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# Digital Access is not Binary: The 5'A's of Technology Access in the Philippines

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**Abstract**

Online political participation has been presented as a possible solution to declining levels of trust in traditional politics. However, the most marginalised communities are often the least connected and participate least in digital citizenship programmes. Much existing literature rests on a binary understanding of citizens as being either connected or unconnected. Progress is therefore often understood simply as a process of "connecting the unconnected." This paper presents primary empirical research from the Philippines, which suggests that such binary understandings disguise more than they reveal. We argue that it is descriptively more accurate and more analytically useful to recognise that multiple classes of technology access exist, which limit digital citizenship in multiple ways. Qualitative methods were used to learn from non-users and the least connected about the barriers to online civic participation that they experience. The 5'A's of Technology Access was employed as a framework to analyse those barriers and reveal the social and economic factors that they reflect, reproduce, and amplify. Findings suggest that nonbinary and nontechnical understandings of the barriers to digital inclusion are essential to any effective attempt to remove the remaining obstacles to genuinely inclusive digital citizenship.

**KEYWORDS**

5'A's, binary, digital citizenship, digital inclusion, Philippines, technology access

## 1  |  INTRODUCTION

Trust in traditional political processes is at historic lows and this represents a threat to the credibility of liberal democracies (Van der Meer, 2017). Some argue that mobile and Internet technologies can address this problem by enabling citizens to engage directly with important issues affecting their lives by using online governance and participatory budgeting processes (Miller, 2017). FixMyStreet,* IPaidABribe,† and BudgIT‡ are well-established examples of "civic tech"; mobile and Internet technologies that allow citizens to play a more active role in the areas of, respectively; and local service improvement, corruption reporting, and government budgeting. However, the uptake of digital governance technologies is uneven along familiar lines of (under)privilege with the result that urban educated men are over-represented in digital citizenship§ initiatives

(Rambul, 2015). Some civic tech advocates discount this evidence in the expectation that the problem will disappear as ever more people are connected to mobile and Internet services. This paper argues that we have good reason to expect digital inequalities to persist despite increasing connectivity and that digital development actors must therefore make greater efforts to understand the factors stratifying technology access and limiting its use for development. The international community signed up to the United Nations Sustainable Development Goals (SDGs) in 2015, which includes several targets dedicated to increasing the use of Information and Communications Technologies for Development (ICT4D). To measure progress against these targets, the SDGs established binary measures of mobile phone ownership, Internet coverage, and Internet use.[¶] This paper argues that these binary understandings of what constitutes development progress are highly problematic. The paper contributes a revised analytical framework and diagnostic tool for identifying a more nuanced understanding of the remaining barriers to digital inclusion and who is being left behind.

Although more than four billion people now have some kind of Internet access,[#] almost the same number remains without access worldwide (WeAreSocial, 2018). Smartphone sales and the rate of growth in Internet connections are now slowing (Kleiner Perkins, 2018). Women are over-represented amongst those being left behind (Sambuli, Brandusescu, & Brudvig, 2018). Research is now showing that many of the people who are counted as connected in official statistics actually experience fragile, intermittent, and unaffordable connections (De Lanerolle, Walton, & Schoon, 2017; Faith, 2018). This makes their meaningful inclusion in digital governance initiatives often impossible (Roberts & Hernandez, 2017). Understanding more about the true nature of the unconnected, the least connected, and the poorly connected is essential for those wishing to make digital citizenship inclusive of disadvantaged communities.

The research presented in this paper was part of the broader Making All Voices Count programme that involved more than 120 civic tech research projects across 12 core countries (McGee, Edwards, Anderson, Hudson, & Feruglio, 2018). This paper[‖] focuses in on civic tech experiences in the Philippines. The Philippines was selected as the focus for this research as it has relatively high levels of mobile and Internet adoption and a unique history of citizen use of mobile applications to challenge governance failings, notably in the People's Power 2 popular mobilisations that peacefully ended the rule of President Estrada in 2001 (Rafael, 2003). The initial literature review and desk-based interviews identified three gaps in existing knowledge that are addressed in this paper. First, existing literature emphasised a binary distinction between connected and unconnected citizens, which is insufficient for a comprehensive understanding of barriers to digital citizenship. Second, most existing research failed to capture the perspective of non-users and the least connected to understand the particular barriers to participation that they experience. Third, the literature evidenced a lack of a structured approach for analysing technology access.

To address these gaps, we conducted interviews and focus groups with non-users and least-connected Filipinos and we adopted and revised the '5'A's of Technology Access (Roberts, 2017). The 5'A's provided a conceptual structure for analysing the barriers to technology access experienced by non-users and least-connected citizens. This helped to "decentre" the technology itself and surface the social and economic factors shaping civic tech participation. The study enabled us to move away from a binary understanding of connectivity and to produce a new model of the emerging classes of technology access existing in the Philippines. The main research questions addressed were: (a) Who participates in digital governance in the Philippines and who remains excluded? (b) What barriers to participation exist in terms of technical issues, social norms, and structural power relations? (c) What recommendations would contribute to enhanced development outcomes?

This article is structured as follows. The next section reviews the existing literature, key concepts, and debates. The methodology section then explains the selection of research instruments, case studies, and sample selection. A structured analysis is then made of findings about the barriers to digital citizenship experienced by Filipino users and non-users. A modified version of the 5'A's of Technology Access is explained before summarising key findings and contributions in the conclusion.

## 2 | LITERATURE REVIEW

The use of information and communication technologies (ICTs), such as mobile phones and the Internet, to engage in online politics or governance is often referred to as "digital citizenship" or "digital governance" (Mossberger, Tolbert, & McNeal, 2008). The practice and study of digital governance is situated at the intersection of the fields of ICT4D and Open Governance. ICT4D research is concerned with understanding whether, to what extent, and under which circumstances, the use of ICTs can be productive of development (Avgerou, 2010; Heeks, 2017; Unwin, 2009, 2017; Walsham, 2013; Zheng, Hatakka, Sahay, & Andersson, 2017). Open Governance research is concerned with transparency and accountability

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[¶]SDG targets include tracking the following indicators: 5.B.1 = the proportion of individuals who own a mobile telephone (by sex); 9.C.1 = the proportion of the population covered by a mobile network; and 17.8.1 = the proportion of individuals using the Internet. https://sustainabledevelopment.un.org/sdgs

[#]A person counts as having internet access so long as they accessed the internet once or more in the last 3 months, including on a device belonging to a family member or employer (ITU, 2018).

