A QUALITATIVE STUDY ON THE PERCEIVED DRIVERS OF THE DIGITAL DIVIDE IN A DEVELOPING COUNTRY

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ABSTRACT

The study aimed to assess the perceived drivers of the digital divide in developing countries. In-depth interviews were collected with the public members to understand their perceptions and drivers of the digital divide. A total of 12 qualitative in-depth interviews were conducted for the study. The participants believed that the internet and data costs were exorbitant and made it difficult for those living below the poverty line to afford data. The participant also highlighted the infrastructure challenges, such as spectrum availability and load shedding, as potentially driving the digital divide. Most participants believed that the digital divide challenges are deeply embedded in the societal and economic challenges that continue to affect the country. Although studies support that the access divide has been bridged in other countries, in South Africa, access issues continue to be challenging and are driven by the above factors. The study provided some insights into digital divide perceptions.

KEYWORDS

Drivers of the Digital Divide, Internet Access, Developing Country, Qualitative Study

1. INTRODUCTION

The divide can be broadly defined as a gap between the haves and have concerning access to information and communication technologies. Over the years and most recently in the last two years, the digital divide issue was spotlighted. The past two years (2019-2022) have been characterised by remote working and online education. During the hard lockdowns, there were a lot of physical restraints on movement, resulting in most learning and working activities taking place online. This meant that individuals needed resources such as mobile phones, computers and internet access to continue with year work and school activities. This study aimed to assess the perceptions and drivers of the digital divide. The literature on the digital divide tended to use secondary data from the world bank, International Telecommunication Union (ITU) and OECD (ITU, 2019; OECD, 2001). Most of the studies also employed quantitative means using web-based surveys to collect data associated with the digital divide (Cruz-Jesus et al., 2012). A few studies have explored the digital divide with an interpretivism methodological orientation (Mumporeze & Prieler, 2017). The qualitative study aimed to assess the perceived drivers of the digital divide in a developing country. In particular, the following research questions informed the study:

- What are the perceptions of the digital divide?
- What are the drivers of the digital divide?

2. LITERATURE REVIEW

2.1.1 Levels of the Digital Divide

Literature on the digital divide broadly distinguishes between the three levels of the digital divide (Van Deursen & van Dijk, 2019). The first level is concerned with access (Van Deursen & van Dijk, 2019), the second level emphasises skills and usage (Hargittai, 2002), and the third level of the digital divide is based on the tangible outcomes associated with being online (Van Deursen & Helsper, 2015). Internet penetration and access are

high in developing countries compared to developing countries. In some developing countries, mobile devices are shared within households (Burrell, 2010), and there exist disparities concerning the internet and mobile phone access (Blumenstock, 2012).

Earlier work on the digital divide focused on the first level of the digital divide, or what others call the first level digital divide, which was more prevalent from 2000-to 2010. The first level of the digital divide focused on the schism between the have and have regarding mobile device ownership and internet access. The first level of the digital divide is also known as the access divide. The literature research from 2010 to date has shifted slightly to focus on usage and skills or the second-level digital divide (Haight et al., 2014; Helsper & Van Deursen, 2015). From 2015 onwards, the literature has progressed to focus on the third-level digital divide (Helsper et al., 2016; Van Deursen et al., 2014). The third level of the digital divide is characterised by the tangible outcomes associated with being online.

2.1.2 Drivers of the Digital Divide

The literature distinguishes between the micro and macro drivers of the digital divide. These will be discussed briefly. The micro drivers include social, economic, income, social status, age, gender, and ethnicity. Age is one of the widely measured drivers of research on the digital divide. Several studies have examined differences between age and the digital divide. Van Deursen and van Dijk (2019) found that younger people between 18 and 36 were more likely to use tablets than older people between 36 and 65. Some studies suggest that women are more likely to be digitally underdeveloped and thus less likely to access and use ITC products (Kalmus et al., 2013; Mesch et al., 2013) than their male counterparts. A study conducted in Latin America has further exacerbated disparities in the internet usage of women compared to men (Gray et al., 2017). Ethnic minority groups are less likely to access and use the Internet (Mesch & Talmud, 2011). Research suggests that the levels of education are associated with more significant internet usage (Szeles, 2018).

