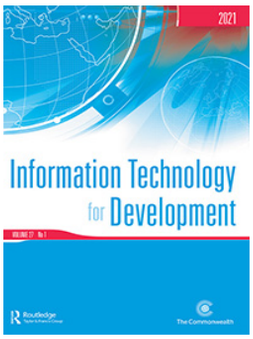

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Silvia Masiero & Savita Bailur

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EDITORIAL

Digital identity for development: The quest for justice and a research agenda

Silvia Masiero[a] and Savita Bailur[b]

[a]Department of Informatics, University of Oslo, Oslo, Norway; [b]School of International and Public Affairs, Columbia University, New York, NY, USA

ABSTRACT

We pursue three main objectives in this editorial for the Special Issue on Identification in a Digital Age: Implications for Development. After outlining the motivations that led us to launch this Special Issue call, we first propose a framework to map the theoretical link between digital identity and human development, articulated in three dimensions linking digital identity to expected development outcomes. Secondly, we present the seven papers in this collection in terms of how they problematise such a link, observing how each of them uses empirical data to increase existing knowledge on this connection and question it. Thirdly, we leverage insights from these contributions to put forward a research agenda on digital identity and human development, suggesting possible avenues to engage with this topic and ultimately, framing digital identity as an object of ICT4D research.

KEYWORDS

Digital identity; development; ICT4D; data justice; digital age

1. Introduction

Identification in a digital age matters because it reduces complex humans to records and systems, mostly categorised by others. Consider the refugee who is given a 'refugee identity' by UNHCR, or a female platform worker who is identified through a scan of the national ID she submits along with her profile. The term *digital identity* indicates the conversion of human identities into machine-readable digital data. As noted by Nyst et al. (2016, pp. 8–9), such a conversion results in schemes that allow the digital identification of individuals, as well as their authentication at various points of access and, on that basis, authorisation for them to perform given actions or access given services. Digital identity schemes are schemes in which 'the three functions of identification, authentication and authorisation are all performed digitally' (Nyst et al., 2016): such schemes are hence different, for example, from schemes where the delivery of goods or services is digital, but the identification of recipients depends on paper-based identity cards or other documents.

The relation between digital identity and socio-economic development has been made explicit across multiple works (e.g. Caribou Digital, 2017; Dahan & Gelb, 2015; Gelb & Clark, 2013a, 2013b; Gelb & Metz, 2018; World Bank, 2016). While diverse links are suggested, a common basis lies in the recognition of an *identity gap* (Gelb & Clark, 2013a; UNICEF, 2013), which leaves people – and especially people in vulnerable countries and regions – uncovered by civil registration. While lack of a legal identity results in denial of essential rights (Nyst et al., 2016), its recognition provides the basis for individuals to be entitled with rights, receive public services, or benefit from much-needed forms of social assistance.

CONTACT Silvia Masiero silvima@ifi.uio.no Department of Informatics, University of Oslo, Gaustadalléen 23B, Ole-Johan Dahls Hus, Oslo 0373, Norway

As a result, the United Nations Sustainable Development Goal target 16.9 is framed in terms of reaching a 'free and universal legal identity, including birth registration, by 2030.'

Within the broader picture of a link between legal identity and essential rights, digital identity emerges as a means putting technology at the service of socio-economic development (World Bank, 2016). In its diverse manifestations (Gelb & Metz, 2018), digital identity uses technology to guarantee the legal identity that makes people visible to providers as holders of rights, whether they are undocumented poor in urban slums or displaced persons fleeing war and persecution. As noted by the World Bank (2016, p. 2), identification systems have three overarching development goals, framed as (a) inclusion and access to essential services (such as healthcare, education, voting rights, financial services and social safety nets); (b) effective, efficient and transparent administration of public services; and (c) greater accuracy in measuring progress on key development indicators, e.g. reductions in maternal and infant mortality. By strengthening existing identity systems and developing new, reliable ones where these are absent or weak, digital technology affords the possibility to build development through robust identification.

And yet, the so-constituted orthodoxy of 'digital identity for development' presents multiple issues.

