Media and Communication
2024 • Volume 12 • Article 8173
https://doi.org/10.17645/mac.8173

ARTICLE

Open Access Journal

Smartphone- and Tablet-Reliant Internet Users: Affordances and Digital Exclusion

Becky Faith and Kevin Hernandez

Digital Futures at Work Research Centre, University of Sussex, UK

Correspondence: Becky Faith (b.faith@ids.ac.uk)

Submitted: 31 January 2024 **Accepted:** 16 April 2024 **Published:** 24 June 2024

Issue: This article is part of the issue "Practices of Digital In- and Exclusion in Everyday Life" edited by Marcel Broersma (University of Groningen), Joëlle Swart (University of Groningen), Denise Mensonides (University of Groningen), Alex Smit (University of Groningen), and Maud Rebergen (University of Groningen), fully open access at https://doi.org/10.17645/mac.i446

Abstract

In countries where digital-only service delivery has become the norm, the removal of offline services and channels risks exclusion and alienation for marginalised communities, many of whom have access to the internet exclusively through a smartphone or a tablet computer. These users have been described as part of a "mobile underclass" who face challenges interacting with systems that are difficult to use on devices other than laptops or desktop computers. This article uses the theoretical lens of affordances to explore the everyday realities of digital engagement for economically and socially marginalised communities who only have internet access through a smartphone or tablet computer. This allows for an examination of the ways in which these devices might discourage or refuse certain actions such as applying for a job, as well as how they might encourage or allow other courses of action. Using data from qualitative interviews with people working at community-based organisations delivering support to digitally excluded unemployed people seeking welfare and employment support in three cities in the US and the UK, we seek to understand the role of the affordances of devices in preventing smartphone- and tablet-reliant users from accessing their basic entitlements and finding work. In doing so, we offer new perspectives on mobile-only internet access, digital divides, and digital inequalities.

Keywords

digital by default; digital divide; digital engagement; digital exclusion; mobile internet access

1. Introduction

Digital-by-default service delivery has become the norm since the Covid-19 pandemic, and there is concern that the removal of offline support in essential services such as welfare and job-seeking is leading to exclusion

for persistently digitally excluded communities. This led the UN Special Rapporteur on Extreme Poverty and Human Rights to warn of the risk of a "digital welfare dystopia" (Alston, 2019, p. 21) in which people are denied their human right to social protection because of their inability to engage with digital government platforms. This broader trend has been described as "digital enforcement" (Díaz Andrade & Techatassanasoontorn, 2020) or "compulsory digitality." In their work on this topic, Kuntsman and Miyake (2022) argue that this shift makes digital refusal or opt-out increasingly impossible in interactions with the state, impacting in particular those most dependent on welfare who are some of the most vulnerable people in society. This shift to effectively compulsory digital access has impacted debates on the digital divide, which now take on new urgency as social and digital inequalities are now more intertwined than ever. Recent work by Robinson et al. (2020) on the "third-level digital divide" draws attention to the way in which inequalities and injustice caused by persistent digital inequalities in access and use have been exacerbated by the spread of technologies such as automation and surveillance systems in many aspects of daily life.

Against this backdrop, it becomes even more important to understand the realities of digital access for people who access the internet exclusively through a smartphone or tablet computer. Data from the UK telecommunications regulator Ofcom (2023) put this figure at 18% of the population. For unemployed people and those working in semi-skilled and unskilled manual occupations, the figure is even higher, with 27% only going online via a smartphone and 48% going online on devices other than a desktop or laptop computer. In the US, 15% of American adults are "smartphone-only" internet users (Pew Research Center, 2021); 27% of those living on an annual household income of less than $30,000 were reliant on smartphones for internet access. The figures reflect broader inequalities; 25% of Hispanic people and 17% of Black people are reliant on smartphones for connectivity compared to 12% of the White community, and just 6% for those with a household income of $75,000 and above (Pew Research Center, 2021). This data from the UK and US shows how these digital inequalities intersect with socio-economic and race-based axes of inequality.

To understand the challenges these communities might face in engaging with essential services online, this article draws on work within the digital divide literature on the "mobile internet underclass" (Napoli & Obar, 2014) which has explored the limitations of internet access through mobile phones compared to desktop or laptop computers (Reisdorf et al., 2022; Tsetsi & Rains, 2017). The contribution of this article is to look at these "device divides" (Pearce & Rice, 2013) through the theoretical lens of affordances (Davis, 2020) to explore the everyday realities of digital job-seeking, employment-related education, and welfare access for marginalised communities who only have internet access through a smartphone or tablet. This follows Marler's (2018) call for work which explores how mobile affordances might shape outcomes for marginalised users but extends this beyond mobile phones to understand how cheap tablet computers, often provided as a "solution" for digital exclusion in the UK, might have similar limitations. Using this framing allows for an examination of the ways in which smartphones and tablets might "discourage" or "refuse" certain actions such as applying for a job or completing forms online. However, it also enables consideration of conditions such as the digital literacy of the user or digital poverty which may lead to insufficient mobile data to complete the task.

This article seeks to understand the affordances of smartphones and tablets for instrumental purposes associated with job seeking and welfare using data from qualitative interviews with community-based organisations (CBOs) providing support to digitally excluded unemployed people and with digitally excluded people seeking welfare and employment support in three cities in the US and UK. In doing so it aims to

illuminate the challenges faced by smartphone- and tablet-only internet users in a digital-by-default society, where offline access to many essential services has effectively been removed.

2. Digital by Default, Digital Exclusion, and the Mobile and Tablet Underclass

This section explores the background context of digital exclusion in the UK and US and efforts made to address this issue through the provision of free devices such as tablet computers. It then looks at the literature on device divides and the mobile underclass which seeks to understand the extent to which devices other than computers can address these divides. The theoretical framework of affordances is introduced to understand these "device gaps."