In addition to the personal or individual drivers of the digital divide, there are country-level macro drivers linked to the infrastructure, economy, GDP, poverty and policies (Shenglin, Simonelli, Ruidong, Bosc, & Wenwei, 2017; Ben, Bosc, Jiao, Li, Simonelli, & Zhang, 2017). Some of the infrastructure challenges, such as electricity, play a pivotal role in driving the digital divide. Against this context, the study aimed to understand the drivers of the digital divide.

3. METHODS

The study employed an interpretive approach through qualitative interviews. Data were collected using in-depth interviews with the public members to understand their perceptions of the digital divide. A non-probability sampling using a purposive sampling frame was adopted in the study. The research followed an inductive method, allowing for the emergence of themes from the data (Fereday & Muir-Cochrane, 2006). A six-step thematic analysis approach by Braun and Clarke (2012) was adopted, and the following steps were followed: familiarising with the data *(1)*, which involved reading the transcripts. The second stage was the generation of the initial codes from the data *(2)*, followed by searching for the potential themes based on the initial codes developed (3). The initial themes were reviewed *(4)* and then defined *(5)*, and an analysis report was produced *(6)*.

The study received ethical clearance from the University of the Witwatersrand Human Ethics Committee (Non-Medical). In addition to the ethics approval, the study followed the ethical principles applicable in qualitative studies or research involving human subjects. Informed consent was obtained from the participants. Pseudo-names were used instead of their real names to protect the real identity of the participants.

A total of 12 interviews were conducted with individuals between the ages of 18-45 years. There was an equal split of gender; six participants were female, and another six were male. All the interviews were conducted between the period of November to December 2022. Data saturation was reached in the 12 interviews (Fusch & Ness, 2015). All the interviews were conducted in English and transcribed verbatim.

The following themes emerged from the data: *The perceptions of the digital divide, Infrastructure challenges, Data costs and affordability, The lack of digital literacy skills, and Poverty levels*

3.1.1 The Perceptions of the Digital Divide

The participants have expressed different views on what informs the digital divide. Their views and understanding were centred on internet access. Across the board, the participants believe that the digital divide is the gap between those with access to the internet, mobile phones, or computers.

"*My understanding of the digital divide is around the accessibility to a digital environment, so it speaks to the infrastructure of the digital to which you so, for instance, if we look at something like data, is data easily available to you in terms of affordability and the infrastructure giving the data itself? So, if we look at fibre, do you have easy access to fibre" -* ***Participant 3***

3.1.2 Infrastructure Challenges

Across the board, the participants have expressed the infrastructure issue as one of the key drivers of the digital divide. They believe that infrastructure plays a crucial role in enabling internet access and is one of the leading causes of the digital divide. The infrastructure issue further perpetuates the divide. The participants have also mentioned that although one can have or own a mobile phone, without the necessary infrastructure, they may not be able to access the internet. The issue of infrastructure enabling internet access is a challenge in the country.

"If you think about someone who has a cell phone but does not have access to the internet, if I stay in sixth -a pack, for example, didn't you know the western part of South Africa not only infrastructure challenge but also. Therefore, the ability to fight that's daily also a challenge – ***Participant 2***

3.1.3 Data Costs and Affordability

Second to the issue of infrastructure was the issue of affordability. Most participants believed that the cost of data to access the internet is one of the factors driving the digital divide; they have expressed that most people cannot afford to buy data due to the high data costs. In contrast, those on contract may be able to get data at a cheaper rate. Most individuals cannot afford contracts and use prepaid; purchasing data or internet on prepaid can be hefty. The participants seem to agree that the issue of affordability is fundamental in the debate on the digital divide. They believed that the higher cost of the data plays a critical role in enabling internet access, which results in fewer people being able to afford the data. Most people are unemployed, and therefore, the affordability of data is an issue.

"And then some of the key so many some of the communities, first, data is costly. I mean, it's expensive, and the gadget, you know, is costly, and the government of ours is trying to rid some of them have some intervention, you know, try to have. - ***Participant 12***

3.1.4 Lack of Digital Literacy Skills

Some participants believed that literacy levels could potentially drive the digital divide. They have argued that some people do not have the digital literacy skills to participate online. Even though they may have access to fancy devices and the internet, most people may not be able to know what benefits are associated with being online and having a mobile phone due to their level of digital literacy. Therefore, the lack of digital literacy plays a significant role in perpetuating the digital divide.