Research highlights the importance of unpacking links between benefits attributed to digital identity schemes and their costs, firstly in terms of exclusion of legally entitled recipients (cf. Drèze et al., 2017; Khera, 2019; Muralidharan et al., 2016, 2020; Ramanathan, 2014). Determined at the stages of registration, authentication or assertion of identity (Hosein & Whitley, 2019), exclusions result in denial of essential services and may be associated to highly grave outcomes. In India, hunger deaths have been associated to digitally enforced exclusion from food security schemes (cf. Singh, 2019). In Kenya, migrants and refugees are barred from essential social assistance as a result of misrecognised IDs (Weitzberg, 2020). In addition, there is disproportionate impact on women because they often feel (heightened by socio-cultural norms) that they cannot justify the need for ID as compared to men (Bailur et al., 2019). This is particularly problematic in the case of digital gig economy work, which is seen as attractive for women, but where analogue infrastructures may not support their online work. For example, they may be paid for their work online but may not have a bank account or mobile money account, resulting into money being paid into their husband's account (Caribou Digital, 2020).

There is also a component of how identification (a static process) captures one's dynamic identity in a fairly immutable way which makes it much more challenging to change later. This is problematic for all, but impacts on those whose identity necessarily is fluid at the time, such as children, refugees or migrants. Caribou Digital's research with UNICEF on children, identification and identity in Brazil, Kenya, Lebanon and Thailand illustrates how children and youth, born into identification systems, may not understand or struggle with fixed identities, exacerbated in the digital age (Bailur & Smertnik, 2020). They illustrate this with the case of Paul, in Kenya, who uses his brother's national ID and M-Pesa account to get a small loan from the mobile loan app Tala but who is not aware of the repercussions for his brother if he does not pay that loan (Smertnik & Bailur, 2020a). Similarly, in Brazil, youth struggling to change their name and sexuality on their birth certificate and other credentials face numerous obstacles (Bailur et al., 2020), and young Syrian refugees in Lebanon feel their identity is so much more than a 'refugee,' but feel their identity as captured as such in digital identity systems only shows one side of them (Smertnik & Bailur, 2020b). Thus, identification while enabling human freedom in one sense can also restrict it, depending on who is doing the identifying.

For migrants and refugees, being labelled is problematic. Caribou Digital's research in India (Caribou Digital, 2017) illustrates how migrants within India struggle with their 'fixed identification' when moving between states, a challenge that was further apparent during the COVID-19 crisis in 2020 when migrants with 'Mumbai' as residence on Aadhaar cards could not take certain trains back to their home states because they were not considered as belonging to those states (Vaktania & Sharma, 2020). Janmyr and Mourad (2018) illustrate how Syrians fleeing to Lebanon resent labels are imposed on them of 'registered refugee,' 'labourer' or other exogenously determined categories,

detailing how such labels impact on them. This runs the risk that increasingly open digital platforms for identification may lead to the monopolisation of identification categories through network effects that force more stakeholders to use the same static categories, when these are actually fluid categories (Janmyr & Mourad, 2018). This is evident particularly in the link of identification to financial sectors, such as credit ratings, where a user may not be in control of what information is revealed about them or be able to explain it. The Black Mirror episode Nosedive always comes to mind as an illustration of how a woman's life unravels because she is rated by strangers on everything she does.

The increased use of data justice frameworks (Heeks & Renken, 2018; Taylor, 2017) in studies of digital identity reveals how problems go beyond exclusion, ultimately perpetuating forms of injustice associated to the digitisation of identities (Masiero & Das, 2019; Srinivasan et al., 2018). One of the latest Special Issues of this journal (26:2) also discusses core themes of data justice and injustices in access to data (Qureshi, 2020). Viewed together, these theses put into serious doubt the idea that digital identity may be a deterministic condition of development.