2.1. Digital Exclusion in the UK and US

Government policies which move services to a digital-first or digital-by-default model, often with the stated aim of saving money and improving customer service experiences, are underpinned by an implicit logic that anybody who needs to get online to apply for welfare or find work has consistent, affordable access to the internet (Al-Muwil et al., 2019). Whilst internet access statistics in the UK might give the impression that as many as 96% of people have this level of access, interrogation of these statistics shows that digital exclusion remains a persistent problem, since this figure only indicates whether the respondent has gone online at least once in the past three months (Hernandez & Faith, 2023). In the US, 95% of people report using the internet, but economic divides remain in access to broadband. Nearly all (95%) adults with an annual household income of at least $100,000 say they have broadband, compared to only 57% of adults in households that make less than $30,000 per year (Gelles-Watnick, 2024). Once they are online, people need digital skills to interact with services; yet 25% of the UK population are considered to have the lowest levels of digital capability and as a result are likely to struggle to interact with online services (Lloyds Bank, 2023).

In 2023, the UK House of Lords Digital Exclusion and the Cost of Living inquiry recommended that schemes to distribute devices should be scaled up in the UK: "Device distribution schemes cannot solve digital exclusion on their own. But they are a practical way of reducing barriers to getting people online" (Communications and Digital Committee, 2023). Whilst the US government rolled out a programme to provide subsidised internet connectivity and devices, funding for this programme was withdrawn by the government in April 2024 (Universal Service Administrative Company, 2024). In the face of these funding challenges, the provision of tablet computers is often promoted as an affordable solution to address digital exclusion in marginalised communities with schemes aimed at disabled people (Department for Digital, Culture, Media & Sport & Dinenage, 2021), older people (Age UK, 2022), and unemployed people (Liverpool City Region Combined Authority, 2023). Whilst these devices offer some degree of connectivity, they also can prove challenging for complex tasks (Liberatore & Wagner, 2022; Ozok et al., 2008).

2.1.1. Digital Exclusion and Device Divides

A significant body of research in communications studies over more than 20 years has drawn attention to the social inequalities arising from unequal access to technology (DiMaggio et al., 2004; Hargittai, 2003; Warschauer, 2003). This led to substantial bodies of work which explored digital divides beyond access to understand intersecting inequalities in technology use (Van Deursen & Van Dijk, 2014) and the impact of

digital access on capital-enhancing activities (Helsper, 2012; Ragnedda, 2018). Other work has drawn attention to the intermittent connectivity and technology maintenance issues experienced by marginalised communities, including insecurely housed and homeless people (Faith, 2018; Gonzales, 2016; Humphry, 2021; Williams et al., 2023). More recent theorisations of "third level" digital inequalities (Robinson et al., 2020) and "disconnected communities" (McMahon et al., 2023) reflect broader shifts in social relations brought about by the rapid spread of digital-only service delivery, "digital colonialism" (Couldry & Mejías, 2019), and the resulting power and information asymmetries (Taylor & Mukiri-Smith, 2021) experienced by marginalised communities.

Alongside this mainstream body of digital exclusion research, there is significant work on "device divides" (Pearce & Rice, 2013) and the challenges faced by mobile-only internet users, first described by Napoli and Obar (2014) as a "mobile underclass." Their work was an attempt to address claims that mobile phones might be a substitute for connectivity on desktop and laptop computers, highlighting the very different usage patterns of these devices and how "these disparities detrimentally affect users' abilities to engage in information seeking and content creation, and to develop a wide range of digital skills" (Napoli & Obar, 2014, p. 330). Despite the advances in mobile phone technology since this work was first published, studies have reinforced their findings showing how mobile phones' limitations impact the activities people undertake on these devices. Marler's (2018) review of this work shows how the experiences of people who are reliant on mobile phones to get online might reinforce patterns of stratification across socio-economic groups. Whilst his review covers works which show how these devices might impact positively people's lives through the growth of personal networks (Campbell, 2015), it also highlights the usage gaps and findings that mobile phones are used more for social rather than "instrumental" or productive uses. The "usage gap" hypothesis is part of the wider body of digital exclusion research and suggests that the wealthier an individual, the more likely they are to use the internet for information-/transaction-based activities, with poorer users focusing more on entertainment and social uses, and argues that this risks widening inequalities (Van Deursen & Van Dijk, 2014). These instrumental uses are central to this study as it is concerned with the use of technology for job seeking and welfare, and more broadly with the implications of mobile and tablet-only internet access in a context of digital by default government service delivery.

Mobile-only internet users who use them for social rather than instrumental purposes have also been described as "limited" users. In their analysis of UK telecoms data, Yates et al. (2020) show how these users are likely to be younger people from deprived backgrounds and with lower educational attainment. Tsetsi and Rains (2017) analyse US data and come to similar conclusions in relation to the usage gap. They warn that not only are smartphones not closing the digital divide but that there is a risk that they "may even be widening it by giving upper income people more tools to expand the gap" (Tsetsi & Rains, 2017, p. 251). Similar findings emerged in Fernandez et al.'s (2020) study of digital divides in urban Detroit which showed that the types and diversity of online activities dropped dramatically when a household lacked an internet service provider or when individuals relied primarily on their phones to access the internet. The study showed that shopping online was particularly impacted by the lack of an internet service provider—meaning that they were unable to compare costs online and shop around for lower prices. This also has implications for the development of digital skills since this limited usage is correlated with lower digital skills. A study of digital exclusion in Chile found that people who accessed the web through mobiles only had lower levels of skills (Correa et al., 2020).

Whilst these studies are not concerned with accessing the internet through tablet devices, attention needs to be paid to what Marler (2018) describes as the "constellation" of devices people might be using and the need for "device variable" research. Within this constellation, Tsetsi and Rains (2017, p. 251) distinguish smartphone-dependent users from what they describe as "multimodal" internet users who have the choice of choosing a particular device to suit different online activities.

2.1.2. Affordances of Smartphones and Tablets

To understand the inequalities that might arise between people who can choose to use a smartphone for communication and a laptop for job-hunting, and those who are dependent on one device for everything, it is useful to look at the affordances of these devices. Although the technological limitations (Napoli & Obar, 2014) and everyday materialities (Newlands & Lutz, 2021) of mobile phones have had some attention, the contribution of this study is to understand how the theoretical affordances might be fruitfully applied to the study of mobile-only internet users.

