes into data [35]. Not only the datafied subject, but the processes of disempowerment and injustice that they may enter as a result of datafication are engaged by the field: such processes range from the setbacks of digital identification to data-induced forms of unfairness, in forms of exclusion or adverse digital incorporation. The same literature focuses, however, on practices of resistance to unjust data systems, which may challenge datafication through the same technologies by which oppression occurs [36].

Whereas ICT4D experienced a journey from belief in “development” and the role of ICTs in it to an agenda that challenges such assumptions, critical data studies was born in open problematisation of the promise of “big data”. As critical data studies begins dialogue with other disciplines, and ICT4D finds in this field an interlocutor for its most recent approaches, we identify digital identity, the datafication of the Global South, and adverse digital incorporation as three, conversation-starting themes for a joint research agenda between the two fields.

3.1 Digital Identity

As noted above, one founding marker of critical data studies is the field’s engagement with subject formation in a datafied world [13]. One of the impacts of datafication on subject formation is the conversion of human identities into machine-readable data, referred to as *digital identity* [32]. Not surprisingly, digital identity is a common theme of critical data studies: research on how individuals’ identity is converted into data, which are then made amenable to machine-led administration, is an important theme across journals of the discipline. Paradigmatically, a recent Special Issue of Information, Communication and Society [16] constructs digital identity in terms of the injustices it results in, excluding people from essential services and generating new forms of profiling.

Beyond diffusion of digital identity systems is a logic that can be traced to the underlying orthodoxy of data-for-development: machine-readability of individuals, the orthodoxy goes, allows matching individuals with their entitlements [20-21]. Such a matching is designed to combat two simultaneous issues: *exclusion errors*, for which individuals are excluded from provision of services to which they are entitled, and *inclusion errors*, for which the non-entitled are erroneously included in the same services. By tackling exclusion and inclusion errors at the same time, digital identity is capable to serve all and only those entitled to crucial services, which optimises the delivery of forms of assistance as crucial as government welfare, social protection schemes, emergency assistance and humanitarian aid [20-21].

Nevertheless, problematisations of data have inspired multiple problematisations of digital identity. A recent taxonomy [34] identifies three main issues, all based on the notion of *data justice* as “fairness in the way people are made visible, represented and treated as a result of their production of digital data” [47]. Plugged in the context of critical data studies, a data justice lens affords the identification of injustices in a datafied world [39]: this leads to taxonomise critiques of digital identity in terms of *legal*, *informational* and *design-related* forms of data injustice [34]. In legal terms, digital identity results in confining essential rights to digital, and often biometric, registration. This makes digital profiling a condition for access to services that, ranging from food security to humanitarian aid, should be characterised by universal access [42].

From an informational perspective, the problem lies in the lack of information disclosure offered by data keepers to the subjects of data collection [33]. A recent study of food security in India [34] finds that, while the provision of biometric data is mandatory to access the national food security scheme, users have little or no information on how their data is handled. Similar findings emerge on social protection in Latin America: recent insights by Lopez [28] on Colombia and

Cerna Aragon [8] on Peru note how subsidies, to be distributed to vulnerable households during the COVID-19 pandemic, are based on cross-checking information from governmental databases, whose opacity leads to confusion on how data are combined and utilised. Informational injustice leads, in the words of Chaudhuri [9], to users viewing providers as “distant, opaque and seamful”, in contrast with a data-for-development view where accurate information is provided to users.

Finally, a design-related data injustice is also identified in digital identity, calling into action the concept of design-reality gaps [24]. The concept, theorised in the early days of ICT4D, explains failure of ICT4D projects with systematic discrepancies between the worldview of the designers – often based away from implementation of projects – and users of a given technology [24]. In the case of digital identity schemes, design-reality gaps are remarkable: on the one hand, the very design of digital identity systems subordinates access to crucial services to successful authentication [39], thereby excluding non-authenticated users from such services. On the other, such systems do not meet the reality of users that can be erased from authentication for numerous reasons: these go from non-readability of fingerprints to name misspellings, design inconsistencies or outright erasure of their names from user databases [18, 37]. Emerging across digital identity research, design-related injustice presents issues that research in critical data studies [11] has engaged since its early days.