It is this dichotomy, between a widely asserted development potential and the injustices emerging in practice, that makes it important to frame digital identity as an object of research in the field of information and communication technologies for development (ICT4D). Against this backdrop, a first motivation for this Special Issue lies in the need to unpack the theoretical link between digital identity and development, visualising the routes through which different elements of development may be entailed. A second motivation, stemming from such a link, lies in the multiple ruptures observed in it: narratives of exclusion, imposed surveillance and injustice associated to digital identity (cf. Krishna, 2019; Muralidharan et al., 2020) make it essential to ask what happens when the link does not work. Failure of such a link, and its impact on vulnerable subjects, results into perverse development outcomes such as perpetuated exclusion (Khera, 2019) or transition to social policies with detrimental effects on recipients (Masiero & Prakash, 2019).

wA third motivation of this Special Issue is to build the basis for an agenda for future research on digital identity and development. The fact that such technologies are still evolving, but already showing how they impact vulnerable people, make it important to see which themes are relatively unexplored, generating the need for greater analysis from an ICT4D perspective, leading to action and redesign of harmful technologies. As a result, we sought to build an account of core themes emerging for such an agenda, arriving at five priority themes suggested by the Special Issue papers. Adding to the theoretical link and its practical challenges, such an agenda constitutes the third main goal we had in mind when the call for papers for this Special Issue was formulated.

The seven contributions in this collection of papers accomplish all three objectives, and to introduce them, this editorial is structured as follows. First, we map the theoretical link between digital identity and development, using an ICT4D perspective to frame its core components. Second, we present the seven papers in this collection by detailing how each of them, using different empirical data, puts into question the theoretical link between digital identity and development. Third, we build on these contributions to propose a research agenda on digital identity and development, outlining five themes of interest and suggesting avenues for ICT4D research to engage with them.

2. Digital identity and development: theorising the link

Multiple works (cf. Gelb & Clark, 2013b; Gelb & Metz, 2018; Muralidharan et al., 2016, 2020; World Bank, 2016) demonstrate the importance of producing proof of identity to reach goals connected to various dimensions of development. A debate on what constitutes 'development' in ICT4D is long-standing, highlighted by contributions that remind us of the importance of defining this core term in our research (Walsham & Sahay, 2006). Analyses of the field's history (cf. Walsham, 2017) especially note how ICT4D has distanced itself from approaches centred on economic growth, espousing instead human-centred approaches in which dimensions relating to the quality of human lives become central.

Following such human-centred approaches, we stand with Roztocki and Weistroffer (2016) in defining development as 'human development' in this editorial, embracing a definition that encompasses multidimensional aspects of good health, education and the ability to generate livelihoods as core dimensions of development. This multidimensionality, reflected also in works that take a primarily macroeconomic perspective (cf. Samoilenko & Osei-Bryson, 2016), helps us unpack different sides of 'what' can be achieved by digital identity, going beyond functional views of development as growth (Roztocki & Weistroffer, 2016). Through this definition, aspects of improvement of people's lives through public services, socio-economic inclusion, and strengthened humanitarian are directly tied to development, as they illuminate the human dimension of it (Roztocki et al., 2019; Zheng et al., 2018). For this reason, we use human development in the theoretical framework proposed here, as a core notion encompassing multiple routes to improving people's lives.

A recent special issue of this journal, centred on conceptualising development in ICT4D (Zheng et al., 2018) has noted how lenses such as the capabilities approach (Andersson et al., 2012; Zheng, 2009) and the livelihoods framework (Duncombe, 2006) have informed our research. This is in line with Roztocki and Weistroffer's (2016) repositioning of 'development' from an economic to a humanly-centred conception. Over the last years, multi-dimensional (Roztocki et al., 2019) and holistic (Sein et al., 2019) frameworks to conceptualise ICTs for development have further validated such a human-centred view, providing background for the view presented here.

In this optic, theorising the link between digital identity and development means referring to digital identity as related to the individual's ability of self-realisation, be this connected to the creation of livelihoods, the exercise of essential rights such as voting, or being seen by the state and competent providers as recipient of services ranging from health, education, financial services to emergency assistance and social protection. Digital identity too needs to be defined, as we do here with the coexistence of digital identification, authentication and authorisation detailed in Nyst et al. (2016). Donner (2018) puts forward the term 'identification in a digital age' rather than digital identity. After all, one of the key challenges of defining a 'digital identity' is understanding precisely which aspect of it is digital, a question answered by Nyst et al.'s (2016) definition used here. Time and again, and as authors in this Special Issue find, it is often the physical nature of the identity credential, that is more valuable to the end user or citizen than the digital aspect (for example, the common use of Aadhaar in India is 'Aadhaar card,' emphasising the physical aspect of Aadhaar).