The term "affordance" means how "objects shape action for socially situated subjects" (Davis, 2020, p. 6). It was originally used by the psychologist Gibson (1977) as a way to understand the possibilities afforded—provided or furnished in other words—by an environment to an individual and has been widely adopted to help us understand how technologies shape action possibilities across the fields of human–computer interaction, psychology, information systems, communications studies, and science and technology studies. The concept of affordances provides a conceptual bridge between material and semiotic understandings of technology (Curinga, 2014) which enables a recognition of the way the meaning of a technology's use is constructed both by the user and the user's societal and cultural context (Pinch, 2009), and also recognise the actual possibilities for human action made possible by the device or system. The term has been widely used to understand the impacts of mobile phones through their communicative affordances (Schrock, 2015), their use to access social media platforms (Willems, 2021), and their limitations in accessing mobile internet in resource-constrained environments (Wyche et al., 2018).

The term has been subject to criticism for conceptual vagueness, in response to which there have been different approaches to try and achieve greater conceptual clarity. Evans et al. (2017) attempt this by suggesting threshold criteria which distinguish affordances from features and outcomes, whilst Nagy and Neff (2015) proposed the addition of "imagined" to affordances to capture users' expectations of technology. Finally, Bucher and Helmond (2018) distinguish between the more abstract high-level affordances associated with platforms and media and low-level affordances associated with user interfaces such as buttons and screens. Davis (2020) created an affordances, mechanisms, and conditions framework which "takes a relational position in which humans and technologies are inherently co-constitutive" (p. 15). This framework goes beyond previous binary conceptualisations of affordances—either/or framings of what an object enables or constrains. Instead, it proposes the idea of mechanisms to analyse technological objects in ways that more closely describe our everyday encounters with devices such as smartphones. So rather than simply affording or not affording a course of action, a device might request, demand, encourage, discourage, refuse, or allow. The conditions part of the framework specifies the relational nature of human/technology encounters: perception, dexterity (skills), and cultural and institutional legitimacy. These three conditions help us understand how users perceive an object, the skills needed to use it, and finally the embedded power relations in these socio-technical dynamics. In the context of the enforced use of technology and the

removal of offline channels, the inclusion of these conditions of use allows for a richer understanding of the experiences of technology access for users who are dependent on smartphones or tablets to get online.

3. Methodology

This article draws on data from two separate studies carried out during the Covid-19 pandemic, in 2020–2021, with both people who were directly digitally excluded themselves and with support workers and intermediaries who were supporting these communities. The interviews involved respondents from the cities of Brighton and London in the UK and from New York City in the US. The study was originally planned in late 2019 with interviews meant to take place in person in Brighton with digitally excluded people only. The onset of the Covid-19 pandemic and social distancing restrictions made it impossible to reach digitally excluded groups in person. Moreover, although many professional and social meetings shifted to video-conferencing technology, this approach was not appropriate to reach the intended interviewees given their lack of access to the necessary devices, internet access, and low levels of digital skills. Thus, the research team decided to adjust their approach to interviewing employees and volunteers from community-based organisations who were providing support to digitally excluded people during lockdowns, many of whom continued to have physical or phone-based contact with beneficiaries. Due to the nature of their work (providing digital support), the community workers did possess the appropriate technology and skills to participate in remote interviews. This approach provided the research team with insights from intermediaries who had a broad overview of how digital exclusion was playing out for members of their communities including those who only had access to smartphones or a tablet. The authors tapped into their social networks to identify the first round of interviewees and then applied a snowballing approach to identify further interviewees in both contexts. The authors stopped at 18 interviews with CBOs because it became clear that there were diminishing returns on any further interviews due to content saturation.

Towards the end of data collection, the research team was able to secure further funding to provide tablets to 12 digitally excluded unemployed individuals in Brighton. The tablets were distributed in partnership with a local digital inclusion charity with experience providing device and remote digital training support to digitally excluded people in the local area predating the pandemic. The new project and partnership provided the research team with the means to reach a group of people who had been digitally excluded at the onset of the pandemic and who had since gained access to the internet, albeit only on a tablet.

Interviews with CBO workers and volunteers took place on Zoom and Teams and lasted between 45 minutes to an hour. Interviews with digitally excluded people lasted approximately 30 minutes and took place over Zoom and via phone calls for those who were not comfortable with video-conferencing technology. All interviews were semi-structured and an interview guide was used. Two interview guides were used (one for CBO representatives and one for previously digitally excluded people). All interviews were recorded with the consent of the participants. CBO workers and volunteers were not provided with any incentive to participate.

As mentioned earlier, digitally excluded interviewees were beneficiaries of a scheme to provide basic tablet computers and connectivity to vulnerable people. Although the new project funded tablets for 19 beneficiaries, the partner organisation routinely distributes devices to digitally excluded people and the chosen beneficiaries—at random—were part of a backlog of referrals. The beneficiaries were given the

choice to receive the tablet immediately with the condition that they signaled that they were open to participating in short interviews. Participants were made aware that they would still receive a device at a later date if they turned down the offer. Participants were also informed that they were free to change their minds about participating in interviews without having to return the device or repercussions on any digital support received. None of the digitally excluded people turned down the offer. Thus, although tablets were provided to beneficiaries who showed an inclination to participate in interviews, participation in the study was not compulsory. Ethics approval was obtained through the University of Sussex institutional ethics process.

The data was transcribed and then analysed using Dedoose qualitative coding software using thematic analysis (Braun & Clarke, 2012). Dedoose was chosen given its cloud-based collaborative functionality which allowed both authors to jointly work on the same codebook at the same time. After having conducted and transcribed the interviews, the authors met to discuss potential open codes and agreed on the codes in Table 1. These codes were then loosely coded into a set of thematic codes relating to the mechanisms and conditions shown in Table 2. Table 3 lists the respondents in this study.

Table 1. Open codes.

Difficulty doing things on the phone
Challenges of getting people set up on free devices
Old or broken devices
Digital meetings better than face-to-face
WhatsApp
Phone is slow or freezes
Phone is too old
Limitations of mobile phone affordances
Downloading and installing apps
Hardware issues (e.g., mouse touchscreen)
Downloading and installing apps
Filling in forms, creating accounts, emails, passwords
Setting up device
System updates
Uploading documents and pictures
Using email
Tablet is slow
Smartphone screen too small
Downloading and installing apps
User interface issues
Grateful to have the tablet
Maintenance and upgrades

Table 2. Thematic codes.