Central in critical data studies, the theme of digital identity (and its injustices) sparks multiple conversations with ICT4D [31]. A first one stems from the sharing of theoretical concepts, where design-reality gaps – a central notion in ICT4D research – is used to illuminate design-related data injustice. Reversely, the concept of data justice finds its origins in critical data studies [47], and acts as a guiding light to explore such dynamics in contexts of disadvantage that ICT4D traditionally explores. A track on ICT4D and Data Justice, inaugurated at the Americas Conference of Information Systems (AMCIS) in 2021, generated a first exchange between the two fields. More synergies are in the study of digital identity in contexts that, while structurally disadvantaged, are building awareness of data injustice and resistance against it [36].

3.2 Datafication of the Global South

In addition to datafication of the individual, another common thread of critical data studies relates to the role of datafication in population management [13]. This focus led critical data studies to turn their focus to the Global South, observing the effects that datafying technologies may have across less wealthy nations. The data-for-development orthodoxy views the Global South as benefitting from the extremely rapid diffusion of basic information technologies, especially mobile phones, in countries where limited connectivity was available before the 2000s [4]. Such an orthodoxy mirrors the early days of ICT4D, in which technology transfer to “developing countries” was seen as a solid, viable route to modernity [1, 5].

Such an orthodoxy is, again, problematised in critical data studies. Taylor and Broeders [48] expose the extractive nature of the datafication of the Global South: proposing to act in the name of “development”, providers of mobile and database technologies in less wealthy countries are empowered to appropriate and use data generated from these. This leads to “development/surveillance assemblages” [48] where people’s data are aggregated for profit, with powers of database construction shifting from the state (traditionally in charge of citizen data management) to private companies. Opportunities to build capitalistic rent from large “unidentified masses” have been a focus of critical data studies and, especially, of ongoing research efforts on the industry of biometric technologies [29, 30].

Largely conducted through joint efforts of international organisations and multinational companies, the datafication of the humanitarian sector is similarly problematised. Populations of refugees, undocumented migrants, or otherwise needful groups are subjected to the process of identity-giving described above, presented as necessary for accurate identification and delivery of social assistance. The process results, however, in what Iazzolino [26] refers to as “infrastructures of compassionate repression”: biometric identity blends an aid logic with the commercial logic of private organisations,

interested in profiling large sections of the population [30]. The tension, Weitzberg et al. [53] argue, is between the logics of aid and surveillance: while biometric profiling is purported as needed for the correct administration of aid, surveillance capitalism nourishes itself of arbitrarily collected data, a “collateral” effect that is at the heart of business in the biometrics industry [46].

The problematisation of “humanitarian tech” affects technologies otherwise purported as generators of opportunities for the poor and vulnerable. An example relates to financial technology services (*fintech*) targeting poor or otherwise vulnerable populations. Studies of pro-poor fintech have purported this technology as a life-changer [27]: these have not, however, directly engaged the perspective of recipients of such “development” efforts. Critical data studies embrace more closely the recipients’ perspective, narrating, alongside promised benefits, stories of injustice and exclusion perpetuated through financial technology. Such injustices span across technologies and populations: Raghavan [41] shows the exclusionary architecture of cash transfers in India, where such a technology risks replacing an established food security system. A further instance is provided in Cheesman [10], showing blockchain-based architectures biasing infrastructures of humanitarian aid, leading to fear and concern from the refugees involved in such infrastructures.

Rooted in critical data studies, themes of datafication of the Global South interact with ICT4D research in at least two ways. A first way concerns the connotation of “development”, which in ICT4D has experienced a parable from positive to increasingly questioned [19]. Critical data studies pose a similar critique: highlighting the power structures of information capitalism, they show how these are masked by a “development” logic that justifies private companies in their extractive activity. Development efforts shield large surveillance operations, a logic that, combined with recent problematisations of “development” in ICT4D, further nourishes the critique that led to questioning the core assumptions in the ICT4D field.