Deconstructing this aspect of digital, we adopt Nyst et al.'s (2016) vision of digital identity through the schemes that it enables. According to Nyst et al. (2016, p. 8), in digital identity schemes the three functions of identification, authentication and authorisation are all performed digitally:

- Identification is 'the process of establishing information about an individual. Today this often involves examining "breeder documents" such as passports and birth certificates, consulting alternative sources of data to corroborate the identity being claimed and potentially collecting biometric data from the individual' (Nyst et al., 2016, p. 8),
- Authentication is 'the process of asserting an identity previously established during identification. Typically, this involves presenting or using an authentication credential (that was bound to the identity during the identification process) to demonstrate that the individual owns and is in control of the digital identity being asserted' (Nyst et al., 2016, p. 9),
- Authorisation is 'the process of determining what actions may be performed or services accessed on the basis of the asserted and authenticated identity' (Nyst et al., 2016, p. 9). For example, an individual who has registered their biometric and/or demographic data with a digital identity system will be authorised to access a government service once those data have been matched with the individual's entitlement to the service in point.

Following Nyst et al. (2016), the digital performance of all three functions is the distinguishing marker of a digital identity scheme. It is schemes of this type that inform the contributions in this

Special Issue, illuminating the links between them and dimensions of development – viewed in the human-centred notion outlined above – which we examine in this editorial.

A taxonomy of all dimensions of 'development' in which schemes can take part is beyond the scope of this editorial. But this Special Issue, with its seven contributions which discuss different digital identity systems in different contexts, outlines multiple mechanisms through which digital identity can participate in the making of human-centred development. Based on these contributions, and on the recent literature which puts digital identity in relation to socio-economic development goals, we propose the theoretical framework depicted in Figure 1.

The scheme represents how digital identity is linked, from a theoretical perspective, to three main dimensions of human development. These dimensions are mutually interactive and emerge from literature on how digital identity fosters diverse types of development goals. These dimensions can be detailed as follows:

2.1. Improved access to fundamental services

Several researchers frame digital identity systems as empowering technologies that help people having their rights recognised (Dahan & Gelb, 2015; Gelb & Metz, 2018). These are, in the first place, rights to receive government services, which to be received need to correctly identify recipients. Allowing secure identification, which affords authentication at service points and hence authorisation, digital identity systems are seen as the key means to guarantee universal services (health, education) and targeted ones (social safety nets for the poor and vulnerable, emergency assistance for populations hit by war, human-made or natural disasters).

A specific point is to be made for social protection schemes, defined as public and private initiatives that provide benefit transfers to the poor and vulnerable and protect them against livelihood risks (Devereux & Sabates-Wheeler, 2004). Widely diffused in responses to global poverty and hunger (FAO, 2018), such schemes are prone to suffering from two problems: an inclusion error, meaning the erroneous inclusion of non-entitled subjects into provision, and an exclusion error, meaning the unlawful exclusion of entitled people. Given the incidence of both errors on the ability of such schemes to be properly targeted (Devereux & Sabates-Wheeler, 2004), large digital