[‖]The Making All Voices Count (MAVC) programme commissioned more than 120 research, evidence, and learning reports on citizenship participation technologies. This paper draws on our own primary research in the Philippines previously published as one of those reports in the form of a much broader MAVC Working Paper: https://opendocs.ids.ac.uk/opendocs/handle/123456789/13344. This paper's main contribution—challenging the binary view of digital citizenship—was not central to the Working Paper. This paper also makes a new analytical contribution by incorporating agency for the first time to the 5'A's.

in the relationship between citizens, elected representatives, and institutions in decision-making processes (Gurstein, 2011; Raftree, 2013; Smith & Reilly, 2013; Transparency International, 2015). The study of digital governance intersects these two domains, to focus on the ability to use mobile and Internet civic tech to enhance inclusive governance interaction between citizens, government, and the private sector (Isin & Ruppert, 2015; McGee et al, 2018; Mossberger et al, 2008).

Great hope has been invested in the idea that new digital technologies can provide solutions to global development challenges more widely. Expectations are repeatedly raised about the potential of ICT4D from the earliest rural telecentres and the one laptop per child project (Nugroho & Lonsdale, 2010), to drones (Ramalingam, Hernandez, Prieto Martin, & Faith, 2016), and the blockchain for development (Hernandez, 2017). The application of ICTs in the field of digital citizenship has not escaped either the hype or the disappointments of the broader ICT4D field. Digital citizenship initiatives employ civic tech to provide citizens with digital means to access government data, report service deficiencies, and "close the feedback loop" (Gigler & Bailur, 2014). However, the empirical evidence to support claims that this leads to improved government responsiveness is weak (Fox, 2007). In their review of 23 digital governance platforms, Peixoto and Fox (2016) found that levels of government responsiveness were low or non-existent in the majority of cases. It has been suggested that project failings are partly due to false assumptions in the theories of change that underlie many such initiatives (McGee & Gaventa, 2011). One such false assumption is that access to the correctly specified technology is a sufficient condition for responsive governance.

## 2.1 | The techno-centric gaze

There is now a consensus in the ICT4D literature that technology access is an insufficient condition of development (Heeks, 2017), that practice and research suffers from being too technology-led (Souter, 2016; Unwin, 2017), and that techno-centric approaches are associated with project failures (Dodson, Sterling, & Bennet, 2012). However, in practice, the implicit assumption that complex development problems are amenable to linear technical solutions continues to inform many digital development initiatives. This techno-centric assumption results in insufficient attention being paid to the remaining barriers that inhibit uptake of digital governance programmes. In their review of the field, Zheng et al. (2017) argue that most ICT4D research has featured techno-centric case studies in which the implicit conceptualisation of development is economic growth. This paper seeks to avoid both techno-centric and econocentric analysis by locating itself in Sen's (1999) framework of human development and uses 5'A's of Technology Access (Roberts, 2017) to decentre technology and make visible some of the social and political barriers to the use of civic tech to enhance people's political agency and capabilities.

## 2.2 | The 5'A's of Technology Access

In practice, projects that provide technology "solutions" quickly encounter nontechnical obstacles including gendered social norms or unequal power relationships. The 5'A's are a simple heuristic and analytical device that guides participants through a structured five-stage reflection about potential barriers to inclusive technology access. The 5'A's help problematise the unconnected/connected binary by breaking access down into five constituent elements of: availability, affordability, awareness, ability, and agency.** This approach builds on the previous work of scholars including that of Tongia and Subrahmanian (2006), Kleine (2010), Roberts (2010, 2017), and Roberts and Hernandez (2017). Structuring analysis around these five dimensions helps to decentre the technology and to highlight the social and political factors that limit technology access. The dimensions of the 5'A's can be thought of as five concentric circles as illustrated in Figure 1.
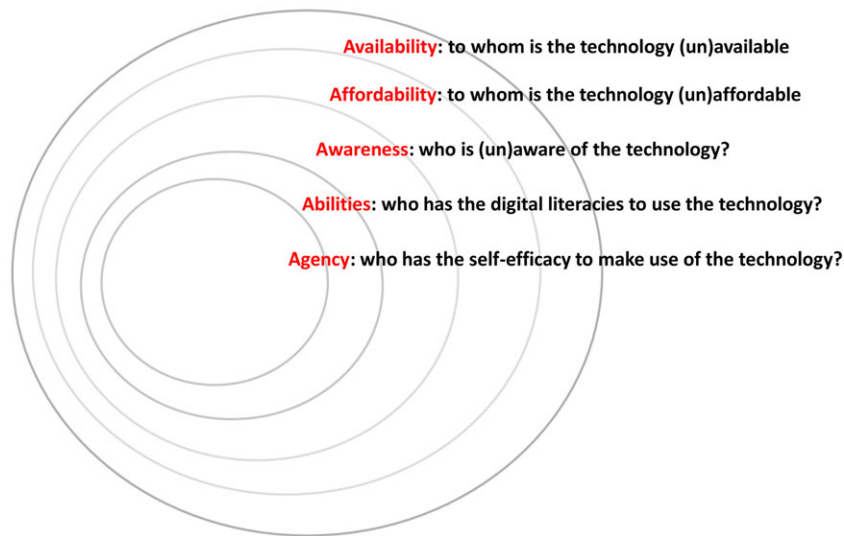
## 2.3 | Availability

The first dimension of the 5'A's is a consideration of to whom a particular technology is (un)available. In most countries, there are remote locations in which cellular phone or broadband Internet coverage is unavailable. For people living on remote islands, the Internet may simply not be available. For millions of other Filipinos, the question of availability is less binary. Some areas may have intermittent and unreliable coverage, some areas may have only voice coverage but lack data coverage. Connectivity speeds vary enormously. Levels of connectivity often reflect pre-existing geographical and economic exclusions. Women and indigenous ethnic groups are over-represented in rural communities where connectivity is not available.

Availability is not only about availability of connectivity, it is also about availability of relevant content in local languages and the availability of adaptive and assistive technologies for people with disabilities. Many indigenous languages are not available as screen interfaces for digital citizenship applications or platforms. People living with disabilities, such as those who are blind or visually impaired, may find that digital

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**In earlier versions the 5'A's was accessibility however other scholars have argued convincingly that accessibility should be subsumed in the categories of availability or ability, and that user "agency," "appetite," or "aspiration" were neglected, so I now include the category of agency. I am grateful to these scholars for their critiques, including anonymous reviewers, Kevin Hernandez, and Olusola Owonikoko.