A second conversation sparks from commonalities across research objects, where traditional themes of ICT4D research are now at the center of critical data studies. Two recent Special Issues of Information Technology for Development, a flagship journal of ICT4D, relate to issues of critical data studies: while one on blockchain for development [12] contains mainly positive perspectives on the topic, a Special Issue on digital identity [32] focuses more on the roadblocks to the data-for-development ideology put forward by international organisations and the biometrics industry. Interdisciplinary in nature, both Special Issues highlight how the datafication of the Global South brings ICT4D to conversations with other fields, with perspectives from critical data studies offering important counterpoints to the data-for-development orthodoxy.

3.3 Adverse Digital Incorporation

Critical data studies engage many adverse effects that people suffer from incorporation into datafied systems. Developed in ICT4D, the concept of *adverse digital incorporation* captures such effects: Heeks [23] defines it as “inclusion in a digital system that enables a more-advantaged group to extract disproportionate value from the work or resources of another, less-advantaged group”. The core problem of ICT4D, argues Heeks [23], has evolved: while an earlier logic feared a “digital divide” between those included in connectivity and those excluded from it, the field has now moved its focus on problems experienced *as a result* of inclusion in digital systems. Connectivity, once assumed to be universally good and a route to modernisation, is now the very source of disempowerment and injustice for many people included in digital systems.

Examples of adverse digital incorporation abound in ICT4D research. Since the early 2000s, the deterministic link between ICTs and development was problematised: Akpan [1] and Avgerou [5] illustrated the shortcomings of such a link, while Silva and Figueroa [44] questioned the extent to which institutional inclusion in global ICT infrastructures benefit rural communities. Early problematisations were not about the digital or, especially, datafied systems that the literature faces today: however, they already noted the negative effects that could stem from people’s access to ICTs. As early as

2002, Wade [49] noted how ICTs risked becoming entrenched in a race to the bottom to secure access to technologies directed by hegemonising powers, invariably based in Western nations.

In the same line of thought, recent ICT4D research studies adverse digital incorporation as it affects datafied technologies. ICT4D research on digital identity has noted multiple, detrimental effects of the conversion of human beings into data: inclusion in digital identity also incorporates users in unwanted cash transfer systems, whose risks can be higher than benefits for the unbanked [34, 41]. Similar platforms, subordinating crucial services to biometric authentication, are at the core of the Information Technology for Development Special Issue on digital identity: studies published in that volume bring ICT4D to contemplate the biometric-backed repression of undocumented migrants [26], the suffering of citizens mismanaged by the biometric state [9] and the issues suffered by refugees forced into digital systems [30,43].

Even more recently, ICT4D research has openly engaged themes of data justice. With the AMCIS conference track mentioned above, multiple common themes have emerged: vulnerable populations, historically studied by ICT4D, are now suffering the data injustices that the critical data studies literature explores. Works on data injustice have started to be published in ICT4D forums: in the latest International Federation for Information Processing (IFIP) Working Group 9.4 conference in 2021, a paper looked at the data injustices caused by adverse digital incorporation [23] and another studied the risks suffered by LGBTQIA+ communities as a result of incorporation into COVID-19 tracing in South Africa [55].

While conceptualised in the domain of ICT4D, adverse digital incorporation is at the very core of the birth of critical data studies. In the paper recognised as originator of the field, Dalton and Thatcher [14] note the problematicity of data's incorporation into people's lives, posing question that follow up on boyd and Crawford's [7] critique of big data. Historically delinked from ICT4D concepts, critical data studies have long dealt with the phenomenon: instances pertain to groups that, such as undocumented migrants or LGBTQIA+ people, have historically suffered forms of marginalisation that are now datafied. On migration, studies demonstrate the risk of violence and deportation endured by digitally profiled migrants [36, 38, 40] whereas on LGBTQIA+ communities, systematic marginalisation through extant technologies has led to a stream of studies originating the field of queer HCI [17, 45].

Due to the commonalities across fields that it brings about, adverse digital incorporation constitutes a third theme to spark conversation between ICT4D and critical data studies. The two fields' perspectives on the topic can be seen as complementary: on the one hand, ICT4D approaches the issue in terms of the fields' evolution, from a focus on the problems of the "digital divide" to those arising from adverse effects of incorporation into digital systems. On the other, critical data studies was born in response to the promise of big data, with adverse digital incorporation conceptualising the injustices resulting from the systematic disattendance of such promises. Around this topic as well, the two fields can inform each other and learn from each other's perspective in conceptualising the same phenomena.