Code	Example of open code
Mechanism: Discourage	Smartphone screen too small
Mechanism: Refuse	Difficulty doing things on the phone
Mechanism: Encourage	Digital meetings better than face-to-face
Mechanism: Allow	Connecting communities via WhatsApp
Condition: Dexterity/skills	Filling in forms, creating accounts, emails, passwords
Condition: Device	Setting up device
Condition: Operating system	System updates
Condition: App	User interface issues Downloading and installing apps

Table 3. List of interviewees.

ID	Location	Description	Interviewee type
UK01	UK	Unemployed construction worker	Digitally excluded
UK02	UK	IT trainer working at a community centre	CBO support worker
UK03	UK	Community worker supporting refugees	CBO support worker
UK04	UK	Beneficiary of free tablet from digital inclusion scheme	Digitally excluded
UK05	UK	Beneficiary of free tablet from digital inclusion scheme	Digitally excluded
UK06	UK	Beneficiary of free tablet from digital inclusion scheme	Digitally excluded
UK07	UK	Beneficiary of free tablet from digital inclusion scheme	Digitally excluded
UK08	UK	Employment support worker in low-income area	CBO support worker
UK09	UK	Voluntary community worker in low-income area	CBO support worker
UK10	UK	Voluntary community worker in low-income area	CBO support worker
NY01	US	Two English-as-a-second-language teachers for migrants in NYC	CBO support workers
NY02	US	Community worker with an organisation focusing on migrant labour rights in NYC	CBO support worker
NY03	US	Two community workers working with African migrants in NYC	CBO support workers
NY04	US	Community worker supporting low-income residents in public housing	CBO support worker
NY05	US	Director of a network of community-based organisations in NYC serving low-income communities and migrant groups	CBO network director
NY06	US	Community worker providing employment services and training to low-income migrants in NYC	CBO support worker
NY07	US	Community worker providing legal advice and services to recent migrants in NYC	CBO support worker

4. Smartphones, Tablets, and the Mechanisms of Affordance

Technological artefacts often present obstacles which might either put us off a particular action or downright refuse to allow us to make something happen. In some instances, this can be a trivial annoyance, but for the respondents in our study, these mechanisms could have serious consequences. Whilst they

might have a smartphone or basic tablet computer to access vital training, welfare information, or applications, the devices they were dependent on often made these lines of action implausible or impossible. The interviewees who were supporting digitally excluded communities were also experiencing these challenges as they had had to rapidly move their activities online at the onset of the Covid-19 pandemic. Despite these challenges, the data also revealed the ways in which these technologies were encouraging and allowing activities and connections which were personally and economically enriching. This section explores the different mechanisms of affordance of mobile phones and tablets which impeded or facilitated different lines of action for the interviewees in our study in relation to their engagements with digital platforms for training, job seeking, and welfare information. It should be noted that this takes Davis's (2020, p. 65) framework as she intended: a "set of hooks on which analysts can hang their descriptions" rather than as a prescriptive set of codes.

In common with almost half of the UK's manual or unemployed workers, one UK construction worker had no way to get online other than his smartphone (Ofcom, 2023). However, to get his health and safety certification card he was required to take a test on a device other than a smartphone to allow him to get work on a building site. He had been provided with a basic tablet computer and, as he reflected: "I was in desperate need. I could have had this card sorted out three or four weeks ago, but I don't have a tablet" (UK01). In this instance, the technology he had previously had access to was not simply "discouraging," it was "refusing" to allow him to get this vital certification.

The data revealed other instances where smartphone dependency led to "discouragement" in trying to access education opportunities and job-seeking activities on small screens. One interviewee reflected on the intersectional digital inequalities experienced by the undocumented migrant men from Central America they worked with: "If they're single, they most likely don't have a laptop. I'll say around half will have a smartphone, But for laptops, it's pretty rare" (NY02). This presented challenges when trying to engage them in educational activities:

> Most of them in my class have cell phones. They're frustrated because the screen is so small, so if I'm sharing my screen, sometimes they're like, "I can't see!" and then they just totally disengage and I try to teach them you can pinch the screen, this is what I do, pinch the screen! They prefer a laptop because the screen is bigger. (NY01)

The same interviewees reflected on how the affordances of the small screen discouraged their students from paying full attention as they could only see four of their classmates, concluding that this discouraged engagement and facilitated disruptive behaviour such as walking around or napping: "One of my guys loves to take a little nap because he only sees four students right, but he doesn't realise I can see everyone on the screen [on a laptop]" (NY01).

As in the UK, some US interviewees were supporting workers who were attempting to complete health and safety training courses but, in this case, they were struggling to complete the requisite 40 hours of training via Zoom on their phones as the screens discouraged effective learning: "It's very difficult because they're taking the lesson through their phone…that's [even] difficult for college students to try to see a whole lecture and a professor and take notes through their tiny smartphone compared to a laptop" (NY03).

One worker compared the on- and offline experiences of providing career advice to disadvantaged youth, reflecting that "with Zoom…it's really hard to get people to participate because people can be outside—They dial in on their phone and other people are there" (NY03).

Yet smartphone and tablet access also encouraged and allowed activities such as setting up email and access to the welfare systems. One interviewee had been able to set up his account for his Universal Credit (digital-by-default welfare payment) account: "I don't have much computer experience. It's a bit different from a laptop, isn't it? I've set up my universal credit accounts and email" (UK05). Another talked about how he was able to engage in online meetings, encouraged by the fact that he found them less anxiety-inducing than face-to-face meetings (UK06). In the US, an employment support worker described a migrant worker who had poor English and digital skills but was encouraged by the visual interface on her phone to learn how to send a vital document to a prospective employer:

> She speaks a low amount of English but she was so excited to have a job interview. But the employer emailed her and said, "I want a photo of your social security." So we spent an hour on the phone and I had to teach her how to make an attachment to an email. I had to explain what things look like. Do you see the blue triangle? So she figured it out really fast when I explained what things looked like, but if I had explained to her in like technical terms, we would have been there forever. They make up for a lot of that lack in digital literacy with just like really strong visual cues. (NY01)

Another employment worker described how the use of WhatsApp had allowed more people to join training and advice sessions:

> We do our virtual sessions, we share it on WhatsApp….It's actually expanding now because we are now getting more people reaching out to us to ask for sessions on some other areas or some other topics that we, you know, ordinarily wouldn't have addressed. (NY07)

On some level, the basic tablets provided to the digitally excluded people we interviewed were a step up from the smartphones they had been using previously and encouraged a wider range of uses, thus suggesting that these devices can go some way towards addressing "usage gaps." One neurodivergent interviewee had found that the tablet was well-adapted to his needs: "I'm dyslexic as well and so I've always struggled to do some of that stuff on a phone more than I do on the tablet. Like, I can get specific apps for mind-mapping and this and that" (UK04).