## Five 'A's of Technology Access



**Availability:** to whom is the technology (un)available

**Affordability:** to whom is the technology (un)affordable

**Awareness:** who is (un)aware of the technology?

**Abilities:** who has the digital literacies to use the technology?

**Agency:** who has the self-efficacy to make use of the technology?

**FIGURE 1** The 5 'A's of Technology Access adapted from Roberts (2017)

governance initiatives are unavailable to them. In a world where citizenship is increasingly mediated online, these new digital exclusions often amplify the effect of existing prejudices and unequal power relationships along familiar lines of ethnicity/language group, disability, and gender.

### 2.4 | Affordability

Even if technology access is available for some people, it may not be affordable. The Philippines has the most expensive and slowest Internet in Southeast Asia (Akamai, 2017; ITU, 2016). These high costs mean that connectivity is out of reach for many Filipinos on low incomes. Like availability, affordability is not a binary issue. A person may be able to purchase a limited amount of data connectivity on payday but need to use it frugally. De Lanerolle et al (2017) have documented patterns of "fragile connectivities" and "frugal practices" in South Africa. Frugal practices include owning multiple SIM[††] cards to switch between free services offered at different times on different networks and conserving data for instant messaging rather than web-surfing. Faith (2018) has shown how the costs of keeping mobile phones repaired, charged with power, and loaded with call and data credit create structural barriers to use for working class women. Research shows that middle-class men are over-represented on digital governance platforms with the result that already privileged voices are further amplified (Rambul, 2015).

### 2.5 | Awareness

Where connectivity is both available and affordable, a lack of awareness often contributes to levels of non-use of certain technologies. A large number of digital governance initiatives have been launched in the Philippines, but levels of public awareness about them remain low, reducing their uptake levels. Awareness is not a binary issue, as it refers not simply to knowledge that a service exists, but also to levels of awareness about its functions and applications as well as critical awareness of the extent to which it is relevant to a person's life priorities and concerns. Digital development projects that do not budget sufficient funds and expertise for marketing and awareness-raising will often struggle to achieve scale.

### 2.6 | Ability

Even when availability, affordability, and awareness are high, a person's ability to make effective use (Gurstein, 2003) of a technology can be limited by a lack of digital literacy, skills, or knowledge (Bawden, 2001; Martin, 2006; Pangrazio, 2016). It is often easier to secure one-off funding for civic tech prototyping and pilots than it is for user training and critical thinking about applications, the need for which is often ongoing and expensive. This is especially important where initiatives wish to be inclusive of those already marginalised by low levels of educational access and accomplishment. As gender norms in many countries result in the under-representation of women and girls in science, technology, engineering, and mathematics, gender-aware programming may need to pay particular attention to the training needs of women and girls (UNESCO, 2012).

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[††]Subscriber identity module, which is intended to securely store the international mobile subscriber identity number of a mobile phone.

## 2.7 | Agency

The term 'agency' refers to the extent to which a person's feels able to act in the world to bring about change (Chambers, 1983) or what a person is able to do in line with their conception of the good (Sen, 1985). Amartya Sen (1999: 281) argued that development initiatives must be built on "the idea of the public as an active participant in change, rather than as a passive and docile recipient of instructions or of dispensed assistance." The problem that Sen (1999) highlights is that some people who experience persistent deprivation supress their aspirations and revise their expectations downwards resulting in a lack of aspiration or appetite for change. Socially constructed norms and values about gender, ethnicity, and caste/class are often internalised and negatively affect people's sense of self-efficacy and agency for change (David, 2014; hooks, 1982). Even for those marginalised people who experience civic technologies as available and affordable, and for whom awareness and abilities are no restriction, agency may remain a formidable barrier. A person may feel that trying to change the situation that constrains them is futile, that they are not up to the task or that those with power to change the situation will not listen to them. It is some people's experience that politicians have never sought their opinion or that their priorities and interests are always ignored. Engaging such marginalised communities in digital citizenship initiatives may require activities specifically designed to address people's depressed sense of political agency. The literature on women's empowerment and critical consciousness-raising provides useful guidance for enhancing levels of agency for development (Freire, 1970; hooks, 2000; Poveda & Roberts, 2017). This research used the 5'A's of Technology Access as an analytical framework to discuss and analyse barriers to citizen participation in digital governance projects in the Philippines.

## 3 | METHODOLOGY

This study was designed to pay particular attention to non-users and the least connected, and to foreground their voices and standpoints, in order to gain insight into which combination of factors contribute to their exclusion (McGee & Carlitz, 2013). A mixture of qualitative methods were used in order to understand their experience of barriers to the use of civic tech.The first research phase involved a desk review and online consultations with Filipino experts to generate general insights about the key research questions and the selection of case study areas. Three case study areas were selected from the Making All Voices Count portfolio of civic tech in governance initiatives.

Phase two involved five focus groups involving 66 participants as well as 10 semi-structured interviews with key informants. The five focus groups were convened by our local research partner whose experience and reputation in the field allowed us to access a wide range of experience and expertise in a relatively short time period. The focus groups took place in three locations: in the capital city Manila, in the town of Puerto Princesa on Palawan island, and in the rural Batak indigenous village. The focus groups were balanced for gender and include participants from five areas: senior civic governance professionals, civic governance activists, extractives network members, local government actors, and Batak indigenous people. The focus group discussion provided the space for participants to challenge each other's evidence and to use collaborative exercises to agree importance rankings and to verbalise their reasoning. By contrast, the in-depth interviews secured the undivided attention of key informants to pursue specific issues at length.

Each focus group began with a presentation about the research aims and with questions about the digital citizenship initiatives that participants were familiar with. Then, focus group members worked first individually, and then in pairs, to generate examples of barriers to the effective use of civic tech. These examples were then shared with the whole group who discussed them before clustering examples into themed groups. A participatory ranking exercise was then used to agree the most significant impediments to civic tech uptake by marginalised groups. The ranked clusters were photographed and the workshop discussions and key informant interviews were audio recorded. The triangulation of methods and data sources added rigour to the research process.

Phase three of the research took place in the United Kingdom and involved the transcription of focus group and interview recordings and the coding of data by the authors. The coding process was deductive and involved combining the transcribed data from focus groups, participatory ranking exercises, and interviews, then organising them thematically against a range of potential theoretical codes. Of the theoretical coding schemes employed, this paper relates to the coding of data against the modified 5'A's of Technology Access. Our draft findings were then shared with participants in a final workshop in the Philippines in order to correct and validate the findings, which we present in Section 4. This process took place over a 6-month period during 2017.