4 CONCLUSION

This note sought to initiate a conversation between ICT4D and critical data studies. In the light of the ongoing theoretical crisis of ICT4D, it has done so by suggesting a joint research agenda, consisting of three shared themes of interest on which the two fields offer complementary perspectives. Engaging new fields of research is of crucial importance in this stage of the history of ICT4D: the crisis of its founding assumptions, from the positive nature of "development" to the role of ICTs in it, needs engagement with new objects to fully appreciate the state of the crisis. Such new objects can, however, lead to emergence of a new ICT4D, taking critical approaches to data and conceptualising the injustices at the heart of its research.

The conversation suggested here can take diverse forms. Initiated in field conferences such as ICTD, it can evolve informally as well as through debate, joint symposia, Special Issues and thematic tracks in the other field's forums. Whatever the forms that such a conversation will take, this research note underlines its importance and the epistemological

growth that it can foster in both fields and across them. While the agenda proposed here is just a starting point, we hope it can inform a discussion that would substantially shape the evolution of both fields.

This is the pre-copy editing version of “ICT4D and Critical Data Studies: A Joint Research Agenda”, ICTD Conference, Seattle, 27-29 June 2022.

REFERENCES

- [1] Akpan, P. I. 2003. Basic-needs to globalization: Are ICTs the missing link?. *Information Technology for Development*, 10(4), pp. 261-274.
- [2] Avgerou, C., 2017. Theoretical framing of ICT4D research. In *International Conference on Social Implications of Computers in Developing Countries* (pp. 10-23). Springer, Cham.
- [3] Avgerou, C., 2010. Discourses on ICT and development. *Information Technologies and International Development*, 6(3), pp. 1-18.
- [4] Avgerou, C., 2008. Information systems in developing countries: A critical research review. *Journal of Information Technology*, 23(3), pp. 133-146.
- [5] Avgerou, C., 2003. The link between ICT and economic growth in the discourse of development. In *Organizational information systems in the context of globalization* (pp. 373-386). Springer, Boston, MA.
- [6] Avgerou, C., & Walsham, G. (Eds.). 2000. *Information technology in context: Studies from the perspective of developing countries*. London: Routledge.
- [7] boyd, D. & Crawford, K., 2012. Critical questions for big data: Provocations for a cultural, technological, and scholarly phenomenon. *Information, Communication & Society*, 15(5), pp. 662-679.
- [8] Cerna Aragon, D. 2021. On not being visible to the state: The case of Peru. In Milan, S., Treré, E., & Masiero, S. (Eds.), *COVID-19 from the Margins: Pandemic Invisibilities, Policies and Resistance in the Datafied Society* (pp. 120–125). Amsterdam: Institute of Network Cultures.
- [9] Chaudhuri, B., 2021. Distant, opaque and seamful: seeing the state through the workings of Aadhaar in India. *Information Technology for Development*, 27(1), pp. 37-49.
- [10] Cheesman, M., 2022. Self-sovereignty for refugees? The contested horizons of digital identity. *Geopolitics*, 27(1), pp. 134-159.
- [11] Costanza-Chock, S., 2020. *Design justice: Community-led practices to build the worlds we need*. The MIT Press.
- [12] da Cunha, P. R., Soja, P., & Themistocleous, M. 2021. Blockchain for development: a guiding framework. *Information Technology for Development*, 27(3), pp. 417-438.
- [13] Dalton, C. M., Taylor, L., & Thatcher, J. 2016. Critical data studies: A dialog on data and space. *Big Data & Society*, 3(1), pp. 1-14.
- [14] Dalton, C., & Thatcher, J. 2014a. Inflated granularity: The promise of Big Data and the need for a critical data studies. In: Paper presented at the Association of American Geographers Annual meeting, Tampa, FL.
- [15] Dalton, C. and Thatcher, J., 2014b. What does a critical data studies look like, and why do we care? Seven points for a critical approach to ‘big data’. *Society and Space*, 29.
- [16] Dencik, L., Hintz, A., Redden, J. and Treré, E., 2019. Exploring data justice: Conceptions, applications and directions. *Information, Communication & Society*, 22(7), pp. 873-881.
- [17] DeVito, M.A., Walker, A.M., Lustig, C., Ko, A.J., Spiel, K., Ahmed, A.A., Allison, K., Scheuerman, M., Dym, B., Brubaker, J.R. and Simpson, E. 2020. Queer in HCI: Supporting LGBTQIA+ Researchers and Research Across Domains. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1-4).
- [18] Drèze, J., Khalid, N., Khera, R., & Somanchi, A. (2017). Aadhaar and food security in Jharkhand. *Economic & Political Weekly*, 52(50), 51.
- [19] Escobar, A., 1995. *Encountering development: The making and unmaking of the third world*. New York: Princeton University Press.
- [20] Gelb, A. and Metz, A.D., 2018. *Identification revolution: Can digital ID be harnessed for development?*. Brookings Institution Press.
- [21] Gelb, A. and Clark, J., 2013. Identification for development: The biometrics revolution. *Center for Global Development Working Paper*, (315).
- [22] Graham, M. 2014. My response to the geoweb and ‘big data’ alt. conference at #AAG2014. *Zero Geography* blog. Available at: <http://www.zerogeography.net/2014/04/my-response-to-geoweb-and-big-data.html>.
- [23] Heeks, R., 2021. From Digital Divide to Digital Justice in the Global South: Conceptualising Adverse Digital Incorporation. *Proceedings of the 1st IFIP 9.4 Virtual Conference on the Implications of Information and Digital Technologies for Development*, 26-28 May 2021.
- [24] Heeks, R., 2002. Information systems and developing countries: Failure, success, and local improvisations. *The Information Society*, 18(2), pp.101-112.
- [25] Kitchin, R. and Lauriault, T., 2014. Towards critical data studies: Charting and unpacking data assemblages and their work. Working Paper, Maynooth University.

