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Inequality of what? An intersectional approach to digital inequality under Covid-19

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ABSTRACT

In this paper we ask the question "inequality of what" to examine the multiple inequalities revealed under the covid-19 pandemic. An intersectional perspective is adopted from feminist studies to highlight the intersection and entanglement between digital technology, structural stratifications and the ingrained tendency of 'othering' in societies. As part of a future research agenda, we propose that IS research should move beyond simplistic notions of digital divisions to examine digital technology as implicated in complex and intersectional systems of power, and improve our sensitivity to the positionality of individuals and groups within social orders. Implications for practice and policy are also discussed, including moving beyond single-axis analysis of digital exclusion.

1. Introduction

The covid-19 pandemic has unveiled and thrown a spotlight on deep seated inequalities across different societies, from the most advanced economies to the economically underdeveloped. Under the pandemic, existing socio-technical discrepancies are often magnified, and diverse forms of exclusion, marginalisation and vulnerabilities emerge. Some are more visible than others, but not all of them, the excluded and vulnerable, have a voice. Many of these disparities are mediated through digital technology, partly due to social distancing and lockdowns which replace face to face contacts with digital interactions.

The IS literature has traditionally focused on digital divide, which centres on accessibility, literacy and skills, and adoption of digital technology. In this discourse, individuals are usually conceived as 'users' of technology, and assigned to a specific group category of 'the excluded', such as the elderly, or based on the binary division of 'have' and 'have-nots' (Qureshi, 2014). The notion of digital divide does not account for the multifaceted and compoundness of digital inequality (van Deursen, Helsper, Eynon, & van Dijk, 2017). It has been well recognised that digital exclusion is a complex and dynamic phenomenon that is influenced not just by digital divide by other divisions as well, such as age, gender, and education (van Dijk & Hacker, 2003).

In the paper *Inequality of what? Social exclusion in the e-society as capability deprivation* (Zheng & Walsham, 2008), we argued that social exclusion is multi-dimensional and it is important to examine the heterogeneous spaces of social exclusion - "[i]nclusion in one space can co-exist with exclusion in another space (p. 238)". Furthermore, what needs to be further explored is the intersection and interaction among different types of social division and the implications for our understanding of digital inequality. In this paper, we draw upon the feminist concept of intersectionality (Carastathis, 2014; Crenshaw, 1989) to explore the interconnectivity of

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inequalities.

Originally proposed to expose the marginalisation of black women under both sexism and racism, intersectionality stands against the tendency in critical social theorising to treat individuals in independent categories, or so-called "single-axis" analysis (Crenshaw, 1989). All of us have composite identities that link us to various different social categories or social groups, for example, gender, race, profession, and so on, each of these labels situating us in a certain position of the society with implications of rules, social norms and accessibility to resources.

While Information Systems has a rich literature on the relationship between IT and identity (Carter, 2015; Whitley, Gal, & Kjaergaard, 2014), most of these studies rest at the individual or group level and investigate how IT mediates or shapes identities (Carter, 2015). From an intersectional perspective, subjectivity emerges from differential experience produced by multiple and intersecting power structures (Crenshaw, 1989), and therefore moves beyond a behavioural, individualistic sense of identity to one of 'social positioning' of individuals within social structures (Giddens, 1984), and closer to what Foucault refers to as 'the self' in 'technologies of the self' (Foucault, 1988).

In qualitative IS research, social structures are often descriptively presented as the 'contexts' or case background, while their inherent properties of power relations and associated productive process are usually neglected. In contrast, intersectionality is fundamentally concerned with individual positionality within multiple 'systems of power', and how digital technology might interact with interconnecting power relations in which individuals are embedded.

Intersectionality as a concept and approach has been heavily contested (Warner, Kurtiş, & Adya, 2020) and generated considerable confusion as a 'buzzword' (Davis, 2008). Due to space limitation we are not able to do justice to the discourse especially as it is mostly outside the IS discipline. In this short paper we are using intersectionality with a light touch, i.e. as a sensitising device (Walsham, 1993) to illuminate the multi-dimensionality of digital inequality and the interaction of multiple power systems, not limited to just gender, race and class. We argue that digital inequality operates at the intersection of the multiple fracture lines of differences that mediates the various spaces of inclusion/exclusion.