## 3.1 | Case studies

The Philippines was selected as a research site because of its high levels of mobile technology adoption. Once dubbed the short message service (SMS) capital of the world (GSMA, 2016b), and later the social media capital of the world (Universal McCann, 2008), Filipinos' "Generation Txt" activists used mobile messaging to mobilise the People's Power 2 demonstrations that terminated the Estrada presidency in 2001 (Rafael, 2003). Given the wide range of digital governance initiatives in the Philippines, it was necessary to make a purposive sample (Palys, 2008) to best answer the research questions. A desk review was conducted of Making All Voices Count studies as well as other civic tech projects in the

Philippines in consultation with Filipino sector experts. The desk review found that the existing literature was dominated by techno-centric case studies at the expense of person-centred approaches. To address this, the study avoided constructing case studies based on a specific technology (eg, a mobile app or an open data platform) and instead constructed case studies around areas of citizen action including participatory budgeting, school governance, and the extractive industries. The details of other case studies are presented in Roberts and Hernandez (2017). For reasons of space and concision, this paper focuses primarily on participatory budgeting. This case study area benefited from strong existing documentation and a range of actors to whom we were able to gain direct access via our local research partner.

## 3.2 | Participatory budgeting

After initial desk research and Skype consultations with local experts, we engaged with representatives of two contrasting examples of participatory planning and budgeting technologies: bottom-up budgeting (BuB) and Check My *Barangay* (CMB). BuB was launched in 2012 by President Aquino to accelerate progress towards the kind of participatory governance that was provided for in the 1987 constitution. Piloted in 600 of the country's poorest municipalities before scaling nationwide, the BuB process includes transparency, participation, and accountability elements (Ateneo, 2013). Government budgets are made available via the OpenBuB portal[‡‡] and accredited civil society organisations (CSOs) are invited to identify communities' expenditure priorities. The potential then exists for using the portal to monitor expenditure and to use it to hold government to account.

CMB: The BuB process only reaches down to the municipal level. CMB is a civil society initiative that aims to create a space at the village, or *barangay*[§§] level to enable citizens to play a direct and active role in the planning, monitoring, and evaluation of public expenditure in their neighbourhood. Compared with BuB, CMB is a relatively small pilot project, which combined a mobile app and website platform to enable citizens to design, promote, and rank for priority local development projects online.

## 3.3 | Research ethics

This research was conducted in accordance with the research ethics policy of the Institute of Development Studies (IDS).[¶¶] This process included informing all research participants of the purposes of the study and potential uses of data, including making all findings and interpretation openly available. Voluntary informed consent was provided by all research participants. Given the principle of "avoiding doing harm," the local Philippines context in which violence is experienced by some civic activists, and paying attention to the sensitivity of some of the data collected, it was necessary to conceal the identities of research participants. This confidentiality and anonymity involved not only withholding the names of research participants quoted, but also removing organisation names and other potentially identifying information. Research data was recorded without participants' names and was never shared beyond the researchers.

## 4 | FINDINGS

In this section, the research findings are organised around the theoretical codes of: availability, affordability, awareness, abilities, and agency. The words of non-users are used wherever possible to foreground their experience and perspectives.

Given the statistically high levels of mobile and Internet penetration in the Philippines, it was anticipated that the research would find extensive use of citizen governance intiatives. These assumptions were challenged early in the research process. We found that multiple barriers to using digital governance technology existed even for those who would be counted as "connected" in national statistics. We found no binary division between the connected and unconnected. Interviewees and focus group participants made it clear that many of those who statistics would count as connected, in fact, only had 2G[##] voice and text access via a weak and intermittent signal. Many of those who did have 3G[‖‖] mobile data were frugal and judicious about its use. Any mobile data was often reserved for instant messaging on WhatsApp or Viber and would not be expended on data-hungry web-surfing. For such reasons, many connected citizens are no more likely to engage in digital governance initiatives than those who were "unconnected." As the next five sections illustrate, relatively well-off, educated, urban men are more likely to engage in digital citizenship than relatively poor, rural women. The 5'A's provides a mechanism for analysing the reasons why.

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[‡‡]http://openbub.gov.ph/

[§§]The *barangay* is the smallest unit of administrative governance in the Philippines and equates to a neighbourhood or village of 50–100 families. There are 42,000 *barangay* in the Philippines.

[¶¶]See: www.ids.ac.uk/about-us/who-we-are/governance-and-funding/research-ethics

[##]The second generation of mobile connectivity made it possible to send text messages in addition to voice calls.

[‖‖]The third generation of mobile connectivity made it practical to use the web and send data on smartphones.

## 4.1 | The availability barrier

Connectivity is unevenly distributed in the Philippines: more than seven million Filipinos are not covered by a 3G mobile Internet signal (GSMA, 2016a). For this reason alone, Internet connectivity is simply not available to millions of Filipinos, making participation in digital governance impossible. As the Philippines is composed of 7000 islands, the provision of national connectivity infrastructure is a major challenge that acts as a substantial obstacle to digital inclusion. As one focus group member told us "If you speak about remote islands, 100% are off the grid." In these remote contexts, the availability barrier to inclusion of rural communities in digital governance activities is very difficult to overcome. As one interviewee from a CSO commented, "most of the communities that we work with are in far-flung places, so connectivity is an issue." These availability issues often have the effect of reflecting existing socio-economic (dis)advantage for rural populations and amplifying it by excluding their participation in the digital governance of issues affecting their lives. Broadband Internet connections and the fastest cellular connections are mainly found in the metropolitan areas of the relatively prosperous central islands. Many smaller towns and villages do have cellular phone connections, but hundreds of remote islands have no electrical power, no cellular coverage, and no Internet connection. Interviewees explained that this availability was not a binary issue: connected Filipinos often struggle with partial and fragile connectivity. As an open data activist in the Manila expert focus group explained, "We have outages every day … How can a community access [government] data if the infrastructure is so weak?" For marginalised ethnic groups, the situation can be significantly worse; in the indigenous Batak village where we held a focus group, there was no connection at all; there was no connection to the electricity grid,[***] no cellular coverage, and no Internet. Only three people in the village had mobile phones (so would count as connected for statistical purposes). Only one was a smartphone—given to her by the nongovernment organisation she works with. However, to access any kind of signal, villagers had to take a long hike—across 11 bridges—to the nearest main road where a weak 2G signal was available. By contrast, members of the focus group that we held in the capital city with senior civic tech professionals owned high-end iPhones and other smartphones, and were typically able to access Wi-Fi with good data speeds both at home and at work. Although these were the two extreme ends of the spectrum of connectivity experiences that we encountered in the Philippines, most of the people with whom we interacted fell into neither extreme; they owned more modest smartphones, feature phones, and basic phones and had a range of other intermediate experiences of access to connectivity.

