

Digital Policy Hub – Working Paper

# Bridging Kenya's Digital Divide: Context, Barriers and Strategies

**Frederick Okello**

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The Digital Policy Hub working papers are the product of research related to the Hub's identified themes prepared by participants during their fellowship.

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67 Erb Street West  
Waterloo, ON, Canada N2L 6C2  
[www.cigionline.org](http://www.cigionline.org)

## Key Points

- Access to digital technologies in Kenya has grown significantly in recent years, although disparities persist in availability and affordability of digital technology and digital literacy.
- Urban areas exhibit higher digital literacy levels and adoption of digital technology, while rural and marginalized communities lag behind.
- Limited availability of digital equipment at all levels of education hinders digital literacy and skills development.
- Digital literacy programs in schools and communities, infrastructure investments, low-cost satellite internet and public-private partnerships are critical to accelerating digital engagement in Kenya.
- Kenya's digital divide is driven by infrastructure issues, high costs, digital illiteracy and cultural norms. Progressive policies should encourage equitable access by lowering taxes and tariffs.

# Statement of the Issue

Kenya stands as a prominent digital and economic centre in East Africa. Despite this, it falls behind in global digital GDP rankings, highlighting a significant digital divide. UN Conference on Trade and Development (UNCTAD) data highlights this gap, emphasizing disparities in information and communications technology (ICT) access, usage and benefits, impacting economic growth and human development not only in East Africa but also globally (UNCTAD 2023). Merely possessing high mobile phone penetration and a widespread mobile money transfer platform does not resolve this acute digital division.

To address this issue, the Kenyan government should develop internet access strategies to connect the majority who lack internet access, despite owning mobile phones. These strategies must tackle ICT equipment availability, affordability, digital illiteracy and policy development to address infrastructure issues such as poor broadband coverage and internet reliability. Furthermore, the government should aim to bridge rural-urban and gender divides.

Over the past two decades, ICTs have significantly impacted the developed world, influencing various sectors. However, Africa, including Kenya, lags behind in ICT adoption (Jere and Ngidi 2020), impacting the continent's development. Despite international, regional and local efforts to bridge this digital gap, Kenya's digital divide persists. This policy brief delves into Kenya's digital divide, offering a framework for analyzing this issue and offering recommendations.

# A Synopsis of the Digital Divide in Kenya

This working paper examines the digital landscape in Kenya, highlighting its status as a regional digital and economic hub in East Africa while also acknowledging its lag in global digital economy GDP rankings. Drawing on UNCTAD data, this paper emphasizes the inequalities in access, usage and benefits of ICT in Kenya, and the subsequent impact on economic growth, productivity and human development in East Africa, Sub-Saharan Africa and other developing states globally. It argues that addressing the acute digital divide in Kenya requires more than just high mobile phone penetration and a widespread mobile money transfer platform. It recommends the development of internet access strategies that prioritize connecting the majority of people who lack internet access despite owning multiple mobile phones. The key focus areas for these strategies include bridging the rural-urban divide, gender disparity, digital illiteracy, insufficient or inaccessible ICT and high mobile penetration contrasted with limited connectivity.

## Assessing Kenya's Digital Divide

The digital gap in Kenya stems from various factors. Limited access to digital equipment across all levels of education impedes digital literacy and skills development among students and educators. Gender inequality also worsens the gap, with women facing more hurdles in accessing digital technology. Additionally, poverty plays a significant role, as those from low-income backgrounds often lack the financial means to afford digital technology. The high cost of such equipment and the urban-rural disparity further widens the gap, making it challenging for disadvantaged populations to bridge the digital divide.

Kenya's digital economy contributes 7.7 percent of Africa's GDP,<sup>1</sup> followed by Morocco at 6.82 percent and South Africa at 6.51 percent (Wangui 2020). This sector is among the fastest growing in East Africa and is anticipated to enhance Kenya's economy by adding 9.24 percent to the GDP by 2025. Despite evident economic, technological and infrastructural growth, Kenya must overcome various challenges to achieve sustainable socio-economic change. This policy brief explores these challenges and proposes policy approaches to mitigate them.

In the current scenario, most Kenyans perceive the internet as a business opportunity, albeit with exclusionary practices. However, in the context of the global digital economy, digitalization is crucial for realizing all the 17 UN Sustainable Development Goals (SDGs),<sup>2</sup> offering a practical means to positively transform an inclusive global society (Wahi 2021). Despite remarkable strides in digital transformation, Kenya's widening digital gap has faced significant criticism, underscoring the urgent need for an inclusive digital transformation accessible

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1 See <https://unctad.org/news/kenya-unveils-e-commerce-strategy-better-harness-digital-economy> for recent data on Kenya's digital economy.