This short paper will draw mainly upon news reports, NGO documents, and the emerging but limited domain of academic publications on the social impact of covid-19. We will investigate how digital technology is implicated in the differences of wealth, class, gender, age, geography, types of labour, skills and literacy, as well as stigma and discrimination associated with ethnic identities and other identities produced under the pandemic. We are interested in how digital technology manifests, mediates, exacerbates and, sometimes, bridges the multiple spaces of disparity and dominance.

2. The intersectionality of inequalities under Covid-19

In this section we will provide examples of how digital technology is intertwined with various inequalities, including the 'digital divide', work, gender, and racial discrimination, and some of the limitation and consequences of digital adoption.

2.1. Digital divide

Let us start with some basic statistics of digital divides. In 2019, only 53.6% of the global population were online, and in the least developed countries, the number is 19.1% (ITU, 2019). Even in a rich country like the UK, an estimated 5 million people are not connected to the Internet (Allmann, 2020). Although these numbers tell us little about how people are using the Internet in practice, the consequence of basic digital divides in terms of access to technology has become more prominent under the pandemic. For example, the pandemic has caused serious disruption to education. On the one hand, digital education leapfrogged in response to school closures in most countries; on the other, vulnerable students on the wrong side of the digital divide are further disadvantaged, especially those living in poverty and with disabilities (Martinez, 2020). Furthermore, schools often serve as a source of health, nutrition and social support for those from under-privileged socio-economic classes. Even though some countries provided free laptops for disadvantaged students (Whittaker, 2020), these students are exposed to greater vulnerabilities in terms of well-being and mental health (Eyles, Gibbons, & Montebruno, 2020; UNESCO, 2020). In other words, digital exclusion has roots in social inequality, yet digital connectivity is not automatically a remedy for the social disease.

Social exclusion could also be exacerbated by the digital track and trace systems intended to control the spread of covid-19. Such systems usually require a smart phone with GPS functionalities. In China, individuals have to show a digital health code (in green, orange and red colours) before they are allowed to board public transport or access venues. To have a valid health code, one has to self-report their health status on the system on a daily basis. The tracking systems were location-based which means one had to switch between different systems when crossing geographical boundaries, at least in the earlier stages of the system rollout. Thus to enjoy mobility and equal treatment as a citizen, one needs to possess a smart phone and a certain level of digital skills to negotiate with often arbitrary tracking systems prone to breakdown and human interference. In practice, this excluded the already disadvantaged social groups (Wang, 2020), e.g. some elderly people and low-income population who may not own a smart phone or know how to navigate the diverse and evolving tracking systems. There are often cases of people being rejected to get on a train or even enter a building due to the failure to produce the green code (Wu, 2020), unless special measures are taken to provide a parallel paper-based system.

2.2. Digital work, precarity and marginality

The pandemic illuminates and magnifies existing structural inequalities such as class and ethnicity. For example, in the UK, mortality rate is higher in the population with black and Asian origins than any other ethnic group (Campbell & Siddique, 2020), and

among people living in deprived areas than in less deprived areas (PHE, 2020). This disparity of mortality across ethnic and socio-economic lines is also intersecting with the division between *digital workers* adopting online remote work mode, and those who rely on physical labour and face to face interactions. Sadly, the key workers sustaining the essential services and the basic functioning of a society are often those in the second category, receiving a minimum wage while being exposed to a higher risk, e.g. workers in a supermarket, bus drivers, or garbage collection workers.

Furthermore, rural migrant workers in the Global South were suddenly deprived of their livelihood under covid-19, most of whom worked in temporal and casual employment without a safety net. The International Labour Organisation estimates that almost 1.6 billion informal economy workers have been significantly impacted by lockdown measures and/or working in the hardest-hit sectors, and geographically, Africa and Latin America probably witnessed the largest decline of jobs (ILO Monitor, 2020). Both India and China witnessed tens of millions of rural migrant workers 'abandoned' to their own devices with numerous jobs evaporating under the economic impact of the pandemic (Bhowmick, 2020; FAO, 2020; Feng & Cheng, 2020).