He later reflected on how the tablet had also encouraged certain paths of action, for bidding on social housing and for being able to have a device separate from his phone to keep these functions separate from his personal life that he sometimes shares with his toddler for entertainment. This experience shows the rich picture of positive and negative affordances of the devices the digitally excluded respondents in this study and the advocates who were supporting them had access to, both encouraging connection and exploration but also discouraging certain instrumental activities related to employment and education.

5. The Conditions of Human/Technology Encounters

In Davis's (2020) affordances framework, conditions of perception, dexterity, and cultural and institutional legitimacy specify the relational nature of human/technology encounters, in a way that she suggests "gives depth and breadth to analytic understandings of human–technology relations" (p. 90). For the disadvantaged communities in our study, the condition of "dexterity" she describes is particularly relevant since it is a way to understand how dexterity translates into digital skills—or the lack thereof. One trainer from the UK reflected on the many hurdles his clients faced when they were trying to apply for a job on a smartphone or a tablet:

> They often need to register with a site, they need to be reasonably familiar with typing up a document, saving a document such as a CV, uploading a file to the website, doing a cover letter, in some cases doing copy and paste. There are barriers built into those things. (UK02)

Other marginalised communities also faced barriers caused by a lack of digital skills. A US trainer reflected that their construction certifications training presented barriers to people who were formerly incarcerated: "It's more common than in any other sector to come across individuals who are formerly incarcerated in the construction sector and they tend to have some of the worst or least developed digital skills" (NY05). Similarly, a worker supporting refugees to access welfare and employment reflected that many of her clients lacked the digital skills to fill in online forms (UK03).

Whilst Davis's affordances framework allows us to think about conditions of device use such as digital skills, our data revealed other conditions of use which impacted users' ability to use smartphones and tablets for instrumental purposes such as job seeking or education. Whilst mobile devices and tablets are seen as ubiquitous, they are not homogenous and vary wildly in speed, ease of use, and accessibility. Our data suggests the importance of interrogating further conditions of device use impacting human technology encounters, including speed, operating systems, and the applications installed on the device.

Some issues that emerged in the data related to experiences of applications that had been poorly configured to the device. One tablet recipient was trying to learn Excel for work and to write cover letters for job applications on her device. This was in part due to the affordances of the tablet as it lacked an external keyboard and mouse but could be seen to be part of the conditions of use, that the application and the user interface were simply not optimised for tablet users:

> But I do still find it really difficult to do stuff on the tablet. You know I'm a Windows girl. It hasn't got an external keyboard and mouse to do stuff with. When I'm typing stuff into Google and I press enter or search just like…nothing happens. I don't know if the tablet's faulty or whether I'm faulty! (UK07)

Later she reflected on the fact that she found it difficult to understand where to save documents on her tablet, making the task of saving cover letters and CVs more challenging. Overall, she had found the move to working on a tablet challenging:

> I know all about digital technology and how it will help you and like what you can achieve with it. But I'm struggling to move operating systems—figuring out how to get the most out of the tablet and do the stuff that I used to find really simple on a computer on this tablet. (UK07)

An employment support worker also found that the communities he was working with were struggling to complete their Excel training on their phones:

> Most of them had Wi-Fi at home because it came as a package with the TV, but they didn't have laptops, they were just using their phones. Phones are not designed to do [productivity] applications or even training. They were trying to do some Excel training online—All of that was impossible on the phone. (UK08)

In both these cases the devices were technically able to run Microsoft Excel, but the usability on a phone or tablet—the only devices the interviewees had access to—was so limited that the training was effectively useless.

Beyond the fundamental difficulty of trying to use a tablet or phone to perform the functions of a computer, our interviewees experienced other challenges in the operating systems and apps they were trying to use. One trainer in New York bemoaned the fact that they could not draw on Zoom on the phone during training (NY01). Another described the challenges of trying to run an employment webinar with participants who struggled with basic Zoom functionality:

> There was the unemployment webinar where we had the most participant engagement [ever]—We had a lot of issues. People didn't know how to mute their phones, people even didn't know they could speak into the phone, they thought it was more one-sided—where they can listen to hear us but they can't respond or interact with us. (NY06)

Other users struggled with basic functionality such as using email on a phone owing to their problems with the user interface:

> Then you might have the ones who are but now it's like a real learning curve just getting them to learn how to open the Gmail icon on their phone and bring it up okay "where did that email go?" and teach them things like that so that's definitely absolutely been a challenge. (NY04)

For some communities, their access to basic services was impeded by the lack of information available in languages other than English on apps and websites, as revealed by a community worker who supported refugees: "The failure of websites to be fully accessible is a complete nightmare. I think a lot of the contact forms on websites aren't necessarily accessible in different languages" (UK03).

Beyond the apps, the device itself was a barrier for some recipients of free tablets; a recipient of a free tablet was worried at the start of the interview that the tablet was asking for a system update and that he was unsure whether he had sufficient data to update it. Another community worker who was providing free devices to vulnerable members of her community reported that the recipient was unable to get the device to work and could not fix it without the aid of an external IT expert:

> The lady that I had the iPad delivered to, for the first week of having that tablet, she couldn't work it. She didn't know how to use it. So she kept on saying to me, "It's not working." Then they took it back to the IT person and figured out that it was the SIM card that was the issue. (UK09)

Other intermediaries reflected that the cheap tablets they were providing were simply of too low a specification to be of genuine use to people:

> But there's also a level of we have got what we paid for. It was an entry-level Android tablet I think that they're around the 70 to 90 pounds mark. The use of it is horrible. The battery dies really quickly. The camera's useless. (UK10)

Another tablet recipient reflected on how the tablet had enabled him to keep up with the news, which he had not previously been able to do on his mobile phone which had been damaged: "My phone's really been through wars, the speakers are all gone, and the screen is cracked." However further interrogation of his experiences using the tablet showed the limitations of the device in terms of its speed: "I guess it's just the way it works. Just going from one program to another, one action to another, it's a bit slow" (UK05). Another recipient needed weekly support from a digital champion to understand how to restart the tablet when it was running slow.