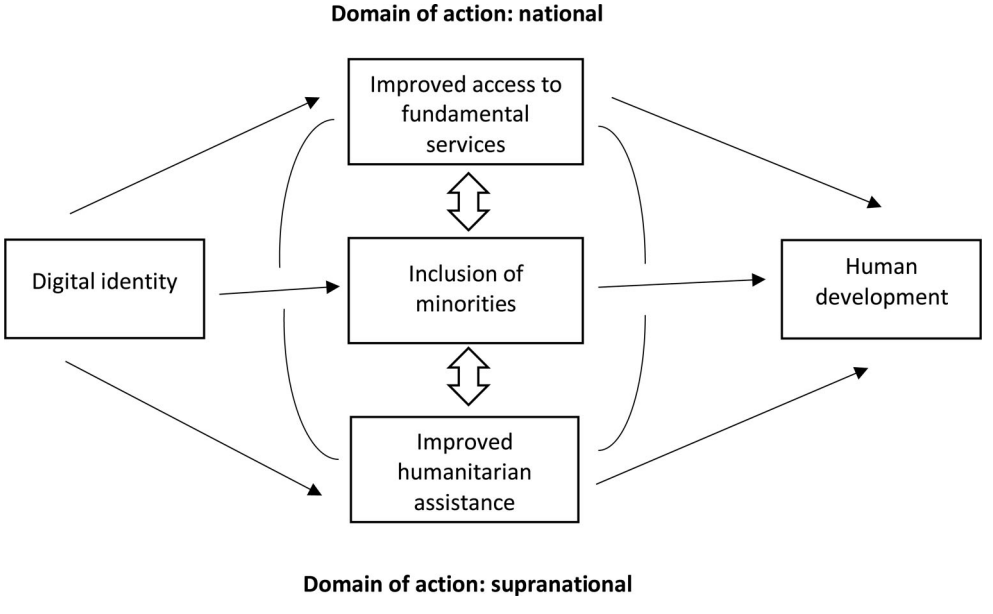

Figure 1. Digital identity and socio-economic development – theorising the link.

identity schemes – such as India's Aadhaar, the largest biometric identification scheme worldwide – are motivated, in the first place, by the improvement they are meant to induce in social benefit systems (Gelb & Clark, 2013b). Matching biometric or demographic records with recipients' entitlements, digital identity offers to fix both error types, claiming to provide an optimal solution to issues such as leakage and diversion (Gelb & Metz, 2018).

2.2. Inclusion of minorities

The promise of digital identity goes beyond accurate provision of public services to all those entitled. By fixing identity recognition, it promises to help especially minorities and vulnerable groups that, for any reason, do not have their identity automatically recognised by governments and service-providing organisations. Typical cases are from refugees and internally displaced people, for whom the World Bank (2016) suggests that a digital system can guarantee registration even in conditions of statelessness. Similar points apply for populations of contended territories, such as India's Assam (Masiero, 2019); populations not automatically endowed with right from the state they live in, such as Kenyans of Somali origin (Weitzberg, 2020), or populations living under military occupation, such as refugees in the Occupied Palestinian Territories (Halkort, 2019). Framed as means to guarantee identity where one is not automatically established, the inclusion of minorities through digital identity goes one step beyond the promise of better services, as it promises systemically excluded people a structural solution to their problem.

Improved humanitarian assistance – the fundamental link reviewed here is based on allowing recognition of rights, which in general are substantiated into services provided by state governments. But many communities are in need for non-governmental humanitarian assistance, which generates a third dimension of the link between digital identity and development. Relying on the targeting affordance of digital and, in particular, biometric systems, the humanitarian sector is becoming increasingly based on digital recognition of beneficiaries (Donovan, 2015), with the stated objective to better target and serve its recipients. Previously dominated by digital identity in the public sector, the literature is developing a new focus on digital identity for humanitarianism, which moves the core actor from state governments to a global, supranational perspective.

The framework detailed here develops the idea of digital identity for development, articulating it in three channels that, interacting with each other, detail how digital identity should result into expected human development goals. By making the theoretical link visible, the three channels seen here substantiate the concept of digital identity for human development.

3. Digital identity and development: problematising the link

As noted in the beginning, this assumed link between identification and human development does not automatically work. A plethora of stories of exclusion, injustice and oppression related to digital identity systems lead to question such a link, inviting field perspectives on it. Below we present the papers in this Special Issue in the light of how, with their empirical data and theory, each of them problematises the link in point, enriching the reader's knowledge of it in practice.

In the first paper titled 'Identity at the margins: data justice and refugee experiences with digital identity systems in Lebanon, Jordan, and Uganda,' Emrys Schoemaker, Dina Baslan, Bryan Pon and Nicki Dell examine refugees' experiences with, and views of, the digital identity systems used by humanitarian organisations to collect, manage and share their personal data. The study, based on fieldwork with refugees in Lebanon, Jordan and Uganda, illustrates diverse ways in which refugees' data are collected – from supranational and non-governmental organisations – and the challenges they experience in the process, framed as data injustices according to Taylor's (2017) approach. Identifying diverse forms of data injustice, the paper problematises the channel for which, through more accurate and efficient identification of refugees, digital identity would lead to human development through better humanitarianism. The paper is, at the same time, an illustration of agency – through

which refugees become aware of the problems in point, and take action to renegotiate their identities – and the proposal of an alternative framework, augmenting theories of data justice through feminist science and technology studies.