2 For the impact of connectivity on the SDGs, see GSMA (2016).

to all segments of society. This paper delves into why Kenya necessitates an inclusive digital transformation and suggests steps to ensure its realization.

According to a 2023 UN Development Programme (UNDP) study in Kenya,<sup>3</sup> data access costs for mobile and fixed broadband are expensive compared to other East African countries. The average price for a 2GB data mobile package is US\$4.64, and a 5GB fixed broadband package costs US\$26.92, higher than similar developing countries such as Ghana, Sri Lanka, Vietnam and Bangladesh (UNDP 2023).

Kenya, as a member state of the East African Community (EAC),<sup>4</sup> has the opportunity to standardize and reduce tariffs on digital technology equipment and services within the region, comprising seven partner states: the Democratic Republic of Congo; the Republics of Burundi, Kenya, Rwanda, South Sudan and Uganda; and the United Republic of Tanzania.<sup>5</sup>

## Challenges to Bridging the Digital Divide in Kenya

Without intervention, the widening disparity between minimally connected developing states such as Kenya and extensively digitalized developed nations will worsen, amplifying current inequities. The degree of digital integration could impact a country's ability to accomplish the SDGs, addressing serious societal issues such as famine, illness and environmental shifts (Kituyi 2018). Hence, additional efforts are necessary to aid impoverished nations in their endeavours to become part of the digital economic landscape. However, before any interventions can be made, there is a need to enumerate the challenges to bridging Kenya's digital divide. The framework for analyzing the challenges facing the collective effort of narrowing this divide in Kenya is comprised of the five thematic areas discussed below.

### Rural–Urban Disparity

Kenya's rural communities are most affected by the digital divide. In rural areas, pastoralist and agricultural communities struggle with limited or no internet access (Agrawal, Khan and Ansari 2022). Around 70.7 percent of Kenyan people live in rural areas (Seow et al. 2019), which means they are more likely to be affected by the lack of internet access, widening the digital divide. Besides disparities in access to advanced ICT services, broadband adoption rates are lower in rural areas than in urban areas (Salemink, Strijker and Bosworth 2017). This limits access to financial services, online education, health-care services, administrative services, security and economic opportunities in rural Kenya.

The rural-urban disparity poses a significant challenge to addressing the digital gap in Kenya for several reasons. First, rural areas often lack adequate ICT infrastructure, which hinders access to digital technologies. Additionally, rural populations may face limited digital literacy and awareness compared to their urban counterparts. Furthermore, disparities in institutional support and service delivery between rural and urban areas exacerbate the digital

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<sup>3</sup> See UNDP (2023), a discussion paper detailing Kenya's exorbitant mobile and fixed broadband data access costs.

<sup>4</sup> The membership of the EAC has recently expanded to seven countries.

<sup>5</sup> See [www.eac.int/about-eac](http://www.eac.int/about-eac).

gap. These combined factors make it challenging to ensure equitable access, adoption and effective use of digital technologies across the country (ibid.).

Rural areas in Kenya experience a digital gap in comparison to urban areas, characterized by disparities in access to advanced ICT services and lower broadband adoption rates. The perception of the digital divide has evolved from mere access to technology to the ability to use technology effectively (Hollman, Obermier and Burger 2021). The imbalance in internet use persists, favouring urban dwellers over rural communities. The digital gap between Kenya's rural and urban areas primarily manifests in education and the digital economy, where rural youths tend to use technology more for entertainment than for productive or educational purposes (Laskar 2023).

### **Gender Disparity and Cultural Norms**

The digital divide has social consequences and limits civic engagement. Research shows that women in impoverished urban areas are less likely to be online compared to men, and they face barriers to using the internet for empowerment. Women exhibit a 50 percent lower likelihood of online presence compared to men, with a 30–50 percent reduced probability of leveraging the internet for economic and political empowerment (World Wide Web Foundation, n.d.).<sup>6</sup> This disparity prevents women from accessing important services and information and from participating in civic affairs<sup>7</sup> in Kenya (Wilson, Wallin and Reiser 2003).

Overall, progress toward gender equality and digital inclusion for women has been slow worldwide, despite important advances in moving beyond a focus on “digital access” (as measured by network coverage and hardware) toward a more holistic understanding of inclusion<sup>8</sup> that considers abilities, awareness and agency (David and Phillips 2023). Researchers now advance the gender digital divide theory, which states that women may become locked in a state of low inclusion (in feedback loops between digital, social, economic and political exclusion).

Gender disparity presents a challenge to bridging the digital gap in Kenya due to several factors. Women often encounter limited access to digital resources, including technology and internet connectivity. Moreover, societal norms, cultural and religious practices, and expectations may restrict women's opportunities to engage with digital platforms. Additionally, unequal access to education and employment further widens the gender digital gap. Addressing these challenges is crucial to ensuring equal participation and benefit from digital advancements across all genders (Karar 2019, 514–37).