We found that the patterns of connectivity availability in the Philippines was significantly more complex than the binary divide between unconnected rural and connected urban populations. Interviewees explained that their connectivity often varied over space and time, for example, as a person moves from their home to their workplace or from the village to the main road. Availability also fluctuates in unpredictable and intermittent ways: as the power supply cuts in and out, or as the cellular coverage fluctuates. Even when a citizen lives in an area where the Internet is normally available, questions of reliability and quality remain. One of the Philippines' most experienced open data professionals quipped that slow download speeds mean that he has plenty of time to boil his rice while waiting for a single government dataset to download. This wide range of experience matters to people designing open data or civic tech projects and can explain low project uptake. It points to the need for further research to address the gaps in existing knowledge about the everyday technology practices of the least connected and most excluded communities that digital governance projects are keen to include.

Other barriers to inclusive governance exist beyond availability of cellular Internet coverage. The statistics reveal that even in areas of the Philippines where mobile Internet is available, 67% of the population do not use it (GSMA, 2016b). The other 4'A's provide reasons why.

## 4.2 | The affordability barrier

Foremost of these reasons is affordability. As one interviewee told us in a discussion about the cost of mobile data, "a 3G signal is available but it is not affordable". The significance of the affordability barrier to digital citizenship was reinforced in all five focus group discussions. In all of the ranking exercises, affordability was rated as the most important or second most important barrier to inclusion in digital citizenship. As one participant commented, "a phone that is 3G-ready is too expensive". World Economic Forum figures rank the Philippines 107th out of 139 countries regarding affordability.[†††] Mobile data is least affordable for those on lowest incomes. In the largest survey of its kind, research showed that the cost of mobile data is five times more expensive for the poorest 40% of Filipinos than the richest 5%, and three times more expensive than for their neighbours in Thailand, Indonesia, or Vietnam (GSMA, 2016a). Several interviewees attributed the high prices to alleged price fixing by the only two mobile providers permitted by the government.

Many people on low incomes can still afford to buy a basic feature phone. It can cost as little as US$10 to connect a mobile phone and buy a prepaid "bundle" that provides 50 SMS text messages. At the other end of the spectrum, a new, top-end smartphone costs over US$1000 and a postpaid monthly data and voice subscription can cost US$50 per month. For a Filipino nurse or teacher that equates to 4 month's salary to buy the phone[‡‡‡] and another 20% of their salary for monthly connectivity.[§§§] SMS-only connectivity was affordable to

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[***]Some homes have solar power as a result of a non-government project.

[†††]See: http://reports.weforum.org/global-information-technology-report-2016/networked-readiness-index/

[‡‡‡]See: www.payscale.com/research/PH/Job=Registered_Nurse_(RN)/Salary

[§§§]See: https://shop.globe.com.ph/postpaid-plans

most, but not all, of the people that we met. However, SMS connectivity was insufficient to engage with some of the citizen-engagement platforms included in this research, which required Internet access or smartphones and mobile data that are unaffordable to the majority of the population.

Affordability is not a binary issue; there is no neat division in the Philippines population between those who can afford smartphones and Internet connectivity, and those that cannot. Many of those who can afford phones cannot afford mobile data and the majority of those that do can only afford to be connected to the lowest speed plans, which are adequate for instant messaging on WhatsApp or Viber but inadequate for surfing websites or downloading open government datasets. A person who needs to employ frugal practices to make their mobile credit last until payday may feel disinclined to expend that limited credit on digital governance initiatives because of these affordability issues.

At the time of our research in Manila and Palawan, we found patterns of device and connectivity availability and affordability that were significantly more stratified than the binary picture shown in our initial desk research. Despite high levels of cellular coverage and mobile subscriptions in the international statistics, closer inspection made it clear that most Filipinos could not afford the kind of smartphones or sufficient 3G mobile data to participate meaningfully in online participatory budgeting initiatives. As the leader of the CMB initiative told us in an interview, "the [mobile app] aspect of the project failed, or was underutilised, even though we made it available". Even those target users who had mobile data chose to conserve their limited data for other purposes. When uptake of the mobile app stalled, CMB reverted to the proven citizen engagement technology of driving around the neighbourhood in a rented "jeepney" bus with a loud speaker system. This was significantly more successful in securing citizen engagement in face-to-face participatory budgeting meetings.

Our research identified a stratified picture of distinct classes of technology access and connectivity in the Philippines, which explained the limited success of digital citizenship initiatives. Figure 2 illustrates the classes of technology ownership and connectivity experience that we found. The statistical data from GSMA (2016a) is complemented with qualitative findings from our study. Forty six percent of Filipinos use mobile phones to connect to the Internet but 80% of them can only afford to connect to the slowest data plans; 26% of Filipinos use their mobile phones for voice and text, and 28% do not use mobile phones at all (GSMA, 2016a). Our two focus groups in Manila were made up of iPhone and other high-end smartphone users who typically enjoyed Wi-Fi connectivity at home or work or both. This is a level of technology access and connectivity experience that makes participation in online civic governance initiatives a practical possibility.

Our two focus groups in the town of Puerto Princesa on the island of Palawan foregrounded the experience of Filipino citizens who owned lower specification smartphones or feature phones and who reported more frugal use of available mobile data. In our final focus group with the rural Batak community, there was no connectivity in the village and the majority of people did not own phones of any kind.

The idea of classes of technology access builds on the logic of Qiu's (2009) research with marginalised migrant workers in China and with his concept of "working class technologies." In our research, we identified additional classes of device use and connectivity experience that have emerged in the Philippines and which have material implications for what types of digital citizenship are attainable for different social groups. For the 28% of Filipinos who form a digital "underclass," without phones or connectivity, engaging in digital governance is not practically possible. For the 26% who rely on "working class ICTs" (basic phones with only text and call functions) using web-based or mobile app-based governance initiatives are practically impossible. Participatory governance actors, who wish their initiatives to be inclusive of this combined 54% of already marginalised Filipinos, will need to design their interventions accordingly.