The second paper in this issue titled 'Distant, opaque and seamful: seeing the state through the workings of Aadhaar in India,' Bidisha Chaudhuri uses the lens of an anthropology of the everyday state (Corbridge et al., 2005) to explore how citizens 'see the state' through digital identity systems. This lens states that citizens 'see the state' through its localised embodiments – the police, local bureaucracy, sellers of food rations – and hence, to study digital identity mediation of state-citizen relations, it is important to see how technology affects such state-citizen encounters. Studying how Aadhaar – India's biometric identity system – mediates the delivery of food rations, rural employment guarantees and pensions in the Indian state of Jharkhand, the paper observes service disjunctures which lead sightings of the state to be 'distant, opaque and seamful' for recipients. The paper problematises the component of the link of digital identity and human development based on 'better services,' as the disjunctures in point distance the state from the citizen, portraying digital identity as a layer of complexity in accessing essential services.

In the third paper titled 'Exclusion and inclusion in identification: regulation, displacement and data justice,' Aaron Martin and Linnet Taylor focus on the issue of exclusion lived by refugee and displaced populations, observing the challenges that lack of official identity proof poses in legally accessing mobile and banking services. Using a data justice lens, the paper juxtaposes identification policies and practices in Uganda and Bangladesh, noting that, faced with the common feature of large displaced populations, the Ugandan approach chooses a policy that expands access for refugees. Bangladesh's approach instead imposes profound restrictions to the stateless Rohingya, restrictions whose implications for data justice are detailed in relation to digital identity systems. Studying systems that are, on paper, aimed at including displaced communities, the paper problematises the component of the link related to inclusion of minorities, showing that policies designed into digital identity may effectively perpetuate existing injustices.

The fourth paper titled 'Digital identity, datafication and social justice: understanding Aadhaar use among informal workers in south India,' Shyam Krishna studies the use of Aadhaar by informal worker groups of cab drivers and domestic workers in a south Indian city. The orthodoxy behind use of digital identity for these workers is that, by using Aadhaar-verified data, workers can access digital platforms of online recruitment portals leading to job creation. Through a lens centred on the concept of abnormal justice and linked to elements of surveillance and datafication inscribed in digital identity, the paper observes the perpetuation of injustice on the informal workers in point, whose perception of digital identity is largely framed through the semantic domain of surveillance rather than that of job creation. By directly conveying the voices of workers, the author expands extant visions of data injustices produced through digital identity systems, further problematising the view of digitally-enabled 'inclusion of minorities' that the paper by Martin and Taylor had put into question.

In the fifth paper titled 'From national to sector level biometric systems: the case of Ghana,' John Effah and Emmanuel Owosu-Oware focus on biometric identification systems, observing that research has focused on systems that are national or sectoral (relating to healthcare, voting, or other types of functional applications), but limited work exists on the relation between the two levels. To understand such a relation, the paper makes an interpretive case study of Ghana, observing the connection between the one national and the multiple sectoral systems that evolved over time. Using the lens of activity theory, the paper documents a case in which political divergences have been associated to duplication of sectoral systems, with consequent failures affecting the national identity scheme. The analysis problematises the link between digital identity and human development centred on better services, noting that when the political will behind design is itself problematic, problems reflect on implementation and in turn on users of the system.

In the sixth paper titled 'Infrastructures of compassionate repression: making sense of biometric technologies in Kakuma refugee camp,' Gianluca Iazzolino brings us back to the humanitarian

discourse, speaking of implementation of a biometric identifcation system in Kakuma, a large refugee camp in Kenya. The system was meant for the distribution of in-kind aid and the paper studies it from the point of view of Somali refugees, observing how the system influences their relations with the humanitarian organisations that they relate to. Faced with an orthodoxy that frames digital identity as an improver of humanitarianism, the analysis shows tensions between care and surveillance, for how these are lived by refugees and through their own voices. It is this tension, and the continuous coexistence of care and surveillance, that problematises the concept of better humanitarianism, viewed from the voices of refugees that interface with the systems in point.