Among digital workers there is also a stratification in terms of skills and job security. Platform gig workers were also among the worst hit by the pandemic, with almost 70% losing their income, over half losing their jobs and more than a quarter seeing their hours cut (Moulds, 2020). Location-based gig work, such as deliveries, is mediated through digital platforms, managed by algorithm and devices, yet does not withstand the health risks under the pandemic. While gig work offers flexibility, the lack of unemployment benefits and sick pay entail significant vulnerabilities for workers (Yerby & Page-Tickell, 2020). A few regions, such as California in the US and France, had enforced employee status for platform workers (Niblett, 2020). However, only 5 out of 120 platform companies introduced some form of coronavirus financial assistance (Yerby & Page-Tickell, 2020). In the Global South, gig workers have received hardly any financial support from either governments or platform companies, and were often even excluded from the benefits offered by global platform companies (Osborn, 2020).

In other words, the multiple levels of division between and within digitalised and non-digitalised work under covid-19 are associated with deeper ruptures of class and economic inequality as well as the uneven distribution of resources across geographical boundaries around the globe and within nations. While remote working may be a readily available option for digital workers during a public health crisis, the much celebrated 'flexibility' and 'autonomy' in the platform-based gig economy could be terribly fragile under severe disruptions in the market and economy. How to develop digital resilience, not just at an individual level (Masten & Reed, 2002; UKCIS, 2019) but also at community and systems level (Heeks & Ospina, 2019; Walker, Holling, Carpenter, & Kinzig, 2004) are therefore an important topic to explore.

2.3. Visible and invisible gender inequality

That digital inequality is gendered is no news. All over the world, more men than women use the Internet, and the gap is much larger in the least developed countries (ITU, 2019). In low- and middle-income countries, women's mobile phone ownership is 10% lower than men, and 300 million fewer women use mobile internet across the globe (GSMA, 2020). This digital gap has further undermined women's capability to adapt to adversity under the pandemic, both in terms of work and household labour.

Women carry out most of the 'invisible work' (Danielsson & Eriksson, 2020; Hatton, 2017) in the household and are subjected to greater risks as a result of the pandemic. Based on data from 104 countries, 67% of health workers are women (Boniol et al., 2019) therefore particularly suffering from extended work hours and stress. In most societies, women bear greater responsibility than men in taking care of the family and household during the pandemic, e.g. extra housework, home schooling, caring for the elderly and the ill, which are often economically devalued and taken-for-granted, and further undermine women's economic activities and earnings (Wenham, Smith, & Morgan, 2020).

However, it should be noted that the experiences of women are divergent depending on their different socio-economic status and social and cultural norms to which they are subjected. Women in disadvantaged groups often carry the double burden of wage-earning and caring for family members, yet they are also more likely to have lower digital capacity and access to find relevant information about the pandemic, to support home schooling for their children, or even to fill in online application forms for economic relief (Razzaq, 2020).

Further 'invisible' gender inequality is reflected in the 'male gaze' from digital surveillance. It has been noted that under the health tracking systems in China, personal information is sometimes revealed to the public (Sun, 2020). Yu (2020) discusses in this context a case of cluster outbreak in northern China. The identity of a young woman was revealed in media reports and her private information further exposed by netizens through 'cyber manhunt', because a speculative affair between her and a neighbour was suspected to have triggered the spread of the virus. In this imaginary 'love story', she was described as 'pretty', 'unemployed', but 'rich', and accused of cheating on her boyfriend with the neighbour. The neighbour was later revealed to be also a woman, at which point the plot turned into a lesbian relationship. In fact, the two did not even know each other and the transmission of virus was likely to have occurred in an elevator. Thus even with an assumption that the system was not designed to discriminate, gendered discourses, social norms, and power structures that value monitoring and control over individual integrity and wellbeing, are inevitably entangled in the enactment of surveillance systems, and in this case, interact with intersectional identities to produce oppressive social consequence.