Our findings also build on those of De Lanerolle et al (2017) in South Africa where they found that low and very low income South Africans experience "fragile connectivity" and had to adopt frugal practices to manage the limited connectivity that they could afford. In the Philippines, we found that even those who had connectivity were likely to experience intermittent and unreliable service quality. Filipinos who had mobile
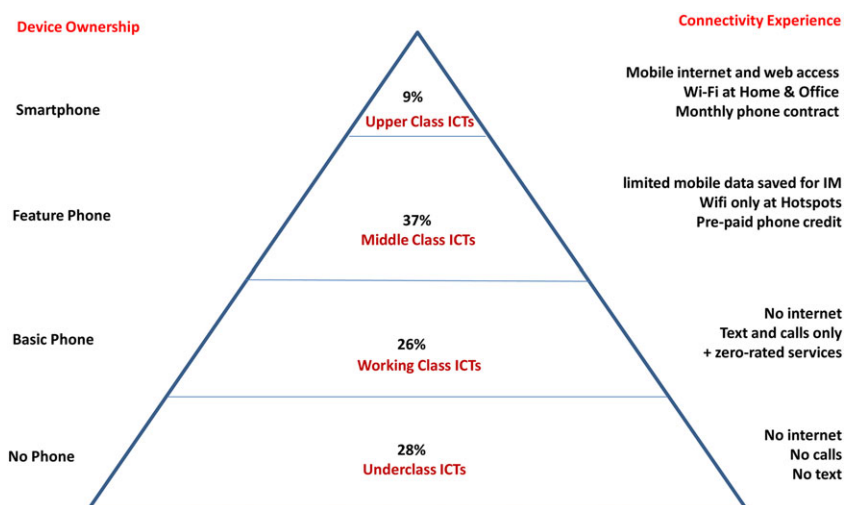


**FIGURE 2** Classes of technology access and connectivity using data from GSMA, 2016a

Internet access had access to different speeds depending on how much they were willing to pay for it. Those who bought their mobile data in prepaid bundles often reserved the limited amount that they had for priorities other than digital citizenship. These nonbinary and tiered experiences of fragile connectivity and frugal practices are important as they act as barriers to effective engagement in online participatory budgeting.

Despite the limited sample size of this research and the need for further research to verify the findings, we argue that this typology has analytic and descriptive value, and that it provides a more detailed, more accurate, and more analytically useful understanding of mobile connectivities in the Philippines than the dominant binary unconnected/connected understanding constructed by the commonly used national statistics of mobile and Internet uptake.

The final verification workshop identified several exceptions to these categories. A low-income worker, for example, may choose to forego other pleasures in order to buy an advanced phone or data credit. A second-hand market in imported or stolen phones is another means by which some people access a "higher" class of technology. Alternatively, even if a person has no job, she or he may have a phone gifted to them by a family member. These exceptions suggest that the actual pattern of technology access in any setting can only be established empirically and that further research is necessary to understand the full complexity.

This conceptualisation of different classes of technology access also provides a foundation from which to refute the binary idea that the disconnected are progressively being connected and that technology access is leading to a reduction of inequality. The popular notion of a meritocratic information revolution, in which the category of unconnected is rapidly disappearing and being replaced by a level playing field, is not borne out by the evidence from this study. On the contrary, evidence from this study shows that distinct classes of technology access are forming and changing over time and the gap between the most connected and the least connected is widening. The urban professionals in Manila with access to upper class ICTs were not waiting for those with working class ICTs to catch up. They are regularly upgrading to the latest iPhones and faster data speeds, leaving the 28% of Filipinos with no phone and no connection further and further behind. To the extent that the most connected are able to access digital dividends (World Bank, 2016) including digital citizenship, the 54% of Filipinos with no mobile access are becoming relatively more disadvantaged. From this perspective, the use of civic tech that relies on Internet access can be argued to be increasing the political influence of the already privileged in relation to the already marginalised.

A further finding from this study was that for research participants, affordability was not simply about the purchase price of devices and connectivity; for some respondents, it was time (rather than money) that they could not afford to spend on digital governance initiatives. For this reason, it is important that applications were easy to use and could upload data quickly: "The cost and time is very real... Time is very important, because they could have been doing something else, earning money". In addition to this calculation of the opportunity cost, one interviewee framed the calculation in terms of the return on investment, where the expected return was government responsiveness: "If citizens are engaging but government is not responding why should they continue engaging?"

From a gender perspective, the issue of time is particularly important, as research has established that women enjoy less free time than men because of the gendered burden of unpaid domestic work (Bardasi & Wodon, 2006). This echoes findings from the recent Web Foundation report,¶¶¶ which stated that lack of time was the single most important barrier preventing women from using the Internet more often. Lack of time was cited by more women than men in this research, and more often by the poorest women than by other, less poor, women. Further research is necessary to understand the ways in which gendered social norms act as a barrier to women's participation in digital citizenship as well as the intersection of gender barriers with those of low income and rurality, if civic tech is to be genuinely inclusive.

## 4.3 | The awareness barrier

Insufficient awareness of digital governance initiatives is clearly a barrier to their uptake even where technology and connectivity are available and affordable. One focus group participant commenting about the BuB initiative, "they [citizens] are simply not aware of the programme". Even in areas where community projects have been funded by the BuB programme, citizens are often unaware. In the Batak focus group, it became apparent that the rope bridge we were taken to see had been funded through the BuB without their having heard of the BuB. "About BuB, they are not aware of the programme. It is actually the city government that knows the hanging bridge is funded by the BuB". These low levels of awareness were common even amongst experts and government officials. As one interviewee pointed out, "some of the chief executives of the local government units do not even know that they have an existing [BuB] website in their municipality". Awareness is not a binary issue that can be fixed with a single intervention; it is an on-going need because populations are fluid and technologies are changing. As one respondent noted, awareness-raising should be considered an ongoing process, "It's never about a one-time event when you are speaking about Open Data. It has to figure within the awareness of the organisation and appreciation for use of data".

Awareness of digital governance initiatives was lower in the rural focus group. In the focus group with the indigenous Batak community, nobody had heard of any of the participatory budgeting initiatives covered in this study, and there were low levels of understanding about what the Internet itself was and how it might be relevant to their priorities. This highlights that, especially in marginalised communities, awareness is

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often about more than technical training on a discrete app. A wider critical appreciation of its place in wider systems and in relation to people's daily priorities is necessary to support effective uptake. In GSMA (2016b), 51% of offline Filipinos reported a lack of awareness about the usefulness of the Internet in general, and of locally relevant content in particular. The awareness barrier to inclusive digital governance should be a key concern for designers of digital citizenship initiatives that wish to secure widespread uptake and adoption across low-income and low-education demographics.