Finally, in the seventh paper titled 'Without an Aadhaar card nothing could be done': a mixed methods study of biometric identification and birth registration for children in Varanasi, India,' Amiya Bhatia, Elizabeth Donger and Jacqueline Bhabha examine access to, and perceptions of, Aadhaar as related to the crucial theme of birth registration. Drawing on a mixed-method study that combines a survey with children, caregivers, and service providers in a marginalised are of Varanasi, they find Aadhaar enrolment figures that far exceed those for birth registration, along with the widespread belief that Aadhaar is mandatory and functional to securing proof of citizenship. In addition, both Aadhaar and birth registration are found to be capable of including falsified details, an issue whose implications for facilitating child labour and human trafficking are exposed. This further increases the problematisation of the notion of 'good' digital identity, as the implications of falsifiability and misrepresentation of schemes are illustrated in their extreme consequences.

Two notes should be made, in particular, on theoretical contributions in this Special Issue and the challenges they address. First, the recurrence of theories – data justice, anthropologies of the state – and approaches (all papers rely on empirical studies, whose fieldwork involved interaction with the digitally identified subjects) bring to light the need to give voice to recipients, illustrating their perspectives and illuminating aspects – such as data injustices – which are not covered by mainstream narratives. Secondly, the three components of the link of digital identity and human development – better services, inclusion of minorities, better humanitarianism – are all discussed, with some papers showing how one component influences the others. For example, the paper by Martin and Taylor shows how failures in inclusion of minorities affect the ability to deliver humanitarian aid. These considerations, along with the many synergies between the papers in this collection, lead us to suggest several pointers for further research.

4. Digital identity and development: a research agenda

With the World Health Organisation declaring the COVID-19 disease a pandemic on 11 March 2020, the current Special Issue is published at a time when the importance of rights recognition for vulnerable groups, in the light of the theoretical framework delineated here, is further heightened. Work on data justice during COVID-19 has focused especially on issues of surveillance and the role of private companies within it, exploring its implications for people in vulnerable settings (Taylor et al., 2020). Building on such a focus, we leverage the seven contributions in this Special Issue to identify five pointers for research on digital identity for development, whose importance is increased by a global crisis that non-neutrally hits poor, migrant and informal workers across countries. Through these, we highlight a move away from the technological focus on identity systems and towards the social impact of inclusion, exclusion and justice, all components of human development as illustrated above. Our proposed agenda articulates in the following points.

- *Increasing the geographical scope of digital identity research*. With India's Aadhaar spearheading, in many ways, the 'digital identity revolution' that unfolded worldwide (Muralidharan et al., 2020), a substantial share of research has used empirics from the Aadhaar case to study the relation of digital identity and development. The cross-national focus of this Special Issue, drawing on

empirical research on seven different countries and multiple schemes within those, highlights the importance of observing experiences from different nations, with two papers (Schoemaker et al. and Martin & Taylor) adopting a comparative approach. Focused on few country cases in its early days, research on digital identity is acquiring a geographical focus whose breadth is mirrored in this Special Issue, and whose extension is needed to explore the consequences of less-narrated stories of digital identification. In the post-pandemic scenario, Taylor et al.'s (2020) book on data justice during COVID-19 accomplishes such a purpose with 33 country cases, an exercise from which digital identity research would strongly benefit. There is much more research needed from the Central and South American perspective (see for example Barbosa et al., 2020), on regional identification systems (for example ECOWAS in West Africa), as well as small island states and fragile and post-conflict states.