### **Digital Illiteracy**

Digital illiteracy presents a significant hurdle in narrowing the digital gap in Kenya. The limited accessibility of digital tools across various educational levels contributes to this divide (ibid.). Moreover, the lack of digital proficiency among educators

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6 The World Wide Web Foundation (n.d.) report looks at the gender digital divide from a human rights perspective.

7 See the Organisation for Economic Co-operation and Development (2018) report for details on how technological disparity undermines women's societal participation and self-advocacy capabilities.

8 See David and Phillips (2023) on the gender digital divide theory, which proposes dynamic, systems-based analysis of gender digital divide progression.

obstructs the effective delivery of online education.<sup>9</sup> Additionally, the absence of technical support and unfamiliarity with technology acts as a barrier to embracing digital products, further complicating efforts to bridge the digital gap (Tiwari, Schaub and Sultana 2019). Effectively addressing digital ineptitude is vital for bridging the digital gap in Kenya. Digital illiteracy is a significant challenge to bridging the digital divide in Kenya because it limits the ability of individuals and communities to access, use and benefit from digital technologies. This lack of knowledge and skills hinders the ability of people to participate fully in the digital economy and to access essential services, information and opportunities. Digital illiteracy is often linked to poverty, lack of education, old age and other social and economic factors.

### **Insufficient ICT Infrastructure and Expensive ICT Services**

Inadequate ICT infrastructure and high ICT service costs present challenges to Kenya's digital divide. Limited digital equipment availability in education, unequal ICT infrastructure distribution, high costs, lack of policy framework and insufficient in-service training impede ICT integration in education, as highlighted by several studies. Providing internet access to low-income urban communities is crucial, aligned with internet access as a human right. Civil society groups play a strategic role in fostering digital inclusion, particularly for vulnerable groups, supporting the inclusivity goals of Kenya Vision 2030.<sup>10</sup> Additionally, visionary policy objectives are needed to inform national economic policies, aligning with the transformative aspirations of Kenya Vision 2030 (Newell et al. 2014; Ritchie 2022; Wamuyu 2017).

In Kenya, as in other African regions, fixed internet services are characterized by elevated costs attributed to high government tariffs and exorbitant fees imposed by internet service providers. Moreover, due to inadequate infrastructure, mobile prepaid internet services have gained popularity, offering a practical, convenient and cost-effective alternative. A study by Christoph Stork, Enrico Calandro and Ranmalee Gamage (2014) illustrates that offering affordable, uncapped fixed internet could co-exist with mobile broadband in Africa. However, the availability of fixed internet diminishes when provided as a capped service, not priced similarly to mobile broadband.

In Kenya, as elsewhere in Africa, mobile voice surpassed fixed voice with prepaid services, and now mobile internet is rapidly outpacing fixed internet. While the developed world debates fixed versus mobile broadband, Africa's fixed broadband, like fibre to the home, will likely reach only a few urban elites. To compete, fixed-line operators must invest in high-speed technologies and reconsider pricing strategies. The future outcome depends on their business decisions and policy interventions.

### **High Mobile Phone Penetration Contrasted with Limited Internet Connectivity**

Kenya's mobile penetration increased by 11 percent from January 2020 to January 2021, reaching 59.24 million connections, with an almost 109 percent penetration

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9 Kenya possesses basic digital literacy, but lacks advanced digital expertise. See Fernando and Jain (2022) and Domingo (2023) for 2023 data.

10 See <https://vision2030.go.ke> for information on Kenya Vision 2030.

rate due to multiple SIM card ownership. However, the number of internet users in Kenya was only about 21.75 million in January 2021, resulting in a 40 percent internet penetration rate. The growth in mobile penetration is attributed to technological advances such as mobile banking, particularly the widely used M-PESA service in Kenya, which has facilitated financial inclusion outside major cities (Allen et al. 2014). The analysis of mobile phone data has highlighted the role of human mobility in the transmission of disease (such as malaria) in Kenya, emphasizing the impact of connectivity and movement patterns on public health (Wesolowski et al. 2012).

Kenya has high mobile phone penetration at approximately 78 percent, but internet connectivity faces challenges (Poggiali 2017), with less than 10 percent penetration in 2008 and only 69 percent in 2015 (Dwyer 2019). Factors such as high costs, geographical disparities, limited infrastructure and lack of electricity in schools and rural areas hinder internet access. Despite rapid growth, the high cost of connectivity remains a significant barrier, limiting internet access in Kenya (Otiang'a 2022; Castro 2019).