- [26] Iazzolino, G., 2021. Infrastructure of compassionate repression: making sense of biometrics in Kakuma refugee camp. *Information Technology for Development*, 27(1), pp. 111-128.
- [27] Lagna, A. and Ravishankar, M.N., 2022. Making the world a better place with fintech research. *Information Systems Journal*, 32(1), pp. 61-102.
- [28] Lopez, J. 2021. The case of the Solidarity Income in Colombia: The experimentation with data on social policy during the pandemic. In Milan, S., Treré, E., & Masiero, S. (Eds.), *COVID-19 from the Margins: Pandemic Invisibilities, Policies and Resistance in the Datafied Society*. (pp. 126–128). Amsterdam: Institute of Network Cultures.
- [29] Mann, L., 2018. Left to other peoples' devices? A political economy perspective on the big data revolution in development. *Development and Change*, 49(1), pp. 3-36.
- [30] Martin, A. and Taylor, L., 2021. Exclusion and inclusion in identification: Regulation, displacement and data justice. *Information Technology for Development*, 27(1), pp.50-66.
- [31] Masiero, S., & Arvidsson, V. 2021. Degenerative outcomes of digital identity platforms for development. *Information Systems Journal*, 31(6), pp. 903-928.
- [32] Masiero, S. and Bailur, S., 2021. Digital identity for development: The quest for justice and a research agenda. *Information Technology for Development*, 27(1), pp. 1-12.
- [33] Masiero, S. 2020. COVID-19: What does it mean for digital social protection?. *Big Data & Society*, 7(2), 1-6.
- [34] Masiero, S. and Das, S., 2019. Datafying anti-poverty programmes: Implications for data justice. *Information, Communication & Society*, 22(7), pp. 916-933.
- [35] Mayer-Schönberger, V. and Cukier, K., 2013. *Big data: A revolution that will transform how we live, work, and think*. New York: Houghton Mifflin Harcourt.
- [36] Milan, S., Treré, E. and Masiero, S., 2021. *COVID-19 from the margins: Pandemic invisibilities, policies and resistance in the datafied society*. Amsterdam: Institute of Network Cultures.
- [37] Muralidharan, K., Niehaus, P., & Sukhtankar, S. 2020. Balancing corruption and exclusion: Incorporating Aadhaar into PDS. *Ideas for India*.
- [38] Newell, B.C., Gomez, R. and Guajardo, V.E., 2016. Information seeking, technology use, and vulnerability among migrants at the United States–Mexico border. *The Information Society*, 32(3), pp. 176-191.
- [39] Qureshi, S. 2020. Why data matters for development? Exploring data justice, micro-entrepreneurship, mobile money and financial inclusion. *Information Technology for Development*, 26(2), pp. 201-213.
- [40] Qureshi, S. 2015. Are we making a better world with information and communication technology for development (ICT4D) research? Findings from the field and theory building. *Information Technology for Development*, 21(4), pp. 511-522.