## 4.4 | The abilities barrier

Low levels of digital literacy can be a substantial barrier to the uptake of digital citizenship initiatives even in places where the issues of availability, affordability, and awareness have been addressed. Many Filipinos do not have sufficient digital literacy or lack the technical abilities to become active users of digital governance initiatives. As one member of the indigenous Batak community focus group said, "that is only for the educated ones; if you are not educated, you cannot use the computer".

As one of our Manila interviewees commented, "we see a lot of potential in citizens using technology to engage with government, but that of course will depend on citizens having access to technology, knowing how to use it, understanding and appreciating the information". As this quote suggests, ability is not binary but multidimensional. The ability to make effective use of technology access is dependent on more than one kind of digital literacy. Relevant digital literacies may include mobile keyboard or touchscreen skills, experience with specific applications or icon literacy but also understanding how to interpret and modify information and apply it politically to mobilise opinion for change. The importance of addressing this abilities barrier to inclusive digital citizenship is echoed in recent GSMA research that found 27% of Filipinos felt that lack of technical abilities was holding back their use of mobile data (GSMA, 2016b).

Digital governance initiatives therefore need to periodically assess the relevant abilities of their target users and incorporate the necessary digital literacy training and capacity building into their programmes if these initiatives are to be optimally effective and truly inclusive.

## 4.5 | The agency barrier

Even when digital governance initiatives are available and affordable, and where people have the necessary awareness and abilities to make effective use of them, there are still many people who lack the *agency* to engage in digital citizenship initiatives. They may lack the aspiration, appetite, or self-belief necessary to act to bring about change.

Interviewees and focus group members offered a number of explanations for low levels of citizen agency. One focus group member recalled being told, "Who am I to be monitoring these projects? I am just an ordinary citizen. Who am I to disagree with the municipal engineer or the Mayor?" The quote reveals how citizens learn to internalise their place in social hierarchies and to self-censor their critical voice and civic agency. In an in-depth interview, a senior government official from the county's largest participatory budgeting programme explained how even when funders provided mobile phones and paid for connectivity, digital citizen engagement levels were low. Her analysis was that after a lifetime of being marginalised and disregarded, working people had internalised a sense of powerlessness, "I think it's the class status, if you're just a citizen... specifically the poor people, they have low self-esteem... for so long we have not heard their voices... so there are a lot of people who feel like that." In our focus group with the indigenous Batak community, one of the leaders said, "We are small people and it is easy to disregard us... especially the women." This resonates with Freire's (1970) suggestion that when people have been systematically marginalised for generations by unequal power relations, a "culture of silence" develops, causing people to doubt the worth of their opinions or needs. As one interviewee commented, "[We] are not necessarily confrontational people... especially when speaking to authority personalities with some kind of power status. The whole submissiveness is there. Perhaps it's a postcolonial thing".

Agency is not binary; it is not something that you either have maximally or do not have at all. Everyone has agency to different degrees in different domains of their life and it is something that can diminish or be enhanced over time. There is a great deal of experience documented in the popular education, women's empowerment, and Black consciousness literature about processes designed to enhance participants' agency to change their situation (Freire, 1970; hooks, 1982). As one activist from the civil society focus group commented, it is difficult but by no means impossible to encourage people to believe that they can make the government respond to their needs. She emphasised that the priority has to be addressing people's immediate felt needs rather than focusing on the technology, "the bottom line of engagement is whether the person can have her immediate needs met through the engagement... [then] it can be enhanced or supported by the technology". A government official told us that they are seeing situations where people who were initially highly sceptical about speaking to the government had become highly engaged, "I think the monitors have acquired self-confidence and self-esteem and in fact some groups organised themselves and negotiated with the local government". She attributed this increase in agency to beginning with small achievable targets to increase the group's sense of aspiration for change and their appetite for civic engagement.

## 5 | DISCUSSION

Part of the motivation for conducting this study in the Philippines was the country's high statistical levels of mobile phone ownership and Internet penetration. However, on closer inspection, these statistics hid more that they revealed. The binary nature of national statistics on device ownership, mobile phone registrations, and Internet connectivity contributes to the construction of a binary myth of citizens who either have no connectivity at all, or are fully connected. This myth is perpetuated in evaluations of development, such as the SDG targets, where binary reductionism makes invisible the diversity in people's everyday experiences of connectivity. The findings of this study include that fragile connectivity and frugal use of limited mobile data are explanatory factors in the low uptake of digital governance initiatives in the Philippines. This suggests that qualitative contextual understanding of the everyday technology practices of the least connected may be fundamental to the success of civic tech initiatives that seek to be inclusive of low-income and marginalised citizens.

The 5'A's provided a useful analytical framework to examine key barriers to citizen use of digital governance initiatives. Focus group discussions and participatory ranking exercises identified affordability as the most significant barrier to uptake of civic technologies amongst non-users and least-connected citizens. Analysis suggests that several distinguishable classes of technology access have emerged in the Philippines, which stratify the ability to participate in online governance and so help to explain relative levels of digital citizenship inclusion in different demographics. For those designing digital citizenship initiatives, this points towards the need for blended (nondigital and digital) approaches in order to be inclusive of the least connected and the unconnected. As patterns of access are dynamic over time and space, understanding the existing situation will always be a matter of empirical investigation. Designers of civic tech initiatives will need to conduct regular evaluations of the changing connectivity landscape and everyday technology practices and exclusions as appropriate.

This study's use of qualitative methods and engagement with non-user groups and the least connected made it possible to produce new knowledge about the barriers to engagement experienced by different social groups in the Philippines. Quantitative methods teach us a great deal about changing levels of device ownership and mobile account registration. However, these statistics conceal as much as they reveal. Qualitative methods such as those used in this study enable us to assess why device owners do not engage in digital citizenship initiatives, showing how connectivity is not binary and how mobile use is contingent upon factors including digital literacy and agency. Focus groups foregrounded the different everyday technology practices and connectivity experiences of non-users and of the least connected. We were able to understand how fragile connectivities and frugal technology practices explain low participation levels in digital citizenship initiatives of Filipinos who appear as connected in official statistics. Interpreting their experiences through the lens of the 5 'A's of Technology Access allowed a structured analysis of five key barriers to inclusive digital governance: availability, affordability, awareness, ability, and agency.