## Recommendations

- **The rural-urban disparity:** To mitigate the rural-urban disparity in Kenya's digital divide, policy recommendations should emphasize enhancing ICT infrastructure, digital literacy and addressing institutional support disparities. Prioritizing broadband access in rural areas is crucial, promoting productive use of digital technologies, particularly in education and the digital economy. Addressing limited digital literacy requires policies focused on increasing awareness and skills in rural populations, while reducing institutional support disparities and improving service delivery, which are essential for narrowing the digital gap. Overall, policy interventions should target equitable access to, adoption of and effective use of digital technologies across rural and urban areas in Kenya.
- **Gender disparity and cultural norms:** Policy recommendations to address gender disparity and cultural norms in Kenya's digital divide should focus on targeted initiatives to improve digital literacy, address societal norms and promote gender-inclusive access to digital resources. Policy makers should prioritize interventions aimed at increasing women's access to digital technologies and internet connectivity, particularly in impoverished urban areas. Initiatives to enhance digital literacy among women and address cultural and religious practices that restrict their opportunities to engage with digital platforms are crucial. Additionally, policies should focus on reducing barriers to education and employment for women to narrow the gender digital gap. Furthermore, gender-inclusive policy making is essential for bridging the digital divide, and public policies should be designed to address the specific challenges faced by women in accessing and utilizing digital resources. Overall, policy interventions should aim to ensure equal participation and benefit from digital advancements across all genders in Kenya.
- **Digital literacy:** To drive digital transformation in Kenya, prioritizing digital skills development alongside infrastructure is crucial. This involves investing in digital skills development and subsequent management and assessment of training programs. It has been proposed to implement mechanisms ensuring proper management through



a standardized data collection framework linked to an internationally recognized digital literacy index, adapted to suit the dynamic nature of the digital economy (Chetty et al. 2018). Kenya's Vision 2030 emphasizes information technology-enabled services, including the Digital Literacy Program, as a crucial pillar for prosperity and global competitiveness. Embracing ICT in public services offers various benefits, such as reducing fraud and corruption, enhancing resource efficiency, improving information access and security, and providing shared transport data through internet and mobile technologies (Fernando and Jain 2022; Karar 2019).

- **Insufficient ICT infrastructure and expensive ICT services:** Policy recommendations to address inadequate ICT infrastructure and costly ICT services in Kenya include implementing the national ICT policy to support e-learning, addressing financial constraints and affordable internet bandwidth, providing ICT training to teachers, embedding ICT interventions in instructional reform and encouraging the use of ICT to revolutionize school management. Additionally, filling the digital divide gap by providing low-income urban communities with internet access is crucial. In the same vein, a study by Stork, Calandro and Gamage (2014) suggests that fixed-line telecommunication companies should prioritize data to avoid losing out to mobile operators.

To counter the swift dominance of mobile internet over fixed internet in Kenya and Africa, policy suggestions should incentivize fixed-line operators to invest in high-speed technologies and re-evaluate pricing strategies to retain competitiveness (Choi 2007). This transition is shaped by lifestyle, social norms and regulations, positioning mobile messaging as more cost-effective and culturally suitable than voice calling (Kennedy, Holcombe-James and Mannell 2021). Moreover, grasping the cultural and material capital of the populace is vital for fostering wider engagement in digitally mediated activities, underscoring the necessity for inclusive policies.

- **High mobile phone penetration contrasted with limited internet connectivity:** Policy recommendations to tackle the challenge of high mobile phone penetration coupled with limited internet connectivity in Kenya should prioritize enhancing mobile internet access in rural areas, addressing cost barriers and improving infrastructure. This includes initiatives to boost internet penetration and smartphone coverage in rural regions, along with tailored policies considering distinct challenges faced by different rural groups. Efforts should focus on reducing costs and geographical disparities, empowering local solutions and leveraging internet technology for rural development.

## Conclusion

Kenya's digital divide persists due to disparities in access, affordability and digital literacy. Urban areas exhibit higher digital literacy and adoption, while rural and marginalized communities lag behind. Limited availability of digital equipment at all levels of education hinders digital literacy. Infrastructure investments, low-cost satellite internet and public-private partnerships are critical to accelerating digital engagement. Kenya's digital divide is driven by

infrastructure issues, high costs, digital illiteracy and cultural norms. Progressive policies should encourage equitable access by lowering taxes and tariffs.

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## About the Author

Frederick (Fred) Okello is a master's student at the Balsillie School of International Affairs. At the Digital Policy Hub, his research will focus on technology for development (T4D) as a tool for reducing poverty, and digital and energy inequality in Sub-Saharan Africa. His research assesses T4D as a platform for the region's digital innovation, investment and policy development, and aims to identify digital technology innovations and policies that can improve private investor regulation, market competitiveness, as well as provision of financial assistance to disadvantaged customers in Sub-Saharan Africa's digital economy.

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