- *Adopting and extending data justice frameworks*. Data justice is used and built upon as framework by three papers in this collection. The relationship between the authority issuing the identification and the person receiving it is imbued with power, as it is in Kakuma refugee camp (Iazzolino), the refugee settlements of Jordan, Lebanon and Uganda (Schoemaker et al), or sites of access to social protection in Jharkhand (Chaudhuri). Data justice is also problematic when it is *embodied*, i.e. when the individual gives up an aspect of their identity in order to be identified, whether that is an iris scan or fingerprints. Note, for example, how the refugees in Schoemaker et al.'s paper fear biometric capture as 'stealing their eyes' and those in Kakuma in Iazzolino's paper talk of 'burning their fingerprints,' portraying situations in which individuals are willing to give up their own identity so others cannot capture it either. With its components of visibility, engagement and non-discrimination (Taylor, 2017), data justice offers a crucial perspective for conceiving of digital identity systems, which papers in this collection explicitly position in the framing of ICT4D research.
- *Deconstructing 'identity' in digital identity research*. Another point emerging across the seven contributions is that the relational, dynamic, mutating aspect of identity is one that current models of digital identity do not account for, whether it is a woman getting married, or a rural inhabitant moving to the city (as in one case in Chaudhuri's paper), someone with two citizenships, or someone with none. Within this backdrop, COVID-19 illustrated how digital identity problematises our physical limitations. The burden to justify one's own identity is completely on us as individuals and puts an immense strain on those who struggle. As Chaudhuri illustrates, mistakes in names, age, and any detail in digital records impact greatly on access, and correcting those takes time and money for those who already have low resources.
- *Exposing injustice in identity construction.* At a time when injustices crystallised by extant identity systems are exposed in the wake of mass social movements, importantly at the historical time of Black Lives Matter and its exposure of structural racism, questions of how identity systems solidify colonial constructions are brought back to centre stage. Cases such as the mass exclusions from the National Citizens' Register in India's Assam (Panigrahi, 2020), or the major challenges residents of Côte d'Ivoire, including the Burkinabe, face simply because of residency in the country before independence (Caribou Digital, 2018), lead to question the very logics of how identity is assigned. While focusing on the digital infrastructures that convert identities into data, it is important that studies of digital identity do not lose sight of such logics, which are crystallised into digital systems rather than questioned by these. It is hence our contention that while not losing sight of technology, studies of digital identity need continued attention on the dynamics leading to the very way technology is designed and implemented.
- *Conceptualising implications of digital identity for entitlements in the post-pandemic world*. Against the backdrop of the injustices exposed within digital identity systems, COVID-19 has hit a world in which social protection is crucial to the millions of vulnerable people affected. This increases the problematic core aspects of digital social protection, such as the trade-off between accuracy of identification and exclusions of entitled individuals. Within the focus on data justice brought by the ongoing crisis (Taylor et al., 2020), it is our contention that the need to explicitly focus

on such exclusions is now more pressing than ever, also exploring how data injustices of digital social protection (Masiero & Das, 2019) have evolved during the pandemic. With digital social protection being closely linked to digital identity, effects on entitlements under crisis are a theme that contributions in this volume offer a solid basis for researching.

While non-exhaustive in conceiving of the topic of digital identity as related to 'development,' in turn deconstructed in its human and socio-economic dimensions, we believe that the five pointers above offer a map for the next, post-pandemic steps in digital identity research. Keeping the non-neutrality of the crisis as a firm starting point, upcoming research will need to account for major shocks in the governmental and humanitarian structures that digital identity is part of, understanding how digital identity schemes participate (or not) in the response. Building on the documented data justice implications of COVID-19 (Taylor et al., 2020), questions of digital identity will need to account for the new scenario, focusing on pre-existing vulnerabilities and on their evolution according to the above themes. We do hope that this Special Issue will offer a basis for building such an agenda, placing the study of digital identity in the heightened vulnerability of a post-crisis world.

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Notes on contributors

Silvia Masiero is an Associate Professor of Information Systems at the Department of Informatics, University of Oslo. Her research operates within the area of information and communication technology for development (ICT4D), with a focus on the role of digital platforms in socio-economic development processes. She has conducted extensive work on the computerisation of India's main food security programme, the Public Distribution System (PDS), and on the adoption of ICTs in core aspects of the Indian public sphere including elections, rural employment guarantees and programmes of social protection. Silvia is Secretary of the International Federation for Information Processing IFIP 9.4 Working Group on Implications of Information and Digital Technologies for Development, a member of the Association for Information Systems (AIS), and a member of the Editorial Board at Information Technology for Development.

Savita Bailur is an Adjunct Associate Professor in digital development at the School of International and Public Affairs, Columbia University, and a Research Director at Caribou Digital, an ethical digital economies consultancy working in emerging markets. She has been working in ICTD for around 15 years, more recently in digital identity, platform economies and gender. She is experienced in qualitative research and narrative research, has worked for organisations including Gates Foundation, Microsoft Research India, UN Women and World Wide Web Foundation, published several peer reviewed papers and books and currently working on a textbook for Routledge on social media and development for 2021. She is a member of the Editorial Board at Information Technology for Development, a member of EPIC (ethnographic praxis in industry) and contributes frequently to webinars, podcasts and panels on the user focus of development in a digital age.

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