Finally, one further condition of use described by Davis (2020, p. 98) is "cultural and institutional legitimacy," an "intrinsically political condition tied to existing status and power structures." The political and economic decisions to make welfare and job applications only available online is a significant condition of use. Reflecting on their powerlessness in the face of these developments, this interviewee talked about being "dragged" into using technology:

> Well, it's the way things are going, I'm sort of being dragged into the 21st century, if you understand. Before I used to say I am an "InterNOT," so when People used to ask, "What's your email address," I used to say "I'm an InterNOT." (UK05)

This section has shown how a range of conditions impact the effective use of technology beyond those detailed in Davis's framework of perception, dexterity (skills), and cultural and institutional legitimacy. The devices themselves, the apps, and the operating systems shape users' experiences of using these technologies. Our data showed how these experiences often left users feeling powerless and helpless and impeded them from carrying out basic digital activities.

6. Discussion: Smartphone- and Tablet-Reliant Internet Users and Digital Service Delivery

This study illuminates both the positive and negative ways of digitally excluded communities engaged with smartphones and tablets, revealing the ways in which these technologies impeded instrumental activities such as job seeking or education through mechanisms of refusal and discouragement, but also encouraged other more positive actions involving connection and engagement on their own terms, such as through participating remotely in meetings or using visual interfaces to send important documents. It also shows the complexities of the conditions of this engagement, including the "institutional legitimacy" of the political decisions to move services online.

In exploring these other conditions, we go beyond Davis's original conditions to highlight the impact of the device (the model, age, condition, and battery life), the operating system, and the apps people are using (the user interface). The addition of other conditions to Davis's framework suggested by the data from this study

illustrated in Figure 1 below adds further value to its use in understanding the relationship between social and digital inequalities. These issues of technology maintenance (Gonzales, 2016) have been raised in previous work on the digital divide, and the data from this study shows the importance of factoring these issues into discussions of "device divides" (Pearce & Rice, 2013).

Digital access statistics in countries such as the UK and the US are often premised on the assumption that access to a smartphone or tablet computer is sufficient to classify that person as an internet user (Hernandez & Faith, 2023). This article has shown how the limitations of these devices are possibly masking the full extent of digital exclusion. Digital inclusion interventions in high-income countries are often based on the supply of cheap tablets or smartphones to digitally excluded communities who need to get online to access basic entitlements or find work. Whilst these tablets clearly made some positive impact on the lives of people who had previously been without connectivity, their limitations were very apparent. In terms of the policy relevance of this research, this data shows the importance of designers of government digital systems prioritising the needs of marginalised users; this is in line with the UK Government Digital Services' stated aim of "continuing to champion the needs of end users above all else" (The GDS Team & Read, 2021).

This study therefore contributes to earlier literature and discussions on mobile-only internet users and device gaps to show how the theoretical lens of affordances and in particular Davis's conceptualisation of mechanisms and conditions is a fruitful way to understand the limitations of this type of internet access in the broader context of compulsory digitality (Kuntsman & Miyake, 2022) in many countries. For the respondents in this study, the conditions and mechanisms of their encounters with smartphones and tablets had implications beyond mere inconvenience or frustration. These experiences were shaping their access to essential welfare payments, jobs, and education. These were members of underserved communities who were already experiencing social and economic marginalisation, which was, arguably, being exacerbated by these very conditions and mechanisms which meant that the technologies were discouraging or refusing a particular outcome. Data from Ofcom in the UK shows that 66% of all smartphone users in the UK reported that completing job and public service application forms and working on documents was more difficult on a smartphone than on a laptop or desktop (Ofcom, 2023). Data from our study reflects this broader trend,

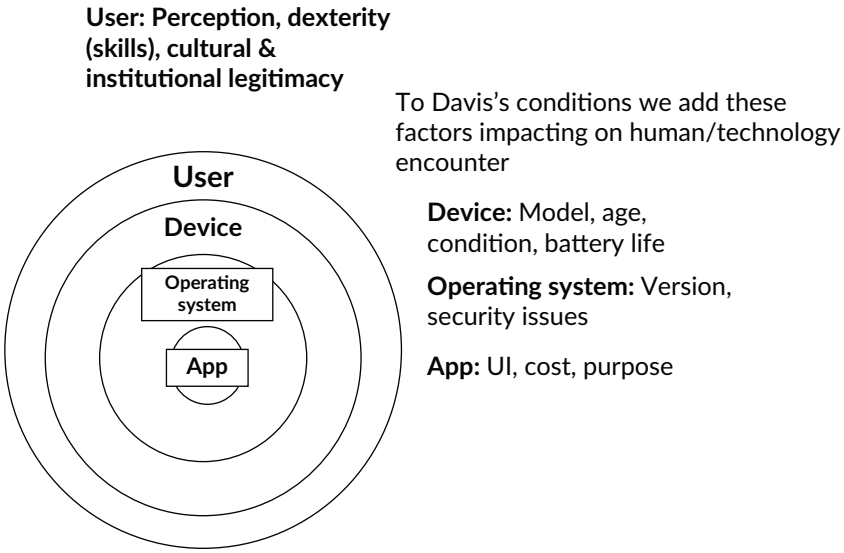

Figure 1. Additional conditions.

with respondents and intermediaries reporting that filling in complex forms, participating in online learning, and uploading CVs are part of the reality of welfare and job-seeking but extremely challenging to perform on a smartphone or tablet. Beyond the empirical value of this work in contributing to the literature on mobile-only internet access (Marler, 2018) digital exclusion and divides, this article shows the value of Davis's affordances framework in adding nuance and depth to our understanding both of digital exclusion and how we might address it. Whilst this is only a limited study carried out during the unusual research conditions of the Covid-19 pandemic, further research which engages directly face-to-face with mobile and tablet-only internet users would be of value to understand their experiences of engaging with essential services.