- [41] Raghavan, M. 2021. Transaction failure rates in the Aadhaar-enabled payment system. Dvara Research, <https://www.dvara.com/research/wp-content/uploads/2020/05/Transaction-failure-rates-in-the-Aadhaar-enabled-Payment-System-Urgent-issues-for-consideration-and-proposed-solutions.pdf>.
- [42] Ramanathan, U. 2014. Biometrics use for social protection Programmes in India violating human rights of the poor. Geneva: United Nations Research Institute for Social Development. <http://www.unrisd.org/sp-hr-ramanathan>.
- [43] Schoemaker, E., Baslan, D., Pon, B. and Dell, N., 2021. Identity at the margins: data justice and refugee experiences with digital identity systems in Lebanon, Jordan, and Uganda. *Information Technology for Development*, 27(1), pp. 13-36.
- [44] Silva, L. and Figueroa, E., 2002. Institutional intervention and the expansion of ICTs in Latin America: The case of Chile. *Information Technology & People*. 15(1), pp. 8-25.
- [45] Spiel, K., Keyes, O., Walker, A.M., DeVito, M.A., Birnholtz, J., Brulé, E., Light, A., Barlas, P., Hardy, J., Ahmed, A. and Rode, J.A., 2019, May. Queer (ing) HCI: Moving forward in theory and practice. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems* (pp. 1-4).
- [46] Taylor, L., Sharma, G., Martin, A. and Jameson, S., 2020. *Data justice and COVID-19: Global perspectives*. London: Meatspace Press.
- [47] Taylor, L., 2017. What is data justice? The case for connecting digital rights and freedoms globally. *Big Data & Society*, 4(2), pp. 1-14.
- [48] Taylor, L. and Broeders, D., 2015. In the name of Development: Power, profit and the datafication of the global South. *Geoforum*, 64, pp. 229-237.
- [49] Wade, R.H., 2002. Bridging the digital divide: new route to development or new form of dependency. *Global governance*, 8, pp. 443-466.
- [50] Walsham, G., 2017. ICT4D research: reflections on history and future agenda. *Information Technology for Development*, 23(1), pp. 18-41.
- [51] Walsham, G., Robey, D. and Sahay, S., 2007. Foreword: Special issue on information systems in developing countries. *MIS quarterly*, pp. 317-326.
- [52] Walsham, G. & Sahay, S., 2006. Research on information systems in developing countries: Current landscape and future prospects. *Information technology for development*, 12(1), pp. 7-24.
- [53] Weitzberg, K., Cheesman, M., Martin, A. and Schoemaker, E., 2021. Between surveillance and recognition: Rethinking digital identity in aid. *Big Data & Society*, 8(1), pp. 1-7.
- [54] Zheng, Y., Hatakka, M., Sahay, S. and Andersson, A., 2018. Conceptualizing development in information and communication technology for development (ICT4D). *Information Technology for Development*, 24(1), pp. 1-14
- [55] Zyl, I. and McLean, N., 2021. The Ethical Implications of Digital Contact Tracing for LGBTQIA+ Communities. Proceedings of the 1st IFIP 9.4 Virtual Conference on the Implications of Information and Digital Technologies for Development, 26-28 May 2021.