2.4. Racial discrimination and cyberbullying

The covid-19 pandemic has generated a surge of racial discrimination of Asian and people of Asian descent. As early as February when there were only 4 confirmed cases in the UK, the Chinese community already reported a 'shocking level of racism' consisting of verbal and physical harassment and abuse (Campbell, 2020), and the trend continued to grow with numerous incidents emerging

worldwide (HRW, 2020). According to an organisation focusing on combating online toxicity to protect children, there was a 900% increase of hate speech on Twitter directed towards China and the Chinese, and 200% increase in traffic to hate sites and specific posts against Asians (L1ght, 2020).

Meanwhile, within China, people from the city of Wuhan or other places in Hubei province were also shunned and sometimes discriminated against by fellow countrymen and women (Li, 2020). Furthermore, foreigners of African origins living in Guangzhou were suddenly barred from entering hotels, restaurants and shops, some even unable to find accommodation. Some were forced to go into quarantine by the authority despite repeatedly being tested negative (Burke, Akinwotu, & Kuo, 2020). Such discrimination was not shared by white people who are also foreign residents in China, indicating an order of power disguised by the fear of the virus.

While the previous sections illuminate how digital inequality intersects and exacerbates existing structural inequalities, the viral spread of racial discrimination and cyberbullying reminds us that digital technology can also reinforce our self-referential perspectives, enact and amplify what Buddhism refers to as three poisons, or toxicities, that inflict the human mind (greed, ignorance and hatred), energising the tendencies of 'othering' and xenophobia in all societies.

3. Discussion and a research agenda

In this paper we have introduced the concept of intersectionality as a sensitising device to unpack the complexity and multiplicity of digital inequality under covid-19. Even though we do not have the space to provide a more sophisticated account of digital technology in terms of its heterogeneity, malleability, and processes of socialising affordances (Zheng & Yu, 2016), we have covered a wide range of digital technologies in a variety of forms, e.g. digital education devices, digital labour platforms, track and trace systems, and social media. These pluralistic technologies offer heterogeneous affordances under the pandemic, but the affordances are socialised and experienced differently by individuals and groups depending on their social positions in existing power structures, and produce inequitable and sometimes unjust social outcomes.

So what do we talk about when we talk about digital inequality? Our argument is that digital divide is only the starting point of discussion. While the provision of infrastructure and digital connectivity is important, digital inequality is an intersectional problem. The notion of intersectionality sensitises us towards the multiplicity and interactivity of systematic social inequalities, and directs us to situate individual experience within networks of power relations (Collins & Bilge, 2016). Most importantly, intersectionality resists the tendency of attaching to essentialist identity categories, and seeks to understand the complexity of individual vulnerability shaped by relative positionality within interlocking social structures.

In most of the examples mentioned above, inequality occurs not along one singular division. Instead we can see multiple fracture lines and differences within the same categories. For example, while most women share the common burden of 'invisible work' in the household, those of lower economic status are likely to be more vulnerable during lockdown and economic recession. The disparity between Global North and Global South is always present, though often neglected, within digital inequality in relation to gender, class, and type of work. The same ethnic group could be both the recipient and perpetrator of racial discrimination depending on their relative position in the order of power.

What can we learn from the intersectional approach to carry out research on digital inequality? It sensitises digital researchers to incorporate in their analysis the social positioning of actors within multiple hegemonies, hierarchies and systems of power, and to problematise taken-for-granted boundaries in designing our research questions and research approach. As a proposal, we would like to suggest the following as part of a future research agenda.

Firstly, *digital inequality rather than divide*. The research on digital inequality should move beyond a simplistic notion of digital divide focusing on the accessibility and usage of technology within particular categories of the population. While it is helpful to map out the obvious, most visible divides, as we also did in this paper, it is important to note that digital inequality is closely entangled with the positionality of individuals within multiple systems of power. For example, the resent surge of research on the gig economy have been largely concerned with the exploitation and precarity of gig workers, yet often ignored the fact that marginalised subjects like women and minorities have long been undertaking precarious and insecure work in history (Gregg & Andrijasevic, 2019; Huws, 2019). More than 60% of the world's employed population work in the informal economy (ILO, 2018), and socially marginalised groups can be further marginalised under the regime of platform economy (Hunt & Samman, 2019). An intersectional approach would make visible the inequalities among gig workers.

