

## EDITORIAL

### Overcoming Technological Determinism in Understanding the Digital Divide: Where Do We Go From Here?

Sajda Qureshi\*  
*Editor-in-chief*

The plethora of research on the digital divide has illustrated that in essence the gap between digital “haves” and “have-nots” is a complex phenomenon with local and global characteristics (Barzilai-Nahon, 2006; van Dijk, 2006; Servon, 2008; Warschauer, 2003 are some sources). It appears that the digital divides may not be associated with economic and social well-being as hoped for by governments and international agencies. A study by the *Economist* (2011) found that Africa is now one of the world’s fastest-growing regions with 6 of the world’s 10 fastest-growing economies in sub-Saharan Africa. For example, Uganda’s GDP growth rate, one of the highest in sub-Saharan Africa, has fluctuated between 6.6% in 2011, 3.4% in 2012, around 6% in 2013 and 6.9% in the first quarter of 2014 (World Bank World Development Indicators, 2014). Yet the digital divides remain active in Uganda, with 45.9% of the population with mobile cellular subscriptions and 14.7% using the internet (International Telecommunications Union, 2012). This is largely due to deep divides between those who have resources, skills and education to reap the benefits of the information technologies and those who do not (May, Waema, & Bjastad, 2014; Servon, 2008; Warschauer, 2003). Given equal access to the technology, digital literacy sets apart those who are able to reap the benefits of the technology and those who are not. The divide between digital literacy exacerbates the inequalities caused by the information technologies, according to van Dijk (2006). He suggests that not only are the relative differences between social categories, that were already unequal in terms of “old” types of resources and capital, are amplified by the use of digital media, but the control of positions in an increasingly global, complex society and the possession of information and strategic skills to acquire and maintain these positions is increasingly unequally divided. In this way, he adds that digital media usage contributes to new types of absolute and relative inequality that add to or reinforce existing inequalities (van Dijk, 2006, p. 231).

While the poorest societies face fundamental problems of basic survival and multiple difficulties with nutrition, literacy and health, Norris (2003) suggests that perhaps, “in order to rise above the minimum economic threshold. access to information technologies has become important for integration into the global economy” (p. 40), May et al. (2014) identify overcoming *digital poverty* is an important step towards economic and social well-being. By providing access to information and communication technologies (ICTs), skills and adequate information about the usefulness of ICTs, people are able to “learn of new production strategies, access market information and resources by keeping in contact with peers and associates” (May et al., 2014, p. 18). The innovative applications of ICTs do lead to improvements in people’s lives. For example, Kenya has at this time the largest number of users of mobile payment

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\*Corresponding author. Email: [squireshi@unomaha.edu](mailto:squireshi@unomaha.edu)

systems, namely M-Pesa, and is spurring economic and social development in its economy as increasing numbers of people are able to make payments and save money without the need for bank accounts, thereby increasing their participation in economic life. The *Economist* reported that in rural Kenyan households that adopted M-Pesa, incomes increased by 5–30% and that the availability of reliable mobile-payments platform has spawned many new businesses in the city (*Economist*, 2013). Yet, studies, such as those in this issue, have shown that in some cases the digital divide remains largely unchanged in some parts of the world.

The term, digital divide first appeared in a series of reports by the National Telecommunications and Information Administration (NTIA, 1995) that identified the gap between people who had access to telephones and those who did not. Subsequent reports identified gaps between those who had access to telecommunications and information technology infrastructures (NTIA, 1999). Thus began the focus on the technology and infrastructure deemed necessary for “individuals’ economic and social well-being [which] increasingly depends on their ability to access, accumulate, and assimilate information” (NTIA, 1995, p. 1). By connecting the information “have-nots” such as the rural poor and inner city minorities with telecommunications infrastructure, policy-makers argued for information access for the general public through the public schools, libraries and “community access centers.” Such policies to address the digital divide have been transported through international agencies, governmental and non-governmental organizations, to emerging and developing countries. The technological deterministic assumption that, increased access to and use of information technology and network infrastructures would somehow lead to economic and social development, is still being tested to this day.

By using five groups of variables for digital development, economic, infrastructure, demographic and risk, the first paper in this issue investigates how the global digital divide is changing. Entitled “The changing – and unchanging – face of the digital divide: An application of Kohonen self-organizing maps,” it is co-authored by Maria Skaletsky, Olumayokun Soremekun and Robert D. Galliers. The goal of their study is to trace the evolution of the digital divide, with a view to understanding whether and how the divide is widening or closing. In doing so, the authors begin to identify implications and further research moving forward. They make use of longitudinal data over a period of nine years (1999–2007) and employ the Kohonen self-organizing maps approach to show how the global digital divide has changed. This exploratory approach allows for clear visualization and interpretations of country’s positions on the map and illustrates any changes that may have occurred over a given time period. They identify five clusters of countries, based on their digital development; economical; demographic and risk indicators. Their results indicate that a number of Eastern European countries such as Slovakia and Lithuania have made significant progress in the period 1995–2003, while most African countries have made little or no improvement during this period. Overall, this study provides a clear visualization of the progression of digital development indicators alongside economic, demographic, infrastructural and risk factors in 179 countries over a nine-year time frame. These results are relevant as a basis for policy discussions as they highlight the success stories of some countries relative to others.

The second paper in this issue entitled “Investigating the impact of investments in telecoms on microeconomic outcomes: conceptual framework and empirical investigation in the context of transition economies” is authored by Sergey Valery Samoilenko. The effects of investments in telecommunications infrastructures on the overall growth and productivity of an economy has been the subject of much research. The author tests a conceptual model allowing for the investigation of the microeconomic impact of investments in telecoms as there seems to be scant published research on the microeconomic impact of telecom investments. The proposed conceptual model links investments in telecoms with microeconomic constructs that are closely associated

with such measures of macroeconomic bottom line as GDP; this allows the author to outline a more detailed path traversed by the impact of investments. Structural equation modeling is used to test the proposed model in the context of a sample of transition economies comprising two groups differing in terms of economic development. The results suggest the existence of the context-independent paths that are common to both groups; however, there is evidence that some of the impacts of investments in telecoms are dependent on the level of economic development. The results of the investigation offer valuable insights for policy-makers tasked with the responsibility of improving the micro- and macroeconomic impacts of investments in telecoms.

The final paper in this issue is in the Journal's View from Practice section and is entitled "When you do not have a computer: public-access computing in developing countries" by Ricardo Gomez. In developing countries, people who do not have computers or the Internet go to public-access computing (PAC) venues such as libraries, tele-centers and Internet cafes. What is the nature, scope and impact of the services offered by these PAC venues? Funded by the Bill & Melinda Gates Foundation, a mixed-methods investigation of libraries, tele-centers and cyber-cafe's in 25 developing countries around the world shows that there is a strong ecosystem of PAC venues in developing countries, and that users are shifting away from libraries in favor of commercially driven Internet cafes that provide good customer service and support to meet their information needs. Furthermore, an in-depth analysis of the benefits of using public access computers indicates that while users enjoy faster and cheaper access to more sources of information, PAC venues appear to be used more for building and maintaining users' social networks, personal relations and entertainment, and less for education, health, e-government or e-commerce activities. Gomez discusses the success factors that emerge in the study, the implications of the choices in public-access venues to use ICTs in developing countries and the focus on personal relations as a critical information need for underserved populations.

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