" So even when someone might have a cell phone, they might not be able or allowed to use it instead to receive calls and make calls. And so many people are not trained enough to use these gadgets. – ***Participant 2***

3.1.5 Poverty and Inequality

Some participants believed poverty and inequality are crucial in driving this country's digital divide. The levels of poverty and inequality are high, impacting some of the issues highlighted above. Because people are poor, they cannot afford data to access the internet. The participants have expressed that in the current times, most people need the internet to access everything, search for jobs and education and communicate via social media. Therefore, those without any means must debate between buying food or the internet.

"If you look at the huge inequalities of this country where you know, people are living below, you know, one day. And so, people must constantly choose between buying food and having access to some, you know, but because people are unemployed, they don't have the resources to buy a cell phone or a laptop. So that creates that space and that gap within our society "– ***participant 2***

4. CONCLUSION

The study sought to understand the perceptions and drivers of the digital divide. Over the years, the digital divide has declined in developed countries due to the availability of infrastructure and increased levels in the number of individuals with internet access (Myovella, Karacuka & Haucap, 2021). The first level of the digital divide, concerned with access, has not been entirely reduced in developing countries. However, many countries have shown some increase in the number of people accessing the internet (Haight, 2014; Várallyai, 2015). Some significant issues still impede individuals from accessing the internet in developing countries. The current study explored the perceptions and drivers of the digital divide in a developing country. The study findings have shown that participants have different perceptions and understanding of the digital divide. This is consistent with previous literature on the variations in understanding what informs the digital divide (Srinuan & Bohlin, 2011). The lack of a consensus and clear understanding of the digital divide creates challenges for digital inclusion.

The study has identified four possible factors that drive the digital divide: namely, infrastructure, data costs and affordability, lack of digital literacy skills, literacy levels, and Poverty and inequality. This is consistent with other findings from other countries. All 12 participants in the study highlighted the issue of affordability as one of the key drivers of the digital divide. In most developing countries, the availability of infrastructure and spectrum remains the biggest challenge. People in rural communities have network challenges which impact internet access. The affordability issue as a driver of the digital divide is consistent with a study conducted in Nigeria by Tayo et al. (2016) and other studies (Drake, 2019; Velaga, 2012). The availability of infrastructure is necessary and crucial in enabling digital inclusion in developing countries. The participants highlighted that the lack of digital literacy could drive the digital divide. Digital literacy includes the cognitive and emotional ability to use the internet and operate a digital device (Reddy, Sharma, & Chaudhary, 2020). The lack of digital skills plays a significant role in digital inclusion (Martínez-Cantos, 2017;). Individuals who lack digital skills are limited in what they can do on the internet and how they can use their devices optimally. Most people are not digitally literate, making it difficult for them to effectively utilise the internet and thus further exacerbating the digital divide (Nishijima et al., 2017). A link between literacy levels and the digital divide has been established in the literature (Correa et al., 2020; Ferro et al., 2011).

In addition to the three factors mentioned above, the participants also highlighted the levels of poverty and inequality as contributing to the digital divide. Weiss et al. (2015) found a link between income inequality and the digital divide. The participants also highlighted the plight of poverty as a potential driver of the digital divide. Internet access can assist in tackling poverty in developing counties (Mora-Rivera & García-Mora, 2021). The levels of poverty play a significant role in perpetuating the digital divide in developing countries (Henry, 2019; Mecinas Montiel, 2016). Reducing the data costs and enabling the availability of infrastructure to facilitate internet resources in rural areas can assist in bridging the digital divide. There is also a greater need for integrating digital literacy programmes into traditional basic education to equip learners with the necessary digital skills at an early age needed to compete in the digital world. Unless the poverty and inequality levels are addressed, some of the socioeconomic issues associated with the digital divide will continue to perpetuate in developing countries. There is a greater need for free access to the internet to enable digital inclusion and facilitate access for all. Internet access is fast becoming a need; without internet access, people cannot socialise, communicate, transact, or access education. Therefore, the government in developing countries needs to consider freeing internet access for all to benefit.

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REFERENCES

Ben, S., Bosc, R., Jiao, J., Li, W., Simonelli, F., & Zhang, R. (2017). Digital infrastructure: overcoming the Digital divide in China and the European Union. *Centre for European Policy Studies*.

Blumenstock, J.E. and Eagle, N., (2012). Divided, we call disparities in access and use of mobile phones in Rwanda. Information Technologies & International Development, 8(2), pp. pp-1.

Braun, V. and Clarke, V., 2012. Thematic analysis. American Psychological Association.