The 5'A's framework was particularly useful in decentring technology in the analysis. By focusing the analysis on the social and economic barriers to inclusion, rather than on the apps and platforms, it helped to identify the nontechnical factors that act as barriers to inclusive digital governance. We saw for example how gender norms and the marginalisation of indigenous people in the Philippines are reflected and reproduced in technology use. What also came through very clearly was that access to connectivity and digital cannot be adequately understood using binary concepts. By having focus groups drawn from different demographic groups in the Philippines, it became clear that citizen's access to devices and connectivity was stratified in ways that shaped their participation in mobile and online governance initiatives. In the focus group with the marginalised Batak community, agency and availability were evident barriers to citizen's participation in digital governance. In the two focus groups with civic governance and extractive industry activists, low levels of awareness about digital citizenship was highlighted as a significant barrier to citizen participation in governance. In all of the participatory ranking exercises conducted in the focus groups, it was affordability that participants judged to be the greatest barrier to inclusion and which explained the stratification of types of device ownership and experiences of connectivity.

That affordability matters is not a new finding. What this research contributes is a nonbinary explanation of how stratified levels of affordability endow Filipinos with different classes of digital access. It is not simply that some people can afford phones and others cannot. Evidence from this study shows that people can afford phones with very different kinds of capabilities; they can afford different speeds of Internet, and different amounts of data to access the mobile Internet. People who could afford relatively little mobile data used it frugally and were less likely to expend it engaging in digital citizenship initiatives. Identifying different classes of technology access and patterns of technology use improves our ability to understand why participation in digital governance is uneven, and what might be done to improve inclusion moving forward.

The analysis points not to a binary division between connected and unconnected citizens but rather to the emergence of distinct classes of technology access in the Philippines, which is significantly shaping people's ability to engage in digital governance programmes. Tackling these obstacles to digital inclusion will require measures to extend the availability of digital devices and connectivity as well as interventions to address barriers of affordability and abilities (digital literacies). However, what this research suggests is that such measures are necessary but insufficient; the inclusion of the most marginalised will also require measures to address low levels of awareness and agency.

The ability of Filipino citizens to participate in technology-mediated citizen governance is being structured unequally, in ways that reflect, reproduce, and amplify existing inequality along familiar dimensions including gender, ethnicity, and class. If it continues to be the case that evermore aspects of social, economic, and political life move online and are digitally-mediated, then we can expect to see existing inequalities amplified in other digital domains.

## 6 | CONCLUSION

This study addressed three gaps in the existing literature to provide a fuller understanding of the challenges of inclusive digital citizenship. First, it moves us away from the binary reductionism in much of the existing literature by producing new knowledge about stratified experiences of classes of technology access in the Philippines. Second, by using focus groups to foreground the perspectives of non-users and the least connected, we were able to better understand the nonengagement decisions of citizens and the remaining barriers to digital inclusion. Third, the revised 5'A's of Access framework contributes a new analytical device for decentring technology and for interrogating the five key dimensions along which digital exclusion is structured. This structured analysis allowed us to effectively foreground the remaining barriers limiting the uptake and effective use of digital governance initiatives.

The addition of agency to the 5'A's framework now enables a more comprehensive analysis; it enables us to explain why even where connectivity and devices are available and affordable, and where citizens have the necessary awareness and abilities, it may still be the case that some citizens feel unable or disinclined to engage in digital governance.

The research produced new knowledge about the three research questions: who participates in digital governance in the Philippines; what structural barriers exclude other citizens, and what lessons can be derived to guide future policy, practice, and research. We found that the availability of connectivity favoured the participation of urban populations who could afford smartphones and mobile data. Awareness of digital governance initiatives and digital literacy abilities were lowest in the rural Batak focus group. We found that women, indigenous people, and those on low incomes were most excluded from digital citizenship initiatives and were most constrained by low levels of agency. Again, the theoretical contribution of this research is in highlighting the need for nonbinary understandings of digital access and the need for digital inclusion initiatives to pay increased attention to awareness and agency. We have shown that the "connected-unconnected" binary of official statistics effectively disguises the stratified levels of digital device ownership and that shape participation in digital citizenship in the Philippines. We have also shown that for the most excluded social groups, ensuring digital inclusion will often be about addressing low levels of awareness and agency. Fortunately, there is a great deal that digital development actors can learn about awareness-raising and enhancing agency from the existing development literature on popular education and women's empowerment.

Recommendations arising from this research findings are the need for practitioners and policymakers to better understand and address the stratified levels of technology access and connectivity experiences that materially impact on citizen's ability to engage with digital governance initiatives. The 5'A's is not just a way of analysing barriers to digital inclusion, it also has potential as a framework to identify needs and to devise interventions to extend availability and to increase affordability, awareness, abilities, and agency. The 5'A's may help agencies to structure multilevel programmes that go beyond providing availability, affordability, and abilities and serve as a framework to focus additional attention on the incorporate of awareness-raising and agency-enhancing processes into digital inclusion programmes. Building this human capacity and intent is an essential foundation that digital technology can amplify but cannot be a substitute for (Toyama, 2010). To date, there has been insufficient research into the awareness and agency element of digital inclusion; further research is needed to understand the extent to which these factors explain low uptake of digital development initiatives.

This research was limited in its sample size and geographical scope. Further research is necessary to test these findings with larger populations and in different locations. Further research with a larger sample could usefully examine how the intersection of gender, ethnicity, and class structure exclusion in digital governance initiatives. In this research setting, we conclude that nonbinary and nontechnical understandings of existing barriers to digital inclusion are essential to any comprehensive understanding of digital governance uptake and to removing the remaining barriers to inclusive digital citizenship. For this purpose, we offer as a contribution of this research the 5'A's of Technology Access, and the stratified classes of technology access, as diagnostic and analytical tools for practitioners and researchers to use and to modify in order to better understand contextual barriers to digital development, existing patterns of technology access, and everyday technology practices.

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**Kevin Hernandez** is a Research Officer at the Institute of Development Studies. After completing an MA in Globalisation, Business and Development at IDS, he worked on a foresight study looking at synergies and trade-offs between pathways to Equality, Sustainability, and Building Secure and Inclusive Societies. Kevin now works with the Digital and Technology cluster on various projects including the impact of digital technology on economic growth, productivity, employment, and equality, the use of Real Time Data for decision making in the development sector, Frontier Technologies for Development, and Foresight Studies on the future of Digital Technologies. He also provides technical support to entrepreneurs in two innovation funds.