Funding

As part of the Digital Futures at Work Research Centre, this work was supported by the UK Economic and Social Research Council (Grant No. ES/S012532/1), which is gratefully acknowledged. It was also supported by a grant from the University of Sussex Higher Education Innovation Fund.

Conflict of Interests

The authors declare no conflict of interests.

References

Age UK. (2022). *Vodafone Connected Age: Tablet loan scheme*. https://www.ageuk.org.uk/our-impact/programmes/digital-skills/connected-age

Al-Muwil, A., Weerakkody, V., El-haddadeh, R., & Dwivedi, Y. (2019). Balancing digital-by-default with inclusion: A study of the factors influencing e-inclusion in the UK. *Information Systems Frontiers*, *21*(3), 635–659. https://doi.org/10.1007/s10796-019-09914-0

Alston, P. (2019). *Report of the Special Rapporteur on extreme poverty and human*. United Nations General Assembly. https://undocs.org/A/74/493

Braun, V., & Clarke, V. (2012). *Thematic analysis*. American Psychological Association.

Bucher, T., & Helmond, A. (2018). The affordances of social media platforms. In J. Burgess, A. Marwick, & T. Poell (Eds.), *The SAGE handbook of social media* (pp. 233–254). SAGE.

Campbell, S. W. (2015). Mobile communication and network privatism: A literature review of the implications for diverse, weak, and new ties. *Review of Communication Research*, *3*(1), 1–21. https://doi.org/10.12840/issn.2255-4165.2015.03.01.006

Communications and Digital Committee. (2023). *House of Lords—Digital exclusion: Communications and digital committee*. https://publications.parliament.uk/pa/ld5803/ldselect/ldcomm/219/21902.htm

Correa, T., Pavez, I., & Contreras, J. (2020). Digital inclusion through mobile phones?: A comparison between mobile-only and computer users in internet access, skills and use. *Information, Communication & Society*, *23*(7), 1074–1091.

Couldry, N., & Mejías, U. A. (2019). *The costs of connection: How data is colonizing human life and appropriating it for capitalism*. Stanford University Press.

Curinga, M. X. (2014). Critical analysis of interactive media with software affordances. *First Monday*, *19*. https://doi.org/10.5210/fm.v19i9.4757

Davis, J. L. (2020). *How artifacts afford: The power and politics of everyday things*. The MIT Press.

Department for Digital, Culture, Media & Sport, & Dinenage, C. (2021, February 25). *Free tablets to improve lives of thousands of people with learning disabilities* [Press release]. https://www.gov.uk/government/news/free-tablets-to-improve-lives-of-thousands-of-people-with-learning-disabilities

Díaz Andrade, A., & Techatassanasoontorn, A. A. (2020). Digital enforcement: Rethinking the pursuit of a digitally-enabled society. *Information Systems Journal*, *31*(1), 184–197. https://doi.org/10.1111/isj.12306

DiMaggio, P., Hargittai, E., Celeste, C., & Shafer, S. (2004). From unequal access to differentiated use: A literature review and agenda for research on digital inequality. *Social Inequality*, *1*, 355–400. https://digitalinclusion.typepad.com/digital_inclusion/documentos/revdimaggio.pdf

Evans, S. K., Pearce, K. E., Vitak, J., & Treem, J. W. (2017). Explicating affordances: A conceptual framework for understanding affordances in communication research. *Journal of Computer-Mediated Communication*, *22*(1), 35–52. https://doi.org/10.1111/jcc4.12180

Faith, B. (2018). Maintenance affordances, capabilities and structural inequalities: Mobile phone use by low-income women. *Information Technologies & International Development*, *14*, 66–80. http://itidjournal.org/index.php/itid/article/view/1556

Fernandez, L., Reisdorf, B. C., & Dutton, W. H. (2020). Urban internet myths and realities: A Detroit case study. *Information, Communication & Society*, *23*(13), 1925–1946. https://doi.org/10.1080/1369118X.2019.1622764

Gelles-Watnick, R. (2024). *Americans' use of mobile technology and home broadband*. Pew Research Center. https://www.pewresearch.org/Internet/2024/01/31/americans-use-of-mobile-technology-and-home-broadband

Gibson, J. (1979). The theory of affordances. In *The ecological approach to visual perception* (pp. 67–82). Houghton Mifflin.

Gonzales, A. (2016). The contemporary US digital divide: From initial access to technology maintenance. *Information, Communication & Society*, *19*(2), 234–248.

Hargittai, E. (2003). The digital divide and what to do about it. In D. C. Jones (Ed.), *New economy handbook* (pp. 821–839). Academic Press.

Helsper, E. J. (2012). A corresponding fields model for the links between social and digital exclusion. *Communication Theory*, *22*(4), 403–426.

Hernandez, K., & Faith, B. (2023). Online but still falling behind: Measuring barriers to internet use "after access." *Internet Policy Review*, *12*(2). https://doi.org/10.14763/2023.2.1713

Humphry, J. (2021). Looking for Wi-Fi: Youth homelessness and mobile connectivity in the city. *Information, Communication & Society*, *24*(7), 1009–1023. https://doi.org/10.1080/1369118X.2019.1670227

Kuntsman, A., & Miyake, E. (2022). *Paradoxes of digital disengagement: In search of the opt-out button*. University of Westminster Press. https://doi.org/10.16997/book61

Liberatore, M. J., & Wagner, W. P. (2022). User performance on laptops vs. tablets: An experiment in the field. *Behaviour & Information Technology*, *41*(13), 2878–2886. https://doi.org/10.1080/0144929X.2021.1956589

Liverpool City Region Combined Authority. (2023). *More than 4,500 people are to receive free tablets, connectivity and training to tackle digital exclusion in the Liverpool City Region*. https://www.liverpoolcityregion-ca.gov.uk/news/more-than-4500-people-are-to-receive-free-tablets-connectivity-and-training-to-tackle-digital-exclusion-in-the-liverpool-city-region

Lloyds Bank. (2023). *UK consumer digital index 2023*. https://www.lloydsbank.com/banking-with-us/whats-happening/consumer-digital-index.html

Marler, W. (2018). Mobile phones and inequality: Findings, trends, and future directions. *New Media & Society*, *20*(9), 3498–3520.