Secondly, *actors rather than users*. IS researchers should enrich our understanding of human actors to be more complex than simply 'users' who interact with artefacts with 'social purposes' in certain organisational roles. The intersectionality perspective sensitises us towards the hybridity of identities and positionality (Anthias, 2002, 2008) of individuals. Extending from intersectionality, positionality also implies a sensitivity to subjectivity, spatiality (Massey, 1993; Jiménez & Zheng, forthcoming) and temporality (Wu & Zheng, 2020), which deepen the situatedness of digital research within the multiple layers of power structures in social reality and the understanding of the subjects. Furthermore, treating individuals as social actors rather than just 'users' also means expanding our attention to subjectivities, and embodied, discursive, and material experience (Dale, 2005) of individuals and consider their vulnerabilities, agency and resilience when addressing the issue of digital inequality.

Thirdly, *positioning rather than contextualising*. In the literature of ICT for Development, more attention is paid to socio-economic conditions and local cultures, yet these are often treated as 'contexts' and therefore external to the issue of technological adoption. They are usually presented as case background and not part of the analysis. We suggest that 'contexts', as in properties of social structures and categories of social identity, e.g. gender, class, ethnicity, education, geography and so on, are integral parts of individual identities implicated in their level of agency and wellbeing. An intersectional perspective not only sensitises us to positionalities, spaces and boundaries, but more importantly how they intersect and manifest differently in producing inequalities.

4. Concluding remarks

In this paper we try to show that digital inequalities do not operate along independent axes of division, but often overlap, interlink and interact; hence the intersectionality of dominance and vulnerability. Extending from our 2008 paper, we argue that inequality and social exclusion are relational and occur along multiple fracture lines which differentiate people's spaces of opportunities, well-being and level of agency. The pandemic may bring out new instantiations and shed light on what was less visible before, but the roots of inequalities are deeply entrenched in systems of power and social orders. As information systems researchers it is important for us to not only see digital technology as 'solutions' and 'innovations', but also how it is intertwined and implicated in producing and reproducing social orders and stratifications.

What implications for practice and policy can be derived from this discussion on digital inequality?

Firstly, dominant public discourse on digital inclusion still very much centres on the traditional notion of 'digital divide'. In the Global North, this is reflected in the narrow focus on digital literacy, usually related to providing training to the elderly or the unemployed. In the Global South, policies and development initiatives often emphasise the provision of digital devices and digital infrastructure to the poor and disadvantaged. While these issues continue to the important, such policy interventions are still based on the simplistic notion of single categories and divisions, the 'have and have-not', the 'can and cannot'. Such an approach tends to ignore the complexity, multitude and intersectionality of digital inequalities.

Thus policy makers should move beyond the 'single axis' analysis (Crenshaw, 1989). Technology designers and providers need to see the subjectivity of human beings behind the label of 'users' and consider how gender, race, class, and other structural constraints individuals may face which condition their space of opportunities and capabilities, and thus how digital technology may impact their lives. For example, lack of social capital and support may hinder working class women, or migrants and refugees, in using smart phones to find better job opportunities or claim social welfare. Bridging digital inequality thus requires not only technologies and skill training, but more importantly associative interventions and supportive networks that address some of the underlying vulnerabilities of disadvantaged groups.

Thus, if digital inequality is rooted in structural inequalities in society, it is important not to let the overemphasis on 'digital solutions' disguise or divert from the more fundamental and deep-seated issues of segregation, division and hegemony. This paper only scratches the surface of some of these issues, and abundant research has shown that digital technologies do not necessarily resolve social stratification, but also often exacerbate them. When policy makers and civil organisations think about digital technology as an innovation or solution, it is important to be mindful that 'empowerment' in one space is often simultaneously accompanied by 'disempowerment' in another (Pandey & Zheng, 2019), and that measures need to be taken to minimise potential negative consequences, for example, exploitation, precarity, surveillance, alienation, discrimination, algorithmic bias, and so on.

In short, it is likely that digital technology will play an even more important role in shaping the post-pandemic world. It is critical to keep asking whether digital technology makes a better world (Walsham, 2012).

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