Burrell, J., 2010. Evaluating Shared Access: social equality and the circulation of mobile phones in rural Uganda. Journal of computer-mediated communication, 15(2), pp.230-250.

Correa, T., Pavez, I. and 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), pp.1074-1091.

Cruz-Jesus, F., Oliveira, T. and Bacao, F., (2012). Digital divide across the European Union. *Information & Management*, *49*(6), pp.278-291.

Drake, C., Zhang, Y., Chaiyachati, K.H. and Polsky, D., (2019). An observational study of the limitations of poor broadband internet access for telemedicine in rural America. *Annals of internal medicine*, *171*(5), pp.382-384.

Fereday, J. and Muir-Cochrane, E., (2006). Demonstrating rigour using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. International journal of qualitative methods, 5(1), pp.80-92.

Ferro, E., Helbig, N.C. and Gil-Garcia, J.R., (2011). The role of IT literacy in defining digital divide policy needs. *Government Information Quarterly*, *28*(1), pp.3-10.

Fusch, P.I. and Ness, L.R., (2015). Are we there yet? Data saturation in qualitative research. *The qualitative report*, *20*(9), p.1408.

Haight, M., Quan-Haase, A. and Corbett, B.A., (2014). Revisiting the digital divide in Canada: The impact of demographic factors on access to the internet, level of online activity, and social networking site usage. *Information, Communication & Society*, *17*(4), pp.503-519.

Hargittai, E. (2002). Second-level digital divide: Differences in people's online skills. First monday, 7(4).

Henry, L. (2019). Bridging the urban-rural digital divide and mobilizing technology for poverty eradication: challenges and gaps. *GSM Association. URL: https://www. un. org/development/desa/dspd/wp-content/uploads/sites/22/2019/03/Henry-Bridging-the-Digital-Divide-2019. pdf [accessed 2021-12-19]*.

Helsper, E.J. and Van Deursen, A.J.A.M., (2015). Digital skills in Europe: Research and policy. *Digital divides: The new challenges and opportunities of e-inclusion*, *195*, p.125.

Helsper, E.J., Van Deursen, A.J.A.M. and Eynon, R., (2016). Measuring types of Internet use. *From digital skills to tangible outcomes project report*.

ITU. (2019). ITU Core Indicators on access to and use of ICT by households and individuals.

Mora-Rivera, J. and García-Mora, F., (2021). Internet access and poverty reduction: Evidence from rural and urban Mexico. *Telecommunications Policy*, *45*(2), p.102076.

Mumporeze, N. and Prieler, M., (2017). Gender digital divide in Rwanda: A qualitative analysis of socioeconomic factors. Telematics and Informatics, 34(7), pp.1285-1293.

Myovella, G., Karacuka, M., & Haucap, J. (2021). Determinants of digitalization and digital divide in Sub-Saharan African economies: A spatial Durbin analysis. Telecommunications Policy, 45(10), 102224.

Nishijima, M., Ivanauskas, T.M. and Sarti, F.M., (2017). Evolution and determinants of digital divide in Brazil (2005–2013). *Telecommunications policy*, *41*(1), pp.12-24.

Organisation for Economic Co-operation and Development, (2011). OECD guide to measuring the information society 2011. OECD.

Reddy, P., Sharma, B., & Chaudhary, K. (2020). Digital literacy: A review of the literature. International Journal of Technoethics (IJT), 11(2), 65-94.

Shenglin, B., Simonelli, F., Ruidong, Z., Bosc, R., & Wenwei, L. (2017). Digital infrastructure: Overcoming the digital divide in emerging economies. G20 Insights, 3, 1-36.

Tayo, O., Thompson, R. and Thompson, E., (2016). Impact of the digital divide on computer use and internet access on the poor in Nigeria. Journal of Education and Learning, 5(1), pp.1-6.

Van Deursen, A.J., Helsper, E.J. and Eynon, R., (2014). Measuring digital skills. From digital skills to tangible outcomes project report.

Van Deursen, A.J. and Helsper, E.J., (2015). The third-level digital divide: Who benefits most from being online?. In *Communication and information technologies annual*. Emerald Group Publishing Limited.

Weiss, J.W., Gulati, G.J., Yates, D.J. and Yates, L.E., (2015), January. Mobile broadband affordability and the global digital divide--an information ethics perspective. In *2015 48th Hawaii International Conference on System Sciences* (pp. 2177-2186). IEEE.