McMahon, R., Nazarova, N., & Robinson, L. (2023). Expanding the boundaries of digital inclusion: Perspectives from network peripheries and non-adopters. *Social Inclusion*, *11*(3), 220–224. https://doi.org/10.17645/si.v11i3.7395

Nagy, P., & Neff, G. (2015). Imagined affordance: Reconstructing a keyword for communication theory. *Social Media + Society*, *1*(2). https://doi.org/10.1177/2056305115603385

Napoli, P. M., & Obar, J. A. (2014). The emerging mobile internet underclass: A critique of mobile internet access. *The Information Society*, *30*(5), 323–334. https://doi.org/10.1080/01972243.2014.944726

Newlands, G., & Lutz, C. (2021). Crowdwork and the mobile underclass: Barriers to participation in India and the United States. *New Media & Society*, *23*(6), 1341–1361. https://doi.org/10.1177/1461444820901847

Ofcom. (2023). *Adults' media use and attitudes report 2023*. https://www.ofcom.org.uk/__data/assets/pdf_file/0028/255844/adults-media-use-and-attitudes-report-2023.pdf

Ozok, A. A., Benson, D., Chakraborty, J., & Norcio, A. F. (2008). A comparative study between tablet and laptop PCs: User satisfaction and preferences. *International Journal of Human-Computer Interaction*, *24*(3), 329–352. https://doi.org/10.1080/10447310801920524

Pearce, K. E., & Rice, R. E. (2013). Digital divides from access to activities: Comparing mobile and personal computer internet users. *Journal of Communication*, *63*(4), 721–744.

Pew Research Center. (2021). *Internet/broadband fact sheet*. https://www.pewresearch.org/Internet/fact-sheet/Internet-broadband

Pinch, T. (2009). *Material culture and technology in everyday life: Ethnographic approaches*. Peter Lang.

Ragnedda, M. (2018). Conceptualizing digital capital. *Telematics and Informatics*, *35*(8), 2366–2375. https://doi.org/10.1016/j.tele.2018.10.006

Reisdorf, B. C., Fernandez, L., Hampton, K. N., Shin, I., & Dutton, W. H. (2022). Mobile phones will not eliminate digital and social divides: How variation in internet activities mediates the relationship between type of internet access and local social capital in Detroit. *Social Science Computer Review*, *40*(2), 288–308. https://doi.org/10.1177/0894439320909446

Robinson, L., Schulz, J., Dunn, H. S., Casilli, A. A., Tubaro, P., Carvath, R., Chen, W., Wiest, J. B., Dodel, M., Stern, M. J., Ball, C., Huang, K.-T., Blank, G., Ragnedda, M., Ono, H., Hogan, B., Mesch, G. S., Cotten, S. R., Kretchmer, S. B., . . . Khilnani, A. (2020). Digital inequalities 3.0: Emergent inequalities in the information age. *First Monday*, *25*(7). https://doi.org/10.5210/fm.v25i7.10844

Schrock, A. R. (2015). Communicative affordances of mobile media: Portability, availability, locatability, and multimediality. *International Journal of Communication*, *9*, 1229–1246.

Taylor, L., & Mukiri-Smith, H. (2021). Human rights, technology and poverty. In M. F. Davis, M. Kjaerum, & A. Lyons (Eds.), *Research handbook on human rights and poverty* (pp. 535–549). Edward Elgar.

The GDS Team, & Read, T. (2021, May 20). Government Digital Service: Our strategy for 2021–2024. *Government Digital Service*. https://gds.blog.gov.uk/2021/05/20/government-digital-service-our-strategy-for-2021-2024

Tsetsi, E., & Rains, S. A. (2017). Smartphone internet access and use: Extending the digital divide and usage gap. *Mobile Media & Communication*, *5*(3), 239–255. https://doi.org/10.1177/2050157917708329

Universal Service Administrative Company. (2024). *Affordable Connectivity Program*. https://www.affordableconnectivity.gov

Van Deursen, A. J., & Van Dijk, J. A. (2014). The digital divide shifts to differences in usage. *New Media & Society*, *16*(3), 507–526.

Warschauer, M. (2003). Demystifying the digital divide. *Scientific American*, *289*(2), 42–47.

Willems, W. (2021). Beyond platform-centrism and digital universalism: The relational affordances of mobile social media publics. *Information, Communication & Society*, *24*(12), 1677–1693. https://doi.org/10.1080/1369118X.2020.1718177

Williams, H., Faith, B., & Waldman, L. (2023). Technologies of inclusion and marginalization: Mobile phones

and multiple exclusion homeless women. *Mobile Media & Communication*, *12*(2), 404–423. https://doi.org/10.1177/20501579231211498

Wyche, S., Simiyu, N., & Othieno, M. E. (2018). Understanding women's mobile phone use in rural Kenya: An affordance-based approach. *Mobile Media & Communication*, *7*(1), 94–110. https://doi.org/10.1177/2050157918776684

Yates, S., Carmi, E., Lockley, E., Pawluczuk, A., French, T., & Vincent, S. (2020). Who are the limited users of digital systems and media? An examination of UK evidence. *First Monday*, *25*(7). https://doi.org/10.5210/fm.v25i7.10847

About the Authors

Becky Faith (PhD) is a research fellow of the Digital and Technology cluster at the Institute of Development Studies at the University of Sussex. Becky's professional experience and research interests encompass gender and technology, mobile communication studies, human–computer interaction, and technology for social change. Becky has 15 years of strategic and programme experience working in ICT4D and technology for human rights organisations.

Kevin Hernandez is a researcher based at the Institute of Development Studies at the University of Sussex. He is passionate about dissecting and responding to the societal implications of technology through research and evidence-based policy. His main areas of expertise include digital inclusion, digital inequalities, digital government (e-government), the future of work, and the potential social and development implications of emerging technologies.